TOURISM LED GROWTH HYPOTHESIS: EMPIRICAL EVIDENCE FROM FIVE SOUTH ASIAN COUNTRIES

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ABSTRACT

The study analyzes the impact of tourism, gross capita formation and energy consumption on gross domestic product for the selected South Asian countries over the time period 1995 to 2016. For empirical estimation the study applied FMOLS and we have observed from the empirical results that tourism is positively associated with gross domestic product in the selected countries. Thus, the study is supporting the idea of tourism led growth hypothesis in the selected countries. Other results indicate that energy consumption is also positively associated with gross domestic product whereas gross capital formation is also positively influencing gross domestic product (GDP). The study drew few important insights for policy makers to formulate suitable policies to boost up GDP growth rate in the selected countries.

Keywords: Tourism led growth, GDP, GFC, FMOLS
JEL Codes: L83, N3

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I. INTRODUCTION

Travel and tourism have become one of the largest economic sectors over the world. It contributes 10.4% of global gross domestic product (GDP) and generate 313 million employment opportunities across globe. In addition, it is a source of export earnings and accounts 6.5% of total worldwide exports (WTTC, 2017). According to travel and tourism council, it is expected that tourist arrival will increase an average of 3.8% per year between 2017-2028. Moreover, it will generate 414 million jobs worldwide. In recent years, the sector of tourism shows positive affect on global economic growth (EG) (Marin, 1992). It creates jobs, promote investment opportunities, shows development in trade and infra-structure, generate additional taxes, improve balance of payments and increases household and government income over the worldwide economies (Archer, 1995; Davis, Allen and Consenza, 1988; Durbarry, 2002). It has also a significant impact on revenue sources (Oh, 2005). South Asia is the fastest growing region in the world and its growth rate exceed by 5.5% (World Bank, 2018). The pace of EG is directly and indirectly expedited by travel and tourism industry. The direct effects of this industry can be observed by an increase in the revenue of hotels, airlines, and travel agents. It also promotes the transportation industry and increases the domestic purchase of goods and services. Therefore, it directly contributes to 3.6% of total GDP (WTTC. South Asia, 2018). South Asia is recognized as a distinct region with a huge variety of natural resources. The mountain ranges, rivers, coastal areas, deserts, forests, grasslands and diverse climatic conditions has made this region even more attractive for the tourists across the world. In 2016 South Asian countries received 105 million tourists (WTTC 2017). Tourism has the potential to increase EG through employment generation and balance of payment channel. The aim of this study is to investigate the tourism led growth hypothesis for the period 1995 to 2016 based on a panel of selected South Asian (SA) economies. The framework of the present study is structured as fellows. Section 2 reviews the existing literature, section 3 discusses the data and empirical methodology, section 4 presents the empirical results and section 5 concludes the study.

II. LITERATURE REVIEW

A number of studies in the previous literature examined the nexus between tourism EG. However, the results are very sensitive to the period of analysis, region of analysis and estimation techniques. Keeping in view the dynamic effect of tourism industry on EG, the literature is divided into two broad categories. According to first category, there are various studies indicate that tourism shows a significant and positive impact on EG (Rivera, 2016; Ohlan, 2017; Pao and Chen, 2018) while the second category of literature shows weak and negative nexus between tourism and EG (Chen and Wei, 2009). Furthermore, it is important to note that numerous studies elaborated the nexus between tourism and EG in the existence of some other variables. It includes political stability, population growth, financial development, trade openness, urban population, energy consumption (EC), gross fixed capital formation, national saving, law and order, foreign direct investment, and infrastructure. The results show long run relationship among variables (Ali, 2011; Pablo-Romero and Molina, 2013; Ali, 2015; Tang and Abosedra, 2014; Ali and Rehman, 2015; Ohlan, 2017; Ali, 2018).

