Evaluation of the Relationship between Tourism Industry and Economic Growth in Iran

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ABSTRACT

Tourism as an infant industry has affected socio-economic status of countries during recent years. This industry is regarded as one of the important income resources in countries at present which plays a major role in creating employment and establishment of new economic and income opportunities. Impact of tourism on all types of socio-economic status like regional production, employment, level of expenditures, value-added of service sector especially restaurant and hotel industry, banking and financial affairs reveals its importance in economy of countries. Given that Iran is among the ten first countries in the world in terms of tourism attractions the present paper has been conducted to evaluate the relationship between tourism industry and economic growth in Iran during the years 1980-2009 using standard Granger causality test as well as error correction model. Gross domestic product variable has been used as economic growth index and number of tourists has been applied as the replacement variable of tourism industry. Finally, research findings indicate that there is a mutual causality relationship between tourism industry and economic growth in Iran and such relationship between these two variables is supported in long term.

Keywords: Tourism, Standard Granger Causality Test, Error Correction Model

1. INTRODUCTION

It is more than a decade that tourism has been converted into the biggest industry in the world and it has constantly been developed since then. Today this industry is a great income resource for many countries and most governments support tourism industry actively. On the other side, half of the world employment will be allocated to tourism industry until 2020 based on statistics of Tourism World Organization. Tourism industry is one of the high income as well as growing resources in the world. The major factor of economic growth in many parts of the world has been tourism, since all sectors are related with this industry directly and indirectly. Due to the fact that Iran has very rich tourism attractions and an ancient civilization it is hoped that one day it reaches its real position in the world tourism industry through attempt towards development and ever-increasing prosperity of this industry and enjoys profits and returns obtained from prosperity and growth of the intended industry. According to statistics of Tourism World Organization number of tourists in the world exceeded 800 million persons in 2007 with an income more than 800 billion dollars. It places tourism industry in the third rank of world trade after oil
and automotive industries. This industry is one of the most important and high income industries of the world in the 21 century, thus policy makers and programmers of countries pay more attention to this industry as an economic, cultural, and political and security development strategy and its positive economic and cultural impacts are considered seriously by governments and nations.

Iran’s economy is a single-product economy by relying on oil incomes and such dependence has enhanced susceptibility level of the society’s economy so that whenever oil prices are increased because of world changes foreign currency incomes obtained from oil exports in the country gain a more desirable status too, since today oil prices are fluctuating due to permanent political issues despite it is an economic good. But such income increase is not so helpful for us, because first it is in cross sectional form. Secondly the necessary planning hasn’t been conducted regarding how to apply such incomes, because it is unpredictable and thus it is unused in the short-term. Tourism industry is one of the sectors that can play a role in eliminating single-product economy depending on mineral resources given that Iran has a rich culture and civilization and is among the first ten countries in the world in terms of tourism attractions.

Therefore, given to the importance of tourism industry objective of this survey is to study the causal relationship between tourism industry and economic growth in Iran during the years 1980-2009 using Granger causality test and vector auto-correction model. Gross domestic product variable has been used as economic growth index and number of tourists has been applied as the replacement variable of tourism industry. Therefore, in this survey it is tried to respond to this question: Is there a causality relationship between tourism industry and economic growth in Iran?

In the following theoretical principles and research literature are represented. Forms of tour and tourism, all types of tourism, elements and products of tourism industry and role of the government in tourism industry are mentioned while definitions, concepts and characteristics of tourism are illustrated. Then economic and uneconomic impacts of tourism will be stated and finally research background is represented.

2. LITERATURE REVIEW

2.1 Impact of economic growth on tourism

By improving the status of the global economic growth and enhancing future perspectives of economy especially in major tourism countries of origin demand level for foreign trips is increased in such countries. Recorded global evidences demonstrate that whenever economic growth status of the world and especially economic status of major tourist countries of origin hasn’t been in an appropriate condition (oil shock period and etc) international tourism has been faced with stagnation in all countries. International tourism demand has been increased by starting of economic growth and prosperity in the world. Global economic growth is leaded to increase investment in all economic sectors and increased trade volume among the countries and this will be leaded to enhance international tourism demand. In other words, when income per capita status and economy of Iran’s neighboring countries is improved increasing of foreign currency incomes obtained from international tourism for the country is much higher than when improvement of economic status is occurred in far countries. National economic growth and increasing of income per capita level in the first step along with increasing level of internal tourism demand and investment in this sector enhances internal tourism level in a country. In the next step increased internal tourism level is at least resulted in increasing of international tourism level according to Linder theory.

