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Revisiting the Tourism-Led-Growth Hypothesis: Fresh Evidence From the World's Top Ten Tourist Destinations

Isiaka Akande Raifu[1,2], Joshua Adeyemi Afolabi[3] [a]

[1] Department of Economics, University of Ibadan, Nigeria, [2] Research, Centre for the Study of the Economies of Africa, Nigeria, [3] Innovation and Technology Policy Department, Nigerian Institute of Social and Economic Research, Nigeria

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This study examines whether structural breaks matter in the tourism-growth nexus. We estimated annual and quarterly data for the world's top 10 tourism destinations between 1995 and 2020 using the structural break, Fixed Effects and Feasible Generalised Least Square (FGLS) approaches. This study provides evidence of structural fractures in the relationship between tourism (in the lead) and economic growth.

I. Introduction

Since Balaguer & Cantavella-Jorda's (2002) publication, the tourism-led-growth hypothesis (TLGH) has been the subject of research in the tourism literature. The core tenet of TLGH is that the tourism sector has the potential to significantly contribute to economic growth through a variety of channels, including foreign exchange earnings, infrastructure investments, development of physical and human capital, creation of jobs, emergence of new small businesses, and higher wages for employees within the sector and other related industries (Brida et al., 2016). Given these channels, causality and effect analyses have mainly been used to investigate the tourism-growth nexus.

Researchers have attempted to provide answers to the following queries regarding the relationship between tourism and economic growth: Does the expansion of tourism contribute to economic growth? Does economic growth expand tourism? Is there a two-way relationship between tourism development and economic growth? (Brida et al., 2016). Different estimation methods, starting with the Granger-non-causality method, have been used to address these concerns, but the empirical findings seem to be inconclusive. Some researchers have found a unidirectional nexus connecting tourism to economic growth (Brida et al., 2015; Isik et al., 2018; Wu & Wu, 2019). Others have demonstrated that the causal chain flows from economic growth to tourism (Adnan Hye & Ali Khan, 2013; Suryandaru, 2020). Additionally, some studies have shown a bidirectional causal association between tourism and economic growth (see Brida et al., 2016; Fonseca & Sánchez-Rivero, 2020).

Several studies have examined the TLGH from the perspective of impact analysis. However, the results of the effect analysis are as inconclusive as the investigations of causal relations. However, it appears that the literature is mostly in favour of the positive impact of tourism on economic growth (for a review of the literature on the TLGH, see Gwenhure & Odhiambo, 2018; Nunkoo et al., 2020). The level of economic development, size of the country or countries being studied, specialisation level of countries in tourism, proliferation of different methodological approaches, and selection of variables to proxy tourism and economic growth are factors contributing to the mixed findings regarding the causal-effect analyses of the TGLH (see Nunkoo et al., 2020).

Additionally, natural disasters (earthquakes, hurricanes, tsunamis, volcanic eruptions, etc.), environmental pollution, economic and political crises (economic recession and political instability), and the emergence of diseases (Asian Flu, Spanish Flu, Ebola, COVID-19 and HIV) can have an impact on the tourism-growth nexus, resulting in instability and structural change over time (Romão et al., 2016). Failure to account for the structural changes could lead to estimation bias, erroneous findings, and subpar policy decisions (Ditzen et al., 2021). To explore the structural relationship between tourism and economic growth and assess the impact of tourism on economic growth along the detected structural breaks, we revisited the TLGH. Our null hypothesis is that the tourism-growth nexus is subject to structural breaks, and it is tested using the unique structural break detection technique developed by Ditzen et al. (2021) for both time-series and panel data analyses.

Based on The United Nations World Tourism Organisation for 2018, we used statistics from the top 10 tourism destinations in the world, including China, France, Germany, Italy, Mexico, Spain, Thailand, Turkey, the United Kingdom, and the United States of America. The countries

a Corresponding author email: joshuaaafolabi@gmail.com

Table 1. Descriptive Statistics

Variables	Obs	Mean	Std.Dev.	Min	Max	Skew.	Kurt.
Real GDP (US$ Million)	260	3550000	4730000	202739	2.00e+07	2.109	6.205
Real GDP per Capita (US$)	260	25060.95	16583.04	1520.027	60836.77	0.126	1.744
Tourist Arrivals (Million)	260	76.788	56.943	6.952	217.877	0.78	2.561

Table 1 reports the mean, standard deviation, minimum, maximum, skewness and kurtosis values of key variables of interest for the sampled period

were selected because of their highly developed tourism sector, which makes them the choicest tourism destinations, and their sustained economic growth. We used both annual and quarterly panel data for robustness and to determine whether data frequency affects the ability to detect structural changes in the relationship between tourism and economic growth. Fixed Effects (FE) that account for year and country effects and Feasible Generalised Least Squares (FGLS) are used to examine the effect of tourism along the identified structural breaks.

