

# TOURISM AND ECONOMIC GROWTH NEXUS IN TANZANIA: ANALYSIS USING AUTOREGRESSIVE DISTRIBUTED LAG (ARDL) MODEL

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## Abstract

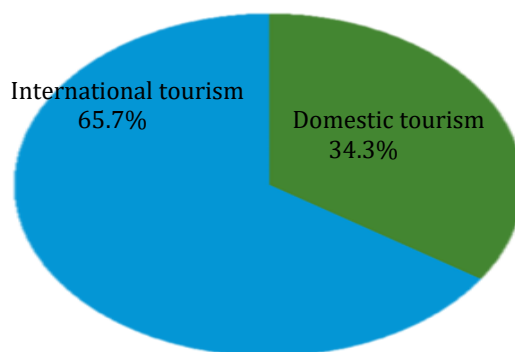
This study examined the cause and effect relationship between tourism and economic growth in Tanzania, where tourism is considered as an important sector of economic growth. The enquiry based on Tourism Led Growth (TLGH) hypothesis which claim that, more resources are to be allocated to tourism relative to other sectors because of its cross cutting effect on economic growth. However, for the purpose of analysis; tourism has been divided into two categories (i.e. domestic and international tourism). Employed data are purely secondary, obtained from International Monetary Fund(IMF) and the World Development Indicators(WDI) database. The bounds test (ARDL) and the error correction model were applied for co-integration and causality test using annual time series data (1995- 2020). Data analysis was done through E-views version eleven. Results show that variables being investigated are co-integrated. Moreover, the findings obtained reveals presence of unidirectional causality in long run as well as in the short run. The error correction term is significant and negative as expected, this scenario confirms the long run relationship between tourism and economic growth. However, results failed to validate, the Tourism Led Growth(TLGH) hypothesis in the Tanzania context.

**Keywords:** Co integration, causality, GDP growth, Tanzania.

## INTRODUCTION

Tourism is an important economic aspect in today's globalized world. It is considered as a powerful vehicle for economic growth along with job creation all over the world (Christie et al., 2020). Report of World Tourism Organization show 8.8 trillion U. S dollars was contributed by the travel and tourism sector in the world economy in 2018 equivalent to 10.4% of the World's GDP growing at 3.9% faster than the global economy's growth rate (Godara et al., 2020 and Kinyondo & Pelizzo, 2020). In Tanzania, tourism is the second sector after manufacturing in terms of the contribution it offers. It is the sector with growth prospect for enhancing export earnings given low outputs from agriculture(Kweka et al., 2003). The sector contributes about 18% to the Country's Gross Domestic Product (GDP) and 30% of export earnings while accounting about 10.9% of total employment and 9.5% of total investments (Anderson, 2014) and (Kinyondo & Pelizzo, 2020). Figure 1 below portrays percentage share of domestic and international tourism consumption in Tanzania during 1995 to 2020.

Figure 1: Domestic and international tourism in Tanzania (1995-2020)



Source: <https://knoema.com/user/7266160>

Several empirical literatures such as (Anderson, 2014; Rasool & Maqbool, 2021; Su et al., 2021) and (Satrovic et al., 2020) examined the connection between tourism and economic growth. Nevertheless, the debate is inconclusive on whether tourism – led growth hypothesis is also valid in Tanzania because most of past studies are from developed economies with only limited investigations from developing countries (Kyara et al., 2021; Satrovic et al., 2021). Results obtained in developed world does not mean will also apply for Tanzania. Therefore, the current study expected to fill the knowledge gap in Tanzania context with regard to the causal connection between tourism and economic growth.