2.2 Research background

We can divide the conducted studies about tourism industry and economy into two classes of internal and external researches. Various researches have been conducted in World regarding tourism that some of them are referred in the following.
Mohammadzade and Najafi Nasab (2010) studied the causal relationship between tourism industry and gross domestic product in the selected Islamic countries during the period 1995-2005. They used pooling data and standard Granger causality test. Finally results of Granger causality test illustrate existence of a one-way causality relation from gross domestic product towards number of tourists.

Tayebi et al (2009) studied the causal relationship between international tourism and economic growth in Iran using VAR model during the years 1960-2005 and OECD countries as well as China, Hong Kong, Malaysia, Russia and Thailand during the years 1995-2005 through VAR-Panel model in an article entitled "studying the causal relationship between tourism and economic growth (case study of Iran, OECD countries as well as the selected countries). Research results show that there is a mutual causal relationship between tourism and economic growth of Iran, OECD countries as well as China, Hong Kong, Malaysia, Russia and Thailand and there is a long term balance between these two variables.

Adrian Liviu Scutariu (2009) emphasized evolitional process of tourism and its role in economic growth and regional development in a paper entitled “tourism as economic growth factor and the essential element in regional production in Romania”. He represented mental limit of tourism in the first part of the paper and focused on the relationship between tourism and economic growth and regional development in the second part. Also he represented a form to organize regional development policy and role of tourism in realization of purposes of this policy. Eventually he illustrated some results and some instructions for tourism development in the future in Romania in the final part.

Maddah (2008) studied the impact of tourism industry on regional production in an article entitled "tourism industry and regional production" by emphasizing limitations of Semnan province in terms of tourism industry substructures after a short review of tourism literature, studying tourism industry status in the world and determining Iran's relative position in this industry using scientific research methodology experimentally. First an economic model of gross domestic product (GDP) was represented and then the model was estimated by means of Ordinary Least Squares (OLS) method. Results obtained from model estimation show that tourism industry with coefficient of 53.1 has more impact on regional production with regard to agriculture, industry and mine.


Wan-Chen Po and Bwo-Nung Hung (2008) studied the relationship between tourism and economic growth using annual data during the period 1995-2005 in different eighty eight (88) countries. They used a non-linear model to show the relationship between tourism and economic growth and analyzed this issue. Results of the conducted estimation show that there exists a positive and significant relationship between tourism growth and economic growth in such countries.

Kim et al (2006) evaluated the causal relationship between tourism development and economic growth in Taiwan. A causality test following co-integration method were conducted in order to determine the causality direction between tourism development and economic growth in Taiwan and results indicated existence of a long-term equilibrium relationship between tourism and economic growth in Taiwan which is of mutual causal type.
Samina Khalil (2006) studied the relationship between tourism industry and economic development in Pakistan during the time period 1960-2005 using Granger causality test and obtained results illustrate existence of a mutual causality relationship between these two variables.

Ranjith Ihalanayake and Guneratne B.Wickremasinghe (2006) studied the issue that tourism industry development is leaded to economic development in a paper entitled “the causal relationship between tourism industry and economic growth in Srilanka” in viewpoint of a developing country. The applied variables in this research included number of tourists and gross domestic product during the years 1960-2000 in which convergence vector, error correction model and variance analysis were used. Results reveal that there is a major causality relationship from the tourist towards gross domestic product in Srilanka. Abbasinejad and Habibi (2006) used time series and cross-sectional data during the time period 1972-2002 to estimate and explain Iran’s tourism demand function. Finally research results demonstrate that variables of income per capita and relative internal and external prices have had the highest impact on tourism demand during the time period under study. Nikolaos Dritsakis (2004) studied the impact of tourism on long-term economic growth in Greece using Granger causality test in a paper entitled “tourism, long-term economic growth factor”. Gross domestic product (GDP), real effective foreign exchange rate and international tourism income were the applied variables in this paper during the years 1960-2000. At last, Granger causality tests based on error correction models showed existence of a strong causality relationship between incomes obtained from international tourism and economic growth. Also, there had been significant causal relationships between effective foreign exchange rate and economic growth as well as effective foreign exchange rate and incomes obtained from international tourism during the intended period in Greece.

