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THE USA'S INTERNATIONAL TRAVEL DEMAND AND ECONOMIC GROWTH IN TURKEY: A CAUSALITY ANALYSIS: (1990 – 2008)

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This paper investigates the relationship between the USA international travel demand and Turkey's economic growth over the period 1990-2008. A vector error correction model is employed to test for Granger causality in the presence of co integration between variables. In this study, the impact of the USA international traveler in the Turkish tourism sector is investigated and evaluated by using ADF test, Co-integration approach, and Granger Causality test. The empirical findings indicate a long-run equilibrium relationship and a further uni-directional causality between the two variables.

Keywords: *International Travel Demand; Economic Growth; ADF; Co-integration; Causality.*

JEL Classification: *L83, M1, O1*

INTRODUCTION

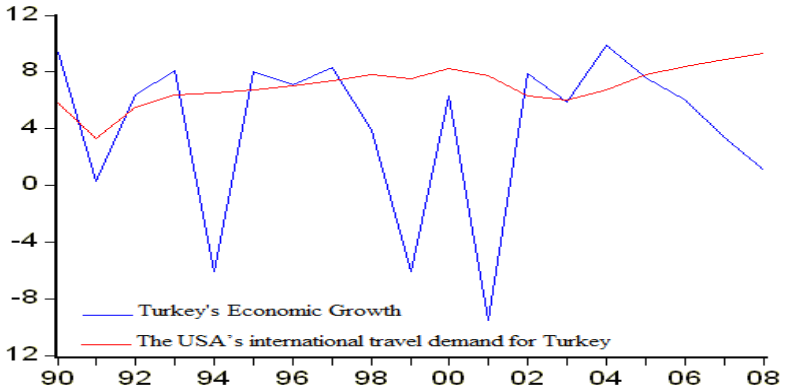
International travel and tourism are among the most dynamic sectors in the modern economy. Many developing countries have thus started to consider tourism as an important and integral part of their economic growth and development strategies as it serves as a source of scarce financial resources, job creation, foreign exchange earnings, and technical assistance (Sinclair, 1998; Dieke, 2004; Fayissa et al. 2007). The changes in aircraft technology, economic prosperity and international air service liberalization in the 1970s, have contributed to the growth of the international travel demand of visitors. Especially, after 1990, the importance and form of tourism have mostly changed by the effect of globalization.

According to the estimates of the World Tourism Organization (WTO, 2000), the number of international people movements around the world will surge to 1602 million by 2020, while tourism receipts will reach some US$200 billion. Furthermore, the World Tourism Travel Council (WTTC, 2005) expects that the scale of the world tourism industry, which made up roughly 10.4% of the world's GDP in 2004, will increase to 10.9% in 2014. When all components of the tourism industry are taken into account, tourism consumption, investment, government spending and exports, the industry grew 5.9% in 2004 alone, reaching US$5.5 trillion. The 10-year growth forecast is for US$9.5 trillion in 2014. For these very reasons, thoroughly investigating all aspects of tourism development and economic growth is extremely important for governments (Lee and Chang, 2008).

American tourists have a reputation for being big spenders, and this has made American tourists attractive visitors for many destinations. Turkey is one of the dominant outbound market in international tourism in terms of tourist arrivals and expenditures. Turkey is led by a strong political leadership in the last 5 years, which is not typical for the country. As a result of this political stability, Turkey has been ranked 20th in 2006 by its 378.4 billion dollars of Gross Domestic Product based on IMF's world's economic outlook. Turkey has an important geopolitical status in the world. Indeed, it has been estimated that a great part of the world tourism destination, which is expected to increase by 60% in the next 25 years, will be met from the region, which also includes Turkey.

The purpose of this paper is to use the Error Correction Model (ECM) model to investigate the dynamic relationship between tourism demand and economic growth of Turkey over time. We analyze the USA's international travel demand for Turkey. The focus of econometric studies is to determine the extent to which the data support a particular theory. More specifically, the ECM model, which embodies both econometric and time series analyses, will be used to test the economic theory that the demand for international travel is positively related to growth in the origin market.

Figure 1 Turkish Economic Growth and The USA's International Travel Demand for Turkey (in percentages)



LITERATURE REVIEW

In a recent study of the economic growth performance of Turkey, Akan et al., (2007) conducted a standard Granger (1969) causality test. The authors found that tourism and economic growth affected each other; thereby study supports both tourism-led economic development and economic-driven tourism growth.

