A STUDY ON CAUSAL RELATIONSHIP BETWEEN TOURISM RECEIPTS AND ECONOMIC GROWTH IN INDIA

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Abstract

Tourism has been a major social phenomenon of the societies all along. It is motivated by the natural urge of every human being for new experience, adventure, education and entertainment. The motivations for tourism also include social, religious and business interests. The increase of education has fostered a desire to know more about different parts of the globe. The basic human thirst for new experience and knowledge has become stronger, as communication barriers are getting overcome by technological advances. Progresses in air transport and development of tourist facilities have encouraged people to venture out to the foreign lands. This study used annual data for the period from 1990-91 to 2014-15. Data for this study have been collected from the sources like, Annual Statistical Report of India Tourism Development Authority, World Investment Reports 1990 - 2016, Handbook of Statistics on Indian Economy. Variables taken for the study are Gross Domestic Product (GDP) to measure the value of economic growth and tourism receipts (TR) as proxy of tourism activity. The evidence, however suggests long-run causality from tourism receipts towards economic growth. It means tourism receipts are one of the contributor in economic growth. In general, the study appears to support and confirm tourism led-growth (TLG) hypothesis in India.

Keywords: *Gross Domestic Product, Tourism receipts, Unit Root Test, Co-integration Test, VAR Model, and Wald Test*

Introduction

Tourism has been a major social phenomenon of the societies all along. It is motivated by the natural urge of every human being for new experience, adventure, education and entertainment. The motivations for tourism also include social, religious and business interests. The increase of education has fostered a desire to know more about different parts of the globe. The basic human thirst for new experience and knowledge has become stronger, as communication barriers are getting overcome by technological advances. Progresses in air transport and development of tourist facilities have encouraged people to venture out to the foreign lands. Tourism's importance, as an instrument for economic development and employment generation, particularly in remote and backward areas, has been well recognized the world over. It is the largest service industry globally in terms of gross revenue as well as foreign exchange earnings. Tourism can play an important and effective role in achieving the growth with equity objectives which India has set for itself. Tourism is one economic sector in India that has the potential to grow at a high rate and can make sure consequential development of the infrastructure of the destinations. It

has the capacity to capitalize on the country's success in the services sector and provide sustainable models of growth.

Tourism in India

India as a tourist destination exercises immense attraction from various angles. Tourism has emerged as a major industry of the Indian economy, contributing substantially to foreign exchange earnings and serving as a potential generator of employment opportunities. India is the largest democratic republic in the world with immense possibilities of growth in the tourism sector, with its vast cultural and religious heritage and varied natural attractions, but the country has only a meager share in world tourism. It is a land of contrasts, that is, from tropics to snows. It presents a diversity of rare natural and cultural endowments, which is the traditional symbol of India, i.e. unity in diversity. India has God's plenty of natural beauty ranging from the towering Himalayas in the north to the sun-kissed beaches of the east and the breathtaking beauty of the west. Each area of the country offers a different experience with its own specific festivals and culinary culture. India's rich cultural heritage and glorious tradition are linked with the development of tourism in India.

Methodology

This study used annual data for the period from 1990-91 to 2014-15. Data for this study have been collected from the sources like, Annual Statistical Report of India Tourism Development Authority, World Investment Reports 1990 - 2016, and Handbook of Statistics on Indian Economy. Variables taken for the study are Gross Domestic Product (GDP) to measure the value of economic growth and tourism receipts (TR) as proxy of tourism activity. The variables GDP and TR were transformed into natural logarithms. The data analysis involves three steps; stationary property of each time series data have been first tested by using Augmented Dickey-Fuller test, Co-integration test and VAR test were performed in the second step to identify the existence of the long run relationship between the variables. In the third step, the Wald test is performed to find out the short run relationship between tourism and economic growth. E-views 9 software has been used for the data analysis.