Eugenio-martin et al (2004) studied the relationship between tourism and economic growth in twenty one (21) Latin American counties during the years 1985-1998 using panel data method and Arlano-Bond estimator in a paper entitled “tourism and economic growth in Latin American counties”. Results of this paper show that tourism growth has a positive impact on economic growth of countries with low income per capita (3 countries) and countries with moderate income per capita (11 countries). But this relationship is reverse in countries with high income (7 countries) and tourism growth has negative impacts on economic growth.

3. RESEARCH METHODOLOGY

In this survey number of tourists is regarded as tourism growth and development criterion. Statistics related to number of tourists has been exploited from Iran’s statistical yearbooks during the years 1980-2009. Also gross domestic product is used as economic growth and development criterion and the statistics related to it have been adopted from annual data of Iran’s Central Bank during the years 1980-2009 (gross domestic product with fixed price of the base year (1998)). Data related to gross domestic product is shown with LGDP and data related to number of tourists is shown with LTour. Logarithmic form is used just for easier interpretation. It shows change percent of dependent variable with change percent of explanatory variable.

4. DATA ANALYSIS

Since the first step in analyzing dynamic models is to study variables’ stationary here we have used Augmented Dicky-Fuller (ADF) unit root test in order to test stationary.

4.1 Reliability of variables in first-order difference

According to tables 1, reliability results of first-order difference show that both variables are reliable with one time difference. In other words, variables are I (1).

TABLE 1
4.2 Determining optimal degree of Var

According to table 2 optimal lag of the model based on Schwartz criterion is equal to one. It is noteworthy that Schwartz criterion is a more suitable criterion given to number of observations and that it loses less degree of freedom. Standard Granger causality test is used to ensure existence of relationship among the existing variables in the model and studying accuracy or inaccuracy of research hypothesis. Wald test is applied for significance of coefficients that we can make decision regarding accepting or rejecting the null hypothesis after obtaining the result through amounts of F, calculated (Chi-Square) X2 and comparing it with critical amounts of the related table or by using the probability amount (Prob).

Table 2

4.2.1 Standard causality test in Var framework from lgdp to ltour

Given to the obtained optimal lag the auto-regression model of determination for causality from lgdp to ltour is as below:

\[ ltour = c(1) * ltour(-1) + c(2) * lgdp + c(3) * lgdp(-1) \]

Null hypothesis regarding that lgdp is not Granger causal factor of ltour is rejected according to the table 3 and given to the obtained statistic. Thus, there is causality from lgdp to ltour.

Table 3

4.2.2 Standard causality test in Var framework from ltour to lgdp

Given to the obtained optimal lag the auto-regression model of determination for causality from ltour to lgdp is as below:

\[ lgdp = c(1) * lgdp(-1) + c(2) * ltour + c(3) * ltour(-1) \]

Null hypothesis regarding that ltour is not Granger causal factor of lgdp is rejected according to the table 4 and given to the obtained statistic. Thus, there is causality from ltour to lgdp.

Table 4

Error correction model method is used to reinforce results. Now, given that the long-term equilibrium relationship among the variables must be studied before applying error correction method first the long-term relationship among the variables should be examined. Ordinary Least Squares (OLS) method has been used to estimate long-term regression model. This method minimizes sum of squares of residual terms and then Angel and Granger co-integration test is studied to perceive co-integration among the variables.

4.3 Studying standard causality in VECM framework from LGDP to LTOUR:

4.3.1. Estimation of OLS

Table 5

4.3.2 Angel-Granger co-integration test

According to tables 6 results of Angel-Granger co-integration test show those residual terms are reliable. Thus there is a long-term relationship among the variables.
4.4 Vector error correction model (VECM)

Vector error correction model is estimated in table 7 given to the obtained optimal lag.