Earlier studies about the relationships between tourism development and economic growth are currently "unfortunately blurry" due to there being different results for different countries in the same subject or region, different time periods within the same country and different methodologies in different regions (see Appendix).

Uysal and Crompton (1985) used a developing model to explain and predict international tourist flows to Turkey. The weights used were derived in 2 phases and were adjusted to incorporate the relative competitiveness of other tourist destination countries with Turkey. Ongan and Demiroz (2005) also investigated the impact of international tourism receipts on the long-term economic growth of Turkey by using the Johansen technique and vector error correction modeling. They found that there was bidirectional causality between international tourism and economic growth in this country. Akan et al., (2008) examined the dynamics of tourism when changes occurred in the sectoral structure. They further investigated the causal relations between Tourism and Economic Growth for the economy of Turkey during the time period of 1985-2007. In the Tourism sector which closely related to lodging,

demand forecasting is also an important area. Uysal and Crompton (1985) used three qualitative techniques: simple survey techniques, Delphi models and judgment-aided models.

Gunduz and Hatemi (2005) empirically confirmed the tourism led growth hypothesis for Turkey by making use of the leveraged bootstrap causality tests. They found unidirectional causality running from international tourist arrivals to economic growth of Turkey. Katircioglu (2009) investigated long-term equilibrium relationship between international tourism and real GDP by the bounds test and Johansen technique for co integration in the case of Turkey.

Using Spain's economic data, Balaguer and Cantavella-Jorda (2002) confirmed the validity of tourism-led growth hypothesis for long-run economic performance. Using Greece data, Dritsakis (2004) discovered a stable long-run relationship between tourism and economic growth. On the other hand, Oh (2005) disagreed with the tourism-led growth theory. After Balaguer and Cantavella-Jorda's (2002) work, Oh (2005) counter-argued that the existence of the tourism-led growth hypothesis in Spain may be attributed to the fact that Spain is one of the world's top recipients of international tourist revenues.

Dritsakis (2004) examined the impact of tourism on the long-run economic growth of Greece using a similar method. One co-integrated vector was found among GDP, real effective exchange rate and international tourism earnings from 1960 to 2000. Granger (1969) causality tests based on Error Correction Models indicated that there is a strong Granger causal relationship between international tourism earnings and economic growth, a strong causal relationship between real exchange rate and economic growth, and simply causal relationships between economic growth and international tourism earnings and between real exchange rate and international tourism earnings. In sum, his study supports both tourism-led economic development and economic-driven tourism growth.

Does economic growth cause tourism development or does tourism development lead to economic growth? Based on previous research, three different empirical results can be found: bidirectional causality between tourism and economic growth and unidirectional causality with either the tourism-led growth or economic-driven tourism growth hypotheses. As for policy implications, if there is clear-cut unidirectional causality from tourism development to economic development, then making strides in tourism growth (tourism-led economic growth) is the most practical approach. If the outcome shows the opposite direction of causality, then every effort should be made for overall economic growth as this, in turn,

will result in the expansion of the tourism industry. If there is no causal relationship between tourism growth and economic development, then there is no feedback effect between each other. Finally, if the relationship is bidirectional, and tourism and economic growth have a reciprocal causal relationship, then a push in both areas would benefit both (Lee and Chang, 2008).

The appendix presents previously reported empirical results for the relation between tourism and economic growth.

METHODOLOGY AND DATA

Engle and Granger (1987) were the first to point out that a linear combination of two or more non-stationary series (with the same order of integration) may be stationary, or I (O), and the non-stationary time series are said to be co integrated. If such a stationary linear combination exists, the series are co integrated and long run equilibrium relationships exist. In other words, once the order of integration is determined by the Augmented Dickey Fuller (ADF, Dickey and Fuller, 1979), the next step is to examine whether the series are co integrated or not, and if they are, to identify the co-integrating (long-run equilibrium) relationships. Incorporating these co integrated properties, an error-correction model (ECM) could be constructed to test for Granger causation of the series in at least one direction. In this paper, the ECM is specially adopted to examine the Granger causality between economic growth and the USA's International Travel Demand for Turkey. When both series are integrated to the same order, the Johansen maximum likelihood procedure (Johansen, 1988; Johansen and Juselius, 1990) is used for the presence of co integration. Any long-run co integrating relationship found between the series will contribute an additional error correction term to the ECM. The Johansen procedure is a vector autoregressive (VAR) based test on restrictions imposed by co integration in the unrestricted VAR. The procedure suggested by Johansen (1988) basically depends on direct investigation of co integration in the vector autoregressive (VAR) representation. This analysis yields maximum likelihood estimators of the unconstrained co integration vectors, but it allows one to explicitly test for the number of co integration vectors.

