CAUSAL ANALYSIS OF TOURISM AND ECONOMIC GROWTH IN INDIA AND SRI LANKA

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Abstract

The present study analyzes the existence and direction of causality between economic growth and tourism development. This study utilized two bivariate models- 1) Gross domestic product (at constant price) (GDP_{cn}) and foreign tourist arrivals (FTAs); and 2) Gross domestic product (at current price) (GDP_{cu}) and foreign exchange earnings (FEEs) during the period of 1991-2016 and 1980-2016 for India and Sri Lanka. For this objective, in-depth empirical results are provided by using the approach of Phillips-Perron unit root tests, Johansen Cointegration tests and Granger Causality Wald tests. Results from these models indicate that variables (GDP_{cu} and FEEs) return to their long run relationship with bidirectional causal link during 1991-2016 in Sri Lanka. However, in India, the FTAs and GDP_{cn} have shared a long run relationship with unidirectional causal link in the same period. However, the results are also reported for the same dynamics between the variables (FTAs and GDP_{cn}) where no causal relationship in India as well as Sri Lanka during 1980 to 2016 has been estimated.

***Keywords**: Causality, Cointegration, Economic Growth, Tourism, Unit Root.*

INTRODUCTION

Tourism has emerged as a propelling industry with increasing opportunities globally as seen from several countries across the world. Indian and Sri Lankan economies are also gradually promoting it as a key activity for economic development and growth since the last three decades. Many reports suggest that tourism sector is emerged as one of the world's largest sector of the world economy (WTTC Report, 2018). The direct contribution the tourism sector to global GDP was 3.2 percent in 2017, and it is forecasted to increase by 3.6 percent per annum during 2018 - 2028. Global tourism industry is projected to generate the total 413.5 Lakh jobs by 2028. However, the total contribution of

tourism sector of the United Kingdom and China to GDP was more than 10 percent in 2017. It is projected to rise by 2 percent for United Kingdom and 6 percent for China in 2018. Tourism industry of United States has contributed to 7.7 percent of GDP and is projected to increase by 3.2 percent in 2018. However, Indian and Sri Lankan tourism industries have the vast and diverse potentials with comparative advantages. According to WTTC Report 2018, direct contribution of the Indian tourism industry to GDP was 3.7 percent in 2017. It is projected to rise by 7.6 percent in the 2018. This rise is projected to by the turn of 7.1 percent per annum during 2018 to 2028. While, the direct contribution of Sri Lankan tourism industry to GDP was 5.3 percent in 2017, it is projected to rise by 5.1 percent in 2018. It is also projected to increase by 5.7 percent per annum during 2018 to 2028.

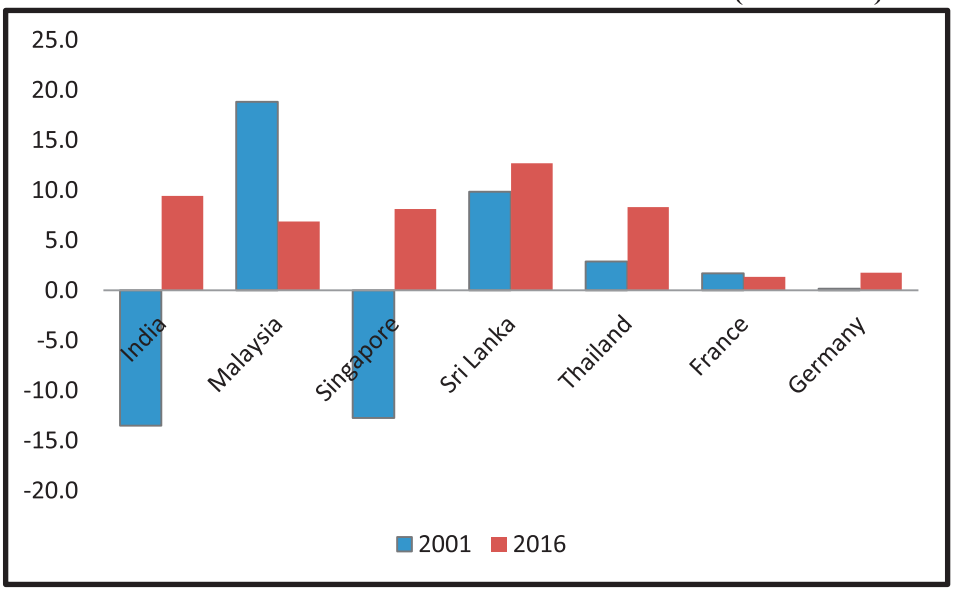
However, in case of other developed and developing countries like Malaysia, Singapore, Thailand, France and Germany including India and Sri Lanka, tourism sector has shown better growth in the recent period. Growth of tourism sector and its contribution to GDP in these countries has also received an appropriate attention in terms of government expenditure and employment generation in recent period. Graph 1 demonstrates the growth rate of tourism sector to GDP in selected countries in 2001 and 2016. India and Singapore have indicated negative growth rate in 2001 (around 13 percent) while in 2016 both the countries have shown better growth rates. Tourism sector of India and Singapore has contributed to GDP to the extent of 9 percent and 8 percent growth rates in 2016 respectively. However, Sri Lanka has shown the highest growth rate of tourism sector (12 percent) among the selected countries in 2016. With this growth rate, Sri Lanka and India have become the first and second largest economy of tourism industry in the selected economies. Singapore and Thailand have performed at around 8 percent growth of tourism sector in 2016 and became the top competitor for Indian and Sri Lankan tourism industry. Malaysia has also been competing with around 6 percent growth rate in 2016. While in 2001, tourism sector of Malaysia was contributing highest tourists with around 19 percent growth rate. On the other hand, France and Germany have shown the lowest growth rate of tourism sector to GDP in 2001 and 2016. France has shown 1.7 and 1.3 percent growth rates in 2001 and 2016 respectively. Germany has been further lower at 0.2 percent growth rate in 2001 and 1.8 percent growth rate in 2016. Thus, it appears that new countries are emerging rapidly where tourism growth rates have been faster than the countries like France and Germany.