There are various country specific studies which shows that tourism has a positive influence on EG. In this context, the studies of Tang and Tan (2013 and 2015) examined the nexus these variables such as tourism and EG and in the context of Malysia supported the tourism-led growth hypothesis In addition, Kumar et al. (2015) also found the positive relationship between these two variables in the case of Malysia. Rivera (2016) examined that tourism has positive effect on EG in Ecuador. However, tourism-led growth hypothesis is not supported in Korean economy (Oh, 2002). The tourism-growth nexus is also studied by using the panel data. The empirical research of Brua et al. (2007) showed that increase in the tourism led to stimulate the EG in the 143 developed and developing economies. Similar, relationship is observed for the panel of 42 Sub Saharan African counties (Fayissa et al., 2007). The study of Mulali et al. (2013) demonstrate that increase in tourism receipts lead to increase in GDP of Middle East countries. Tang and Abosedra (2014) also found the similar results that tourism has positive and significant impact o on EG in 24-MENA countries. Zaman et al. (2016) also observed that the increase in tourism leads to stimulate the economic growth in the selected 11transition economies. The long run nexus between tourism and EG is also evident in G-20 countries (Pao and Chen, 2018). Tugcu (2013) examined the existence of tourism-led growth for Mediterranean Sea region. The results indicate that bidirectional causality is running from tourism receipts to EG in European region whereas, no causality relationship is found in African countries. The study of Anatonakakis et al. (2015) showed that the nexus between tourism and EG is not stable in 10 European regions. Shahzad et al. (2017) concluded tourism lead to that higher the level of tourism stimulates the EG for top tourist countries while the relationship is weak in case of China and Germany. Moreover, among Asian countries tourism-led hypothesis is evident in Taiwan. However, the negative association between the tourism and EG is concluded in South Korea state (Chen and Wei ,2009). The long run nexus between tourism and economic EG is also found in various studies (Chou, 2013; Tang and Tan, 2013; Seghir et al., 2015; Rivera, 2016; Ohlan, 2017 and Parles-Ribes et al., 2017).

The present research is an attempt to highlight the effect of tourism on EG for the selected South Asian countries by using the most recent data and estimation technique. In order to boost economic growth, the study will draw important policy conclusions for policy makers to focus on sustainable and efficient tourism policies in the selected countries of SA region.

III. METHODOLOGY

III.I. DATA DESCRIPTION

In this study we have used annual data set series over the period of 1995-2016 in the five selected South Asian Countries, Sri Lanka, India, Pakistan, Bangladesh and Nepal. The dependent variable is (GDP) per capita (constant 2011 international $) and independent variables are (TOR) international tourism receipts (current US$), (EN) energy use (kg of oil equivalent per capita) and (GFC) Gross Fixed Capital Formation (% of GDP). The annual data for the selected variables are collected from World Development Indicators data base (WDI).
The current study used panel data methodology due to its reliability over time series analysis at the same time penal data methodology also resolves the problem of heterogeneity and serial correlation (Baltagi 2005). This present analysis attempts to evaluate the tourism led growth hypothesis based on a panel of selected South Asian countries. Although various researcher used this model and elaborated a positive nexus between tourism receipts and EG for example Al-Mulali et al. (2014) in Middle East countries, Lee and Chien (2008) and Tang (2012) in Malaysia and Akinboade and BrainMoh (2010) for South Africa.
By following the Al-Mulali et al. (2014), our model can be specified as follows.

$$GDP_{it} = \beta_{1i}TOR_{it} + \beta_{2i}EN_{it} + \beta_{3i}GFC_{it} + \epsilon_{it} \quad (1)$$

All the variables are transformed into the natural logarithm because it gives more reliable results. the slop coefficients are β_{1i}, β_{2i} and β_{3i} and i stand for cross section (1,….,5 South Asian economies), t represent the annual time period (1995-2016) and ϵ is the error term.

$$LGDP_{it} = \beta_{1i}LTOR_{it} + \beta_{2i}LEN_{it} + \beta_{3i}LGFC_{it} + \epsilon_{it} \quad (2)$$

III.II. PANEL UNIT ROOT

In order to examine the order of integration of the selected variables the present study uses five panel unit root tests. These tests are divided into two partss. In the first group we include those tests that assume common unit root across sections such as Levin et al. (2002) and Breitung (2000). The null hypothesis shows that the data set is stationary while the alternative shows that the data series is not stationary. The second group assumes the individual unit root across the cross sections such as Phillips and Perron (1988), ADF (1979) and Im et al. (2003). The null hypothesis shows data set is non-stationery and unit root is present while the alternative shows no unit root and the data set is stationary. These tests are employed with intercept and deterministic trend.