Error-correction Model

Correlation, even in the long run among co integrated variables, does not necessarily imply causality. If several series are co integrated, then a

Granger causality test can be constructed by augmenting the earlier construction with an appropriate error correction term (ECT) derived from the co integrating equation. For example, if the two series are l (l), the Granger causality test for a bivariate regression would be applied after taking their first differences and equations (1) and (2) would take the following forms:

$$(1) \qquad \Delta LY = \alpha_1 + \sum_{i=1}^{q} \delta_{y_i} \Delta LTOUSA_{t-i} + \sum_{j=1}^{r} \sigma^{yi} \Delta LY_{t-j} + \theta_1 ECT_{t-1} + \varepsilon_{yt}$$

$$(2) \qquad \Delta LTOUSA = \alpha_2 + \sum_{i=1}^{m} \beta_{ei} \Delta LY_{t-i} + \sum_{j=1}^{n} \gamma^{ei} \Delta LTOUSA_{t-j} + \theta_2 ECT_{t-1} + \varepsilon_{et}$$

After the test of stationarity, this study uses Engle and Granger (1987) co integration test to identify the existence of any co integrating relationship between economic growth and the USA's International Travel Demand for Turkey. That means, two variables are co integrated if they have a long term equilibrium relationship between them in at least one direction. Engle and Granger (1987) is used for correcting disequilibrium and testing for long and short-run causality among co integrated variables.

LY represents the annual economic growth rate in natural logarithms; LTOUSA expresses the USA's international tourism demand for Turkey and in natural logarithms. Δ denotes the first difference of variable. The optimal lags are selected for the truncation lag for the PP test based on the Akaike information criterion (AIC, Judge, Griffiths, Hill, Lutkepohl, & Lee, 1985). The error-correction term (ECT) is derived from the long-run co integration relationship and measures the magnitude of the past disequilibrium. In each equation, change in the endogenous variable is caused not only by the lags, but also by the previous period. Given such a specification, the presence of causality could be tested. Considering equation (2), if the estimated coefficients on the lagged values of the USA's international tourism demand are statistically significant, then the implication is that the USA's international tourism demand Granger causes economic growth in the short-run.

For this study, we obtain estimates of the relationship between economic growth and the USA's international tourism demand for Turkey on main macroeconomic variables. In the study the data of the USA's international tourism demand for Turkey and economic growth rates are used for the period of 1990–2008. These data is compiled from Central

Bank (CBRT) Electronic Data Delivery System and Tourism Ministry for the 1990–2008 periods.

Empirical Results

Table 1 reports the results of the ADF test on the integration properties of economic growth and the USA's international travel demand for Turkey.

Table 1 Augmented Dickey–Fuller Test Results

Variable	Test Statistic	Critical Value %1
LY	-1, 327605	-2, 699769
LTOUSA	-1, 134738	-2, 699769
Δ LY	-8, 865830**	-2, 708094
Δ LTOUSA	-2, 860101**	-2, 708094

The symbol,, denotes significance at 5% respectively.*
*The symbol, **, denotes significance at 1% respectively.*
LY represents the annual economic growth rate in natural logarithms; LTOUSA expresses the USA's international tourism demand for Turkey and in natural logarithms. Δ denotes the first difference of variable. The optimal lags selected for the truncation lag for the PP test based on the Akaike information criterion

Results of the ADF test indicate that the two series are found to be non-stationary. However, first differences of these series lead to stationarity. These indicate that the integration of economic growth and the USA's international travel demand for Turkey is of order one (1). Given that integration of the two series is of the same order, we continued to test whether the two series are co integrated over the sample period. Table 2 shows the results of the Johansen test. The likelihood ratio (LR) and trace statistic test reject the hypothesis of no co integration, and indicate that there is one co integrating equation at the 5% significance level (i.e. there is a long-run relationship between the USA's international tourism demand for Turkey and Turkey economic growth). The normalized co integrating coefficients are shown in the last row of Table 2, and the signs of the variables conform to the theory in the literature (i.e. there is positive relationship between the USA's international tourism demand for Turkey and Turkey economic growth). Following the detection of the co integrating relationship between the USA's international tourism demand for Turkey and economic growth, an ECM was set up to investigate short and long-run causality. In the ECM, the first difference of each endogenous variable (the USA's international

tourism demand for Turkey or economic growth) was regressed on a one period lag of the co integrating equation and lagged first differences of all the endogenous variables in the system. Causality can be identified by testing for significance of the coefficients on the dependent variables in equations (1) and (2). First, by testing H0: δyi = 0 for all i in equation (1) or H0: γei= 0 for all i equation (2), we evaluate Granger weak causality. This can be implemented using a standard Wald test. Asafu-Adjaye (2000) interpreted the weak Granger causality as 'short run' causality in the sense that the dependent variable responds only to short-term shocks to the stochastic environment.

