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NEXUS BETWEEN TOURISM AND ECONOMIC GROWTH: EMPIRICAL EVIDENCE FROM ODISHA, INDIA

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Abstract: *In view of the importance of tourism as an instrument for economic growth and employment generation, this paper is an effort to examine the nexus between tourism and economic growth in Odisha during 1990-91 and 2013-14; specifically the aim is to examine the tourism-led growth hypothesis at the state level. The study provides the empirical evidence of the existence of long-run equilibrium relationship between tourism and economic growth in the State. Precisely, it provides the evidence of stable, significant and positive response of tourism to economic growth. This finding is important from policy perspective. The State government is required to priority to the promotion of tourism so as to lead a stable and inclusive growth of Odisha.*

Keywords: *Tourism, Economic Growth, Odisha, Cointegration, FMOLS*

JEL Classification: *L83, Z32, Z39*

1. INTRODUCTION

Since last few decades, it has been the consensus that the so-called smokeless industry – tourism has the potential to strengthen the socio-cultural and political economy of a nation and to forge the bonds of international and inter-regional relationships (Richardson, 2010; Gill & Singh, 2011; Gill & Singh, 2013). Tourism has recently, emerged as one of the economic sectors best able to address the issues of spreading the benefits of inclusive and sustainable growth by creating jobs, and raising living standards of poor people, in particular and of nations at large (Ashley, 2007; Mishra *et al.* 2011; Pleumarom, 2012; Mishra & Rout, 2012-13; Munshi & Mishra, 2016). Tourism today is one of the most promising and viable options for global development. Tourism is increasingly a major, if not the main, source of growth, employment, income and revenue for many of the world's developing countries (Roe & Khanya, 2001; Sireyjol, 2010; ILO 2013). The sector is currently

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the first or second source of export earnings in 20 of the 48 Least Developed Countries and is demonstrating steady growth in at least 10 others (UNWTO, 2011). More than half of the world's poorest countries have identified tourism as an effective means to take part in the global economy and reduce poverty (UNWTO, 2011).

Tourism has been observed to promote sustainable growth for the industry, working with governments and international institutions to create jobs, to drive exports and to generate prosperity. In 2015, Travel & Tourism in total contributed USD 7.2 trillion to world Gross Domestic Product (GDP), representing 9.8 per cent of global GDP (WTTC, 2016a). In terms of employment, in 2015 the Travel & Tourism sector supported 284 million jobs in the world (WTTC, 2016a). The total contribution of the sector to employment grew by 2.6% in 2015, while the total GDP contribution grew by 3.1% – faster than wider economic growth (2.3%) for the fifth consecutive year (WTTC, 2016a). In GDP growth terms, the sector outperformed several other major economic sectors in 2015, including manufacturing and retail (WTTC, 2016a). In employment growth terms, it outperformed various other select industries in 2015, including the financial services, education and health care sectors (WTTC, 2016a). Thus, the importance of tourism sector in the real economic growth of an economy can't be undermined. In case of India, the total contribution of Travel & Tourism to GDP was INR 8,309.40 billion (6.3 per cent of GDP) in 2015. Its contribution to employment in 2015 was 8.7 per cent of total employment, i.e., 37,315,000 numbers of jobs (WTTC, 2016b). In a developing economy like India, tourism sector is thus, more significant in determining the inclusive sustainable development.

Tourism is a highly labour intensive sector in India. According to an estimate by the planning commission (currently NITI Aayog), for every million rupees invested in tourism sector, 89 jobs are created against 45 jobs in primary sector and 13 jobs in secondary sector. The ratio of indirect jobs to the direct jobs in the tourism sector is approximately 3:1 (Das, 2013). In India, the tourism industry helped generate about five million jobs (Sahu, 2013; Batta, 2000); the foreign tourists buy handicrafts worth around INR 10 billion a year; the total income from this smokeless industry is around INR 200 billion (Sahu, 2013; Suba & Selvachantra, 2014); and the regions like Aurangabad in Maharashtra, Khajuraho in Madhya Pradesh, Jammu & Kashmir, and Raghurajpur in Odisha have emerged with the help of tourism only (Mishra & Rout, 2012-13). Especially, Odisha Tourism has been playing a significant role to showcase the rich cultural and religious heritage through its treasure of classical and folk music and dance. As a consequence, Odisha Tourism has bagged the Best Tourism Festival Destination Award in a prestigious award ceremony of International Tourism Conclave & Travel Award function held at East Bourne Resorts & Spa, Shimla, Himachal Pradesh, on April 7, 2012 (Ratnam, 2012).

It is with this backdrop, this paper is an attempt to examine the nexus between tourism sector and economic growth in Odisha. Thus, the rest of the paper is organized as follows: Section 2 gives the panorama of tourism in Odisha; Section 3 reviews the past studies; Section 4 outlines the data and methodology of the study; Section 5 presents the empirical findings; Section 6 discusses the results; and Section 7 concludes.

2. PANORAMA OF TOURISM IN ODISHA

Odisha, referred to as '*The Soul of India*', is a mystical land where the past and the modern today form a harmonious blend. The state is filled with awe inspiring monuments, thousands of master craftsmen and artists, numerous wildlife sanctuaries, stunning natural landscapes and many more. In recent days, Odisha has become a multi-dimensional, multi-coloured, many splendored, vibrant and boisterous modern State all set on its journey in the present millennium to make its presence and voice felt in the nooks and crannies of the world through the Universal Cult of brotherhood, its unique cultural heritage, luxuriant forests and wild life, sprawling Chilika Lake, bountiful coastline, wide range of tribes and colourful canvass of art and culture. The state has also won accolades both in domestic as well as international markets for its exquisite art and crafts. Works of Appliqué, Metal Crafts, Silver Filigree, Patta Chitra from the State has won special appreciations from places in and around the world. Owing to its rich and varied topography, vibrant culture and captivating festivities, the State of Odisha offers