Despite these potentials, as evident from total contribution to employment, Travel &Tourism enabling pillar, the tourism sector in these countries could not boast a significant contribution to GDP with employment as shown in Table A. The trend growth rate of percentage distribution of tourism employment has not crossed threshold of 2 percent during the period 2001-2016 except in Singapore. It means Singapore has been the only country among the selected countries which has been able generates employment to the extent of 2.5 percent a year

during 2001-2016. On the contrary, India has shown negative trend growth rate of total tourism employment (around 2 percent a year during the period 2001-2016). But, the Sri Lankan tourism sector is generating impressive employment from 6.9 percent to 10.9 percent share of total employment from 2001 to 2016 respectively. Singapore and Thailand have shown 42.5 and 9.3 percentage change in the share of tourism employment to total employment during the period 2001-2016. Malaysia, France and Germany have received negative percentage change in tourism employment to total employment. This might have happened due to inadequate expenditure of the government on travel and tourism industry in these countries besides other factors like emergence of the new destinations. Hence, there is a need to explore the role of government expenditure on tourism services and tourism growth which seems to directly impact the visitors.

Graph 2 demonstrates the government expenditure on tourism Sector in selected countries during the period of 2001-2016. Government expenditure for travel and tourism sector in France and Germany is very high which reflects the government's policies for tourism employment. Besides, tourism industry of Sri Lanka and Malaysia has received the lowest amount of government expenditure for tourism services. Singapore, India and Thailand have received moderate amount of government expenditures for tourism sector development. The low government expenditures might adversely affect the growth of the tourism sector as it may not be helpful in coming over the poor infrastructure also (Nawaz & Hassan, 2016).

GRAPH-1: Growth Rate of Tourism Sector to GDP (In Percent)



Source: https://tool.wttc.org/

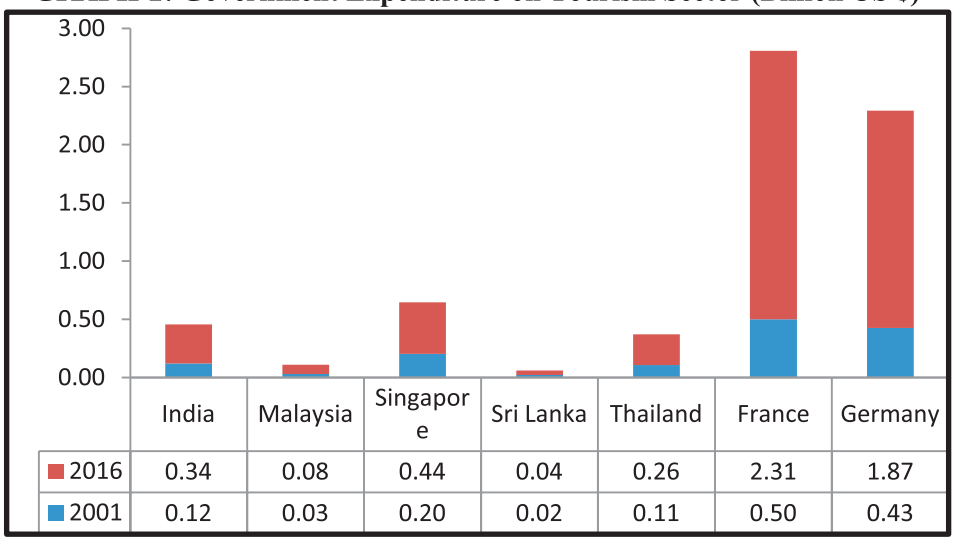
TABLE-A: Share of Tourism Employment and Trend Growth Rate
(In Percent)

