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STATIONARY AND NON-STATIONARY GROWTH OF INBOUND AND
DOMESTIC TOURIST ARRIVALS IN INDIA: AN EMPIRICAL STUDY
FROM 1990 TO 2018

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Dr. Debasish Batabyal, Dr. Shatrajit Goswami, Mr. Pratim Chatterjee, Dr. Abhijit Pandit, Mrs. Bani Ratna Padhi' Stationary and non-stationary growth of inbound and domestic tourist arrivals in India: an empirical study from 1990 to 2018-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(9). ISSN 1567-214x
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ABSTRACT:

Though continuous increase in tourist arrivals is the common form of presenting potentiality of tourism industry, there are many more issues involved in which stationary and non stationary states critically important for policy issue and future direction. This direction is also useful for contextualizing and comparing true and fair condition of tourism industry in a large country like India with 28 states and 8 UTs. The present article is a descriptive

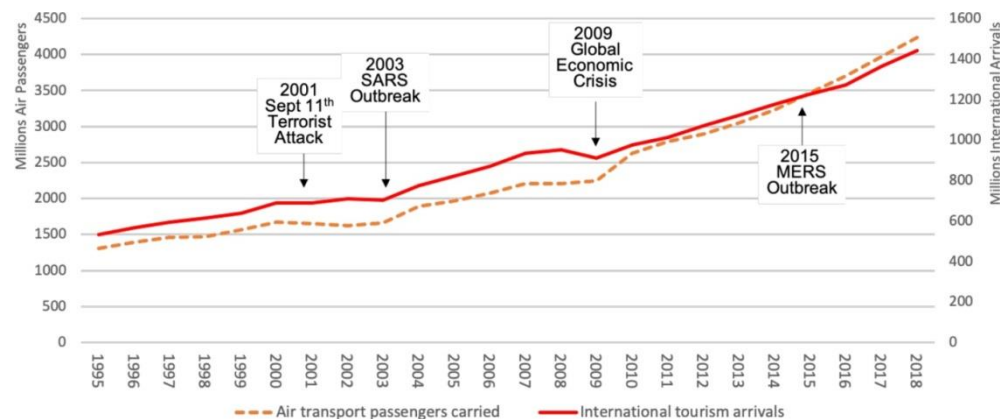
approach to analyse and exhibit stationary and non-stationary growth of domestic and international tourist arrivals in India in the light of the present context of COVID 19 outbreak for setting the future policy issues and recommendations.

Introduction:

Globally, travel and tourism directly contributed approximately 2.9 trillion U.S. dollars to GDP in 2019. As of now global tourism industry directly employs nearly 77 million people worldwide, which comprises about 3% of the world's total employment. India is one of the of the fifth largest economy in terms of nominal GDP and the third largest in terms of purchasing power in the world. Another distinctive feature of India is that it has recorded double-digit growth in international tourism receipts and eager to promote tourism internationally. This country is 7th largest in terms of its land area and 2nd largest in terms of population. The sizes of the states are also varying from many countries in Europe to very small UTs.

But the crisis of tourism is not new. Following are the important international crises given in figure 1. Apart from this, some important national level natural disasters and crises are Mumbai terror attack (2008), earthquake in Sikkim and adjacent area (2011, 2012), Kedarnath flash flood (2013) etc. had adverse effect on tourism industry in the country.

(Batabyal.D,Goswami.S & Chatterjee.P_Figure1) Impact of major crisis events on global tourism



Data source: World Bank

The effects of COVID 19 outbreak is unprecedented, long lasting and with many more adversities. International tourism organizations have also been changing their prediction results and many are being questionable (Gössling et.al.; 2020). It is quiet obvious that tourism organizations, business leaders want to a concerted and coordinated strategy as the situation is expected to improve with lot of differences. This study is a contribution to the future

with a critical knowledge and analysis of the past records and trends. In the same situation, may be with small intensity, Narayan, P.K.(2005). identified the year of the structural break and examined whether the break had a permanent or temporary effect on tourist arrivals. UNWTO Panel of Experts survey exhibited that domestic demand to recover faster than international demand and the signs of recovery would be noticeable by the final quarter of 2020 or in 2021. Asia and the Pacific was found to have the highest impact in relative and absolute terms (-33 million arrivals). Based on previous crises, leisure travel is expected to recover quicker, particularly travel for visiting friends and relatives, than business travel.