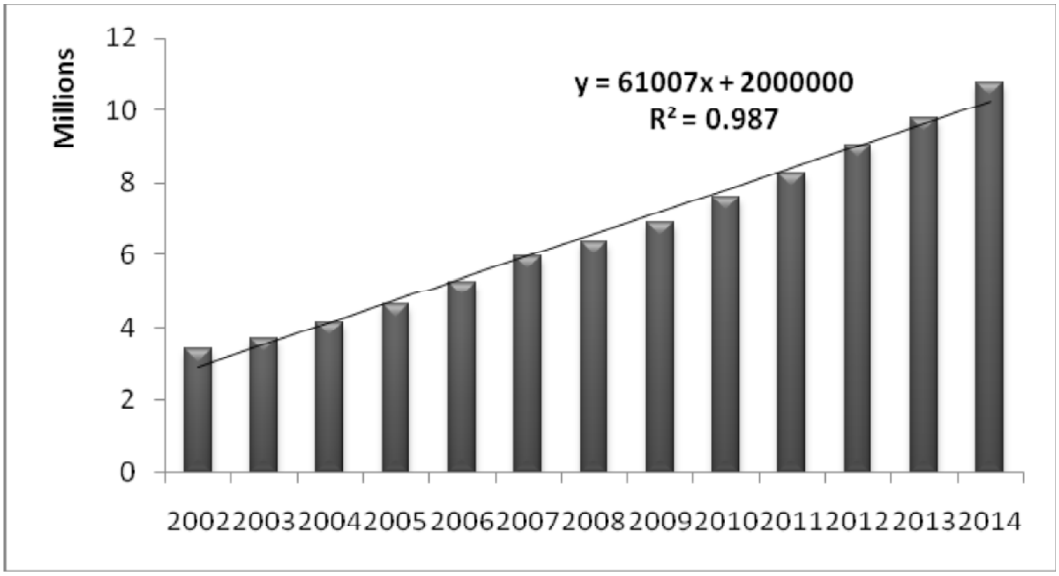

Figure 1: Domestic Tourist Arrival in Odisha

Source: Author's Own Plot

immense tourism delights to the visitors in the State. Tourism in Odisha has grown considerably in recent years on account of good infrastructure facilities, favourable government policies, improvement in existing tourist locations, development of new tourist destinations and strong growth of hotel and restaurant industry in the State. The fact that Odisha is a popular tourist destination is also visible from the fact that over the years the revenue earned from tourism has increased considerably along with increase in both domestic and foreign tourist arrivals to the state.

Fig. 1 reveals that the domestic tourist arrival in Odisha has continuously been increasing (as indicated by positive coefficient of 'X' in the trend equation) during 2002 and 2014. It follows almost a linear trend with a significant R-square value of 0.987. But when we plotted the percentage change in domestic tourist visits in the state, we see little oscillation between 2008 and 2014 (see fig.3). Most of the domestic tourists in Odisha come from West Bengal, Andhra Pradesh, Madhya Pradesh, Chhattisgarh and from within Odisha. If we look at the composition of tourist arrivals in Odisha, it is inferred that about 59 per cent of total tourists come from within the State and 40 per cent from other States of India (see fig.4).

Not only domestic tourist arrival, but foreign tourist arrival in the state has also shown an increasing trend during 2002 and 2014 (see fig.2). Such a positive linear trend is significant with the R-square value of 0.982. But the percentage

