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Region DFR – A New Model to Identifying Loyal Tourists on the Destination

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**E-mail:** jemt@aserspublishing.eu

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Economic Growth, Agricultural Output and Tourism Development in Nigeria: An Application of the ARDL Bound Testing Approach

Adedoyin Isola LAWAL
Landmark University, Nigeria
lawal.adedoyin@lmu.edu.ng; adedoyinisola@gmail.com

Abiola John ASALEYE
Landmark University, Nigeria
abiola.asa@lmu.edu.ng

Joseph ISEOLORUNKANMI
Landmark University, Nigeria
Joe.iseolorunkanmi@lmu.edu.ng

Olabisis Rashidat POPOOLA
Covenant University, Nigeria
ola.bisi@covenantuniversity.edu.ng

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Introduction
In the recent, tourism is fast becoming a major global growth driven sector. This has motivated the government of various emerging economies to calibrate tourism into their future growth driven policies. For instance, the Nigerian government in the year 2004 to identified tourism development as key to achieving her objective of being one of the first largest economies by the year 2020. In the same vein, agricultural sector remains a major player in the non-oil sector of the Nigeria economy. The ability of tourism development and/or agricultural development to advance growth remains an inconclusive but interesting debate among scholars to influence economic growth in emerging economies has been a subject of hot discussion and remains inconclusive. Drawing from three tourism-
growth theories: tourism led growth theory; growth led tourism theory; tourism – growth neutrality theory; and one agriculture-growth nexus theory – agriculture overlapping theory, this study used the autoregressive distributed lag (ARDL) bound testing approach to examine whether or not cointegration exist among economic growth, agricultural output and tourism development in Nigeria. the study is set out to investigate what policy instrument is to be adjusted in order to promote economic growth, increase agricultural output as well as enhancing tourism development. We intend to know what policy instruments need to be manipulated so as to achieve economic growth, increase agricultural output and enhance tourism development. From the results, we could observed that a bi-cointegration run between economic growth and agricultural output as well as between economic growth and tourism. it is evidence that a two - way cointegration exists between economic growth and agricultural output on the one hand, and between economic growth and tourism development on the other hand. The study also noted the existence of significant long run linkages between agricultural output and tourism development. Observed that a compelling long run relationship exist between agricultural output and tourism development. To promoted growth, it is advisable that the government pursue to achieve sustainable economic growth, policy makers are advised to pursue heavy investment in the tourism industry, adopts improved farming strategies driven by simple technology among others.

1. Literature Review

Theoretical Foundations

Tourism - Growth Hypothesis

The theoretical note that described the linkage between growth and tourism can best be classified into three viz: Tourism – led growth; growth –led tourism; and tourism – growth neutrality theories. The tourism –led growth theory is an offshore of the export – led growth hypothesis of the classical economists (Perles-Ribes, Ramon-Rodriguez, Rubia and Moreno-Izquierdo 2017). The theory is premised on the fact that it is tourism that engenders growth (Antonakakis, Dragouni and Fillis 2015; Brida, Cortes-Jimenez and Pulina 2016; Cheam, Mahmood, Abdullah and Ong 2013; Chou 2013).

The proponents of the economic growth – tourism hypothesis are of the views that economic growth is what induces tourism development. This is premised on the fact that tourists, like other rent seeking economic agents are engender to economies with potential investment opportunities (Ohlan 2017; Tang 2011; Tang 2013; Tang and Tan 2013; 2015; Tang and Abosedra 2016; Tang, Tiwari and Shahbaz 2016; Sebri and Abid 2012).

The tourism – growth neutrality hypothesis proposed that the link between tourism and growth are at best described to be neutral, in other words, a zero-sum connection exists between the two are of the view that no relationship exist between tourism and growth. This hypothesis states that economic growth and tourism development independently evolve (Perles, Ramon, Rubia and Moreno 2016; Kadir and Karim 2012; Othman et al. 2012; Cheam et al. 2013; Tang and Jang 2009).