Year	India	Malaysia	Singapore	Sri Lanka	Thailand	France	Germany
2001	9.82	12.95	6.07	6.96	13.97	12.17	16.34
2002	10.78	12.33	6.91	8.59	14.51	11.56	15.87
2003	11.21	10.81	5.51	8.60	13.58	10.98	15.27
2004	11.10	11.32	7.31	9.08	14.52	11.33	15.23
2005	9.39	11.46	7.33	8.31	12.98	10.74	15.31
2006	9.43	11.87	6.73	8.06	13.97	10.58	15.00
2007	10.29	14.75	7.52	7.94	13.95	10.48	14.12
2008	8.48	11.32	6.98	7.41	14.17	10.84	13.92
2009	8.04	12.07	6.89	6.96	13.45	11.02	14.45
2010	7.81	11.79	7.78	5.93	11.53	10.24	14.37
2011	7.92	11.14	8.43	6.76	11.31	11.12	13.92
2012	7.89	11.16	8.81	7.19	13.08	10.27	13.66
2013	7.87	11.97	8.60	7.89	14.87	10.57	13.62
2014	7.93	12.13	8.49	8.84	12.90	10.46	14.08
2015	7.92	11.75	8.54	9.93	14.63	9.94	14.13
2016	7.96	12.10	8.64	10.90	15.27	9.99	13.94
TGR# (%)	**-2.47**	**-0.15**	**2.49**	**0.71**	**-0.08**	**-0.91**	**-1.01**

Source: https://tool.wttc.org/
Note: # denotes Trend Growth Rate (TGR)

Thus, there is no argument over the fact that tourism is increasing its influence in its contribution to GDP in Indian and Sri Lankan economies. Therefore, it is gets important to investigate the tourism led economic growth hypothesis in both the economies. It is because the effect of tourism is significant in export-led economies rather than import-led economies (Katircioglu, 2009). It means tourism is the phenomena of outward oriented policy and assumed that the expansion of tourism should have a positive effect on economic growth. Moreover, it is spelt out in many studies that there is an evident relationship between tourism and economic growth. To find out this relationship, studies used various econometrics approaches. Here while studying the tourism, we consider only foreign tourist arrivals and foreign exchange earnings.

GRAPH-2: Government Expenditure on Tourism Sector (Billion US $)



	India	Malaysia	Singapore	Sri Lanka	Thailand	France	Germany
2016	0.34	0.08	0.44	0.04	0.26	2.31	1.87
2001	0.12	0.03	0.20	0.02	0.11	0.50	0.43

REVIEW OF LITERATURE

Ravinthirakumaran (2015) reported results with respect to Vector Error Correction Model (VECM) causality test between tourism and economic growth in Sri Lanka for the period 1968-2014. Results validate the tourism led economic growth in the long run as well as the short run. Shakouri, Yazdi, Nategian, & Shikhrezaei (2017) found that tourism development causes the increase in gross domestic product in the economy of Iran during 1980-2014. This unidirectional relationship between tourism and economic growth will sustain in long run also. Singh, Birch, & McDavid (2006), in a cross-sectional analysis on Jamaica for the period 1974 and 1993 concluded that tourism has a strong backward and forward linkages to the other sectors of the economy that promotes economic growth. Thus, they endorse that tourism is impacting positively on the economy. On the other hand, Yan & Wall (2002) argue that Chinese tourism industry did not induce much the economic growth at national level in 1995. Katircioglu (2009) also investigated the causal relationship between real GDP, number of tourist arrivals and effective exchange rate index and he found bidirectional long run relationship between the variables in Malta for a long period of 1960 to 2006. Georgantopoulos (2013) reported mixed results with respect to the direction of causality between total tourism expenditure, business travel and tourism spending, leisure travel and tourism, real effective exchange rate and real gross domestic product during 1988-2011 in India. This study found lack of causal relationship between total tourism expenditure and real GDP during the study period. However, there was a bidirectional (GDP and Leisure Travel & Tourism Spending) and unidirectional (Leisure Travel & Tourism Spending and Business Travel and Tourism Spending to GDP) relationship in India during the selected period.

However, Vector Auto Regressive (VAR) framework analysis by Abu Al-Foul (2016) showed the bidirectional causality link between real GDP and tourism receipt in the Jordan economy. For this analysis he used the quarterly data during 2003:IQ to 2011: IV Q. He used the quarterly data to eliminate the short run flactuations in both the variables. To support this argumant, Lionetti & Gonzalez (2012) also used the quarterly data (2001: IQ to 2008: IV Q) of international trade and foreign tourist arrivals from Latin America for causality analysis. They found that there is no long run relationship between tourism and trade. But in the short run, there is a bidirectional relationship present between tourism and trade in Latin America. In other studies Bento & Santos (2012) and Aslan (2014) confirm the tourism led economic growth in Portugal (1997: IQ to 2010 IVQ) and Turkey (2003: 1Q to 2012 IV Q) respectively. But Payne & Mervar (2010) fails to develop tourism led economic growth hypothesis in Croatia during 2000: IQ to 2008: III Q. In fact, he found that increased economic growth causes the tourism development in Croatia and to support his argument he used Toda-Yamamoto causality analysis. Besides, Habibi (2015) containing 85 selected economies for the period 2000 to 2013 including developed and Asian economies, found that there is a long run bidirectional relationship between tourist arrivals and GDP in developed countries whereas a unidirectional relationship from tourist arrivals to GDP for Asian countries.