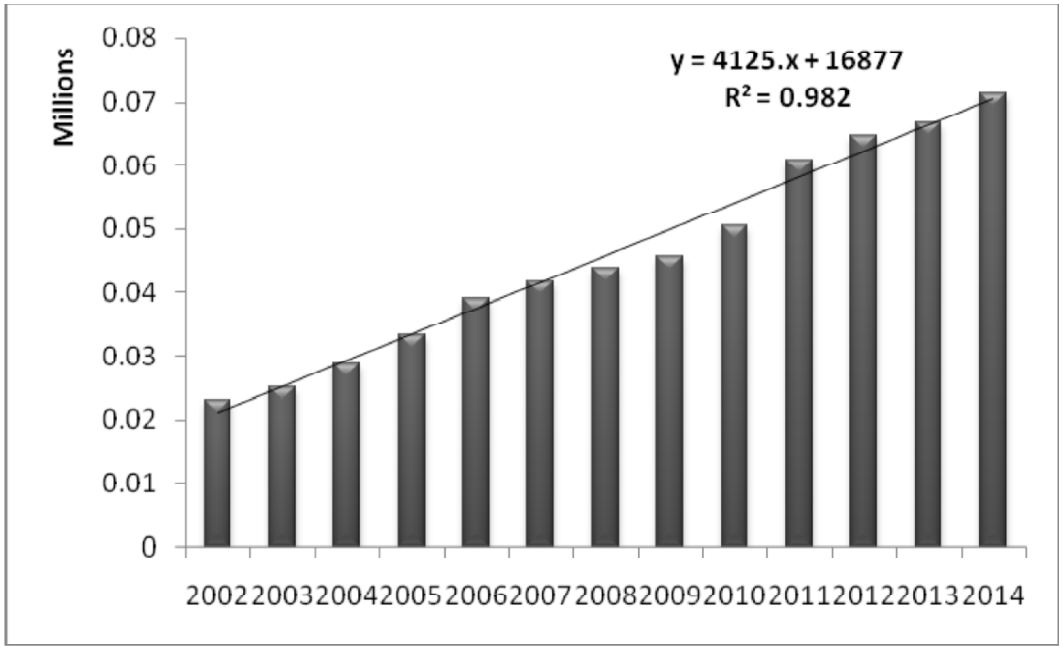

Figure 2: Foreign Tourist Arrival in Odisha

Source: Author's Own Plot

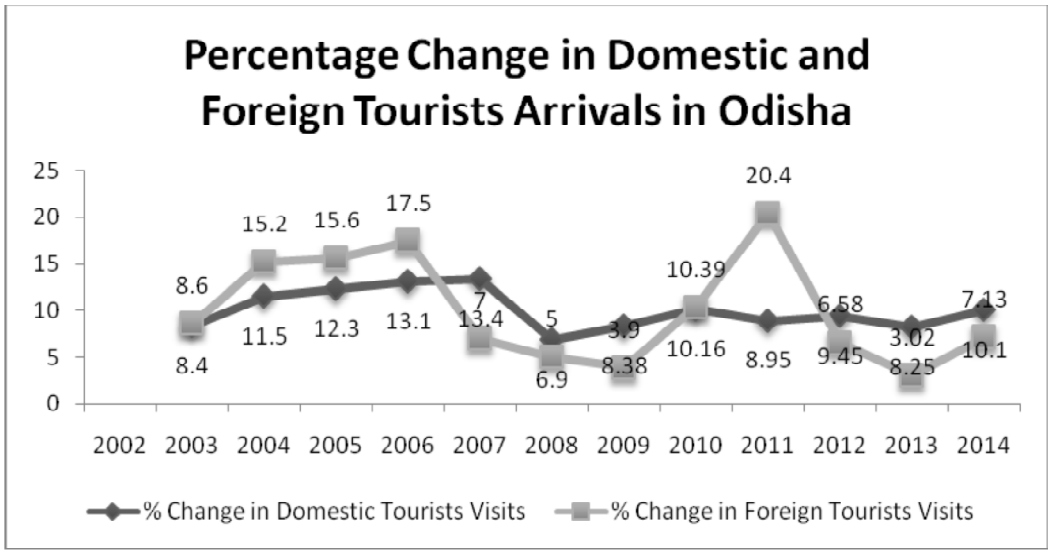

Figure 3: Percentage Change in Tourists Arrivals in Odisha

Source: Author's Own Plot

change in foreign tourist arrivals in the State is a bit sporadic over the years (see fig.3). And, this variation is relatively more than that of domestic tourist arrivals in Odisha. Most of the foreign tourists in Odisha come from France, Germany, UK and USA. If we see the composition of tourist arrivals in Odisha, it is clear that about 0.70 per cent of total tourists come from outside India (see fig.4).

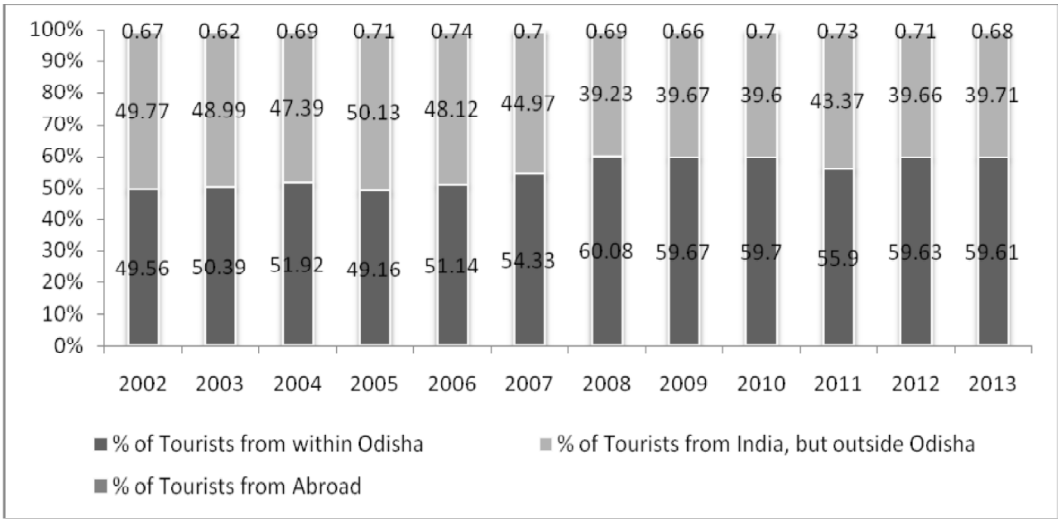

Figure 4: Composition of Tourists Arrivals in Odisha

Source: Author's Own Plot

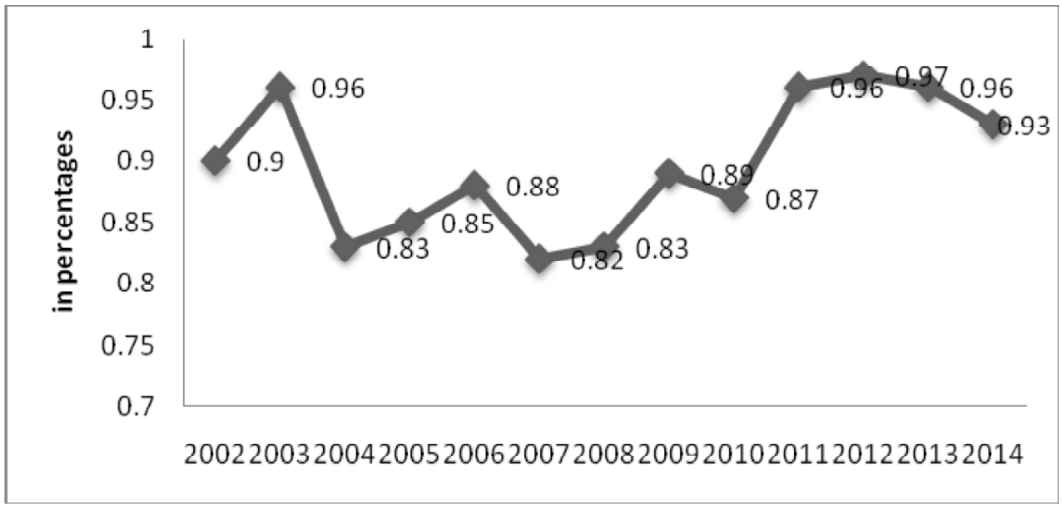

Figure 5: Odisha's Share in National Tourist Arrival

Source: Author's Own Plot

Looking at such a pattern of composition of tourists' arrivals in the state, it can be said that tourism sector needs more policy attention, if the visitors from other States/UTs of India and from outside India are to be attracted. Then we calculated the Odisha's share in national tourist arrival and plotted in fig.5. It indicates a dwindling trend in recent years. It is seen that the state accounts for less than one