Table 7

4.4.1 Short-term causality test

According to table 8 (short-term causality test from Lgdp to Ltour) and given to the obtained statistic null hypothesis regarding that lrgdp is not the Granger causality factor of lrtour in short-term could not be rejected. Therefore, there is no short-term causality from lrgdp to lrtour.

Table 8

4.4.2 Long-term causality test

Given to significance of variable ECM there is long-term causality relation from lrgdp to lrtour.

4.5 Studying standard causality in VECM framework from LTOUR to LGDP:

4.5.1. Estimation of OLS

Table 9

4.5.2. Angel-Granger co-integration test

According to table 10 results of Angel-Granger co-integration test show those residual terms are reliable. Thus there is a long-term relationship among the variables.

Table 10

4.6 Vector error correction model (VECM)

Vector error correction model is estimated in table 11 given to the obtained optimal lag.

Table 11

4.6.1 Short-term causality test

According to table 12 (short-term causality test from Ltour to Lgdp) and given to the obtained statistic null hypothesis regarding that lrtour is not the Granger causality factor of lrgdp in short-term could not be rejected. Therefore, there is no short-term causality from lrtour to lrgdp.

Table 12

4.6.2 Long-term causality test

Given to significance of variable ECM there is a long-term causality relationship from lrtour to lrgdp.

Obtained results of tables show that there is no mutual Granger causality relationship between economic growth and tourism in the short-term and vice versa given to Wald test. On the other hand, significance of coefficient of interrupted error correction term (RESID02 (-1)) illustrates that such relationship exists in long-term. Therefore, neither economic growth is tourism Granger causality nor tourism is economic growth Granger causality in the short-term.
5. CONCLUSION

Results obtained from standard Granger causality test indicate that there exists a mutual Granger causality relationship between tourism industry and economic growth in Iran and results obtained from estimation of error correction models reveal that there is no causality from tourism industry to economic growth in the short term. Also there is no causality from economic growth to tourism industry in short term. But in long-term there is a mutual Granger causality relationship between tourism industry and economic growth in Iran. Hence, given to obtained results from standard Granger causality test as well as error correction model research hypothesis regarding that “there is a mutual causal relationship between tourism industry and economic growth in Iran” is confirmed.

Given to the mutual Granger causality relationship between economic growth and tourism industry we can say that whatever the country enjoys more economic growth it has higher number of tourists. Similarly whatever international tourism of the country has a higher degree of development the country will gain more economic growth.

Therefore, high potential is realized if the grounds of its realization exist. So, it is recommended to pay special attention to tourism industry in order to reach higher economic growth in the country and tourism development program of the country should be compiled in the field of economic development plan. Also it is recommended to authorities to pay necessary attention towards growth of this industry through planning in order to increase foreign tourists’ attraction.

REFERENCES


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Yuseffipour, GH. (2001). Role of tourism industry in Iran’s economic development and ways of developing it, M.A thesis, Imam Sadegh University, department of theology and economy.


Table 1-Unit Root Test

<table>
<thead>
<tr>
<th>Name of series</th>
<th>Augmented Dickey-Fuller statistic</th>
<th>MacKinnon critical amounts</th>
<th>Prob</th>
<th>Explanations</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1%</td>
<td>5%</td>
<td>10%</td>
</tr>
<tr>
<td>LNGDP</td>
<td>-3.614986</td>
<td>3.711457</td>
<td>2.981038</td>
<td>2.629906</td>
</tr>
<tr>
<td>LNTOUR</td>
<td>-5.196929</td>
<td>3.689194</td>
<td>2.971853</td>
<td>2.625121</td>
</tr>
</tbody>
</table>
Table 2 - VAR Lag Order Selection Criteria