Econometrical Background for the Study

Unit Root Test

The present study uses Augmented Dickey-Fuller (ADF) unit root test to examine the stationarity of the data series. It consists of running a regression of the first difference of the series lagged once, lagged difference terms and optionally, a constant and a time trend. This can be expressed as follows:

$$\Delta Y_t = \sim_0 + \sim_1 t + \sim_2 Y_{t-1} + \sum_{j=1}^{P} \sim_j \Delta Y_{t-j} + £_t$$

The additional lagged terms are included to ensure that are uncorrelated. In this ADF procedure, the test for a unit root is conducted on the coefficient of Y_{t-1} in the regression. If the coefficient is significantly different from zero, then the hypothesis that Y_t contains a unit root is rejected. Rejection of the null hypothesis implies statioarity. Precisely, the null hypothesis is that the variable Y_t is non-statioarity series (Ho : $\sim_2 = 0$) and is rejected when α_2 is significantly negative (Ha : $\sim_2 < 0$). If the calculated value of ADF statistic is higher than McKinnan's critical values, then the null hypothesis (H_0) is not rejected and the series is non-stationarity or not integrated of order zero, I(0). Alternatively, rejection of the null hypothesis implies stationarity. Failure to reject the null hypothesis leads to conducting the test on the difference of the series, so further differencing is (variables) are non-stationarity in their levels, they can be integrated with I(1), when their first differences are stationary.

Co-integration Test

Once the unit roots are confirmed for data series, the next step is to examine whether there exists a long-run equilibrium relationship among the variables. This is called co-integration analysis which is significant so as to avoid the risk of spurious regression. Co-integration analysis is vital because if two no-stationary variables are co-integrated, a Vector Auto-Regression (VAR) model in the first difference is mis-specified due to the effect of a common trend. If co-integration relationship is identified, the model should include residuals from the vectors (lagged one period) in the dynamic VECM system. In this stage, Johansen's co-integration test is used to identify co-integration relationship among the variables. The Johansen method applies the maximum likelihood procedure to determine the presence of co-integrated vector's in non-stationary time series. The testing hypothesis is the null of non-co-integration against the alternative of existence of co-integration using the Johansen maximum likelihood procedure.

In the Johansen framework, the first step is the estimation of an unrestricted, closed p^{th} order VAR in k variables. The VAR model as considered in this study is:

$$Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + ... + A_p Y_{t-p} + BX_t + £_t$$

Where Y_t is a k –vector of non-stationry I(1) endogenous variables, X_t is a d-vector of exogenous deterministic variables, A_1,……, A_p and B are matrics of coefficients to be estimated, and ε_t is a vector of innovations that may be contemporaneously correlated but are uncorrelated with their own lagged values and uncorrelated with all of the right-hand side variables.

Since most economic time series are non-stationary, the above stated VAR model is generally estimated in its first-difference form as:

$$\Delta Y_t = \prod Y_{t-1} + \sum_{i-1}^{p-1} \Gamma \Delta Y_{t-i} + BX_t + £_t$$

Where $\prod = \sum_{i=1}^{p} A_i - I$, and $\Gamma_i = \sum_{j=i+1}^{p} A_j$

Granger's representation theorem asserts that if the coefficient matrix $\prod$ has reduced rank r < k, then there exist k × r matrices E and B each with rank r such that $\prod = \alpha$ ′ and ′Y_t is I(0). r is the number of co-integration relations (the co-integrating rank) and each column of β is the co-integrating vector. α is the matrix of error correlation parameters that measures the speed of adjustments in ΔY_t.

The Johansen approach to co-integration test is based on two test statistics, viz., the trace test statistic, and the maximum eigenvalue test statistic.

Trace Test Statistic

The trace test statistic can be specified as: $^{2}_{trace} = -T \sum_{i=r+1}^{k} \log(1 - ^{a}_{i})$, where $^{a}_{i}$ is the largest eigenvalue of matrix $\prod$ and T is the number of observations. In the trace test, the null hypothesis is that the number of distinct co-integrating vector(S) is less than or equal to the number of co-integration relations (r).