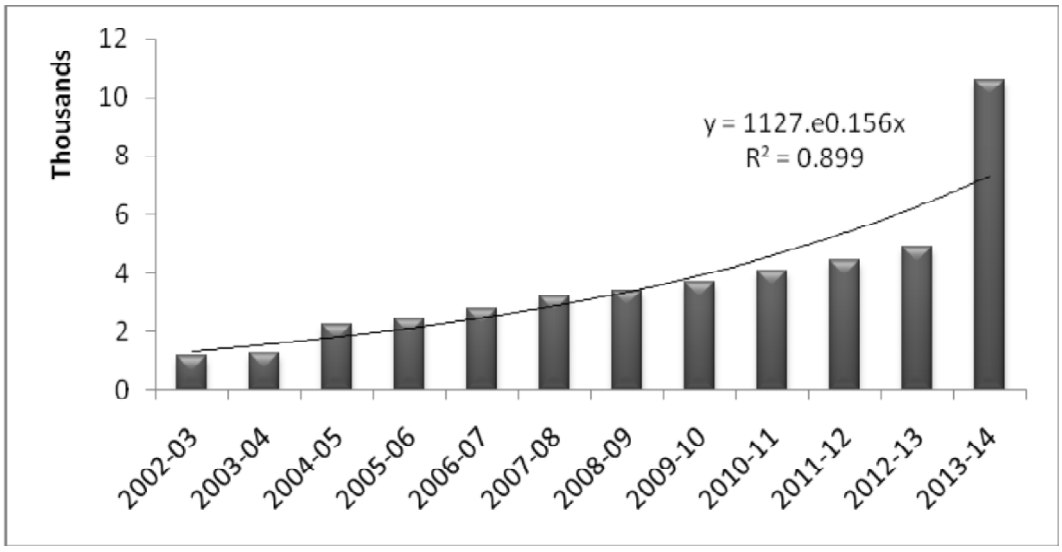

Figure 6: Inflow of Money through Tourist Expenditure in Odisha

Source: Author's Own Plot

per cent of the national tourist inflows. More importantly, this share has registered a falling trend especially after 2012. Experts attribute such decline to the restrictions on foreign tourists to venture into regions inhabited by particularly vulnerable tribal groups. However, such restriction was recently lifted in view of the downslide in foreign tourist inflows (Statistical Bulletin, 2014).

In spite of such declining trend in state's share in national tourist arrival, the inflow of money through tourist expenses in the state has been showing an increasing trend since the FY2002-03 to FY2013-14 (see fig.6). This exponential trend pattern is supported by the R-square value of 0.899. As per the tourist profile survey 2008-09, the average duration and spending of a domestic tourist is 3.7 days and INR 1,357 per day respectively. While the duration and spending of foreign tourist is 14.2 days and INR 2,255 per day. Based on this, the estimated inflow of money to Odisha during 2013-14 has been assessed at INR10, 597.54 crore, a tremendous rise of 117.38 percent over 2012-13 (Odisha Economic Survey, 2014-15).

All these cast the significance of tourism in Odisha. Keeping in view these facts, the Department of Tourism, Odisha, during last couple of years had taken up various developmental programmes to boost up tourism activities in the state. As such the total tourist arrival to the state increased from 8.3 million in 2011-12 to 10.5 million in 2014-15 (see fig.7), represented by a CAGR of around 8.2 per cent. Thus, the state government has started recognizing tourism infrastructure as the vital one in augmenting activities in tourism sector. Very recently, Govt. has declared the Airport at Bhubaneswar as the International Airport. In 2013-14, a

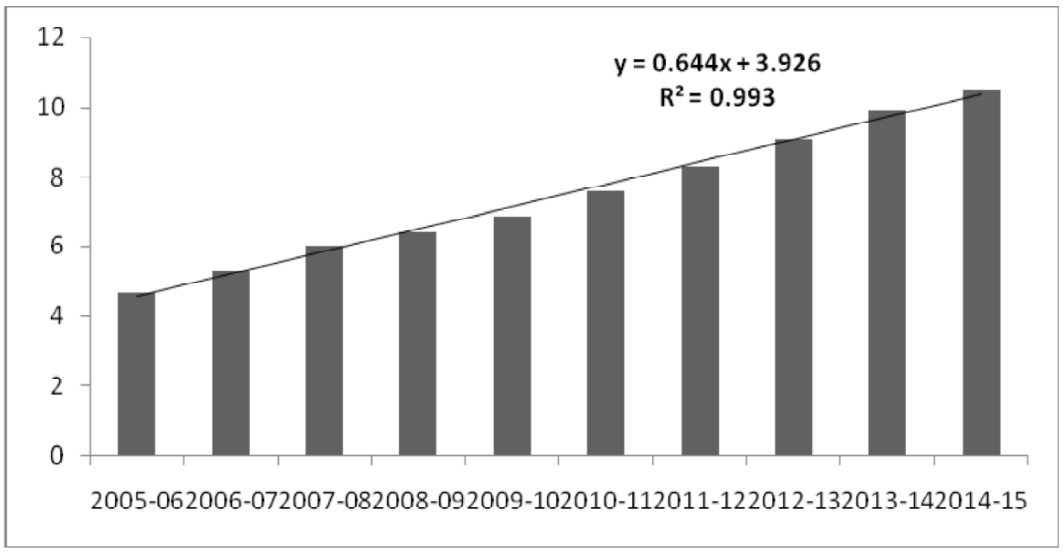

Figure 7: Total Tourist Arrival in Odisha

Source: Author's Own Plot

mega city project Bhubaneswar-Puri-Chilka Circuit phase II has been introduced for which an amount of US$ 3.3 million has been sanctioned, of which US$ 0.65 million was released till May 2015. All these shall definitely augment foreign tourist arrival to the state in coming years.

Although tourism in Odisha has a very minuscule role in comparison to the India's overall tourism scenario, the State has huge potential for growth on this front. Tourism is treated as the priority sector in the state due to its rich employment potential, income generation, foreign exchange earnings and value addition to the state economy. Thus, the tourism industry in Odisha has strong potential to determine the long-run growth and development of the State. It is with this proposition in mind, this paper is an attempt to provide empirical evidence whether tourism is catalysts for long-run economic growth of Odisha or not.

3. REVIEW OF PAST STUDIES

There exists plethora of literature on impacts of tourism sector expansion in the host country, but the literature on whether it actually produces any significant economic growth is conflicting, e.g., Chiu and Yeh (2016) found that countries with different conditions of tourism development experience various impacts on the tourism-growth nexus. As an engine of economic growth, tourism has been found to be resilient and associated with positive impacts in terms of generating foreign exchange earnings, creating employment and income, and stimulating domestic consumption (Modeste, 1995; Durbarry, 2002; Steiner, 2006). Several studies in various developing countries around the world have found a positive and significant relationship between tourism and economic growth (Shan & Wilson, 2001; Durbarry, 2002; Croes & Vanegas, 2008; Mishra *et al.* 2011; Mishra & Rout, 2012-13). The researchers and analysts hold the view that the rapid growth of tourism sector causes an increase of household incomes and government revenues through its multiplier effects, improvements in the balance of payments, and growth of the tourism industry by itself. As such, the development of tourism has usually been considered a positive contribution to economic growth (Khan *et al*. 1995; Lee & Kwon, 1995; Lim, 1997; Oh 2005; Vita and Kyaw, 2016).