<table>
<thead>
<tr>
<th>Lag</th>
<th>LogL</th>
<th>LR</th>
<th>FPE</th>
<th>AIC</th>
<th>SC</th>
<th>HQ</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>21.44424</td>
<td>NA</td>
<td>0.019466</td>
<td>1.736610</td>
<td>1.832598</td>
<td>1.765153</td>
</tr>
<tr>
<td>1</td>
<td>40.49755</td>
<td>110.1187*</td>
<td>0.000267</td>
<td>2.594342*</td>
<td>2.267410*</td>
<td>2.469747*</td>
</tr>
<tr>
<td>2</td>
<td>45.02362</td>
<td>7.375820</td>
<td>0.000258*</td>
<td>2.555374</td>
<td>-2.114403</td>
<td>2.451631</td>
</tr>
<tr>
<td>3</td>
<td>46.63692</td>
<td>2.390070</td>
<td>0.000313</td>
<td>-2.417550</td>
<td>1.745634</td>
<td>2.217754</td>
</tr>
</tbody>
</table>

* indicates lag order selected by the criterion

Table 3 - Wald Test

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>df</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>3.622007</td>
<td>(2, 26)</td>
<td>0.0410</td>
</tr>
<tr>
<td>Chi-square</td>
<td>7.244013</td>
<td>2</td>
<td>0.0267</td>
</tr>
</tbody>
</table>

Table 4 - Wald Test

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>df</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>4.904802</td>
<td>(2, 26)</td>
<td>0.0089</td>
</tr>
<tr>
<td>Chi-square</td>
<td>14.71441</td>
<td>2</td>
<td>0.0021</td>
</tr>
</tbody>
</table>

Table 5 - Ols Estimation, Dependant variable: LTOUR

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (tension)</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>8.01</td>
<td>0.6509</td>
</tr>
<tr>
<td>LGDP</td>
<td>0.65</td>
<td>0.0306</td>
</tr>
<tr>
<td>AR(1)</td>
<td>0.97</td>
<td>0.0000</td>
</tr>
<tr>
<td>DW=2.1</td>
<td></td>
<td>=94% $R^2$</td>
</tr>
</tbody>
</table>

Table 6 - Angel-Granger co-integration test

<table>
<thead>
<tr>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmented Dickey-Fuller test statistic</td>
</tr>
<tr>
<td>Test critical values: 1% level</td>
</tr>
<tr>
<td>5% level</td>
</tr>
<tr>
<td>10% level</td>
</tr>
</tbody>
</table>

Table 7 - Vector error correction model (VECM), Dependant variable: D (LTOUR)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (tension)</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-0.1</td>
<td>0.4963</td>
</tr>
<tr>
<td>D[LTOUR(-1)]</td>
<td>0.94</td>
<td>0.0003</td>
</tr>
<tr>
<td>D[LGDP(-1)]</td>
<td>0.70</td>
<td>0.0005</td>
</tr>
<tr>
<td>RESID01(-1)</td>
<td>-0.19</td>
<td>0.0396</td>
</tr>
</tbody>
</table>

Table 8 - Wald Test

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>df</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>0.232739</td>
<td>1, 24</td>
<td>0.6339</td>
</tr>
<tr>
<td>Chi-square</td>
<td>0.232739</td>
<td>1</td>
<td>0.6295</td>
</tr>
</tbody>
</table>

Table 9 - Estimation of OLS, Dependant variable: LGDP

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient (tension)</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>11.69</td>
<td>0.0000</td>
</tr>
<tr>
<td>LTOUR</td>
<td>0.31</td>
<td>0.0037</td>
</tr>
<tr>
<td>AR(1)</td>
<td>1.04</td>
<td>0.0000</td>
</tr>
</tbody>
</table>

\[DW=2.1\]
\[R^2=96\%\]

Table 10 - Angel-Granger co-integration test

<table>
<thead>
<tr>
<th></th>
<th>t-Statistic</th>
<th>Prob.*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Augmented Dickey-Fuller test statistic</td>
<td>-3.194859</td>
<td>0.0314</td>
</tr>
</tbody>
</table>

Test critical values:
- 1% level: -3.699871
- 5% level: -2.976263
- 10% level: -2.627420


Table 11 - Vector error correction model (VECM), Dependant variable: D (LGDP)

Table 12 - Wald Test

<table>
<thead>
<tr>
<th>Test Statistic</th>
<th>Value</th>
<th>df</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>F-statistic</td>
<td>0.175896</td>
<td>1, 22</td>
<td>0.6790</td>
</tr>
<tr>
<td>Chi-square</td>
<td>0.175896</td>
<td>1</td>
<td>0.6749</td>
</tr>
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</table>