Review of Literature:

The contribution of the tourism industry to the economic development of many countries has crossed that of traditional sectors such as agriculture and manufacturing. An important fact is that tourism is a labour-intensive industry, giving employment to a huge pool of not so educated or unskilled manpower in developing countries (Frederick, 1993). Narayan, P.K.(2005) stated that visitor arrivals in Fiji from Australia, New Zealand and the USA are stationary which proves that shocks would not have a permanent nature. He advised while the industry takes time to revamp post shock, the time taken to revamp could have been utilized by the industry for development.

Assessing growth of tourism is always a contradictory issue in tourism literature. Ghosh (2011) analysed the cointegration between numbers of international tourist arrivals and economic growth over the period from 1980 to 2006 using autoregressive distributed lag (ARDL) model and declined any long-run relationship between international tourist arrivals and economic growth, So tourism led growth hypothesis does not have any validity in India. On the contrary, Tang, Tiwari, and Shahbaz (2016) connected international tourist arrivals with energy consumption and economic growth nexus for India covering the period from 1971 to 2012. Their results ended with a feedback type relationship between international tourist arrivals and economic growth in India. Mishra, Rout, and Mohapatra (2010), used VECM (Johansen)-Granger's causality test on annual data on GDP, receipts and exchange rate of international tourism for the year 1978–2009, intimated that India's long-run economic growth is promoted by tourism. Georgantopoulos (2013), in sharp disagreement, implementing annual data on tourism expenditure, GDP and real effective exchange rate over the period 1988–2011, could be prove the long-run casual link between tourism and economic growth in India. Ghosh (2011) and Tang et al. (2016) worked with many international tourist arrivals data and Georgantopoulos (2013) on tourism expenditure while the commonly seen proxy of inbound tourism is international tourism receipts (Brida et al., 2016). Batabyal, D., Ghosh, B.(2012) evaluated the variations in tourism demand generally interpreted through arrivals to/ in various destinations in India, finally came up with two periods viz. a period of significant development from 1980-81 to 1990-1991 and 1991-92 onwards through hypothetical trend equations contributing to the estimation of growth in tourist arrivals over the years.

However, the extant empirical literature has limitations that the study aims to address. For instance, we observed that none of the above mentioned studies considered the estimates of the magnitude of the impact of tourism on India's economic growth both in the short-run and long-run. In other words, the empirical literature on confirmation of TLGH (tourism led growth hypothesis) looked generally at the presence of cointegration relationship and causality nexus while ignoring the tourism centric economic growth which is very important for formulation of policy and discussion. Second, Ghosh (2011) and Tang et al. (2016) used data on number of international tourist arrivals and Georgantopoulos (2013) on tourism expenditure while the widely used proxy of inbound tourism is international tourism receipts (Brida et al., 2016). Third, studies concerning applicability of TLGH in India used a relatively small time series (24 to 40 observations). Fourth, in context of international literature as well, regarding the methodological structure used to examine the relationship between tourism and economic growth, the majority of the empirical studies relied upon Engle and Granger (1987) two-step approach and the Johansen test (Johansen, 1988) which did not propose estimation of the elasticity in the short run. The effectiveness of TLGH as per many studies is only applies to small economies. Apart from these, there are very few studies considering the possible effect of structural breaks in investigation of the stationarity of the tourism series. In nutshell, the empirical literature on TLGH is less rigorous. Hence, it can be concluded that the validation of the applicability of TLGH in India needs exact empirical estimation of the direct influence of inbound and domestic tourism. The present study fulfills these important gaps and analyses stationary and non stationary state of tourism in Indian provinces and Union Territories. It also explores new inputs to the direction of Indian tourism during this COVID outbreak.