The theoretical notes connecting agriculture to growth can be found in agriculture overlapping theory which rely on Cobb-Douglas production function to explain the impact of labour, capital and land in increasing agricultural output needed to grow the economy (Collier and Dercon 2014; Dorosh and Thurlow 2013; Dorosh and Thurlow 2014; Dorosh and Thurlow 2016; Feng, Wang, Liu and Huang 2017; Hazell 2013; Inwood 2017; Yamaguchi and Kinugasa 2014; Streifeneder 2016).

Empirical literatures on the link between each of these constructs are best mixed and remain inconclusive. Table1 below presents a brief of some of the notable empirical works on the links between tourism and growth framework the summary of some empirical works on tourism-growth nexus, while Table 2 presents the summary of some empirical notes on agriculture-growth nexus. From the Tables, it is evidence that the discussion on the link among the variables remains inconclusive.
Table 1. A brief presentation of empirical works on Tourism – Growth framework Summary of Literature on Tourism - Growth hypothesis

<table>
<thead>
<tr>
<th>Authors</th>
<th>Period</th>
<th>Method used</th>
<th>Findings/ Direction of Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perles, Ramon, Rubia and Moreno, 2016</td>
<td>1980 – 2014</td>
<td>Unit root tests</td>
<td>TOUR ↔ EG</td>
</tr>
</tbody>
</table>

Source: Authors compilation 2018

Table 2. A brief presentation of empirical works on Summary of Literature on Agriculture - Growth hypothesis

<table>
<thead>
<tr>
<th>Authors</th>
<th>Period</th>
<th>Method used</th>
<th>Findings/ Direction of Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inwood (2017)</td>
<td>2012 Census</td>
<td>ANOVA</td>
<td>EG ↔ A</td>
</tr>
</tbody>
</table>

Source: Authors compilation 2018

2. Methodology

Data used in the study consist of annual data sourced from year 2000 to 2016. Data on tourism are sourced from World Tourism Council data base online, while data on economic growth and agricultural output were obtained from the publications of the Central Bank of Nigeria Statistical Bulletin (various issues). Equation (1) represents the economic growth-tourism-agricultural nexus.

RGDP=f (TOUR, AGRIC)          (1)

where RGDP represents economic growth is a proxy for economic growth, TOUR is a proxy for tourism development and AGRIC is a proxy for agricultural output.

The ARDL estimation techniques:

The current study employed the ARDL in preference to other cointegration techniques like Johansen 1991, Engle and Granger 1987, because: (i) it can be employed irrespective of the order of the regressor applied regardless of the order of the regressor; (ii) it is better off when the database is relatively small faced with small data size as currently experienced; (iii) it accommodates different optimal lag for the variables modeled allows variables to have different optimal lag; (iv) it employs a single reduced form equation for determining both long and short runs relationship among the variables (Asaleye et al. 2018; Oye et al. 2018; Babajide and Lawal 2016; Babajide, Lawal and Somoye 2015; Lawal, et al. 2016a; Lawal et al. 2016b).

The ARDL framework for the study is as follows:

1 It is the results of the unit root tests that determine whether or not ARDL will be used. The study employed a number of unit root test ADF, PP and Lee and Strazich test and observed that all the variables are stationary at integrated order 0 and 1. Results of the Unit root tests are available on demand.
\[ \Delta \ln \text{RGDP}_t = \beta_{01} + \sum_{i=1}^{n_1} \beta_{11} \Delta \ln \text{RGDP}_{t-i} + \sum_{i=0}^{n_2} \beta_{12} \Delta \ln \text{TOUR}_{t-i} + \sum_{i=0}^{n_3} \beta_{13} \Delta \text{AGRIC}_{t-i} + \phi_{11} \ln \text{RGDP}_{t-1} + \phi_{12} \ln \text{TOUR}_{t-1} + \phi_{13} \ln \text{AGRIC}_{t-1} + \epsilon_{t1} \]  