The extant literature highlights the effects of tourism on the balance of payments, production and employment as the primary ways in which the sector affects economic growth. Receipts in terms of foreign exchange from foreign tourist arrivals can be crucial to the balance of payments of an economy; it helps making payments for imports, reduces the need for external finance and, therefore, frees up internal resources for investment in other sectors thereby driving the transformation of the structure of production and employment (Ayres, 2000; Oh, 2005; Belloumi, 2010). Tourism sector helps financing the import of capital goods that are used for the goods produced in the country (McKinnon 1964). Furthermore, the literature provides the evidence that the development of tourism attracts direct

foreign investment, which stimulates employment, output and income, and thus, drives the aggregate demand (Soukiazis & Proença, 2008; Cortés-Jiménez, 2008), giving impetus to other economic sectors, such as manufacturing, agriculture and trade. Tourism activity also creates considerable employment opportunities given its labour-intensive nature. In addition, it increases women's participation in the labour market and enables society's most vulnerable groups to take part in the production of goods and services (Ayres, 2000; Croes & Vanegas, 2008). Indeed, Hazari & Sgro (1995), and Vanegas & Croes (2003) identified the positive effects of tourism on small economies in the long-run. Tourism sector allows smaller scale firms to create large benefits in the local economy (Andriotis, 2002; Schubert *et al.* 2012). Lastly, the promotion of sustainable tourism could increase social cohesion and lessen social tension (Llorca-Rodríguez *et al*. 2016).

Keeping in view such positive impact of tourism on economic growth many researchers have investigated the relationship between tourism sector development and economic growth in a specific country, or in multi-country cases. Several studies found the evidence in favour of 'tourism-led growth' hypothesis, e.g., Balaguer & Cantavella-Jorda (2002) for Spain; Tosun (1999), Guduz & Hatemi (2005) and Zortuk (2009) for Turkey; Durbarry (2002) for Mauritius; Dritsakis (2004) for Greece; Oh (2005) for Korea; Wickremasinghe & Ihalanayake (2006) for Sri Lanka; Kreishan (2010) and Aliqah & Al-rfou' (2010) for Jordan; Mishra *et al.* (2011) for India; Eugenio-Martin *et al.* (2004) for low-income Latin American Countries; Lee & Chang (2008) for OECD Nations; Skerritt & Huybers (2005) for 37 developing countries; Fayissa *et al.* (2007) for 42 Sub-Saharan African countries; Fayissa *et al.* (2009) for 17 Latin American countries; Kum *et al.* (2015) for N-11 countries[4]; and Demirhan (2016) for Mediterranean countries.

Some other studies provide the evidence that economic growth and development can be a pre-condition for tourism sector development, e.g., Khalil *et al.* (2007) for Pakistan. Certain studies also document the existence of reciprocal relationship between tourism sector development and economic growth and development, e.g., Kim *et al.* (2006) for Taiwan; Razaq & Masarwah (2006) for Jordan; and Lee & Chang (2008) for non-OECD countries. Contrary to this, Du *et al.* (2016) in a case of 109 countries observed that investment in tourism is an insufficient determinant of economic growth. Cardenas-Garcia *et al.* (2015), in a sample of 144 countries, found the evidence of tourism-led growth hypothesis in case of developed countries and not in least developed and/or developing countries.

Few studies have also examined an empirical link between tourism and poverty reduction. Croes & Vanegas (2008) for Nicaragua found the existence of one-way causal relation between tourism development and economic expansion, and between tourism and poverty reduction. Tourism has also been described as having a snowball effect in contributing to economic growth, since the development of

new tourism destinations is often accompanied by the arrival of new businesses and NGOs (Honey & Gilpin, 2009; Western, 2008).

Furthermore, regarding the pace of growth of economies, Lee & Chang (2008) found that tourism countries tend to grow faster than all other sub-groups (OECD, Oil Exporting, LDC, Small). The reason is that tourism acts as a source of scarce financial resources, job creation, foreign exchange earnings, and technical assistance (Sinclair, 1998; Dieke, 2004). Regarding the size of economies, Lanza & Pigliaru (2000) found that small States are faster growing especially when they are highly specialized in tourism.

Thus, it is inferred that tourism is not only important in global and national levels, but can also be growth enhancing in small States or provinces of a nation. And, the case of India is no exception. When we reviewed the extant literature on this point, only a few studies in the case of Indian States have been found relevant. Some studies focusing on the growth and performance of tourism in Odisha State of India, found that tourism is actually significant for revenue generation, job creation and socio-economic expansion, and suggested measures for improving the scenario (Pani, 2008; Das, 2013; Sahu, 2013; Mohanty, 2014). It has been suggested that tourism infrastructures like accommodation, transportation and air connectivity are vital and these important issues need to be addressed while formulating strategies to exploit opportunities and potential of tourism in a State (Parida, 2011). Das (2012) studied the contribution of tourism industry in eight States of North-East Regions of India, and found that both domestic and foreign tourist inflows significantly contribute to Net State Domestic Product, and Indapurkar & Berry (2015) also found a positive and significant contribution of tourism to economic growth of Odisha. In a very recent study, Mallick *et al.* (2016) confirmed the existence of tourism-led growth hypothesis in case of Indian States.

It is thus, inferred that the tourism sector development can be considered strategic for the socio-economic growth and development of a developing economy like India and her states. However, the extant literature is relatively thin concerning the State level studies emphasizing the tourism-led growth strategy or any variation of it. In an attempt to bridge this gap, the current study has been designed to focus on explaining the real economic growth in terms of tourism sector development, and examining the long-run equilibrium relationship between them in the context of Odishas.

4. DATA AND METHODOLOGY

This study purports to study the link between tourism and economic growth in Odisha State of India. Specifically, it aims to test the tourism-led growth hypothesis. The study uses time series data on Net State Domestic Product at 2004-05 prices as the proxy for economic growth; Domestic and Foreign Tourist Inflows and their

money spending in the state as the proxy for growth of tourism industry in Odisha. The period of study is 1990-91 to 2013-14. The data are collected from Economic Survey of Odisha, Statistical Bulletin of Odisha, Ministry of Tourism, Government of India, Department of Tourism, Government of Odisha, and Odisha Tourism Development Corporation. All the variables are expressed in their natural logarithms to avoid the likely problems of heteroscedasticity (Gujarati, 2007). Theoretical model framed is LEG = f(LDTV, LFTV, LTE) where LEG, LDTV, LFTV and LTE represent teh natural logarithms of net state domestic product, domestic tourist visits, foreign tourist visits and tourist expenditure respectively. The econometric analyses of this study comprise stationarity analysis of variables, correlation analysis for possible degree of association between variables, cointegration analysis for the likely existence of long-run equilibrium relationship between variables, and the analysis of long-run responsiveness (elasticity) of tourism sector variables to the economic growth of Odisha.