## 2. LITERATURE REVIEW

Empirical literatures on tourism and economic growth are enormous. Scholars from different countries have researched on the causality relationship between tourism and GDP growth with varying samples, approaches as well as the methods of investigation. For instance, while (Brida et al., 2008; Del P. Pablo-Romero & Molina, 2013; Jayathilake, 2013; Kyara et al., 2021; Rasool & Maqbool, 2021; Tang & Abosedra, 2013) supports the Tourism Led Growth (TLGH) hypothesis; (Chingarande & Saayman, 2018), Satrovic et al., (2021) and Menyari (2013) are against. They argue that, tourism led growth hypothesis is valid to some economies but not to all countries. Jayathilake in Sri Lanka did a study based on Johansen’s co-integration test and concluded that, tourism development influences economic growth in long run. His conclusion was “tourism has a positive impacts on economic growth in developing countries” (Jayathilake, 2013). In BRICS countries (Brazil, Russia, India, China and South Africa) when inbound tourism, financial development and economic growth were examined using panel data, findings confirmed existence of bi-directional causal relationship between tourism and economic growth (Rasool & Maqbool, 2021). Louail (2020) studied the relationship between international tourism, the real exchange rate and economic growth in Algeria by means of ARDL model during 1995-2017. Results revealed unidirectional relationship from international tourism to economic growth in long run. Likewise, Odhiambo (2011) investigated on the causality relationship between international tourism and economic growth using “ARDL – Bounds test approach from 1980 to 2008” and he concluded that, though in short run tourism development and economic growth show bidirectional relationship; in long run it is the economic growth that drives tourism development in Tanzania. Whereas, the findings of Kyara et al (2021) in Tanzania shows unidirectional relationship from tourism to economic growth in long run. Similarly, Rasool & Maqbool (2021) and Kibara et al (2012) in their respective studies, results declared existence of unidirectional causality from inbound tourism to economic growth. Equally, Shakouri et al., (2017) assessed the long-run and short-run relationships between international tourism and economic growth in Iran using structural breaks, Bayer and Hanks co-integration test and the ARDL Bounds test. In their findings, they concluded that, inbound tourism Granger cause economic growth. Also, Tang & Abosedra (2013) in Lebanon validated the tourism-led growth hypothesis in the long run.

Çağlayan et al., (2012) did their study that involved 135 countries which were divided into eleven (11) groups to study the relationship between tourism and economic growth from 1995 to 2008. Results showed long run bidirectional causality between foreign tourism income and GDP in Europe countries while in America, Latin America, the Caribbean and the World as a whole, results revealed unidirectional causality running from GDP to tourism. However, for South Asia, East Asia and Oceania, results for causality test supported the Tourism Led Growth Hypothesis but, no causality were found in countries of Middle East and North Africa; Central Asia and in sub-Saharan Africa and Asia. Therefore, in response to inconclusive debate even in same country as observed in the reviewed literature, this study seeks to examine causal relationship between tourism and economic growth in Tanzania context to advance knowledge in the field of enquiry.

## 3. METHODOLOGY

Annual time series data 1995-2020 were used to analyze relationship amongst variables.

**Table 1: Data source and Measurements**

Variables	Means of measurement	Data source
Domestic tourism	% of whole economy GDP	World Travel and Tourism Council
International tourism	% of exports	World Travel and Tourism Council
Economic growth	constant prices ( % change)	International Monetary Fund

Source: Africa: IMF World Economic Outlook (WEO), April 2021

WTTC, June 2019 & Worlds Development Indicators(WDI)

### 3.1 ARDL Bound Test for Co-integration

In order to empirically examine long-run equilibrium and short run dynamics amongst variables being studied (i.e. GDP growth, domestic tourism and international tourism). Autoregressive Distributed lag (ARDL) method is employed. The method not only is appropriate but also efficient for small and finite sample size. Study model expressed in equation 1,2 and 3 in sub section 3.1.1. Domestic and international tourism variables are in logarithm (log) form. GDP stands for economic growth while variables; 'dotour' and 'intertour' represents domestic and international tourism respectively; 'D' is the first difference symbol, 't' denotes time, letters 'p' and 'q' are the appropriate lags for dependent and independent variables, ln(.) is the logarithm operator and 'E<sub>t</sub>' is residual term.