In spite of that, there have some more studies which focused on causal relationship between tourism development and economic growth with inclusion of some other variables. These studies have also investigated the tourism led growth hypothesis. Hye & Khan (2013), found that a long run relationship between income from tourism and economic growth in Pakistan during the period of 1971–2008. They applied the rolling windows bound test approach to find out the causal relationship between selected variables. The results of tests have supported the tourism led economic growth in Pakistan during the specified time period. In case of Middle East economies, Al-Mulali, Fereidouni, Lee, & Mohammed (2014) found that tourism receipts have a long run effect and a positive causal relationship with GDP during the period of 1985-2012. Study argued that the increase in GDP, total trade, and the depreciation of the local currency are essential to promote tourism expansion in Middle East. Besides, Perles, Ramon, Rubia, & Moreno (2017) and Lean & Tang (2009) tried to find out stability of tourism led economic growth in Spain and Malaysia respectivey. Perles, Ramon, Rubia, & Moreno (2017) tried to find out the impact of Global Financial and Economic Crisis on tourism led economic growth in Spain during the period of 1957-2014. The study is also analyzed the impact of tourism led economic growth on employment. While, Lean & Tang (2009), used the number international visitors and industrial production index to find out the bidirectional causality with long run stability in Malaysia during the period of January 1989 to February 2009. The study found that tourism led economic growth hypothesis was stable in Malaysia during the selected time phase.

Sharma (2018) has investigated the causal relationship between gross domestic product and tourism receipts in India after the economic reforms period (1991 – 2017). He used the most popular granger causality test for causal relationship and found unidirectional link between both the variables. This unidirectional link seems to suggest that tourism expansion has been promoting the economic growth in India. But the study is failed to clarify the multicollinearity problem. In this light, the central objective of this study is to investigate the relationship between economic growth and tourism development. For this we are estimating the causal relationship between tourism receipts and economic growth as measured by GDP (at current price). Along with this, we are also using two variables, the international tourist arrivals and economic growth as measured by GDP (at constant price), for causality analysis for rapidly growing South Asian economies of India and Sri Lanka. This study is about the comparison of causal relationship between tourism receipts and GDP (at current price) and Tourist Arrivals and GDP (at constant price) for India and Sri Lanka are almost non-existent to the best of our awareness. Moreover, this study is based upon the assumption that tourism receipts is a stronger variable than tourist arrival because it is a main source of balance between current account and balance of payments deficits (Shakouri, Yazdi, Nategian, & Shikhrezaei, 2017). Along with this, increased foreign exchange earnings have contributed to increase in investment also. The rest of the study is organized like this: section 3 examines the brief pattern of tourism sector in both the economies. Section 4 introduces the studied model, methodology and data sources used in this study. Section 5 presents the empirical results and analysis. Section 6 presents the main findings and provides some policy recommendations.

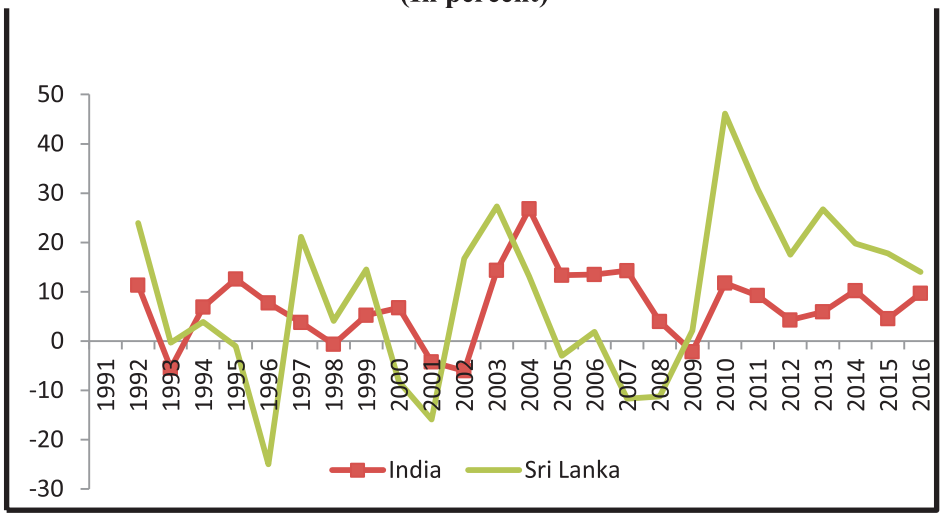
Tourism Development in India and Sri Lanka

The tourism industry is contributing enormously to flourish the graph of developing economies by attracting the huge number of tourists for different purposes. In India and Sri Lanka also, tourism is considered as a key factor for economic development and growth. This is more so in India after economic reforms were initiated in big-bang manner in1991 and in Sri Lanka it got greater thrust after the end of civil wars and political instability in 2009 (Perera, 2015). It is clearly evident from graphs 1 & 2.