Table 2 Johansen and Juselius Co-integration Test Results

r	Trace Statistic	%95	Likelihood Statistic	%95
r=0	28, 78747	15, 49471	28, 77224	14, 26460
r=1	0,015226	3.841466	0,015226	3.841466

Normalized Co-integration Equation: LY = 5, 175581+0,56115LTOUSA
The symbol,, denotes significance at 5% respectively.*
*The symbol, **, denotes significance at 1% respectively.*

Table 3 Granger Causality Tests

Dependent Variable			Independent Variable		
Short-term Causality			*Long-term Causality*		
	Δ LY	Δ LTOUSA	ECT	ECT/ΔLY	ECT/Δ LTOUSA
Δ LY	--------	0, 36128*	0, 2158**	---------	0, 59736*
Δ LTOUSA	3, 11462	---------	0,001	4, 5240	----------

The optimal lags selected for the truncation lag based on the Akaike information criterion (AIC)
The symbol,, denotes significance at 5% respectively.*
*The symbol, **, denotes significance at 1% respectively.*

The causality is the ECT in equations (1) and (2). The coefficient on the ECT's represents how fast deviations from the long run equilibrium are eliminated following changes in each variable. If, for example, β2 is zero, then the USA's international tourism demand does not respond to a deviation from the long run equilibrium in the previous period. This can be tested using a simple t-test. In order to check whether the two types of causality are jointly significant, we test the joint hypotheses H0: β1=0and δei=0 for all i in equation (1) or H0: β2=0 and γyi=0 for all i in equation (2). This is referred to as a strong Granger causality test.

The joint test indicates which variable(s) bear the burden of short run adjustment to re-establish long run equilibrium, following a shock to the system (Asafu-Adjaye, 2000). A test of these restrictions can be done using F-tests. If there is no causality in either direction, the 'neutrality hypothesis' holds. Table 3 shows the result of a Granger causality test between economic growth and the USA's international travel demand for Turkey. As we find the coefficients on lagged the USA's international travel demand for Turkey in the economic growth equation are significant, we conclude that there is a unidirectional short run causal relationship running from the USA's international travel demand for Turkey to economic growth. Using a Wald test, we find unidirectional long run causality running from the USA's international travel demand to economic growth because we cannot reject the null hypotheses that coefficients on the ECT and the interaction terms are jointly zero in the growth equation.

The results provide evidence supporting a long-run steady-state relationship between economic growth and tourism. This means that the two variables are causally related at least in one direction (Engle and Granger, 1987).

CONCLUDING REMARKS

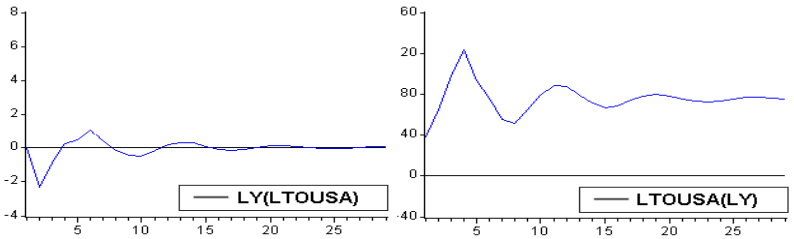
In this study, tourism and economic growth are conceptualized as an econometric model and an analysis is made to relate tourism to Turkey's economic growth. Time series techniques that closely follow the empirical economic growth literature are employed to test the influence of tourism variables on economic growth in a time serie data. The main goal of this study is to investigate the effect of international tourism on the economic growth and development of Turkey both in the short run and in the long run. The results show that the spending of international tourists positively impacts the economic growth of Turkey. The strong impact of tourist activity, according to the magnitude of the estimated parameter would reveal the existence of important long-run multiplier effect.