III.III. PEDRONI COINTEGRATION TESTS

In order to examine the level of integration of selected variables. We have employed various unit toot tests and confirmed that all the selected variables are integrated then in the coming step we will analyze the evidence of long-run nexus among selected variables, thus we will apply Pedroni (1999,2004) and Kao (1990,1991) panel cointegration estimation procedures.

III.III.I. PEDRONI PANEL COINTEGRATION TESTS

These panel cointegration tests are based on the residuals of the Engle & Granger cointegration regressions.
Pedroni proposed several statistics. It assumes that number of countries are M, and the number of observations is K & regression is (Xm). The long-run model is explaining as given below

$$Y_{ik} = a_i + \lambda_i k + \sum_{j=1}^{m} \beta_{j,i}\ X_{j,ik} + \epsilon_{ik} \qquad k = 1, \dots, K, i = 1, \dots M \qquad (3)$$

Where Y_{ik}&$X_{j,ik}$ indicate the integration of order is one. Pedroni has developed the seven statistics. These statistics are divided into two categories such as between dimensions and within dimensions. The first group is within dimensions and included four statistics such as panel-pp-statistics, panel-ADF-statistics, panel-r-statistics, panel-pp-statistics and panel-v-statistics, The second category is between dimensions are included these statistics such as Group-ADF-Statistics Group-rho-Statistics and Group-pp-Statistics.
The null hypothesis shows that cointegration is not present $H_0 : \rho_i = 0;\ \forall_i$ on the other hand alternative hypothesis $H_1 : \rho_i < 0;\ \forall_i$ shows that the existence of cointegration. The ρ_i is AR term of the estimated residual is based on alternative hypothesis and it can be given on the following equation

$$\hat{\epsilon}_{ik} = \rho_i \hat{\epsilon}_{ik-1} + \mu_{i,t} \quad (4)$$

Pedroni analyzed that seven statistics are standard as asymptotic distribution based on independent movements in Motions (Brownian motions when T& X $\rightarrow\infty$

$$\frac{Z-\mu\sqrt{X}}{\sqrt{\nu}} \underset{N,T\mapsto\infty}{\rightarrow} X(0,1)$$

Where z is one of the seven normalized statistics, and μ and ν are tabulated in Pedroni.

III.III.II. KAO PANEL COINTEGRATION TEST

Kao is developed the following equation:

$W_{i,k} = a_{ik} + \beta X_{i,k} + \epsilon_{ik}$ (5)

Where

$$W_{i,k} = \sum_{t=1}^{T} \mu_{i,t}, \quad X_{i,t} = \sum_{k=1}^{J} \nu_{i,k} \; ; \; \forall k = 1, \dots, J, i = 1, \dots M. \qquad (6)$$

It is based on residual and variants ADF is as the following equation

$$\hat{\epsilon}_{it} = \rho\hat{\epsilon}_{it-1} + \sum_{j=1}^{p} \varphi_j \Delta\hat{\epsilon}_{it-j} + \mu_{i,t,p} \qquad (7)$$

Where ρ is selected when $\mu_{i,t,p}$ are not correlated based on the H_O of the nonappearance of cointegration. So, test statistics can be written as

$$ADF = \frac{t_{ADF} + (\sqrt{\sigma N}\hat{\sigma}\mu/2\hat{\sigma}_{0u})}{\sqrt{(\hat{\sigma}^2_{0u}/2\hat{\sigma}^2_{0u}) + (3\hat{\sigma}^2_{u}/10\hat{\sigma}^2_{0u})}} \text{ UNDER H0} \rightarrow M(0,1) \qquad (8)$$

Where t_{ADF} is t statistics of ρ, and σ_{0u} derive from covariance matrix

$$\Omega = \begin{bmatrix} \sigma^2_{ou} & \sigma_{ouv} \\ \sigma_{ouv} & \sigma^2_{ov} \end{bmatrix}$$

of bi-variant process $\left(u_{i,k}\ v_{i,k}\right)$.