Graph 3 shows that both the economies have high variations in inflow of tourist arrivals from year to year. It further narrates that tourism in India and Sri Lanka follows the cyclical pattern of growth. It means the fluctuation has been not only in terms of degree but also in terms of direction. The highest growth rate of the foreign tourist arrivals were in 2004 (26.8 percent) whereas the worst has been in 2002 (-6.03 percent) in India. Sri Lanka has the highest growth rate of the foreign tourist arrivals in 2010 (46.1 percent) whereas the worst has been in 1996 when it turned out to be negative (-25.01 percent). From this it appears as if in the initial period growth rate has been on the lower side while in the later years, there has been improvement in growth rates of tourist inflow. These estimates of foreign

tourist arrivals confirmed that National Tourism Policy 2002 of India played a significant role in rapid development of tourism in India. In case of Sri Lanka, civil wars and political instability were the main hurdles for poor tourism development. There has been a sharp increment in tourist arrivals in Sri Lanka after 2009 and much higher in comparison to the Indian experience. It has become 14.04 percent and 9.7 percent of tourist arrivals in Sri Lanka and India in 2016 respectively. The same pattern is followed by the foreign exchange earnings in both the economies throughout the period (Graph 4). Further, it appears that Sri Lanka has been doing better for tourism development in comparison to India in the recent period as in terms of growth rates of tourist inflow and foreign exchange earnings. Sri Lanka has outperformed the Indian experiences in the recent period particularly since 2009.

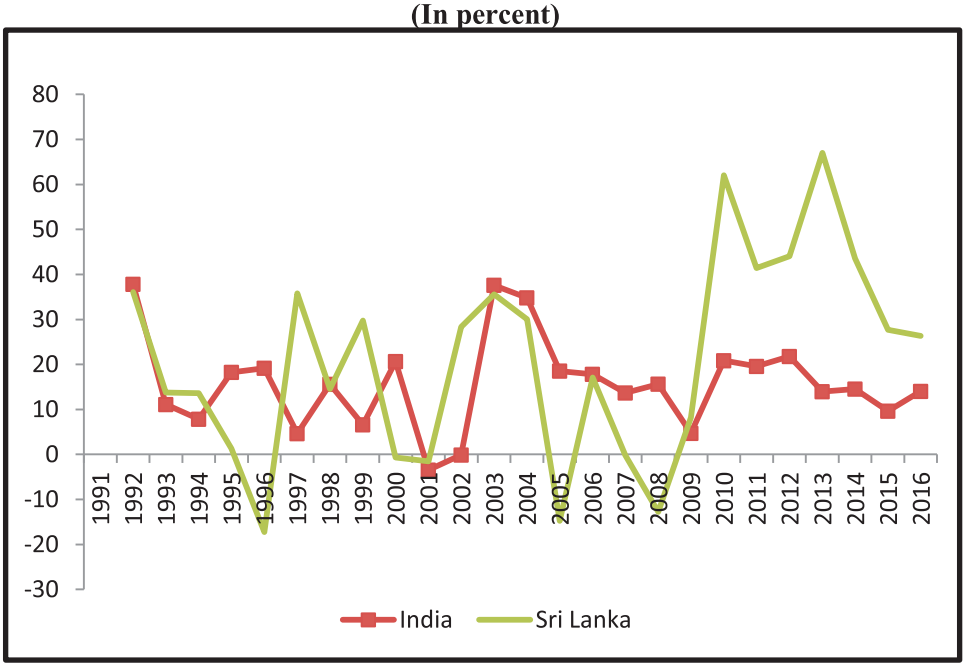
GRAPH-3: Growth Rates of Foreign Tourist Arrivals in India and Sri Lanka
(In percent)



Data and Methodology

The study is using yearly data of international tourist arrivals, foreign exchange earnings and gross domestic product (GDP) at constant and current prices during the period 1980 to 2016. The variables of this study are gross domestic product (at constant price), GDP_{cn}, as a proxy of economic growth and International Tourist Arrivals (FTAs) as a proxy of tourism growth during a period 1980 to 2016. Along with this, Gross Domestic Product (at current price), GDP_{cu}, as a proxy of economic growth and Foreign Exchange Earnings (FEEs) as a proxy of tourism growth during a period 1991-2016 are also used for the analysis. Data for GDP are obtained from *Statistical Year Book of India* for India and *Economic and Social Statistics of Sri Lanka* for Sri Lanka. FTAs and FEEs are extracted from *Indian Tourism Statistical Year book* and *Annual Statistical Report of Sri*

GRAPH-4: Growth Rates of Foreign Exchange Earnings in India and Sri Lanka
(In percent)



Lanka Tourism for India and Sri Lanka respectively. The present study uses time series techniques to analyze the relationship between tourism and economic growth in both the economies at macro level.