where, \( \ln \) represents the log of the variables Where \( \ln \) is the log of the variables, RGDP represents Real Gross Domestic Product, TOUR represents tourism development and AGRIC connotes agricultural output were as earlier defined, \( \Delta \) and \( \beta_{01} \) equals the first difference operator and the constant terms respectively, \( \beta_{11} \ldots \beta_{13} \) are the short run coefficients, \( \phi_{11} \ldots \phi_{13} \) represents the long run coefficients, \( n_1 \ldots n_3 \) represents the lag length while \( \epsilon_{t1} \) represents the white noise error terms. In order to test for the existence or otherwise of the short run \( \beta_1 \) and the long run \( \phi \), the authors formulated the H0 and H1 hypothesis as shown below.

**H0:** no short-run relationship  
\[
\beta_{11} = \beta_{12} = \beta_{13} = 0
\]

**H1:** a short-run relationship  
\[
\beta_{11} \neq \beta_{12} \neq \beta_{13} \neq 0
\]

\[
\phi_{11} = \phi_{12} = \phi_{13} = 0
\]

**H0:** no long-run relationship  
\[
\phi_{11} = \phi_{12} = \phi_{13} = 0
\]

**H1:** a long-run relationship  
\[
\phi_{11} \neq \phi_{12} \neq \phi_{13} \neq 0
\]

Deciding on either to reject or accept H0 (no co-integration among the variables) is based on the following criteria:
- If F-Statistics (F) > upper bond, then we reject H0, thus the variables are co-integrated;
- If F < lower bound, then we accept H0, thus we conclude that the variables are not co-integrated.
- But if F \( \geq \) lower bound and \( \leq \) Upper bound, under this condition, the decision is inconclusive (Lawal et al. 2016c; Lawal et al. 2017; Lawal et al. 2018).

### 3. Research Findings:

Table 3 presents the results of the long run relationship among the variables. In order to address the problem of endogeneity, we re-estimated each of the variables as independent variables. The results as shown in Table 3 shows that when we normalized the regression in the \( \ln \text{RGDP}, \ln \text{TOUR} \text{ and } \ln \text{AGRIC} \), evidence reveals that a significant long run relationship exist among the three constructs. A compelling long run relationship exists among the variables when the regression is normalized in the \( \ln \text{RGDP}, \ln \text{TOUR} \text{ and } \ln \text{AGRIC} \) implying that the variables are cointegrated.

**Table 3: F-Statistics for testing existence of a long run relationship among the variables**

<table>
<thead>
<tr>
<th>Model</th>
<th>F-statistic</th>
<th>Decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>( F_{\ln \text{RGDP}</td>
<td>(\ln \text{RGDP}, \ln \text{TOUR}, \ln \text{AGRIC})} )</td>
<td>4.2316*</td>
</tr>
<tr>
<td>( F_{\ln \text{TOUR}</td>
<td>(\ln \text{RGDP}, \ln \text{AGRIC})} )</td>
<td>5.3246*</td>
</tr>
<tr>
<td>( F_{\ln \text{AGRIC}</td>
<td>(\ln \text{AGRIC}, \ln \text{RGDP}, \ln \text{TOUR})} )</td>
<td>6.1103*</td>
</tr>
</tbody>
</table>

Source: Author’s Computation (2018)

The relevant critical value bounds presented in this table are obtained from Pesaran and Shin (1999), Pesaran et al. (2001). The Critical values for all the regressions with intercept and trends are 2.762 – 3.428 at 10% significance level and 3.084 – 4.219 at 5% significance level. *, ** denotes 5%, 10% significance levels respectively.
Having proved that the variables are cointegrated, we estimated the long run and short run ARDL model based on Schwartz Bayesian Criteria. The results are presented in Table 4. As shown in the Table, it is evidence both at the long run and short run that the connection between tourism and economic growth is positive and significant a positive and significant relationship exist both at long and short run between tourism and economic growth, as well as between tourism and agricultural output in the long run, though no relationship exist in the short run. Our findings further reveals that the connection between agriculture and economic growth is positive and significant. The result also show that a significant and positive relationship exist between agriculture and economic growth. The findings are in line with the findings of Kadir and Karim (2012); Tang and Tan (2013) but contradict Dorosh and Thurlow (2016) and Tang (2011).