Maximum Eigen value Test

The maximum eigenvalue test examines the null hypothesis of exactly r co-integrating relations against the alternative of r + 1 co-integrating relations with the test statistic: $^{2}_{\max} = -T \log(1 - ^{a}_{r+1})$, where $^{a}_{r+1}$ is the $(r+1)^{th}$ largest squared eigenvalue. In the trace test, the null hypothesis of r=0 is tested against the alternative r +1 co-integrating vectors.

It is well known that Johansen's co-integration test is very sensitive to the choice of log length. So, at first a VAR model is fitted to the time series data in order to find an appropriate lag structure. The Akaie Information Criterion (AIC), Schwarz Criterion (SC) and the Likelihood Radio (LR) test are used to select the number of lags required in the co-integration test. Hence we proceed to the vector auto regression model without alluding to the adjustment parameters that ought to be sought through VECM method in case of a cointegrated trend.

VAR Model

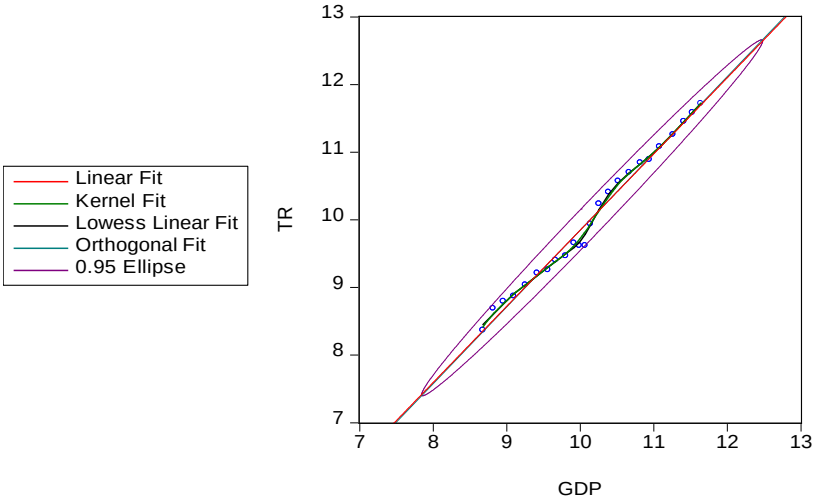
A typical autoregressive model of order p is used when the variables concerned are depending on 'p' lag. In below we write the equation that models such n autoregressive process.

$$Y_t = c + a_1 Y_{t-1} + \ldots\ldots\ldots a_p Y_{t-p} + £_1$$

We note that are stochastic terms incorporating the fluctuations or noises attributed to certain unexpected events happening. A vector auto regression model is considered when n number of variables together follows a correlation with influences from past (lagged) values of themselves. We also note that in our specific case the value of n and the value of p. The AI criteria is the one through which we have fixed two lags for our VAR model, since taking lag we get the required stationary of the time series ensemble. The equation is a typical autoregressive model for a single variable. Let represent the variable in the AR model corresponding to, represent the variable in the AR model corresponding to and so on. Thus we have the vector incorporating all the variables that we have considered which we denote for simplicity as indicating its value for the current time series. Similarly its lags are denoted by etc. Thus the autoregressive model considering all the macroeconomic variables reads as in equation.

Results and Discussions

Graphical presentation of data is very useful to identify the trend and underlying relationship between the variables. The Linear Fit, Kernel Fit, Nearest Neighbor Fit, Orthogonal Fit and Confidence ellipse graphs show that positive relationship between TR and GDP. Also show TR and GDP series are correlated.



Results of Unit Root Tests

It was felt that prior to causality testing, it is essential to examine the time series properties of the given variables in levels or in differences. Now, it is required to determine the order of integration for each of the two variables used in the analysis along with their stationarity tests. Stationarity of the TR and GDP series is examined using ADF tests and the results are presented in the following tables.

Table 1 Results of Tourist Receipts (TR) in Level

ADF (Exogenous)	t - statistic	Test Critical Values	Prob.
Intercept	-0.078	1% level -3.752, 5% level -2.998, 10% level -2.638	0.940
Trend & Intercept	-2.016	1% level -4.416, 5% level -3.622, 10% level -3.248	0.562
None	7.531	1% level -2.669, 5% level -1.956, 10% level -1.608	1.000

Source: Computed by Author.

