Eurasian Review of Business and Finance, 2019, Volume 3, Issue 2, 10-19.

Tourism-led Growth Hypothesis in North Cyprus

Eylem Sertel
The University of Mediterranean Karpasia; Faculty of Business and Economics; Department of Business Administration; Lefkoşa, Kıbrıs; E-mail: eylem.sertel@outlook.com

ABSTRACT

This paper empirically investigates the tourism led-growth hypothesis for the case of North Cyprus by employing the Johansen cointegration test, fully modified ordinary least squares (FMOLS) and Granger causality test using annual data from 1977-2016. The results confirm the existence of a long run equilibrium relationship among tourism revenues, real exchange rates and economic growth for the case of North Cyprus. Granger causality test results also support the existence of tourism-led growth hypothesis. Results of this study can be a guideline for other tourism destination emerging economies to create effective policies around economic growth.

JEL Classification: O47; Z32; Z30.

Keywords: Tourism Revenues; Real Exchange Rates; Economic Growth.

1. INTRODUCTION

The relationship between tourism and economic growth is one of the most popular topics in developing economies and it is very important factor for the global economy that reported from many researchers. The effects of tourism on economic growth in developing countries is a very interesting subject for policy makers (Clancy, 1999). However, literature on the relationship between tourism and economic growth is still inconclusive (Gunduz&Hatemi-J, 2005; Katırcıoglu, 2009a, 2009b, 2014). Tourism is a major source of foreign currency earnings in many situations and it also offsets the current account deficit, negative balance payments, and increases employement opportunities and investment (Oh, 2005). McKinnon (1964) states that tourism brings foreign currency and that it can be used to produce goods, which increases economic growth.

The tourism industry has developed rapidly in North Cyprus during the last two decades. According to the TRNC State Planning Organization, the number of tourists reached more than 1.1 million in 2012, with tourism contributing to the gross domestic product of North Cyprus with more than 8.5%. Therefore, the tourism industry of North Cyprus is an important sector for economic growth. Given the importance of the tourism sector for the case of North Cyprus, aim of this study is to investigate the

long run equilibrium relationship among tourism revenues, real exchange rates and economic growth between the period of 1977-2016.

Investigating the long run equilibrium relationship between tourism and economic growth has attracted great attention by scholars in the last decade. Gunduz and Hatemi-J (2005) proved empirically by testing the tourism-led growth hypothesis for the case of Turkey and found unidirectional causality from tourism to economic growth. Özdemir and Öksüzler (2006) also used Granger causality test for Turkey and found that tourism had a unidirectional causality from tourism to economic growth. Using the Granger causality test for Italy, Brida et al. (2010) observed that there is a causal relationship between tourism and economic growth. Polat and Günay (2012) applied the error correction model to test the existence of tourism-led growth hypothesis for Turkey and stated that tourism has a positive effect on economic growth. Gökovalı and Bahar (2006) similarly stated tourism has an impact on economic growth by using panel data analysis. Holzner (2011) similarly found the same results by using panel data analysis for Mediterreanean countries. Ongun and Demiroz (2005) used the Johansen technique and found bidirectional causality between tourism and economic growth in Turkey. Dristakis (2004) observed that there is a relationship between tourism and economic growth by using casuality analysis and found bidirectional causality as well.

On the other hand, Oh (2005) applied the Granger casuality test to Korea and observed that there was no causality between tourism and economic growth. The results showed that tourism was not a reason of economic growth in Korea. In addition to these results, Kızılgöl and Erbaykal (2008) found the same results by using Toda-yamamato causality test for Turkey. Chou (2013) applied the panel data analysis to 10 transition countries and found that tourism did not affect economic growth in 3 transition countries (Romania, Slovenia and Bulgaria) and in 7 transition countries, tourism was a reason for economic growth.

2. DATA AND METHODOLOGY

As a first step for empirical analysis, Phillips-Perron (PP) unit root test was applied to check if the variables are stationary or not. Second, Johansen and Juselius (1990) cointegration test was adopted to investigate the long run equilibrium relationship among variables. After revealing the existence of long run equilibrium relationship, long run coefficients were estimated by adopting fully modified ordinary least squares method (FMOLS). As a final step, Granger causality test under vector error correction model was applied to investigate the directions of the relationships among variables.