Table 4. Estimated long –run and short run coefficients using the ardl selected based on schwarz bayesian criterion

<table>
<thead>
<tr>
<th>Regressors</th>
<th>InRGDP</th>
<th>InTOUR</th>
<th>InAGRIC</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LR</td>
<td>SR</td>
<td>LR</td>
</tr>
<tr>
<td>InRGDP</td>
<td>0.7108</td>
<td>[3.0805]**</td>
<td>0.3647</td>
</tr>
<tr>
<td>InTOUR</td>
<td>0.3506</td>
<td>[1.8703]**</td>
<td>0.0070</td>
</tr>
<tr>
<td>InAGRIC</td>
<td>0.32659</td>
<td>[3.7576]**</td>
<td>0.26570</td>
</tr>
<tr>
<td>Trend</td>
<td>0.0049</td>
<td>[0.8739]</td>
<td>0.0105</td>
</tr>
<tr>
<td>ECM (-1)</td>
<td>-0.5380</td>
<td>[-3.09]**</td>
<td>0.1348</td>
</tr>
</tbody>
</table>

Note: t-statistics are presented in squared brackets. Asterisks ***, **, * represents 1%, 5% and 10% significant levels respectively.
Source: Author’s Computation (2018) using Microfit 4.0

With respect to the magnitude of elasticity in the model, the result shows that the impact of tourism on RGDP in the long run is about 0.35 at 5% level of significance. The implication is that a 1% change in tourism will induce at least 35% changes in RGDP. On the degree of elasticity among the variables, the result shows that the long run impact of tourism on RGDP is about 0.35 and is statistically significant at 5% level. The implication is that a 1% change in tourism will lead to about 35% changes in RGDP in the same direction. The ECM term is negative and significant. From the result, it is evidence that the coefficient of the dependent variable (RGDP) is negative and significant at 1% when RGDP is the dependent variable, the coefficient is negative and significant at 1% level of significant with a speed of adjustment of 53.8%.

It is a common practice in literature, when using the ARDL model to test the long run coefficients with that of the short run (see Lawal et al. 2016; Babajide et al. 2015). The authors used the Cumulative Sum of Recursive Residuals (CUSUM) as well as the Cumulative Sum of Squares (CUSUMQ) to test the stability of our model. It is expected that for stability of model to be upheld, the plots of both CUSUM and CUSUMQ lies with the range of 5% significant level. Given this condition, we accept the null hypothesis that the coefficients of the error correction models are stable, otherwise we accept the alternative hypothesis that the model is not stable.
Conclusion
The study investigated the linkages among economic growth, tourism and agriculture with focus on Nigeria by employing the ARDL estimation techniques and observed that significantly, long run and short run linkages exist among the constructs, the relationship among economic growth, tourism and agriculture in Nigeria by employing the ARDL estimation techniques and observed that a compelling long run and short run relationship exist among the variables. This implies that each of tourism and agricultural output largely contributes to economic growth. Since Nigeria targets to be among the first twenty largest economies in the world by the year 2020, concerted effort should be made to expend the tourism industry; bottleneck militating investment in the tourism sector should be eliminated. Tourism incentive packages like easy tourist visa, tourism development fund to provide infrastructure in the tourists’ sites, promotion of security that guarantee safety of tourists among others should be pursued. In the same vein, policy makers should ensure that concerted effort is channel to the agricultural sector, food security agenda of the government should pursue with utmost tenacity. Credit facilities as well as Produce-buy-back guarantee scheme should be provided to farmers to boost their production capacity.

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References