Time series analysis starts with unit root properties. It means, the variables must be stationary before applying any time series test or model. Therefore, the study examines the stationarity properties of the selected time series variables. Phillips-Perron (PP) unit root test is employed to the identified variables. It consists of running a regression of the first difference of the series against the series lagged once, lagged difference terms, and optionally, by employing a drift. This can be expressed as:

$$\Delta Y_t = \beta_t + \delta Y_{t-1} + \sum_{i=1}^{n} \alpha_i \, \Delta Y_{t-1} + \epsilon_t \quad \ldots\ldots\ldots\ldots (1)$$

The test for a unit root is conducted on the coefficient of (Y_{t-1}) in the regression. If the coefficient is significantly (t test) different from zero, the hypothesis that (Y) contains a unit root is rejected. Rejection of the null hypothesis implies stationary time series. Phillips and Perron's test statistics can be viewed as Augmented Dickey–Fuller (ADF) statistics that have been made robust to serial correlation by using the heteroskedasticity and autocorrelation consistent covariance matrix estimator. Before going to the test of ADF, one has to choose

the lag length for the test regression. The advantage of the PP tests over the ADF tests is that the PP tests are robust to general forms of heteroskedasticity in the error term. Another advantage is that the user does not have to specify a lag length for the test regression (Gujarati & Sangeetha, 2007).

Furthermore, the time series variables have to be examined for cointegration. Cointegration test analysis helps to identify long-run economic relationship between two or more variables. It is important because it avoids the risk of spurious regression if two non-stationary variables are cointegrated.

$$X_t = \beta_1 + \beta_2 Y_t + \mu_t \qquad \ldots\ldots\ldots\ldots\ldots (2)$$

In the language of cointegration theory, a model such as equation (2) is known as cointegrating regression and the slope parameter β_2 is known as the cointegrating parameter. The concept of cointegration can be extended to a regression model containing *k* repressors. In this case model will have *k* cointegration parameters. In this study, the Johansen Cointegration test is applied to identify a cointegrating relationship among the selected variables (stationary). Johansen test (Hjalmarsson & Osterholm, 2007) suggested two types of tests statistics to determine the cointegration rank like trace statistic and maximum eigenvalue statistics, shown in equations (3) and (4).

$$J_{trace} = -T \sum_{i=r+1}^{n} ln\,(1 - \lambda_i) \qquad \ldots\ldots\ldots\ldots\ldots (3)$$

$$J_{max} = -T \ln(1 - \lambda_{r+1}) \qquad \ldots\ldots\ldots\ldots\ldots (4)$$

Here T is the sample size and λ_i are estimated eigenvalue. The trace statistics tests the null hypothesis of 'r' cointegrating vectors against the alternative hypothesis of 'n' cointegrating vectors. The maximum eigenvalue test, on the other hand, tests the null hypothesis of r cointegrating vectors against the alternative hypothesis of r +1 cointegrating vectors.

On the empirical framwork of this study, Granger Causality test is applied to investigate the causal relationship between tourism and economic growth in both the economies. Within the Granger Causality test, the following model is estimated :

$$X_t = \lambda_1 + \sum_{i=1}^{k} \alpha_{1i}\, X_{t-i} + \sum_{j=1}^{k} b_{1J}\, Y_{t-j} + \mu_{1t} \qquad \ldots\ldots\ldots\ldots (5)$$

$$Y_t = \lambda_2 + \sum_{i=1}^{k} \alpha_{2i} X_{t-i} + \sum_{j=1}^{k} b_{2j} Y_{t-j} + \mu_{2t} \qquad \ldots\ldots\ldots\ldots\ldots (6)$$

Y is said to "Granger-cause" X if and only if X is better predicted by using the past values of Y than by not doing so with the past values of X being used in either case. In short, if a scalar Y can help to forecast another scalar X, then we say that Y Granger-causes X. If Y causes X and X does not cause Y, it is said that unidirectional causality exists from Y to X. If Y does not cause X and X does not cause Y, then X and Y are statistically independent. If Y causes X and X causes Y, it is said that bidirectional causality exists between X and Y. Essentially, Granger's definition of causality is framed in terms of predictability. To implement the Granger test, a particular autoregressive lag length k (Chowdhary, 1991) is assumed and equations (5) and (6) are estimated. Besides, in this study lag length is used according to the Newey-West lag value which is set by PP unit root test.

Empirical Results and Analysis

Tables 1 & 2 show the results of PP unit root test of India and Sri Lanka. In this approach we are using Gross Domestic Product (GDP) (at constant and current price), Foreign Tourist Arrivals (FTAs) and Tourism Receipts (FEEs) variables for the period of 1991 to 2016 and 1980 to 2016. In table 1, the estimated results imply that GDP_{cu} and FEEs are stationary at conventional level with 1% of significance level in both the economies. Even, when we applied GDP_{cn} and FTAs in this approach, we found that GDP_{cn} is stationary at first difference level with 1 percent level of significance in both the economies. But, FTAs is stationary at conventional level with 5% and 1% level of significance in India and Sri Lanka respectively.