Objectives and Hypotheses:

During the crisis period of COVID 19 in tourism and hospitality industry needs a critical assessment that will ensure a more clear strategy formulation for industry leaders and entrepreneurs. Therefore, the objectives are

- To measure the relationship between domestic and international tourist arrivals over the years (i.e. from 2010 to 2018).
- To measure the stationary and non-stationary growth of domestic and international tourist arrivals in India (from 1990 to 2018)

The research question for this study is whether the expansion of domestic tourism brings about an increase in international tourist arrival in India or not. Based on the objectives above, following is the hypothesis given below.

H01: Domestic tourist arrivals pave the way for enhancing the international tourists arrivals in India.

H02: Domestic tourism in India has reached its stationary stage with more high volume than inbound tourism.

Methodology:

The purpose of the study is to recommend for domestic as well as international tourism after analysing stationary stages for states and UTs. All data considered for the study is secondary data either published by the Ministry of Tourism, Government of India or any other appropriate government body. The time period chosen for understanding stationary and non-stationary stages is from 1990 to 2018. Meanwhile, some small time span has also been taken into account in this study.

ADF (Augmented Dicky Fuller) GLS test is a test for a unit root in an economic time series sample. A unit root test depicts whether a time series variable is non-stationary using an autoregressive model. This testing clarifies other existing unit root tests in terms of power. It locally de-shifts data series to efficiently evaluate the parameters of the series which can be accepted, and use the converted data to execute a usual DF unit root test. This procedure helps to eliminate the means and linear trends for series that are not distant from the non-stationary region

Lets have this time series model, $y_t = d_t + u_t$ with $u_t = \rho u_{t-1} + e_t$, where d_t is the deterministic part and u_t is the stochastic part of y_t . When the true value of ρ , is close to 1, estimation of the model, i.e. d_t will pose efficiency problems because the $y_{\{t\}}$ will be close to no stationary. In this setting, testing for the stationary features of the given times series will also be subject to general statistical problems. To overcome such problems this test is suggested to locally differentiate the time series.

Consider the case where closeness to 1 for the autoregressive parameter is modelled as

$$\rho = 1 - \frac{c}{T}$$

where T is the number of observations. Now consider filtering the series using

$$1 - \frac{\bar{c}}{T}L$$

With L being a standard lag operator, i.e. $\bar{y}_t = y_t - (\bar{c}|T)y_{t-1}$

Working with \bar{y}_t $\{\displaystyle \{\bar{y}\}_{t}\}$, would result in power gain, as ERS show, when testing the stationarity features of y_t using the Dickey-Fuller test. This is a point optimal test for which $\{\displaystyle \{\bar{c}\}\}$, \bar{c} is set in such a way that the test would have a 50 percent power when the alternative is characterized by

$\rho = 1 - \frac{c}{T}$ for $c = \bar{c}$. Depending on the specification of d_t , \bar{c} will take different values.

Another statistical tool used in the study is coefficient of variation to measure growth of tourist arrivals. Individual states and UTs are ranked thereby to measure correlation. This correlation between ranks of domestic

and international tourists ultimately directs future relation between domestic and international tourism in any region or country.

Ordinary linear correlation refers to straight-line relationships between two variables and ranges between -1 (perfect negative relationship) and +1 (perfect positive relationship), with 0 indicating no straight-line relationship.

In probability theory, the coefficient of variation is a standardized measure of dispersion or frequency distribution. Here, it is expressed as a percentage, and is defined as the ratio of the standard deviation (σ) to the mean (μ or $|\mu|$).

(Batabyal.D,Goswami.S & Chatterjee.P_Table 1) Coefficient of Variations of Domestic and International Tourist Arrivals from 2010-11 to 2017-18