III.IV. FULLY MODIFIED OLS

If the cointegration exist in the data series. The next step is to examine the long-run coefficients by employing the estimation technique of fully modified ordinary least square (FMOLS) was proposed by Pedroni. (2001,2004). In panel data series the problem of heterogeneity arises due to the heterogeneity this estimation technique is most suitable Kao and Chiang (2001). Numerous techniques is discussing in literature. In this study use FMOLS due to the fulfills of conditions. The FMOLS estimation procedure initially was proposed by Phillips and Hansen (1990). This econometric technique is most suitable then OLS. The FMOLS is non-parametric technique. It solves the problems of serial correlation and heterogeneity bias.

To estimate the long-run coefficients and resolve the problem of endogeneity this technique was applied by Pedroni, p. (2001, 2004). The equation is given below

$W_{i,k} = a_i + \beta_i \chi_{i,k} + \mathcal{E}_{i,k}$ (9)

They supposed that $W_{i,k}$ and $\chi_{i,k}$ are co-integrated with the slope of β_i , the β_i may or may not be homogeneous across i. Mover over the above equation was developed is as follows:

$W_{i,k} = a_i + \beta_i \chi_{i,k} + \sum_{j=-j_i}^{j_i} \gamma_{i,k} \Delta x_{i,k-k} + \mathcal{E}_{i,k}$ (10)

Pedroni also considered that: $\xi_{i,k} = \left(\hat{\mathcal{E}}_{i,k}, \Delta X_{i,k}\right)$ and $\Omega_{i,k} = \lim_{K \to \infty} E\left[\left\langle\frac{1}{K}\right\rangle \langle\sum_{k=1}^{K} \xi_{i,k}\rangle'\right]$

Is the long run covariance for the vector process which can be decompose into $\Omega_i = \Omega_i^0 + \Gamma_i + \Gamma_i'$ where Ω_i^0 is a contemporaneous covariance and Γ_i is the autocovariance of weighted sum.

Thus, the FMOLS can be given by

$$\hat{\beta}_{FMOLS} = \frac{1}{N}\sum_{i=1}^{N}\left[\left(\sum_{k=1}^{K}\left(X_{i,k} - \overline{X}_{i,k}\right)2\right)^{-1}\left(\sum_{k=1}^{K}\left(X_{i,t} - \overline{X}_i\right)w^*_{i,k} - K\hat{\gamma}_i\right)\right] \quad ..(11)$$

Where $w^*_{i,k} = w_{i,k} - \overline{w}_i - \left(\widehat{\Omega}_{2,1,i} / \widehat{\Omega}_{2,2,i}\right)\Delta X_{i,k}$ and

$\hat{\gamma}_i = \hat{\Gamma}_{2,2,i} + \widehat{\Omega}_{2,1,i} - \left(\widehat{\Omega}_{2,1,i} / \widehat{\Omega}_{2,2,i}\right)\left(\hat{\Gamma}_{2,2,i} / \widehat{\Omega}^o_{2,2,i}\right)$

IV. RESULTS AND DISCUSSIONS

The empirical procedure follows the following steps: a) Various Panel Unit Root tests are employed to examine the unit root level in the data set; b) Pedroni Cointegration procedure is used to find the long-run nexus among the selected variables; c) FMOLS technique is utilized to find the long-run coefficients.