The functional relationship to test the existence of tourism-led growth hypothesis can be written as follows;

GDP = f (TOUR, RER) (1)

Where gross domestic product is the function of tourism revenues and real exchange rates.
The functional relationship can be converted to double logarithmic econometric model as follows;

$$\ln GDP_t = \beta_0 + \beta_1 \ln TOUR_t + \beta_2 \ln RER_t + \varepsilon_t \quad (2)$$

Where lnGDP, lnTOUR and lnRER are the logarithmic forms of gross domestic product, tourism revenues and real exchange reates.

3.1.1 Unit root test

PP unit root test is applied to check whether series have a unit root or not. PP test is a superior technique than the standard augmented Dickey and Fuller testing procedure because it calculates a robust error variance to autocorrelation (Phillips and Perron, 1988).
According to Enders (1995), the general model with trend and intercept should be applied as a first step for unit root testing. Then, the model with the intercept should be applied as a second step. Finally, the model without the intercept and trend can be checked to finalize the procedure.

3.1.2 Cointegration test

To investigate the existence of a long run equilibrium relationship among variables, Johansen cointegration test is adopted. Johansen cointegration test can be applied if variables have the same order of integration. Variables should be stationary at their first differences which is called integrated of order one, I (1). The Johansen method uses trace test statistics to see if there is any cointegrating vector present among variables in the suggested model. The null hypothesis for the Johansen test is that there are no cointegrating vectors among variables. To have a long run relationship among variables there should be at least one significant cointegrating vector in the model (Johansen, 1988).

The trace test statistics can be computed as follows;

$$\lambda_{trace} = -T \sum Ln(1-\lambda_i), \; i = r+1, \ldots, n-1 \quad (3)$$

3.1.3 Estimating the long run coefficients

After estimating the long run equilibrium relationship among variables by adopting the cointegration test, the fully modified ordinary least squares (FMOLS) method is adopted to estimate the long run

coefficients of conducted variables in the study. This method is established by Phillips and Hansen (1990) to estimate long run coefficients.

According to Narayan&Narayan (2005), the FMOLS procedure has some advantages when it is compared to standard procedures in estimating the long run coefficients. One of the best advantages of the FMOLS method is that sample bias error can be solved and the problems of endogeneity and serial correlation in the regression model can be fixed.

Applied FMOLS model can be indicated as follows;

$$X_t = \beta_0 + \beta_1 Y_t + \mu_t \qquad t= 1,2,3,.....,n \tag{4}$$

Where X_t is an integrated of order one variable and Y_t is a (k×1) vector of variables which are integrated of order one.

3.1.4. Causality test

Directions of the relationships among variables are estimated by adopting the Granger causality test. If there is a long run equilibrium relationship among variables, which is estimated by cointegration procedures, the causality test should be estimated under error correction model. The existence of cointegration among variables in the suggested model does not allow us to adopt the standard vector autoregressive (VAR) model to estimate causal relationships among variables (Granger, 1988). The null hypothesis of Granger causality test is there is no granger causality between conducted variables. Granger causality under VECM can be shown as follows;

$$\Delta \ln Y_t = \alpha_0 + \varphi_{11}^p(L)\Delta \ln Y_t + \varphi_{12}^q(L)\Delta \ln X_t + \varphi_{13}^r(L)\Delta \ln Z_t + \delta ECT_{t-1} + u_{1t} \tag{5}$$

$$\Delta \ln X_t = \alpha_0 + \varphi_{21}^p(L)\Delta \ln X_t + \varphi_{22}^q(L)\Delta \ln Y_t + \varphi_{23}^r(L)\Delta \ln Z_t + \delta ECT_{t-1} + u_{2t} \tag{6}$$