Stationarity Analysis: The Augmented Dickey-Fuller (ADF) unit root test (Dickey & Fuller 1979, 1981) is used in the study to examine the stationary properties of time series of interest. It consists of running a regression of the first difference of the series against the series lagged once, lagged difference terms and optionally, a constant and a time trend. This can be expressed as: $\Delta Y_t = \alpha_0 + \alpha_1 t + \alpha_2 Y_{t-1} + \sum_{j=1}^{p} \alpha_j \Delta Y_{t-j} + \varepsilon_t$. The additional lagged terms are included to ensure that the errors 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 and the series is interpreted as stationary.

Correlation Analysis: In the second step, we have examined the degree of association between tourism and economic growth by computing Pearsons' correlation coefficient. The significance of coefficients is assessed through the conventional t-test.

Cointegration Analysis: The existence of correlation between two or more variables, however, does not mean the existence of cointegration, i.e., long-run equilibrium relationship between them. Thus, Johansen's cointegration test is used to examine the long-run equilibrium relationship between the variables of interest (Johansen, 1991; Johansen & Jusellius 1990). In the Johansen framework, the first step is the estimation of an unrestricted, closed p^{th} order Vector Auto-Regression (VAR) in k variables. The VAR model as considered in this study is: $Y_t = A_1 Y_{t-1} + A_2 Y_{t-2} + ... + A_p Y_{t-p} + BX_t + \varepsilon_t$, where Y_t is a k-vector of non-stationary I(1) endogenous variables, X_t is a d-vector of exogenous deterministic variables,

A_1.....A_p and B are matrices 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 of the economic time series are non-stationary in nature, the above stated VAR model is commonly estimated in its first-difference form as:

$$\Delta Y_t = \Pi Y_{t-1} + \sum_{i=1}^{p-1} \Gamma_i \Delta Y_{t-i} + BX_t + \varepsilon_t, \quad \text{where} \quad \Pi = \sum_{i=1}^{p} A_i - I \text{ and } \quad \Gamma_i = -\sum_{j=i+1}^{p} A_j .$$

Granger's representation theorem asserts that if the coefficient matrix Π has reduced rank of $r < k$, then there exist $k \times r$ matrices α and β each with rank r such that $\Pi = \alpha\beta' \text{ and } \beta' Y_t$ is I(0). r is the number of co-integrating relations (the *co-integrating rank*) and each column of β is the co-integrating vector. α is the matrix of error correction parameters that measure the speed of adjustments in ΔY_t. The Johansen approach to cointegration test is based on two test statistics: (a) *Trace Test Statistic*: The trace test statistic can be specified as: $\tau_{trace} = -T\sum_{i=r+1}^{k} \log(1-\lambda_i)$, where λ_i is the *ith* largest eigenvalue of matrix Π and T is the number of observations. In the trace test, the null hypothesis is that the number of distinct cointegrating vector(s) is less than or equal to the number of cointegration relations (r); and (b) *Maximum Eigenvalue Test:* The maximum eigenvalue test examines the null hypothesis of exactly r cointegrating relations against the alternative of r+1 cointegrating relations with the test statistic: $\tau_{\max} = -T\log(1-\lambda_{r+1})$, where λ_{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 of $r+1$ cointegrating vectors. It is known that Johansen's cointegration test is very sensitive to lag length. So initially a VAR model is fitted to the time series data in order to find an appropriate lag structure. The sequential modified Likelihood Ratio test (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SC) and Hannan-Quinn Information Criterion (HQ) have been used to select the number of lags required in the cointegration test.

Cointegrating Regression Analysis: The cointegration test described above is unlikely to yield reliable results in the presence of the relatively short time series (Stolbov, 2015). The present study uses the time series over 24 years which is also a case of small series. In order to overcome this problem, Phillips & Hansen (1990) suggested the Fully Modified Ordinary Least Square (FMOLS) method of estimating the cointegrating regression to examine the elasticity of a dependent variable to change in explanatory variables in the long-run. In a situation, where

the series are cointegrated at first difference I(1), FMOLS is suitable for estimating the long-run relationship. FMLOS not only generates consistent estimates of the parameters in relatively small samples, but also controls for potential endogeneity of the regressors and serial correlation. Thus, FMOLS method is used to estimate following long-run relationship between tourism sector development and real economic growth: $LEG_t = \gamma_0 + \gamma_1 LDTV_t + \gamma_2 LFTV_t + \gamma_3 LTE_t + u_t$. In our study, it is expected that $\gamma_i > 0$ which means all the explanatory variables would have positive impacts on economic growth of Odisha. In this model, it is hypothesized that the tourism sector has a positive impact on real economic growth of Odisha in the long-run. Then we have used the parameter stability test as proposed by Hansen (1992). Specifically we have used *Lc* test for parameter instability under the null hypothesis of cointegration or stability. This indicates the cointegration or stability of FMOLS estimated parameters in the long-run.

5. EMPIRICAL FINDINGS

In line with the methodologies described above, we have first tested the stationarity of each time series of our study by ADF unit roots test both at the level form and at first differences with trend and intercept. The results are presented in Table-1. It is clear that the null hypothesis of no unit roots for the variables is not rejected at their levels, but rejected in their first differences at 1% and 5% levels of significances. Thus, the variables are stationary, and are integrated of order one, i.e., I(1).