Table-2 brings out that India has the stationary property in GDP_{cn} at conventional and first difference level with 1percent and 5 percent level of significance during 1980-2001 and 2002-2016 respectively. While, GDP_{cn} is significant stationary at first difference level in 1980-2001 and 2002-2016 in Sri Lanka. Besides, FTAs is stationary at first difference level with 1 percent level of significance in India during 1980-2001 and 2002-2016. In Sri Lanka, FTAs is stationary at first difference level with 1 percent level of significance during 1980-2001 and at conventional level with 10 percent significance in 2002-2016. When we take the GDP_{cn} and FTAs for 1980-2016, results imply that both variables are significant stationary at first difference level in India. In Sri Lanka, GDP_{cn} is stationary at first difference and FTAs at conventional level with 1 percent level of significance.

However, when the variables are tested with PP unit root test approach, the results lead to the conclusion that the variables are stationary at different levels. Given these findings, we are allowed to proceed with the co integration and

TABLE–1: Results of Phillips-Perron Unit Root Test: 1991-2016

Variables	Level (0)	Level (1)	Level (0)	Level (1)
	India		Sri Lanka	
GDP_{cu} (at current price)	11.18*	0.29	3.94*	2.01
Tourism Receipts (FEEs)	8.97*	0.09	8.14*	1.33
GDP_{cn} (at constant price)	2.27	3.96*	0.71	4.58*
Tourist Arrivals (FTAs)	3.01**	2.52	4.04*	1.29

Note: Variables in log levels are labeled level (0), in 1st difference are labeled levels (1). *, ** and *** denotes level of significance at 1%, 5% and 10% respectively.

causality test, since the selected variables appear to have stationarity properties for both the economies.

Tables 3 and 4 provide the results by using the approach of Johansen cointegration test in order to estimate that the variables under the study are cointegrated in the long run. Cointegration vector I(0) shows that there is no cointegration between the variable against the I(1) that variables are cointegrated in the long run. Table 3 estimates the results for the aggregate model (GDP_{cu} and FEEs) for India, indicating that there is no cointegration between the variables, since both the trace and max statistics state it at 5% significance level according to the critical value. On the other hand, Sri Lanka has the long run relationship between the variables in the same model. But, the other aggregate model (GDP_{cn} and FTAs) is indicating the opposite results from the above model. It means, India has the long run relationship while Sri Lanka has no relationship between the variables. The trace and max statistics support this at 5 percent significance level according to the critical value.

Furthermore, Table 4 estimates the results for the aggregate model (GDP_{cn} and FTAs) for India and Sri Lanka. These findings also suggest that the number of cointegrated vectors is equal to 0 during 1980-2001 and 2002-2016, considering that the accepted level of significance is equal to 5 percent. It means both the variables are inelastic to each other during 1980-2001 and 2002 - 2016. There is a long run relationship between the variables in Sri Lanka during 1980 - 2016. This result is also significant at 5 percent level of critical value.

TABLE–2: Results of Phillips-Perron Unit Root Test: 1980-2016

Year	1980-2001		2002-2016		1980-2016	
Variables	Level (0)	Level (1)	Level (0)	Level (1)	Level (0)	Level (1)
India						
GDP_{cn} (at constant price)	5.11*	2.54	0.93	3.44**	3.09	4.52*
Tourist Arrivals (FTAs)	0.29	4.34*	1.16	4.07*	4.80	2.74***
Sri Lanka						
GDP_{cn} (at constant price)	0.08	4.27*	0.23	3.62**	1.46	5.31*
Tourist Arrivals (FTAs)	1.78	3.86*	2.68***	0.91	4.62*	1.67

Note: Variables in log levels are labeled level (0), in 1st difference are labeled levels (1). *, ** and *** denotes level of significance at 1%, 5% and 10% respectively.

TABLE-3: Results of Johansen Cointegration Test: 1991-2016

Test Statistics	Trace Test value	Max Test value	Trace Test value	Max Test value
Cointegration Vector	**India**		**Sri Lanka**	
Variables: GDPcu and FEEs				
r=0	8.84	7.55	40.01	39.61
r=1	1.29	1.29	0.40	0.40
Variables: GDPcn and FTAs				
r=0	16.35	12.65	13.23	10.89
r=1	3.69	3.69	2.33	2.33

Note: See table B, for critical value.

However, Table 5 provides that the approach of causality test for different models lead to the different conclusions. The unidirectional causal link appears significant between GDP_{cu} and FEEs in India but it will not appear in the long run during 1991-2016. In case of Sri Lanka, there is a bidirectional causal relationship between GDP_{cu} and FEEs in the long run in same period. Interesting results are also reported for the same dynamics between the variables (FTAs and GDP_{cn}) where we do not estimate any causal relationship in India as well as Sri Lanka. Besides, India has some indirect link between FTAs and GDP_{cn} in the long run (Table 5).