Where

$$\varphi_{11}^p(L) = \sum_{i=1}^{P_{11}} \varphi_{11,i}^p L^i \qquad \varphi_{12}^p(L) = \sum_{i=0}^{P_{12}} \varphi_{12,i}^p L^i \qquad \varphi_{13}^p(L) = \sum_{i=0}^{P_{13}} \varphi_{13,i}^p L^i \tag{7}$$

$$\varphi_{21}^p(L) = \sum_{i=1}^{P_{21}} \varphi_{21,i}^p L^i \qquad \varphi_{22}^p(L) = \sum_{i=0}^{P_{22}} \varphi_{22,i}^p L^i \qquad \varphi_{23}^p(L) = \sum_{i=0}^{P_{23}} \varphi_{23,i}^p L^i \tag{8}$$

Where Δ indicates the differenced operator and L shows the lag operator. Error corrections term, which is calculated by the long run model, can be shown as ECT_{t-1}. μ_{1t} and μ_{2t} are error terms in the long run models. Statistically significant *t ratios* for ECT_{t-1} indicate the existence of long run causation between variables of this study.

3.2. DATA SET

Annual data was adopted for the empirical analysis between the period of 1977-2016 in this study. The variables are Gross Domestic Product (GDP) (constant), tourism revenues (constant) and real exchange rates. Data was collected from the State Planning Organization of TRNC (SPO). Logarithmic forms of the variables were adopted in this study to conquer the growth impacts.

Table 1: PP Unit Root Test Results

Statistics (Level)	ln GDP	Lag	ln TOUR	lag	ln RER	lag
τ_T (PP)	-2.360	(3)	-2.129	(1)	-1.645	(1)
τ_μ (PP)	-0.336	(3)	0.817	(1)	-1.453	(2)
τ (PP)	2.846	(3)	1.843	(1)	-0.927	(1)
Statistics (First Difference)	**Δln GDP**	**lag**	**Δln TOUR**	**lag**	**Δln RER**	**lag**
τ_T (PP)	-4.628*	(3)	-5.875*	(2)	-5.952*	(1)
τ_μ (PP)	-4.697*	(3)	-5.959*	(2)	-5.859*	(1)
τ (PP)	-3.881*	(4)	-5.490*	(2)	-5.937*	(1)

Note: τ_T indicates the model with an intercept and trend; τ_μ is the model without trend; τ is the model without intercept. Optimum lag levels are reported in parentheses. * represents the rejection of the null hypothesis at 5% level of significance.

Integration orders of variables are tested by the Phillips-Perron (1988) unit root test as a first step of the empirical analysis. Table 1 summarizes unit root test results of the variables conducted in this study. According to the results of the unit root test, the null hypothesis of there is a unit root in the series can not be rejected at their level forms meaning that series are not stationary at their levels. Therefore, the first differences of the series are taken to test the existence of unit roots in the series.

As can be seen in table 1, the null hypothesis of there is a unit root can be rejected for first differenced series. Results of unit root test suggest that all variables are stationary at the same order.

After confirming the same integration order for all variables, cointegration test should be applied to see if variables are in long run equilibrium relationship or not. The existence of a long run equilibrium relationship among economic growth, tourism revenues and real exchange rate are investigated by Johansen (1988) cointegration test.

Table 2: Johansen Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.410977	37.71394	35.19275	0.0262
At most 1	0.303675	18.13022	20.26184	0.0957
At most 2	0.120206	4.738509	9.164546	0.3133

Note: * denotes the rejection of the null hypothesis at 5% level of significance.

Table 2 indicates the results of the Johansen (1988) cointegration test. According to table 2, the null hypothesis of there is no cointegrating vector among variables can be rejected. Therefore, there is a long run equilibrium relationship among variables which indicates the validity of tourism-led growth hypothesis in the long run for the case of North Cyprus.