States	Domestic tourists arrivals (2010-11 to 2017-18)				Foreign tourists arrivals			
	Mean	Std. Deviation	coefficient of variation	Rank	Mean	Std. Deviation	coefficient of variation	Rank
Andhra Pradesh	10.9225	20.63495	188.9215	26	37.1163	91.97085	247.791	23
Arunachal Pradesh	15.2988	16.88056	110.3391	14	18.4875	45.45482	245.867	22
Assam	4.97	7.82608	157.464	22	10.63	32.15152	302.462	25
Bihar	8.0825	9.0173	111.569	15	9.0313	22.56768	249.882	24
Chhattisgarh	3.5388	24.9902	706.331	35	27.5762	53.89483	195.439	18
Goa	16.3875	13.41544	81.863	9	10.1825	9.6226	94.501	8
Gujrat	14.1663	2.21156	15.607	2	18.8825	8.02018	42.474	1
Haryana	6.8925	34.95342	507.153	33	17.6525	64.81509	367.172	27
Himachal Pradesh	3.3075	9.53505	288.328	30	-2.2075	12.56246	569.08	31
Jharkhand	26.9075	36.59671	136.009	18	74.9313	144.9017	193.379	17
Karnataka	28.03	39.04111	139.283	19	6.555	22.35148	340.984	26
Kerala	7.7538	1.8139	23.384	3	6.5988	3.12218	47.314	2
Madhya Pradesh	16.3688	38.56255	235.594	29	5.9112	13.46634	227.81	21
Maharashtra	10.6263	6.49925	61.161	6	9.5575	19.51874	204.224	20
Manipur	6.36	13.49321	212.154	28	48.3275	50.61235	104.728	11
Meghalaya	8.1413	7.94116	97.543	11	21.47	19.20447	89.448	6
Mizoram	3.8088	5.37422	141.124	20	3.265	14.84388	454.636	29
Nagaland	24.3337	27.79564	114.228	16	27.5513	24.13383	87.596	4
Odisha	9.0763	0.56308	6.203	1	10.8388	11.293	104.19	9
Punjab	21.0013	19.90673	94.786	10	39.4813	59.06411	149.6	14
Rajasthan	8.8937	4.13419	46.486	4	4.1175	4.29497	104.31	10

Source: Secondary Data, India Tourism Statistics, From 2010-11 to 2017-18

Sikkim	17.7588	28.54728	160.756	24	21.2325	34.68954	163.379	15
Tamilnadu	20.3975	21.70846	106.427	13	10.485	9.41913	89.834	7
Tripura	2.455	2.82673	115.112	17	49.4163	39.97016	80.884	3
Uttar Pradesh	9.7212	15.39209	158.338	23	10.8275	12.89829	119.122	13
Uttarakhand	3.4625	17.83916	515.28	34	2.81	11.51037	409.621	28
West Bengal	21.985	31.11986	141.547	21	3.9313	3.49486	88.898	5
Andaman and Nicobar Island	13.8713	9.71629	70.045	8	1.1438	11.75225	1027.474	33
Chandigarh	7.0675	7.29635	103.24	12	1.385	16.56955	1196.357	34
Dadra & Nagar Haveli	3.2162	11.43881	355.659	32	0.3462	15.58576	4501.952	35
Daman & Diu	1.9563	3.96367	202.607	27	1.8113	11.48226	633.923	32
Jammu and Kashmir	11.6975	21.40366	182.979	25	19.3775	36.214	186.886	16
Lakshadweep	18.7838	63.38174	337.438	31	12.3688	60.10924	486.006	30
Puducherry	8.69	4.80973	55.339	5	17.1438	34.23048	199.667	19
National Capital Territory of Delhi	10.1888	6.37984	62.613	7	4.8438	5.42175	111.932	12

Data Analysis and Discussion:

The coefficient of variation of growth in arrivals contradicts the absolute volume based arrivals and Gujrat shows the best performance with first position in foreign tourist arrivals and second in domestic tourists arrival respectively. Surprisingly, this gap in ranking between domestic and international arrival is more than twenty for many states or UTs. Again, the growth of arrivals is already found negative for many states and UTs during the last decade of the pre-COVID 19 periods. Another noticeable trend is the poor degree of association ($0.494678 < 0.5$) between the ranks of individual states and UTs in terms of domestic and international tourists arrivals. Gujrat model of brand building could be a good option here, for some other states or UTs with similar attraction features and purpose of arrival even though situation has extensively changed amidst this COVID 19 crisis. Table 2 is the presentation of performance of individual states and UTs in terms of consistency from 2010-11 to 2017-18.