Model Hypotheses: (i) H<sub>0</sub>:  $\beta_{1i} = \beta_{2i} = \beta_{3i} = 0$ , (where, i = 1,2, 3)

(ii) H<sub>1</sub>:  $\beta_{1i} \neq \beta_{2i} \neq \beta_{3i} \neq 0$

#### 3.1.1 Model of study

$$D(\text{gdp})_t = \alpha_{01} + \beta_{11}(\text{gdp})_{t-i} + \beta_{21}\ln(\text{dotour})_{t-i} + \beta_{31}\ln(\text{intertour})_{t-i} + \sum_{i=1}^p \alpha_{1i} D(\text{gdp})_{t-i} + \sum_{i=1}^{q_1} \alpha_{2i} D(\ln(\text{dotour})_{t-i}) + \sum_{i=1}^{q_2} \alpha_{3i} D(\ln(\text{intertour})_{t-i}) + \varepsilon_{1t} \dots (1)$$

$$D(\ln(\text{dotour})_t) = \alpha_{02} + \beta_{12}\ln(\text{dotour})_{t-i} + \beta_{22}(\text{gdp})_{t-i} + \beta_{32}\ln(\text{intertour})_{t-i} + \sum_{i=1}^p \alpha_{1i} D(\ln(\text{dotour})_{t-i}) + \sum_{i=1}^{q_1} \alpha_{2i} D(\text{gdp})_{t-i} + \sum_{i=1}^{q_2} \alpha_{3i} D(\ln(\text{intertour})_{t-i}) + \varepsilon_{2t} \dots (2)$$

$$D(\ln(\text{intertour})_t) = \alpha_{03} + \beta_{13}\ln(\text{intertour})_{t-i} + \beta_{23}\ln(\text{dotour})_{t-i} + \beta_{33}(\text{gdp})_{t-i} + \sum_{i=1}^p \alpha_{1i} D(\ln(\text{intertour})_{t-i}) + \sum_{i=1}^{q_1} \alpha_{2i} D(\ln(\text{dotour})_{t-i}) + \sum_{i=1}^{q_2} \alpha_{3i} D(\text{gdp})_{t-i} + \varepsilon_{3t} \dots (3)$$

The bounds test model is based on joint F- statistic with asymptotic nature when the null hypothesis is non-standard (see Belloumi, 2014). All estimations computed via e-views version 11. If the F- statistic is greater than the upper bound value, null hypothesis is rejected and vice versa. However, if F-statistic value is in between the lower and the upper critical bounds of the F-statistic test results; the test is said to be inconclusive. Computed co-integration results are reported in table 4 of this study.

#### 3.1.2 Specification of the error correction model (ECM)

Since co-integration has been confirmed in table 4 when international tourism is dependent variable. Then, the error correction model is as expressed in equation 4:

$$D(\ln(\text{intertour})_t) = \alpha_{04} + \sum_{i=1}^p \alpha_{1i} D(\ln(\text{intertour})_{t-i}) + \sum_{i=1}^{q_1} \alpha_{2i} D(\ln(\text{dotour})_{t-i}) + \sum_{i=1}^{q_2} \alpha_{3i} D(\text{gdp})_{t-i} + \delta \text{ECM} + \varepsilon_{4t} \dots (4)$$

All other variables are as defined in section 3.1 except for 'δ' which denotes the coefficient of the error correction term (ECM). Results of the error correction model are in table 6.

#### 3.1.3 Granger causality test in both short and long run

Granger causality tests estimates explained in the results and discussion section. The estimations are based on the Akaike information criterion (AIC) using ARDL (0, 2,1). In principle, co-integration, "implies that there must be causality of some direction", but, does not reveal the direction of causality (Menegaki, 2019). Therefore, further analysis for causality is inevitable to know the direction. However, there was no co-integration in equation 1 and 2 (see co-integration results in table 4).

## 4. RESULTS AND DISCUSSION

The aim of this study was to analyze the causal relationship between tourism and economic growth in Tanzania. In order to ensure no variable integrated at I (2), Augmented Dickey Fuller and Phillips- Perron unit root stationarity methods were chosen and worked out. Results of stationarity test in table 2 & 3 indicate all variables integrated at I (1).