In the first step we confirm the level of integration of the selected variables. In this step we checked the stationarity of the selected variables. The results are represented in Table 3 show that after taking he first difference the selected variables are stationary. ADF-Fisher, IPS and pp-Fisher revealed that no unit root is present after taking the first difference. These tests show the consistency and reliability of unit root procedure.

After taking the first difference Since the all the variables are stationary. The next step is to examine that whether the variables are co-integrated for this purpose we used pedroni co-integration procedure. In Table 4 pedroni co-integration estimation results are reported. The results revealed that Gross Domestic Product, Tourism receipts, EC and GFCF are cointegrated. The results from empirical estimation depicts the confirmation of long-run nexus among selected variables. In Table 5 Kao test give the similar results.

The present study also investigates the long-run nexus by employing FMOLS estimation procedure. This technique was proposed by pedroni (2000, 2001) and Mark and Sul (2002). It is important to note that fully modified ordinary least square is a non-parametric approach. This technique improves the degree of freedom and give reliable results then dynamic OLS procedure because that reduces the degree of freedom and due to which give less reliable results.

According to the results of FMOLS, tourism receipt, energy consumption and GFCF are positively and statistically significant at 1% level and positively associated with the GDP over the period of time. The results from the FMOLS are represented in Table 6. The results from FMOLS technique revealed that 1% increase in the tourism receipt lead to an increase in the gross domestic product by 0.167%: 1% increase in the EC enhances the GDPt by 0.52% and 1% increase in the GFC leads to increase the gross domestic product by 0.045%. The coefficient of tourism indicates a positive effect on gross domestic product. The result is consistent with the previous literature on developing countries by Tosum (1999), Kim et al. (2006) in the context of Taiwan, Gunduz and Hatemi (2005) in case of Turkey, Mulali et al. (2013) for Middle East countries, (Schubert et al. 2011,Brua et al. 2004) for a sample of small economies and Durbarry et al (2004) for the sample of island of Mauritius.

IV.III. DISCUSSIONS

According to tourism led growth hypothesis, tourism has become an important sector to trigger the economic growth in an economy around the world (Jiranyakul, 2018; Perles-Ribes et al, 2017; Brida & Pulina 2016; Tang & Tan, 2017). Tourism services are considered to be an alternative form of export services, as it brings foreign exchange and helps to improve balance of payment for countries (Thano, 2015). Tourism has become a potential source of income and earnings for the tourist's receipt countries (FaladeObalade and Dubey, 2014). Generally, countries use the income received from tourism in buying capital goods and services that further accelerate the economic growth. Other related benefits from tourism activities include tax revenues, employment generation and increased income generally (Mayer and Mayer, 2015). Theoretical and empirical literature support the notion that tourism is positively associated with economic growth tin different economies around the globe (Creaco & Querini, 2003; Reddy, Basha & Kumar, 2014; Vaugeois, 2000; Richardson, 2010; Vaugeois, 2000; Unwto, 2002; Modeste, 1995; Creaco & Querini, 2003; Steiner, 2006; Durbarry, 2002).

As compared to early 1990s, the use of energy is multifold now. The role of energy is essential in economic development process (Stern, 2011). As the use of energy is the part and parcel of economic acitivities, since late 1970s the impact of energy consumption on economic growth is widely debated (Karaft and Karaft, 1978; Yu and Choi, 1985; Yang, 2000; Soytas and Sari, 2003; Oh and Lee, 2004; Wold-Rufeal, 2004; Altinay and Karagol, 2004; Schafer, 205)). Over the past two decades, technological development also influencing the use of energy heavily. Energy consumption being the engine of economic growth is causing marvelous changes in the heart of economies, thus creating employment opportunities and increasing the standard of living both at household as economy level (Lee and Chang, 2007).