Based on DF-GLS tau test statistic, domestic tourism in india has registered highest growth and the same is expected to be evident as tourism and hospitality sectors have been experiencing huge challenges of operation and future growth amidst COVID 19 crisis. Poor arrivals and occupancy rates, waning of working capital, new safety norms, increasing pressure for the safety measures, need for promotional expenditure to gain confidence of tourists justifying a bottom up approach for tourism and hospitality business development models. Even large operators are ought to target alternative market in which this domestic tourism is predominating with

excursion market. Following is the table 3 showing the minimum value of DF-GLS tau test statistic at 5% level of significance for domestic tourism in India following outbound tourism and inbound tourism respectively.

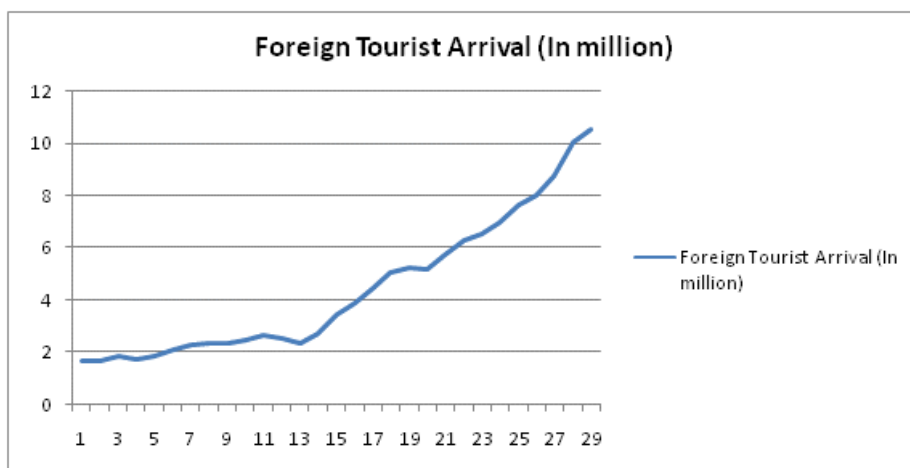
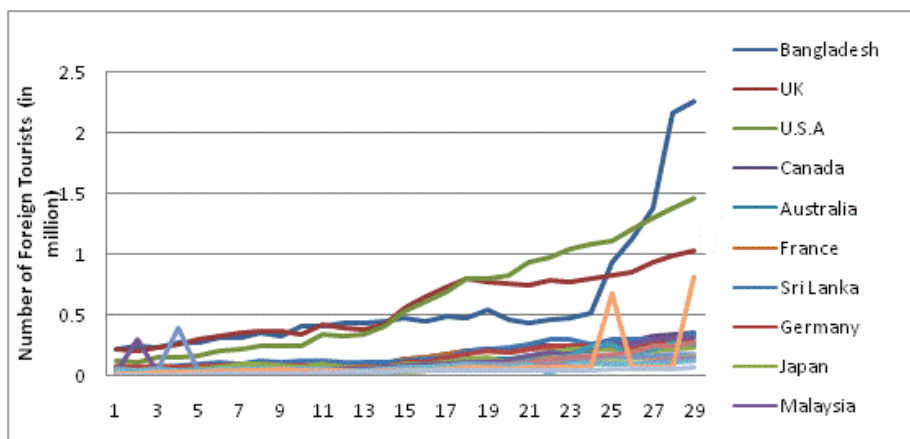
(Batabyal.D,Goswami.S & Chatterjee.P_Table 2) : DF-GLS tau test statistic for Inbound, Outbound and Domestic Tourism from 1992-2018

	Inbound Tourism	Outbound Tourism	Domestic Tourism
DF-GLS tau test statistic	4.569	4.179	3.599
5% critical value	3.386	3.386	3.386

Source: Tourists Arrivals from 1992-2018, India Tourism Statistics, Statistical Package used is Stata

Another important and noticeable trend for last 28 years is volatile market sources for foreign tourist arrivals though growth in arrivals was registered. For last few years the source of foreign tourists visiting India is Asia itself. Bangladesh is one of the new market sources registering huge growth in foreign tourists arrivals in adjacent Indian states of West Bengal, Sikkim etc. This is evident in figure 1 showing the growth in foreign tourists arrivals and source market areas for such growth.