**Table 2: Augmented Dickey-Fuller stationarity test results  
(at 5 % level of significance)**

Variables	Order integrated	ADF test Statistic	Prob. (P-values)	Results
gdp	At level	-3.039634	0.0448	Non stationary

Indotour	At level	-1.712672	0.4130	Non stationary
lnintertour	At level	-2.561621	0.2989	Non stationary
gdp	1st difference	-6.152084	0.0000	Stationary
Indotour	1st difference	-3.845250	0.0078	Stationary
lnintertour	1st difference	-6.404869	0.0001	Stationary

Source: Author's computation via E-views 11

**Table 3: Phillips-Perron stationarity test results**  
(at 5 % level of significance)

Variables	Order integrated	Phillips-Perron test Statistic	Prob. (P-values)	Results
gdp	At level	-3.039634	0.0448	Non stationary
Indotour	At level	-1.969022	0.2976	Non stationary
lnintertour	At level	-2.491576	0.3289	Non stationary
gdp	1st difference	-6.225655	0.0000	Stationary
Indotour	1st difference	-3.845250	0.0078	Stationary
lnintertour	1st difference	-11.79028	0.0000	Stationary

Source: Author's computation via E-views 11

**Table 4: Long run ARDL Bounds test (co-integration test) results**

The results portrayed in this table are based on ARDL Bounds test (vector model) as expressed in the three equations (i.e. equation 1, 2 and 3) in sub section 3.1.1

Dependent Variable (in log form)	Critical values at 5%		F-Statistic	Results
	Lower Bound I(0)	Upper Bound I(1)		
Economic growth(GDP)	3.79	4.85	3.021707	No co-integration
Domestic tourism (dotour)	3.79	4.85	1.092425	No co-integration
International tourism (intertour)	3.79	4.85	5.250575	Co-integrated

Source: Author's computation via E-views 11

**Note:** The Lag length used to all three equations is 1 (Akaike information criterion(AIC))

**Table 5: Results for long run model estimates**

Dependent Variable: LNINTERTOURE  
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.715000	0.458039	3.744220	0.0012
LNINTERTOURE(-1)	0.452178	0.133341	3.391135	0.0028
LNDOTOUR(-1)	0.647179	0.239162	2.706028	0.0132
GDP(-1)	-0.055223	0.019608	-2.816412	0.0103
R-squared	0.696673	Mean dependent variable		3.308586
Adjusted R-squared	0.653341	S.D. dependent variable		0.190593
S.E. of regression	0.112217	Akaike info criterion		-1.391124
Sum squared residual	0.264444	Schwarz criterion		-1.196104
F-statistic	16.07743	Durbin-Watson statistic		2.270467

Source: Author's computation via E-views 11

**Table 6: Error Correction Model(ECM)results**

Dependent Variable: D(LNINTERTOURE)