Table 1
Results of Augmented Dickey-Fuller Unit Root Test

	Augmented Dickey-Fuller (ADF) Test Statistic			
	Level form with trend and intercept		*First Difference form with trend and intercept*	
L(EG)	-2.457	1%: -4.4165%: -3.62210%: -3.248	-6.384	1%: -4.4405%: -3.63210%: -3.254
L(DTV)	-2.495	1%: -4.4405%: -3.63210%: -3.254	-3.723	1%: -4.4405%: -3.63210%: -3.254
L(FTV)	-1.332	1%: -4.4165%: -3.62210%: -3.248	-4.133	1%: -4.4405%: -3.63210%: -3.254
L(TE)	-2.607	1%: -4.4165%: -3.62210%: -3.248	-4.570	1%: -4.4675%: -3.64410%: -3.261

Source: Author's Own Estimation

In the next step, we have computed the pair-wise Pearsons' correlation coefficient between the variables representing tourism sector development and that of real economic growth. And, the results are presented in Table-2. It is clear that all the coefficients are positive and greater than 0.75 and are significant at 1% level. This indicates the existence of strong link or association between tourism sector and economic growth in Odisha. But this does not confirm the existence of long-run equilibrium relationship between them.

Table 2
Pearson's Correlation Analysis

Variables	*L(DTV)*	*L(FTV)*	*L(TE)*
L(EG)	0.965	0.778	0.966
Sig. (2-tailed)	0.000	0.000	0.000

Each Correlation Coefficient is significant at the 0.01 level (2-tailed)
Source: Author's Own Calculation

Thus, we have resorted to the Johansen's cointegration test. Since this test is very sensitive to lag length, we have estimated the VAR model determine the optimal lag length. The Table-3 reports the VAR lag order selection criteria and it indicates that the optimal lag length, based on the LR, FPE, AIC, SC and HQ test statistics, is 1 lag. Then we applied VAR Lag Exclusion Wald Tests for conformity of the optimal lag length selection. The results are presented in Table-4. The p-value of joint hypothesis indicates that 1 is the optimal lag length. Now, with this optimal lag length we have estimated the VAR for Johansen's Trace and Maximum Eigen value tests of cointegration, and the results are summarized in Table-5.

Table 3
VAR Lag Order Selection Criteria

Lag	*logL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	-11.05290	NA	4.35e-05	1.308948	1.506425	1.358613
1	77.91721	139.2576*	7.85e-08*	-5.036280*	-4.048893*	-4.787955*

* indicates lag order selected by the criterion at 5% level; *Source: Author's Own Calculation*
Source: Author's Own Estimation

Table 4
VAR Lag Exclusion Wald Tests

	LNSDP	*LDTV*	*LFTV*	*LTE*	*Joint*
Lag 1	1339.982	724.3747	242.3780	441.9400	2663.687
p-value	[0.000000]	[0.000000]	[0.000000]	[0.000000]	[0.000000]
d.f	4	4	4	4	16

Source: Author's Own Calculation

The Trace test indicates the existence of 2 cointegrating equations at 5% level of significance. And, the maximum Eigen value test makes the confirmation of this result. Thus, there exists the long-run equilibrium relationship between tourism sector and economic growth in Odisha. But the existence of this cointegration does not confirm the tourism-led growth hypothesis in the case of Odisha. Thus, in order to judge the long-run impact of tourism sector on economic growth in the State, we have estimated the cointegrating regression by FMOLS method and results are reported in Table 6. It is revealed that there exists a highly significant and

positive long-run relationship between tourism growth and economic growth in Odisha. Precisely, the domestic tourist visits, foreign tourist visits and money spent by tourists in Odisha have power to explain the economic growth of the State. It is inferred from Table 6 that 10% increase in domestic tourist arrivals in the State can lead to about 1.71% increase in economic growth in the long-run. Similarly, 10% increase in foreign tourist arrivals can lead to 2.21% increase in economic growth in the long-run. Furthermore, 10% increase in money expenditure by tourists in the State can lead to 1.38% increase in economic growth in the long-run.

Table 5
Results of Johansen's Cointegration Test

Hypothesized Number of Cointegrating Equations	*Eigen Value*	*Trace Statistics*	*Critical Value at 5% (p-value)*	*Maximum Eigen statistics*	*Critical Value at 5% (p-value)*
None*	0.865	80.822	47.85(0.000)	44.107	27.58(0.0002)
At Most 1*	0.665	36.714	29.79(0.006)	24.056	21.13(0.018)
At Most 2	0.43	12.657	15.49(0.128)	12.657	14.26(0.088)
At Most 3	0.00000662	0.0001	3.84(0.991)	0.0001	3.84(0.991)

**denotes rejection of the hypothesis at the 0.05 level* *Source: Author's Own Estimation*

Table 6
Results of FMOLS Estimation

Dependent Variable: L(EG); Method of Estimation: Fully Modified Least Square (FMOLS)

Variable	*Coefficient*	*Std. Error*	*t-Statistic*	*Prob.*
L(DTV)	0.171091	0.064492	2.652907	0.0157
L(FTV)	0.220854	0.071084	3.106939	0.0058
L(TE)	0.137902	0.030232	4.561484	0.0002
C	9.820144	0.699770	14.03339	0.0000
R-squared	0.965528	**Mean dependent variable**	15.62427	
Adjusted R-squared	0.960085	**S.D. dependent variable**	0.388537	
S.E. of regression	0.077624	**Sum squared residual**	0.114486	
Long-run variance	0.005085			

Source: Author's Own Estimation

Overall, the FMOLS results provide the evidence in favour of 'tourism-led growth' hypothesis in Odisha in the long-run. Additionally, R-squared value is 0.965 which is close to 1. It means the aforesaid relationships are very strong over the sample period. In order to ensure reliability in the above estimated FMOLS model, the diagnostics of the model must be examined. The high value of R^2 indicates that variations in economic growth are fully explained by variations in domestic and foreign tourist arrivals, and money spending by tourists in the long-run. In the long-run, it is essential that the variables depict a stable equilibrium relationship. For this purpose, we have used *Lc* parameter instability test for the

null hypothesis of stability or cointegration as proposeds by Hansen (1992). The results of this test are presented in Table 7.

Table 7
Results of Hansen's Parameter Instability Test

Time Series: L(EG), L(DTV), L(FTV), L(TE) Null hypothesis: Series are Cointegrated				
Lc Statistic	*Stochastic Trends (m)*	*Deterministic Trends (k)*	*Excluded Trends (p2)*	*Prob.**
0.381861	3	0	0	> 0.2

*Hansen (1992) Lc(m2=3, k=0) p-values, where m2=m-p2 is the number of stochastic trends in the asymptotic distribution
Source: Author's Own Estimation

The *Lc* statistic cannot reject the null hypothesis at the 1% critical level based on FMOLS. In other words, the results in Table-7 show the evidence for parameter stability as the probability values are greater than 0.05. Thus, the estimated long-run relationship by FMOLS is stable.