The study has applied the ECM model to investigate the causality relationship between economic growth and the USA's international travel demand for Turkey during the period of 1990–2008. In this study, two variables are conceptualized as an econometric model and an analysis is made to relate the USA's international travel demand to Turkey's economic growth. The estimation results indicate that there is a unidirectional relationship running from the USA's international travel demand to economic growth.

Before testing for causality, the ADF test and Johansen maximum likelihood and trace statistics tests were used to investigate the series of unit roots and co integration. The co integration analysis of a multivariate system of equations showed that there is a long run relationship between economic growth and the USA's international travel demand for Turkey. Granger causality test was used to examine the causal relationship between economic growth and the USA's international travel demand for Turkey. Prior to testing for causality, the ADF unit root test and Johansen & Juselius co integration rank test were used to examine unit roots and co integration. As co integrated variables are expected to have causal relationships, according to the results, long-run unidirectional causality exists between economic growth and the USA's international travel demand for Turkey, and short-run unidirectional causality exists from the USA's international travel demand to economic growth.

Test results indicate that Economic Growth in Turkey is positively affected by the USA's international traveler in the long run. Causality testing confirms the existence of that relationship in Granger sense and, moreover, it provides necessary arguments to support the tourism-led growth hypothesis. As expected, the earnings from international tourism affect the Turkey economic growth positively.

Figure 2 Impulse Responses



The impulse response functions indicated that there exists a positive correlation between economic growth and the USA's international travel demand for Turkey.

Figure 2 reports the impulse response functions, which are the simulated responses of the USA's international travel demand for Turkey that results from shocks to each of the other series analysis. The time period of the impulse response functions is spread over 29 years, while the response is measured in terms of standard deviations. This impulse response function indicates the existence of the long run co integration analysis, which has indicated that there exists a positive correlation

between economic growth and the USA's international travel demand for Turkey. Moreover, the impulse response function traces the effects on a variable of an exogenous shock to another variable over time.

Numerous empirical tourism studies have used the Granger Causality and ECM for inter-effect of the variables. There have been a number of successful empirical studies that support tourism and thereby led growth hypothesis like Balaguer and Cantavella-Jordá (2002), Narayan (2004), Oh (2005), Vanegas et al., (2007), Eugenio-Martín and Morales (2004), Lanza et al., (2003), Lee et al., (2002). They found a unidirectional causal relationship from tourism to economic growth. In this study, the ECM and the Johansen and Juselius tests also confirm long-term equilibrium relationship between tourism and growth. The results show that the tourism led growth hypothesis for Turkey is valid in the long term. In other words, this paper empirically tests the validity of the tourism led growth hypothesis for Turkey by using the ECM and the Johansen and Juselius technique for cointegration. An additional insight that has been gained from this research is the ECM models capture the dynamic relationships between time series variables and permit testing of economic theoretical concepts as related to travel demand. In other words, the ECM model approach is particularly useful in revealing the effect of tourism. It can also incorporate the future influence of changes in related variables on travel demand. However, the findings in this paper does not confirm the previous studies by Akan et al., (2008), Durbarry (2004), Dritsakis (2004), Kim et al., (2006) and Lee et al., (2002). This study rejects the validity of the tourism led growth hypothesis for Turkey.

American tourists have a reputation for being big spenders, and this has made them attractive visitors for many destinations. As Turkey has been one of the dominant outbound market in international tourism in terms of tourist arrivals and expenditures. Moving from this point, the main reason why American tourists are chosen for this particular study is to reveal, with an econometric model, whether the economic growth between the years 1990 and 2008 in Turkey is influenced by American tourists. In addition, when the literature studies are taken into consideration, in comparison to the previous studies where while the interaction between the tourism of a country and growth variables of the same country is handled, this study investigated the effect of the tourism variable of one country on the economy of another country as an econometric model. Thus, this study includes consequences that can lead new tourism strategies in respect to the quality of the tourists visiting Turkey. In another words, it can be possible to develop new tourism

policies for American tourists after displaying how they influence Turkish tourism.

A policy implication which may be drawn from this study is that Turkey can improve its economic growth performance, not only by investing on the traditional sources of growth but also by strategically contributing to the tourism industry and improving their governance performance. Like many developing countries, Turkey has been contributing to the growth of international tourism demand. The number of American people traveling to Turkey for holidays will increase in near future if the current average growth rate for the tourism demand holds.

New strategies are required in order to attract more tourists from the USA. These are;

- to ensure the development of indicative infrastructure investment projects, which would provide an example and encourage local industrial and commercial business entities to take a similar path.
- to ensure the modernization process at local level by educating youth and the local community about the USA.
- to provide special recreational and touristic opportunities for the USA travelers.
- to develop an understanding and raise awareness on improving the image of the Turkey in the USA.