Capital formation is the proportion of current income saved and invested to increase the future income and out (Bakare, 2011). Capital formation is generally resulted from the new factories, machines, and all other capital goods. We can infer that capital formation in an economy is exactly equivalent to physical capital (Orji and Mba, 2010). Gross fixed capital is segregated into two broad categories of gross public and gross private investment, gross public invest is done by government enterprises and on contrary gross private investment is done by private enterprises. Most of the theoretical and empirical literature indicate the positive effect of gross fixed capital formation on EG (Beddies, 1999). While, the deficiency of gross capital formation is considered to be a serious hurdle to the sustainable growth. The positive relationship between gross capital formation can be observed for different economies such as Ajo (2011) in the case of Nigeria and similar finding for the case of African region by Khan and Reinhart (1990).

Table 1: Descriptive statistics and correlation matrix of the variables

Variables	GDP	TOR	EN	GFC
Mean	3.505265	8.800605	2.560189	10.23653
Median	3.523600	8.747400	2.621200	10.14795
Maximum	4.058600	10.36380	2.804400	11.81220
Minimum	3.130900	7.397900	2.120200	8.982500
Std. dev.	0.240866	0.711148	0.183008	0.749912
Skewness	0.347165	0.398333	-1.157783	0.426353
Kurtosis	2.282860	2.612611	3.206868	2.596076
Jarque-Bera	4.566762	3.596750	24.77128	4.080364
Probability	0.101939	0.165568	0.000004	0.130005

Authors calculations

Table 2: correlation matrix of the variables included in our analysis

GDP	1.			
TOR	0.562277	1.000000		
EN	0.647186	0.824136	1.000000	
GFC	0.318719	0.687054	0.254144	1.000000

Authors calculations

Table 3: Unit root tests

Variables	GDP	ΔGDP	TOR	ΔTOR	EN	Δ EN	GFC	Δ GFC
Null: Unit root (assumes common unit root process)								
Levin, lin& Chu t	0.282	0.000	0.344	0.000	0.019	0.000	0.771	0.000
Breitung t-stat	0.054	0.000	0.427	0.000	0.714	0.000	0.586	0.000
Null:Unit root (assumes individual unit root process)								
Im,Pesaran& shin W	0.354	0.000	0.533	0.000	0.061	0.000	0.939	0.000
ADF - Fisher Chi-square	0.335	0.013	0.393	0.000	0.087	0.000	0.951	0.000
PP-Fisher Chi-sq.	0.968	0.033	0.387	0.000	0.028	0.0000	0.933	0.000

Authors calculations

Table 4: Pedroni cointegration tests

Alternative hypothesis: common AR coefs.(within dimension)	Prob.	Weighted prob.
panel v-statistics	0.000	0.000
panel rho-statistics	0.468	0.382
panel PP-statistics	0.021	0.003
panel ADF-statistics	0.020	0.003
Alternative hypothesis: common AR coefs.(within dimension)	Prob.	Weighted prob.
Group rho-statistics	0.779	0.25
Group PP-statistics	0.033	0.03
Group ADF-statistics	0.029	0.02

Authors calculations

Table 5: **Kao`s cointegration test**

	t-statsitics	Probability
	-3.633	0.000

Authors calculations

Table6: Panel Fully Modified OLS long-run estimates

Variables	Coefficients	t-statistics	prob.
TOR	0.167	9.62	0.00
EN	O.629	12.00	0.00
GCF	0.045	2.71	0.00

V. CONCLUSIONS AND POLICY IMPLICATIONS

The aim of present study is to analyze the effect of selected macroeconomic variables such as tourism receipts, EC and GFC on gross domestic product for the selected SA economies for the period 1995 to 2016. The study drew few important insights for policy makers. Over the past few decades governments have realized the importance of tourism sector activities to economic growth. South Asian countries are rich in terms of natural sources and thus they are potential source of tourism receipts, if policy makers focus on tourism sector and related sector on priority basis. We have observed from the empirical results that tourism activities are positively associated with gross domestic product in the selected countries. Our study supports the tourism led growth hypothesis. In the present era energy consumption has become a lifeline of any economy. Energy consumption is also positively associated with GDP as well as GFCF is also positively influencing gross domestic product. Thus, it is important to invest in tourism sector in the selected countries to promote sustainable economic growth.

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