Table 2 Results of Tourist Receipts (TR) in First Differences

ADF (Exogenous)	t - statistic	Test Critical Values	Prob.
Intercept	-4.643	1% level -3.769, 5% level -3.004, 10% level -2.642	0.001
Trend & Intercept	-4.659	1% level -4.440, 5% level -3.632, 10% level -3.254	0.006
None	-2.224	1% level -2.674, 5% level -1.957, 10% level -1.608	0.027

Source: Computed by Author.

Table 3 Results of Tourist Receipts (TR) in Second Differences

ADF (Exogenous)	t - statistic	Test Critical Values	Prob.
Intercept	-6.049	1% level -3.788, 5% level -3.012, 10% level -2.646	0.000
Trend & Intercept	-5.852	1% level -4.464, 5% level -3.644, 10% level -3.261	0.000
None	-6.221	1% level -2.679, 5% level -1.958, 10% level -1.607	0.000

Source: Computed by Author.

Table 4 Results of Gross Domestic Products (GDP) in Level

ADF (Exogenous)	t - statistic	Test Critical Values	Prob.
Intercept	-0.137	1% level -3.769, 5% level -3.004, 10% level -2.642	0.933
Trend & Intercept	-2.483	1% level -4.440, 5% level -3.632, 10% level -3.254	0.331
None	1.915	1% level -2.674, 5% level -1.957, 10% level -1.608	0.983

Source: Computed by Author.

Table 5 Results Gross Domestic Products (GDP) in First Differences

ADF (Exogenous)	t - statistic	Test Critical Values	Prob.
Intercept	-2.230	1% level -3.769, 5% level -3.004, 10% level -2.642	0.201
Trend & Intercept	-2.174	1% level -4.440, 5% level -3.632, 10% level -3.254	0.479
None	0.626	1% level -2.674, 5% level -1.957, 10% level -1.608	0.434

Source: Computed by Author.

Table 6 Results of Gross Domestic Products (GDP) in Second Differences

ADF (Exogenous)	t - statistic	Test Critical Values	Prob.
Intercept	-4.591	1% level -3.788, 5% level -3.012, 10% level -2.646	0.001
Trend & Intercept	-4.469	1% level -4.467, 5% level -3.644, 10% level -3.261	0.010
None	-4.701	1% level -2.679, 5% level -1.958, 10% level -1.607	0.000

Source: Computed by Author.

The ADF statistics were calculated for the variables in levels and first and second differences (defined as natural logarithms – log). The order of the ADF test was chosen on the basis residual whiteness. Table 1,2,4 and 5 show that the series of each variable at levels and first differences in non-stationary at one per cent level of significance in none.

Table 3 and 6 present the calculated t-values from ADF tests on each variable in second differences. Although we have included intercept, trend and intercept and none in levels, we exclude it in second differences. Since the calculated values are greater than the critical value at 1, 5 and 10 per cent level for TR and GDP, none of them have unit root, when their second differences are taken. The results of the ADF tests indicate that the variables are integrated of order one, i.e., I(2).

Results of Co-integration Tests

In the next step, the co-integration between the stationary variables has been tested by the Johansen's Trace and Maximum Eigenvalue tests. The results of these tests are show in Table 7 and 8.

Table 7 Unrestricted Co-integration Rank Test (Trace) (Lag Interval: 1 to 1)

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05 CV	Prob.**
None	0.363	10.347	15.494	0.254
At most 1	0.019	0.425	3.841	0.514

Source: Computed by Author.

***Mackinnin-Haug-Michelis (1999) p-value*

Table 8 Unrestricted Co-integration Rank Test (Maximum Eigen value) (Lag Interval: 1 to 1)

Hypothesized No. of CE(s)	Eigen value	Max-Eigen value	0.05 CV	Prob.**
None	0.363	9.922	14.264	0.217
At most 1	0.019	0.425	3.841	0.514

Source: Computed by Author.