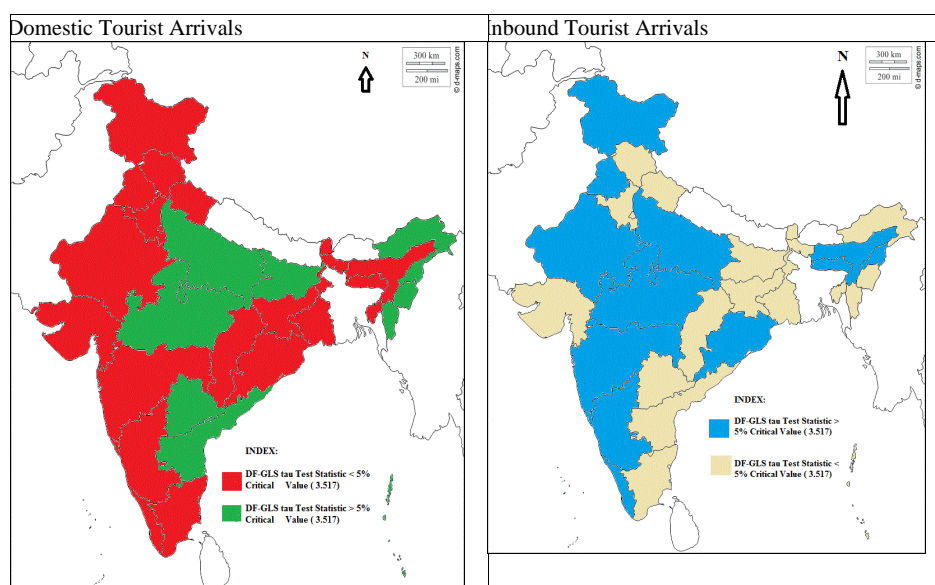
(Batabyal.D,Goswami.S & Chatterjee.P_Figure 2): Foreign Tourists Generating Countries and Growth Pattern from 1990-2018



Source: Tourists Arrivals from 1992-2018, India Tourism Statistics

On the other hand, eleven states and UTs have achieved stationary state of growth for international tourists arrivals whereas it is fifteen for domestic tourism in the country. Following is the figure 2 showing the widest part of land areas, most specifically, from north, north-western, western and south-western part showing non-stationary state of domestic tourists arrivals. In fact, maximum land area is not in stationary stage, as far as domestic tourists arrivals are concerned.

(Batabyal.D,Goswami.S & Chatterjee.P_Figure 3): Indian States and UTs with [DF-GLS tau Test Statistic > 5% Critical Value (3.517)] and without [DF-GLS tau Test Statistic < 5% Critical Value (3.517)] achieving Steady State Condition of Growth for Domestic and Foreign Tourist Arrivals from 1990 to 2018



Source: Secondary Data of Tourists Arrivals, Software: Excel & Choropleth

(Batabyal.D,Goswami.S & Chatterjee.P_Table 3): Indian States and UTs with and without Steady State Condition of Growth for Domestic Tourist Arrivals from 1990 to 2018

Indian States or UTs [DF-GLS tau Test Statistic > 5% Critical Value (3.517)]			
	State/ Union Territories	DF-GLS tau Test Statistic	Achieved stationary stage
1	Andhra Pradesh	4.274	
2	Arunachal Pradesh	4.045	
3	Bihar	4.210	
4	Madhya Pradesh	3.738	
5	Manipur	5.199	
6	Mizoram	4.495	
7	Nagaland	5.953	
8	Uttar Pradesh	3.716	
9	Andaman Nicobar Islands	3.656	
10	Lakshadwip	5.333	
11	Telengana (2014-2018)	10.076	
Indian States or UTs [DF-GLS tau Test Statistic < 5% Critical Value (3.517)]			
1	Assam	2.072	Yet to achieve stationary stage
2	Chattishgarh	3.301	
3	Goa	2.314	
4	Gujrat	1.601	
5	Haryana	2.431	
6	Himachal Pradesh	2.098	
7	Jharkhand	2.964	
8	Karnataka	3.161	