After this introductory section, section II presents the methodology and data sources. Section III presents empirical findings while section IV provides the concluding remarks.

II. Methodology and Data Sources

We follow the methodological approach of Ditzen et al. (2021), applied by Karavias et al. (2023), to detect structural breaks in the tourism-growth nexus in the world's top ten tourist destinations and to estimate the effect of tourism on economic growth. We assume a linear model with N units, T periods and a structural break, s , specified as follows:

$$y_{it} = x_{it}^{'}\alpha_i + \varepsilon_{it} \tag{1}$$

Where y denotes economic growth, x denotes tourism, $x = T_{i-1}, \ldots, T_t$ and $i = i, \ldots, s+1$ with $T = 0$ and $T_{S-1} = T$. We could have an s break (regime) or $s+1$ breaks (regimes) with the regime i. The regime i covers the observations $T_{i-1}, \ldots, T_i$. The regime-wise structural break for equation 1 can be written as:

$$\begin{aligned} y_{it} &= x_{it}^{'}\alpha_1 + \varepsilon_{it} \text{ for } t = T_0, \ldots, T_1, \\ y_{it} &= x_{it}^{'}\alpha_2 + \varepsilon_{it} \text{ for } t = T_1, \ldots, T_2, \\ &\vdots \\ y_{it} &= x_{it}^{'}\alpha_{s+1} + \varepsilon_{it} \text{ for } t = T_s, \ldots, T_{s+1} \end{aligned} \tag{2}$$

To detect the structural breaks in equation 1, we applied Ditzen et al.'s (2021) structural breaks method. Also, to estimate the coefficients of each detected break in equation 1, we applied fixed effects and FGLS. FGLS is superior to fixed effects because it addresses the issues of heteroskedasticity, autocorrelation, and cross-sectional dependence in the estimation (Bai et al., 2021).

Annual and quarterly data covering 1995-2020 real GDP, real GDP per capita, and tourism arrivals were obtained from the World Development Indicators for the world's top ten tourist destinations. Economic growth is proxied by real GDP and GDP per capita, and tourism is represented by tourist arrivals. The descriptive statistics of the variables, reported in Table 1, shows that the real GDP of the sampled countries averaged about US$3.6 trillion with US$202.7 billion and US$20 trillion as the lowest and highest real GDP, respectively. Similarly, the average real GDP per capita of these countries is about US$25,061. These countries also attract as high as 217.9 million tourists annually. Thus, apart from being the top tourism destinations globally, the sampled countries are also high-income countries. Their high income could enable huge investments in the tourism sector that would be highly attractive to tourists.

III. Main Results

After verifying the stationarity properties of the variables, we checked for annual structural breaks (see Table 2), which show that while the tourism-real GDP model has two break dates (2005 and 2012), the tourism-real GDP per capita model has one break date (2008). However, the results of the quarterly data reveal that both the tourism-real GDP and real GDP per capita models have three and two break dates, respectively. The observed structural breaks in 2000 and 2005 have been attributed to the significant increase in the purchasing power in developed and emerging countries, which stimulated inbound tourism growth (World Travel Trends Report, 2008). The 2008 and 2012 structural breaks have been attributed to the rebound of world tourism following the global financial crisis of 2008 and 2009, which lowered global purchasing power and discouraged international travel (World Trade Organization, 2012). Overall, the structural break test shows that irrespective of the data frequency, the tourism-real GDP and real GDP per capita models have multiple break dates. Therefore, we estimated the coefficients of tourism on economic growth along the identified structural breaks.