Table 3: FMOLS Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNTOUR	0.945847	0.097127	9.738237	0.0000
LNRER	-0.042009	0.019953	-2.105437	0.0423
C	2.326589	0.547644	4.248358	0.0001
R-squared	0.876314	Mean dependent var		6.790368
Adjusted R-squared	0.869443	S.D. dependent var		1.087086
S.E. of regression	0.392793	Sum squared resid		5.554322
Long-run variance	0.342122			

After revealing the long run equilibrium relationship among variables, long run coefficients of the variables should be estimated. The fully modified ordinary least square (FMOLS) method is adopted to estimate the long run coefficients in this study. Table 3 indicates the estimated long run coefficients of the variables. According to table 3, tourism revenues have an inelastic, positive and statistically significant impact on economic growth, which is proxied by GDP. Moreover, real exchange rate has an inelastic, negative and statistically significant impact on economic growth. FMOLS test results suggest that when there is a 1% increase in tourism revenues in the long run, GDP of North Cyprus increases by 0.946% and if real exchange rate increases by 1%, GDP of North Cyprus decreases by 0.042% in the long run. That is to say, the economic growth of North Cyprus is driven by the tourism sector, and increases in real exchange rates deteriorate the growth of the economy.

As a last step, directions of the relationships among variables are estimated by the Granger causality test under vector error correction model (VECM).

Table 4: Granger Causality Test Results under VECM

Variables	LNRER	LNTOUR	LNGDP	ECM(t-1)
LNRER	--	0.987462 (0.3276)	0.401463 (0.5307)	-1.70044 (0.09846)
LNTOUR	0.098204 (0.7560)	--	0.341667 (0.5628)	0.14844 (0.88290)
LNGDP	0.964708 (0.3332)	0.192154 (0.6640)	--	1.70362 (0.09785)

Note: Numbers in parentheses indicate probability values

Table 4 indicates the directions of the relationships among variables. Significant error correction terms imply the existence of long run causal relationships among variables. According to the Granger causality test under VECM results, there is a long run causal relationship running from tourism revenues to economic growth.

Unidirectional relationship, which runs from tourism revenues to economic growth, supported the results of cointegration and FMOLS test results and validate the existence of tourism-led growth hypothesis for the case of North Cyprus. Unidirectional causality among tourism revenues and economic growth suggests that if there is a change in tourism revenues of North Cyprus, there is a change in economic growth in the long run. Moreover, there is a bidirectional causal relationship among real exchange rates and economic growth meaning that a change in real exchange rate causes a change in economic growth and a change in economic growth causes a change in real exchange rate. Any short run causalities could not be observed in this study.

4. CONCLUSION

The study investigates the long run equilibrium relationship among tourism revenues, real Exchange rates and economic growth for the case of North Cyprus between the period of 1977-2016. By adopting the Johansen cointegration test, long run equilibrium among variables are obtained. The estimated long run coefficients by FMOLS approach suggest that tourism revenues contribute to the economic growth of North Cyprus with an estimated positive long run coefficient. This result proves the validity of the tourism-led growth hypothesis for the case of North Cyprus. Moreover, the estimated long run coefficients of real exchange rates suggest that there is a negative long run relationship between real exchange rates and economic growth.

Policy makers of North Cyprus should be aware of the positive impact of the tourism sector on economic growth and understand the importance of tourism for the economy. To attract tourists to the country, planning long run policies has vital importance. As North Cyprus is not recognized by international authorities, promotion of the country in the international arena should be targeted. North Cyprus authorities should increase government expenditure on tourism for increases in promotions and invest more in the education of employees in the tourism sector. Educated employees increase the service quality and it helps to attract more tourists to the country.

The effects of tourism on economic growth in the case of North Cyprus is an interesting subject for researchers and managers.

A continuation of this study can be a research covering the tourism data of the countries of Eastern Mediterreanean, such as South of Turkey, North Africa and Middle East. Through this, the hypothesis tested in our study can be checked for the whole region. The more important issue for that is comparing the data with other countries makes the subject more interesting and will contribute to the tourism of North Cyprus by understanding the factors affecting the region.

REFERENCES

Brida et al. (2010), The Tourism-Led Growth Hypothesis for Uruguay. Tourism Economics, 16: 765-771.

Clancy, M. J. (1999), Tourism and Development Evidence from Mexico. Annals of Tourism Research, 26: 1-20.

Chen, C.F. (2009), Tourism expansion, tourism uncertainty and economic growth: New evidence from Taiwan and Korea. Tourism Management, 30: 812-818.