Moreover, the results provided in Tables 6 and 7 indicate that there has been no causal relationship between FTAs and GDP_{cn} in short run during 1980 - 2001 and 2002 - 2016 in both the economies. Besides, there is a causal link between FTAs

TABLE-4: Results of Johansen Cointegration Test: GDP_{cn} and FTAs

Cointegration Vector	Trace Test value	Max Test value	Trace Test value	Max Test value	Trace Test value	Max Test value
India						
	1980-2001		2002-2016		1980-2016	
r=0	25.56	20.14	15.31	11.85	15.37	9.85
r=1	5.42	5.42	3.45	3.45	5.51	5.51
Sri Lanka						
r=0	11.92	8.53	7.69	7.31	17.54	13.71
r=1	3.39	3.39	0.39	0.39	3.82	3.82

Critical Values at 5% level for Johansen Cointegration Tests

Cointegration Vector	Trace Test value	Max Test value
r=0	15.41	14.07
r=1	3.76	3.76

TABLE-5: Results of Granger Causality Wald Test: 1991-2016

Direction	F value	Decision	F value	Decision
	India		Sri Lanka	
FEEs→ GDP_{cu}	1.31	Reject	23.73	Accept
GDP_{cu} → FEEs	4.31	Accept	5.22	Accept
FTAs→ GDP_{cn}	2.98	Reject	0.01	Reject
GDP_{cn} → FTAs	0.27	Reject	0.90	Reject

Note: Accept denotes the F value (for 2 and 18 df) is significant at 5% level.

and GDP_{cn} in India during 1980-2016, failing to support the significance of the tourism led economic growth.

TABLE-6: Results of Granger Causality Wald Test: India

Direction	F value	Decision	F value	Decision	F value	Decision
	1980-2001*		2002-2016#		1980-2016@	
FTAs→ GDP_{cn}	0.06	Reject	1.81	Reject	5.12	Accept
GDP_{cn} → FTAs	1.08	Reject	0.01	Reject	0.52	Reject

Note: *Accept denotes the F value (for 2 and 14 df) is significant at 5% level.
Accept denotes the F value (for 2 and 18 df) is significant at 5% level.
@ Accept denotes the F value (for 2 and 29 df) is significant at 5% level.

TABLE-7: Results of Granger Causality Wald Test: Sri Lanka

Direction	F value	Decision	F value	Decision	F value	Decision
	1980-2001*		2002-2016#		1980-2016@	
FTAs→ GDP_{cn}	0.05	Reject	0.15	Reject	0.20	Reject
GDP_{cn} → FTAs	0.86	Reject	0.12	Reject	1.22	Reject

Note: *Accept denotes the F value (for 2 and 14 df) is significant at 5% level.
Accept denotes the F value (for 2 and 18 df) is significant at 5% level.
@ Accept denotes the F value (for 2 and 29 df) is significant at 5% level.

CONCLUSION

We have studied the dynamics between tourism and economic growth for rapidly developing South Asian economies of India and Sri Lanka. Tourism sector has a potential to develop the economic status of both the economies. Number of foreign tourist arrivals to India and Sri Lanka continued to increase during the period of 1991 to 2016 with some fluctuations. Growth rate of tourism sector in both the economies has reached at more than 9 percent in 2016 which is more than the economic growth of these South Asian economies. However, tourism sector also stands as the main source of foreign exchange earnings for Sri Lanka as well as India. The tourism contribution to total foreign exchange earnings was around 15 percent in 2016 in Sri Lanka. India earned less amount of foreign exchange in comparison to Sri Lanka during the period of 2009-2016. Thus, it appears that Sri Lanka has been doing better for tourism development in comparison to India in the recent period.

On the other hand, during the periods of 1991 - 2016 and 1980 - 2016 in order to test the significance of tourism industry for economic development in both the economies we have used the cointegration approach. To asses these relationships in long run, two bivariate models are formed: first model is foreign exchange earnings (FEEs) and gross domestic product (GDP_{cu}) and the second model is consisting of foreign tourist arrivals (FTAs) and gross domestic product (GDP_{cn}). Furthermore, we have investigated the causal links between these variables in both models separately. The study has provided extensive empirical evidence with the application of PP unit root test, Johansen Cointegration test and Granger Causality test for tourism and economic growth in the selected periods.

To summarize, results from the PP unit root test indicated that all variables are integrated of the order zero and one and therefore these variables show stationary properties. Furthermore, cointegration test supports the existence of cointegration between tourism and economic growth during 1991-2016. So, the variables (FEEs and GDP_{cu}) used in the model suggest that a long run equilibrium relationship in Sri Lanka between these variables. In India, the FTAs and GDP_{cn} used in the model show a long run relationship. There has been a disequilibrium nature of relationship between these variables but in different time periods. Moreover, causality test results provide a unidirectional causal link appears from GDP_{cu} to FEEs in India during 1991-2016. In case of Sri Lanka, there is a bidirectional causal relationship between GDP_{cu} and FEEs in the long run in the same period. Interesting results are also reported for the same dynamics between the variables (FTAs and GDP_{cn}) as there has not been any causal relationship in India as well as Sri Lanka during 1980-2016.

Thus, results support tourism-led economic growth hypothesis, the government of these countries should allocate more recourse to tourism industry for economic expansion. While in the case of results that support economic growth driven tourism hypothesis, the government of these countries should allocate more recourses to industries that can promote development of tourism industry. Along with this, Indian tourism industry needs to learn from Sri Lankan tourism industry development process for significant development.

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