Based on the structural break test results, we estimated the effect of tourism arrivals on economic growth along the identified structural breaks for annual and quarterly data using the fixed effect and FGLS estimation methods (see Table 3). Generally, there are variations in the estimated coefficients of the impact of tourism arrivals on economic growth (either captured by real GDP or real GDP per capita) along the identified structural breaks or regimes. Nevertheless, our findings from annual and quarterly data support the TLGH, implying that tourism development contributes substantially to the observed economic growth in the sampled countries. Specifically, the fixed effect results for annual data show that real GDP and real GDP per capita will grow by about 0.3 percent following a one percent increase in tourist arrivals. Similarly, the FGLS estimates show that an increase in tourism arrival by one percent spurs eco-

Table 2. Break Dates

No. of Breaks	Real GDP		Real GDP per Capita	
		Annual Data		
	Date	Conf. Interval	Date	Conf. Interval
1	2005	2003	2008	2006-2010
2	2012	2010		
		Quarterly Data		
1	2000Q4	2000Q2-2001Q2	2005Q4	2005Q2-2006Q2
2	2005Q4	2005Q1-2006Q3	2012Q4	2011Q4-2013Q4
3	2013Q1	2012Q3-2013Q3		

Table 2 reports the structural break dates of the using annual and quarterly data series of real GDP and real GDP per capita. The confidence interval is evaluated at 5%.

nomic growth by about 0.1 percent. These results suggest that economic growth is positively responsive to changes in tourist arrivals, which is consistent with earlier studies (Gwenhure & Odhiambo, 2018; Nunkoo et al., 2020). The results also suggest that the tourism sector is a critical growth driver. Generally, countries with a highly developed tourism sector tend to have high and sustained economic growth. Interestingly, the results from the model estimation using quarterly data series appear analogous to the results from annual data series. Essentially, the results provide overwhelming evidence that tourism arrival is a major determinant of economic growth across the ten countries. In sum, irrespective of the measures of economic growth (real GDP and real GDP per capita), the results generally show that tourism arrivals have the same effect on economic growth. This indicates that the choice of economic growth indicator does not influence the evaluation of the TLGH's validity in the world's top ten tourist destinations.

IV. Conclusion

The validity of the TGLH has been extensively tested in both time-series and panel studies but with inconclusive findings. This study revisits the TGLH using Ditzen et al.'s (2021) structural break method to test for the existence of structural breaks in the tourism-growth nexus and to estimate the effect of tourism arrivals on economic growth along the identified structural breaks in the world's top ten tourist destinations. The results confirm the existence of structural breaks in the nexus, irrespective of the indicator used to proxy economic growth, and further supports the TLGH in the presence of structural breaks.

These findings imply that the government, policymakers, and other stakeholders in the sampled countries need to devise pragmatic approaches that would make their respective tourism sectors more competitive by attracting more international tourists. Additionally, the present efforts at attracting international tourists need to be intensified and new tourism-promoting policies need to be formulated and implemented to promote tourism development. While this study found evidence to support considering structural breaks in testing the TGLH, future studies can investigate other factors that can drive the structural breaks between tourism and economic growth across economic regions globally.

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Table 3. Fixed Effects and FGLS Results along Structural Breaks

	FIXED EFFECTS	FGLS	FIXED EFFECTS	FGLS
Dependent Variable	**Real GDP**		**Real GDP per Capita**	
		Annual Data		
Tourist Arrivals (NR)	0.228***	0.078***	0.221***	0.082***
	(0.049)	(0.009)	(0.047)	(0.008)
Tourist Arrivals (R1)	0.254***	0.08***	0.258***	0.079***
	(0.06)	(0.009)	(0.062)	(0.008)
Tourist Arrivals (R2)	0.278***	0.08***		
	(0.07)	(0.009)		
Constant	23.915***	26.897***	5.67***	8.714***
	(0.856)	(0.198)	(0.825)	(0.166)
Observations	260	260	260	260
R-squared	0.616		0.493	
Country Dummies	YES		YES	
Year Dummies	YES		YES	
		Quarterly Data		
Tourist Arrivals (NR)	0.221***	0.041***	0.216***	0.039***
	(0.023)	(0.003)	(0.022)	(0.002)
Tourist Arrivals (R1)	0.234***	0.041***	0.233***	0.039***
	(0.026)	(0.003)	(0.027)	(0.002)
Tourist Arrivals (R2)	0.253***	0.042***	0.257***	0.039***
	(0.028)	(0.003)	(0.031)	(0.002)
Tourist Arrivals (R3)	0.275***	0.042***		
	(0.032)	(0.003)		
Constant	24.033***	26.922***	5.738***	7.286***
	(0.41)	(0.073)	(0.388)	(0.224)
Observations	1040	1040	1040	1040
R-squared	0.619	.	0.497	
Country Dummies	YES		YES	
Year Dummies	YES		YES	

Table 3 reports the Fixed Effects and FGLS results showing the estimates of tourism arrival across different structural break dates for the annual (upper part) and quarterly (lower part) data series. NR is the main coefficient while R1, R2 and R3 are the break coefficients. Standard errors are in parentheses while $^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

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