9	Kerala	2.557	
10	Maharastra	2.530	
11	Meghalaya	3.135	
12	Odisha	2.463	
13	Punjab	2.698	
14	Rajasthan	2.514	
15	Sikkim	2.312	
16	Tamilnadu	3.083	
17	Tripura	2.303	
18	Uttarakhand	3.079	
19	West Bengal	2.809	
20	Chandigarh	2.817	
21	Dadra Nagar Haveli	3.244	
22	Daman Diu	2.942	
23	Jammu andKashmir	1.928	
24	Pondicherry	3.121	
25	NCT of Delhi	2.847	

Source: India Tourism Statistics, 2018

The second null hypothesis is rejected as the variability of growth in domestic and international tourist arrivals is not nation-wide. Findings show that many states and UTs are yet to achieve the steady state condition.

Interestingly, 15 Indian states and UTs have achieved this steady state condition for international tourism while this number is only 11 for domestic tourism. Mean and variance are constant for growth of domestic tourist arrivals in Indian states and union territories when the values of DF-GLS tau Test Statistic are greater than the 5% critical value of 3.517.

Therefore, the variability in growth of domestic tourist arrivals in these states or UTs will be nil or expected to be in the same condition once economy is reinstated with almost previous conditions immediately after COVID 19 pandemic. Ten states or UTs are in such steady state condition. On the other hand, the fluctuations in tourist arrivals are expected to be more with high impacts of COVID 19 pandemic.

(Batabyal.D,Goswami.S & Chatterjee.P_Table 4): Indian States and UTs with and without Steady State Condition of Growth for Inbound Tourist Arrivals from 1990 to 2018

Indian States or UTs [DF-GLS tau Test Statistic > 5% Critical Value (3.517)]			
	State/ Union Territories	DF-GLS tau Test Statistic	Achieved stationary stage
1	Assam	3.929	
2	Goa	3.827	
3	Karnataka	4.795	
4	Kerala	5.702	
5	Madhya Pradesh	4.333	
6	Maharashtra	3.745	
7	Meghalaya	4.001	
8	Nagaland	4.491	
9	Odisha	3.760	
10	Punjab	3.694	
11	Rajasthan	3.620	
12	Uttar Pradesh	3.564	
13	Daman andDiu	5.300	
14	Jammu &Kashmir	4.357	
15	Lakshadwip	3.590	
Indian States or UTs [DF-GLS tau Test Statistic < 5% Critical Value (3.517)]			
1	Andhra Pradesh	2.700	Yet to achieve stationary stage
2	Arunachal Pradesh	3.473	
3	Bihar	2.694	
4	Chattishgarh	3.239	
5	Gujrat	3.441	
6	Haryana	2.683	
7	Himachal Pradesh	3.247	
8	Jharkhand	2.978	
9	Manipur	2.602	
10	Sikkim	2.677	
11	Mizoram	3.375	

12	Tamil Nadu	2.766
13	Telangana (2014-2018)	0.605
14	Tripura	3.489
15	Uttarakhand	1.651
16	West Bengal	1.717
17	Andaman Nicobar Islands	3.117
18	Chandigarh	2.361
19	Dadra NagarHaveli	2.561
20	Pondicherry	2.888
21	NCT of Delhi	2.284

Source: India Tourism Statistics, 2018

Conclusion:

The study brings about a new postulate in Indian tourism that the development of domestic tourism would not be bring in success for international tourism. It is found that except a very few Indian states and UTs, there is no parity of performance between domestic tourist arrivals and inbound tourists arrivals. It contradicts the preconceived assumption of developmental stages of destination life cycle . International tourism and domestic tourism have two different directions of growth and factors responsible are also different. The study exhibits that 25 and 21 states and UTs are yet to achieve the stationary state of growth for inbound and domestic tourism respectively. It is also noticeable that more number of states and UTs have achieved stationary state for inbound tourism and as such, the future growth potentiality for domestic tourism is found more. This is of course without incorporating the COVID 19 outbreak but enlightening with a pace of break when industry is planning to start from survival to revival strategies. As the The data analysis and discussion further emphasizes on state-wise policy recommendations for better growth and development.

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