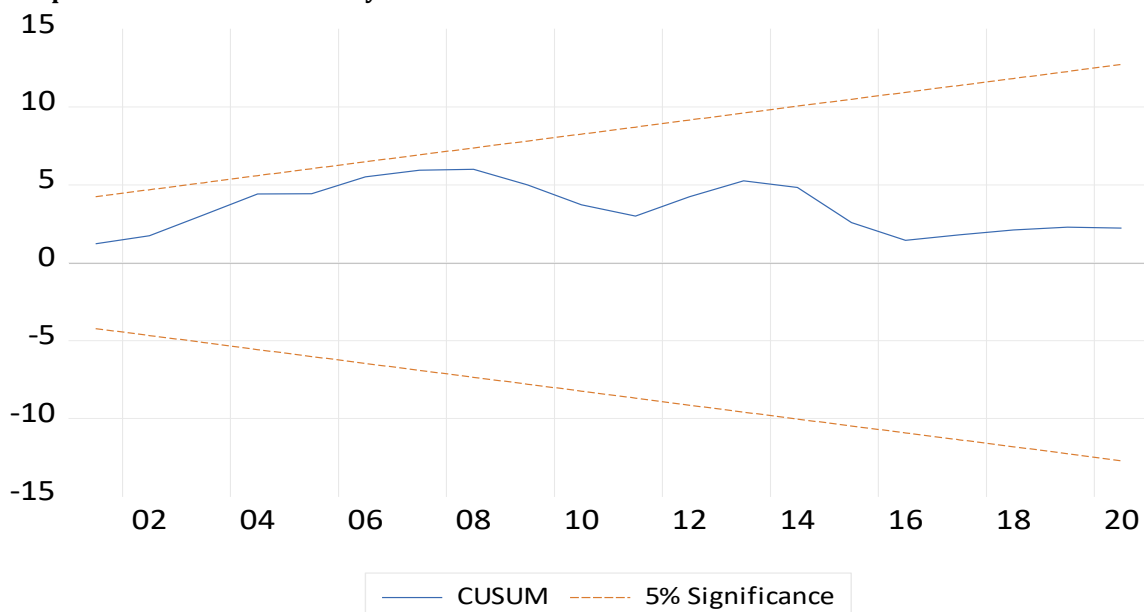
Method: Least Squares

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNINTERTOUR(-1))	0.583539	0.221381	2.635910	0.0158
D(LNDOTOUR(-1))	0.054222	0.325825	0.166415	0.8695
D(GDP(-1))	-0.055427	0.015900	-3.485989	0.0023
ECM(-1)	-1.310621	0.299140	-4.381304	0.0003
R-squared	0.578950	Mean dependent variable		-0.013323
Adjusted R-squared	0.515792	S.D. dependent variable		0.146220
S.E. of regression	0.101747	Akaike info criterion		-1.581642
Durbin-Watson statistic	1.735130			

Source: Author's computation via E-views 11

Economic growth (GDP) and domestic tourism in long run as reported in table 5 are statistically significant at 5% level of significant. However, GDP and international tourism are negatively related while domestic and international tourism are positively related. The error correction model estimates reported in table 6 reveals unidirectional causality running from GDP → international tourism. This applies irrespective of whether the causality is estimated in the short run or in the long run. The long run causality is confirmed by the lagged error correction model (ECM (-1)) in the international tourism equation (lnintertour), which is negative as expected and statistically significant (see table 6). Furthermore, in an event of a shock the speed of adjustment towards equilibrium is 131% On top of that, the analyzed model passed all diagnostic tests (i.e. serial correlation test, normality and heteroscedasticity). Breusch-Godfrey serial correlation LM test with a p - value of 0.2663 confirm the model is free from serial correlation. Likewise, the Breusch-Pagan-Godfrey p-value of 0.2194 implies that the model is not suffering from heteroscedasticity problem. Figure 2 and graph 1 shows results of the normality and stability test respectively. The probability value of 0.605752 obtained from data analysis shows that, the time series data used in the study are normally distributed. CUSUM graph which lies within 5% boundaries in graph 1 confirm about the stability of the model.

**Graph 1: CUSUM Model Stability test**



Source: Author's computation via E-views 11



## 5. CONCLUSIONS

This study aimed at investigating the cause and effect relationship between tourism and economic growth in Tanzania. Annual time series data during 1995 - 2020 obtained from World Development Indicators(WDI) and International Monetary(IMF) database were employed to serve the purpose of the current study. ARDL Bounds tests model and Granger causality applied in analyzing co-integration and causal relationship among variables based on Tourism Led Growth (TLGH) hypothesis. The Error Correction Model(ECM) was specified and estimated when international tourism was a dependent variable. The model passed all diagnostic tests which entails Breusch-Godfrey serial correlation LM test, Breusch-Pagan-Godfrey heteroscedasticity test, normality test and CUSUM model stability test. It was found that in both short run and long run, economic growth(GDP) Granger cause international tourism (GDP → intertour). Similarly, in the long run domestic tourism Granger cause international tourism. The speed of convergence towards equilibrium is 131% in the event of shock. Therefore, the findings of this study suggests that, in Tanzania it is economic growth that predict international tourism progress and not vice versa. In that regards, the government of Tanzania ought to tailor its development policy in such a way that enhances economic growth to win the richness of the tourism industry in the country. However, further studies are to be carried out to understand the reason for negative relationship between the variables investigated. Finally, it can be concluded that, the findings failed to validate the Tourism Led Growth Hypothesis(TLGH) in the context of Tanzania. However, the findings agree with Odhiambo (2011), who in his study conducted more than ten years ago he also found that, in the long run, economic growth drives tourism development in Tanzania. But, why tourism led growth hypothesis (TLGH) not valid in Tanzania? This is another interesting area of study to explore in more depth about what is called tourism leakage in the country.

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