***Mackinnin-Haug-Michelis (1999) p-value*

To ensure whether the variables under study are co integrated or to check whether they exhibit a long term association we use Johnson's Co integration test. Here we use Trace statistics for our analysis. The p value at None in trace is 0.254 and At most 1 is 0.514 indicating that TR and GDP are not co integrated and the p value at None in maximum eigen value test also indicating that TR and GDP are not co-integrated and do not exhibit long term association among themselves in both models.

Results of Vector Auto Regression Test

As the variables under consideration do not exhibit co integration we undertake unrestricted VAR (Vector Auto Regression) test.

Table 9 Vector Auto Regression Test for TR and GDP

	Coefficient	SE	t	Prob.
C (1)	0.998	0.226	4.411	0.000
C (2)	-0.229	0.262	-0.872	0.395
C (3)	0.278	1.014	0.273	0.787
C (4)	0.001	0.838	0.001	0.999
C (5)	-0.413	0.485	-0.851	0.406
C (6)	0.116	0.054	2.132	0.047
C (7)	0.008	0.063	0.126	0.900
C (8)	1.176	0.245	4.797	0.000
C (9)	-0.317	0.202	-1.566	0.135
C (10)	0.268	0.117	2.284	0.035

Source: Computed by Author.

The table 9 indicates that coefficients of Gross Domestic Product (GDP) at different lags C3 and C4 in the equation show p values of 0.787 and 0.999 respectively which are insignificant indicating that the Gross Domestic Product variable does not exhibit a long run correlation with the Tourism Receipts. Neither the Tourism Receipts coefficients C 6 nor C7 as independent variables exhibit any long run correlation with GDP.

Wald Test

The results of Wald tests are presented in Table 10 and 11.

Table 10 Wald Test for TR

Test	Value	df	Prob.
Chi-Square	1.555	2	0.457

Null Hypothesis Summary: C(3)=C(4)=0

Normalized Restriction (=0)	Value	SE
C(3)	0.278	1.014
C(4)	0.001	0.838

Table 11 Wald Test for GDP

Test	Value	df	Prob.
Chi-Square	6.697	2	0.035

Null Hypothesis Summary: C(6)=C(7)=0

Normalized Restriction (=0)	Value	SE
C(6)	0.116	0.054
C(7)	0.008	0.063

The short run correlation between GDP and TR can be quantified by Wald test for C(3) and C(4) the chi square statistic p value being 0.457 which is greater than 5 per cent indicating that C(3)=C(4)=0 tourism receipts in India are not affected by growth in GDP. Thus, economic expansion is not necessary for tourism development in the country. But the short run correlation between TR and GDP shows the C(6) and C(7) the chi square statistic p value being 0.035 which is less than 5 per cent. It shows that tourism receipts cause growth in GDP in India. Promoting tourism via developing a long-term tourism strategic plan will contribute to economic growth in India. Therefore, it appears that Wald test correlation only one way, from tourism receipts to GDP, but not the other way.

Conclusion

The India has been able to attain high growth rate by specializing in the tourism industry. The current research paper attempts to study the causal relationship between tourism receipts and economic growth for India. The empirical analysis suggested that the variables used in the current research paper show a stationary series. Then co-integration test has been conducted to check the relationship between variables and short run relationship is observed between both variables. The Wald test is used to investigate the direction of causality between tourism receipts and economic growth for in India. The evidence, however suggests short-run causality from tourism receipts towards economic growth. It means tourism receipts are one of the contributor in economic growth. In general, the study appears to support and confirm tourism led-growth (TLG) hypothesis in India.

Hence, significant impact of tourism on Indian economy rationalizes the necessity of encouraging tourism. Moreover, government should provide the incentives in the form of basic infrastructure such as roads, big air ports, good transport system and tax incentives to the tourism and its allied industries. India should also ensure the security of both foreign and domestic tourists. As tourism is a multidimensional activity and basically a service industry, it would be necessary that all wings of the Central and State governments, private sector and voluntary organizations, become active partners in the Endeavour to attain sustainable growth in tourism.

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