Chou, M.C. (2013), Does tourism development promote economic growth in transition countries? A panel data analysis. Economic Modelling, 33: 226-232.

Gunduz, L. – Hatemi-J, A. (2005), Is the Tourism-led Growth Hypothesis Valid for Turkey? Applied Economics Letters, 12: 499–504.

Dristakis, N. (2004), Tourism as a Long-Run Economic Growth Factor: An Empirical Investigation for Greece Using Causality Analysis. Tourism Economics,10 :305-316.

Enders, W. (1995), Applied Econometrcs Time Series, New York: Wiley. pp. 374.

Gokovali, U. and Bahar, O. (2006), Contribution of Tourism to Economic Growth in Mediterranean Countries: A Panel Data Approach. Anatolia, 17(2): 155–167.

Granger C. W. J. (1988), Some Recent Developments in a Concept of Causality. Journal of Econometrics, 39, 199-211.

Hair, J. F., Anderson, R. E., Tatham, R. L., & Black, W. C. (1998), Multivariate Data Analysis with Reading. Englewood Cliffs, NJ: Prentice Hall.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010), Multivariate Data Analysis. Vectors. https://doi.org/10.1016/j.ijpharm.2011.02.019

Holzner, M. (2011), Tourism and economic development: the beach disease?
Tourism Management, 32: 923-933.

Johansen, S. (1988), Statistical analysis of co-integration vectors. Journal of Economic Dynamics and Control, 12, 231-254.

Johansen, S. and Juselius, K. (1990), Maximum likelihood estimation and inference on co-integration with application to the demand for money, Oxford Bulletin of Economics and Statistics, 52, 169-209.

Katircioglu, S. (2009a), Tourism, trade and growth: the case of Cyprus. Applied Economics, 41(21), 2741-2750.

Katircioglu, S. (2009b), Testing the tourism-led growth hypothesis: The case of Malta. Acta Oeconomica, 59(3), 331-343.

Katircioğlu, S. T. (2014), Testing the tourism-induced EKC hypothesis: The case of Singapore. Economic Modelling, 41, 383-391.

Kizilgol, O. and Erbaykal, E. (2008), The Relationship between Tourism Revenues and Economic Growth in Turkey: A Causality Analysis, Suleyman Demirel University. The Journal of Faculty of Economics and Administrative Sciences, 13(2): 351–360.

McKinnon, R. (1964), Foreign exchange constraints in economic development and efficient aid allocation, Economic Journal, 74, 388–409.

Narayan, P. K. – Smyth, R. (2004), The Relationship between the Real Exchange Rate and Balance of Payments: Empirical Evidence for China from Co-integration and Causality Testing. AppliedEconomic Letters, 11: 287–291.

Oh, C. K. (2005), The Contribution of Tourism Development to Economic Growth in the Korean Economy. Tourism Management, 26: 39–44.

Ongan, S. – Demiroz, D. M. (2005), The Contribution of Tourism to the Long-run Turkish Eco-nomic Growth. Ekonomický Casopis / Journal of Economics, 53(9): 880–894.

Özdemir, A.R- Öksüzler, O. (2006), Türkiyede Turizm Bir Ekonomik Büyüme Politikası Aracı Olabilirmi? Bir Granger Nedensellik Analizi. Balıkesir Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 16: 107-126.

Perron, P. – Vogelsang, T. J. (1992), Testing for a Unit Root in a Time Series with a ChangingMean: Corrections and Extensions. Journal of Business and Economic Statistics, 10: 467–470.

Perron, P. (1989), The Great Crash, the Oil Shock and the Unit Root Hypothesis. Econometrica, 57:1361–1402.

Perron, P. (1990), Testing for a Unit Root in a Time Series with a Changing Mean. Journal of Busi-ness and Economic Statistics, 8: 153–162.

Polat, E – Günay, S. (2012), The test of the effect of tourism and export receipts on the economic growth in Turkey: cointegration and causality analysis. Süleyman Demirel Üniversitesi Fen Bilimleri Enstitüsü Dergisi, 23: 204-211.