6. DISCUSSION OF RESULTS

On the basis of the above econometric analyses, tourism can be considered as the engine of long-run economic growth of Odisha. Furthermore, the variables such as domestic and foreign tourist arrivals and gross money spending by tourists are significantly responsible for long-run growth of the state. The tourism industry has the potential to stimulate other economic sectors through its backward and forward linkages and cross-sectoral synergies with agriculture, horticulture, poultry, handicrafts, transport, construction, trade, education, health, hotels and restaurants (GoI, 2006; Kunal & Zameer, 2008; Devi, 2013).Thus, greater emphasis needs to be accorded to the facilities that attract more and more tourists to the State.

The growth of tourism sector is associated with the provision of accommodation facilities like hotels, lodges, tourist rest house, etc. (Gill & Singh, 2013). This accommodation expansion is not only tourism enhancing, but adds to employment and income generation. In other words, expansion of tourism sector is growth-contributing in the long-run. Second, expansion in transportation and communication infrastructures plays an important role in the growth of tourism industry (Gill & Singh, 2013). Easy and secured connectivity to tourist spots keep a wide relevance in this context. Third, the direct and indirect tourism opportunities are created on a large scale when events are organized to cater to the needs of regional visitors (Getz, 1997). Getz further specified that festival events can be viewed as rapidly growing and exciting form of tourism. Therefore, events and festivals should be organized in an effective way in order to satisfy the tourist's motive thereby harnessing the socio-economic benefits of tourism (Sahoo, 2013).

Fourth, it is essential to emphasize on the eco-tourism concepts and linking it to traditional tribal ethnic society (Sahu, 2013). Fifth, enhancing the concept of rural tourism through the emphasis on rural industry, handicrafts, traditional art & fairs and festivals can form a strong basis of economic growth by contributing to additional revenues to public exchequer and preventing migration of rural people to urban areas (Mohanty, 2014). Last but not the least, larger care should be given to facilitate fair money spending by tourists during their visits to the State (Ashley *et al.* 2007; Nielsen & Spenceley, 2010; Xenias & Erdmann, 2011). It would induce a chain of transactions requiring supply of goods and services from the related sectors. The consumption demand, emanating from tourist expenditure, also would induce more employment opportunities and generate a multiplier effect in the economy. As a result, additional income and employment opportunities would be generated through such linkages. So, the expansion of the tourism sector can lead to large scale employment generation and poverty alleviation in the long-run. The economic benefits that flow into the economy through growth of tourism in shape of increased state revenues, business receipts, employment, wages and salary income, buoyancy in central, state and local tax receipts can contribute towards overall socio-economic improvement and accelerated growth in the economy of Odisha (GoI, 2006).

The Odisha State of India is famous for its cultural activities in every corner of the world. Several festivals including the *Rath Yatra*, *Konark* Festival, National Crafts Mela, *Mukteswar* Dance Festival and other festivities can be made more colourful in attracting tourists. The district-level festivals like the *Parab* in Koraput and *Mahotsava* in Sambalpur, and *Beach* festivals at Puri, Gopalpur and Chandipur can also be geared towards attracting tourists. Recently, the state government has undertaken *Shamuka Beach Project* at Puri targeting towards high-end tourists. The Govt. has also taken a golden step in upgrading the Airport at Bhubaneswar as International which shall be instrumental in increasing foreign tourist arrivals to the State in years to come. Additionally, the capital city Bhubaneswar has been declared to the smart city of Odisha. In last five years, the government of Odisha has taken all possible initiatives to expand and develop the transport and communication infrastructures. Besides the government has already started the initiative for additions to the existing accommodation infrastructure facilities of 19 tourist units, such as Panthasala, Panthika, Tourist Complex and Yatrinivas, with 105 rooms and 287 beds functioning under the Odisha Tourism Development Corporation (OTDC). In this process, 21 tourist units with 509 rooms and 1,112 beds are in development phase (Das, 2013). In the state, the tourism ministry has already initiated rural tourism projects in eight identified villages including Raghurajpur and Pipili in Puri, Khiching in Mayurbhanj, Barpali in Bargarh, Hirapur in Khurda, Padmanavpur in Ganjam, Deulajhari in Angul and Konark Natya Mandap (Mohanty, 2014). This project has two components – first,

infrastructure development, and second, the imparting training and skill development to artisans. The project envisaged construction of open air auditoriums, tourist amenities, craft demonstration and sale centers on the infrastructure front apart from training and skill development of artisans. All these clearly indicate the fair motto of the State towards tourism. In this context, it is quite logical to predict tourism as an engine of long-run economic growth of Odisha.

7. CONCLUDING REMARK

Tourism is one of the important sectors in Odisha economy. Tourism is being a labour-intensive sector, it has the capacity to generate employment on a large scale through a mix of activities of hotels, transport, shopping, food, entertainment and other areas. Thus, this sector has the potential of generating income, reducing poverty, and increasing the living standard of the people at the bottom of the pyramid. In fact, tourism can be viewed as an engine for long-run growth of a developing economy like that of Odisha. It is with this backdrop, this paper is an attempt to examine the long-run impact of tourism on real economic growth of Odisha. The application of correlation analysis concludes a high degree of positive association or link between tourism sector and economic growth in the state. The cointegration test provides the empirical evidence of the existence of long-run equilibrium relationship between tourism sector and economic growth. And, the estimation of cointegrating regression by FMOLS method confirms the existence of stable, significant and positive impact of tourism sector development on long-run growth of the state. FMOLS reveals that the long-run economic growth of Odisha is significantly determined by the domestic and foreign tourist arrivals and gross inflow of money through tourist expenditure over the sample period of the study. This finding of the present study is in line with the findings of recent studies using FMOLS estimation technique, i.e., Kum *et al.* (2015) which concludes that tourism arrivals has positive effect on GDP growth in N-11 countries; and Demirhan (2016) which concludes that the tourism receipts and tourism arrivals contribute to economic growth in most of the Mediterranean countries, namely Bulgaria, Croatia, France, Israel, Italy, Macedonia and Portugal. Therefore, the proactive role of the state government in developing and expanding tourism infrastructure, organising events and festivals, promoting various concepts of tourism like medical tourism, eco-tourism and rural tourism, etc. and maintaining internal law and order can go a long way in attracting both inbound and outbound tourist to the state thereby justifying tourism as an engine of long-run growth.

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