Within the framework, for the implementation of the strategy, organizational actors in Turkey will play important role in order to implement tourism strategies better. These organizations are National Tourism Council, State Planning Organization (State Planning Organization), Ministry of Culture and Tourism, National Tourism Certification Service, Domestic Tourism Research and Steering Department. The tourism strategies are required in order to achieve its objectives and it is important that public institutions and organizations as well as the whole public adopt the strategy and act harmoniously according to the common objectives.

In conclusion, based on the results in this study, tourism strategies are required in order to encourage international visitors and tourism growth. It is under this perspective that private entrepreneurs and the government should increase the level of resources allocated to tourism. Moreover, the scientifically verified information is crucial for the private, public and governmental sectors to manage the tourism operations and planning in order to maximize the tourism earnings.

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APPENDIX

Appex 1 International Tourist Arrivals and Market Share by Region

Region	2000	2001	2002	2003	2004	2005	Share (%) 2000	Share (%) 2005
World	689	688	709	697	766	808	100	100
Europe	362.2	395.8	407.7	408.6	425.6	443.9	57.5	54.9
Mid/East	140.8	143.7	147.6	147.7	149.5	158.8	20.4	19.8
Asia/Pacific	111.4	116.6	126.1	114.2	145.4	156.2	16.2	19.3
Americas	128.4	122.2	116.7	113.1	125.8	133.1	18.6	16.5
Africa	28.2	28.9	29.5	30.7	33.3	36.7	4.1	4.5

Source: World Tourism Organization, January 2006.

Appex 2 International Tourism Receipts by Region of the World

Region	2003 (US$bill.)	2004 (US$bill.)	Share (%)	Receipts/ Arrival 2004
World	524	626	100%	820
Europe	282.7	626.7	52.5	780
Mid/East	114.1	131.7	21.1	1050
Asia/Pacific	94.9	125	20.1	820
Americas	16.8	21	3.4	590
Africa	15.5	18.3	2.9	550

Source: World Tourism Organization, January 2006.

Appex 3 Previously Reported Empirical Results for the Relation between Tourism and Economic Growth

Samples	**Authors**	**Empirical method**	**Period**	**Countries**	**Causal relationship**
One country	Akan et al. (2008)	Granger causality test	1985-2007	Turkey	Tourism ⇔ Growth
	Balaguer & Cantavella-Jorda (2002)	Error correction model	1975–1997	Spain	Tourism ⇒ Growth
	Durbarry (2004)	Error correction model	1952–1999	Mauritius	Tourism ⇔ Growth

Samples	Authors	Empirical method	Period	Countries	Causal relationship
	Dritsakis (2004)	Error correction model	1960–2000	Greece	Tourism ⇔ Growth
	Ghali (1976)	OLS	1953–1970	Hawaii	Tourism ⇒ Growth
	Gunduz & Hatemi (2005)	Causality test	1963-2002	Turkey	Tourism ⇒ Growth
	Katircioglu (2009)	Bounds test	1960-2006	Turkey	Reject
	Kim et al. (2006)	Granger causality test	1971–2003	Taiwan	Tourism ⇔ Growth
	Narayan (2004)	Error correction model	1970–2000	Fiji	Growth ⇒ Tourism
	Oh (2005)	Granger causality test	1975–2001	Korea	Growth ⇒ Tourism
	Ongan (2005)	Granger causality test	1980-2004	Turkey	Tourism ⇔ Growth
	Vanegas et al. (2007)	Granger causality test	1980-2005	Nicaragua	Tourism ⇒ Growth
Cross-section	Eugenio-Martin and Morales (2004)	Panel GLS	1980–1997	Latin American countries	Tourism ⇒ Growth (in low- and medium-income

Samples	Authors	Empirical method	Period	Countries	Causal relationship
					countries but not in high-income countries)
	Lanza et al. (2003)	Almost ideal demand system (AIDS)	1977–1992	13 OECD countries	Tourism ⇒ Growth
	Lee et al. (2002)	Error correction model	1990–2002	for OECD and non OECD countries	Tourism ⇒ Growth Tourism ⇔ Growth

Note: "Tourism ⇒growth" denotes causality running from tourism development to economic growth. "Growth ⇒tourism" denotes causality running from economic growth to tourism development. "Tourism ⇔growth" denotes bidirectional causality between tourism development and economic growth.

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