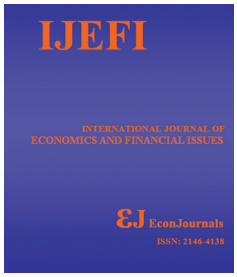

International Journal of Economics and Financial Issues

ISSN: 2146-4138

available at http: www.econjournals.com

International Journal of Economics and Financial Issues, 2020, 10(1), 180-185.

Tourism Led Growth Hypothesis: Has the Tourism Industry an Impact on the Economic Growth of Sao Tome and Principe?

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Received: 07 October 2019 **Accepted:** 13 December 2019 **DOI:** https://doi.org/10.32479/ijefi.9105

ABSTRACT

The importance of the tourism sector as an economic activity has increased the interest of researchers trying to understand the impact of tourism on economic growth. Therefore, the purpose of the present quantitative research is to analyze the relationship between tourism and economic growth in the case of Sao Tome and Principe (STP) employing the Tourism-led growth hypothesis over the period of 1997-2018, using time-series data of the following variables: gross domestic product (GDP), tourism receipts (TR), real exchange rate (EX), and foreign direct investment (FDI). To achieve the proposed objective, first, the unit root test was applied; the result indicated that all the 4 variables are stationary at first difference I(1), futher the Johansen for cointegration was tested and found cointegration of two-equation. The Granger causality approach was employed to enlighten the direction of causality between the variables. A unidirectional relationship was found between TR and GDP, also between FDI and all the other variables (GDP, TR, ER).

Keywords: Tourism, Economic Growth, Unit Root, Cointegration, Causality
JEL Classifications: C22, L83, O55

1. INTRODUCTION

Nowadays, tourism is one of the fast-growing economic activities; therefore it has aroused the interest of a growing number of scientific studies with the purpose of investigating the relationship between the tourism industry and the economic growth (Bassil et al., 2015; Balaguer and Cantavella-Jordà, 2002; Bento, 2016). Several studies postulate that the rapid spread of the tourism industry in the last decades had a positive snd significant impact on economic growth (Sharpley, 2009; Lashkarizadeh et al., 2012). Moreover, tourism contributes to the balance of payment, job-creation, and income-generation (Lickorish and Jenkins, 2000). The World Travel Tourism Council reported that the world travel tourism council (WTTC), tourism occupies an essential place in the world economy. In 2018 the contribution of tourism to the world economy stood at 10.4% of global GDP, a total of 8.8 trillion USD, with more than 319 million jobs (WTTC, 2019).

The importance of the tourism sector for economic growth has been highlighted by numerous scholars (Oh, 2005; Zuo and Huang, 2017). In this context, several studies postulated that the expansion of tourism contributes positively to economic growth, giving origin to Tourism-Led growth Hypothesis (TLGH), which advocates that the development of the tourism sector is a potential strategy to leverage the economy (Bassil et al., 2015). The empirical literature has extensively investigated the role of tourism in the process of economic development, resorting to a wide variety of methodologies to test the TLGH. From an empirical point of view, one of the pioneering studies of the relationship between tourism and economic growth was carried out by Lanza and Pigliaru with a sample of 143 countries observed during a period from 1985 to 1995, noted that the countries specialized in tourism had two main characteristics; were small countries and their per capita income grew rapidly (Lanza and Pigliaru, 2000). Before 2002, some researchers were already interested in studying the relationship

between tourism and economic development, nonetheless only in 2002 Balaguer and Cantavella-Jorda formally referred to the TLGH in an article published in Applied Economics Journal (Brida et al., 2016). This study later gave rise to a large number of publications to test the TLGH based on an econometric approach. TLGH becomes a significant research line in tourism economics (Perles et al., 2017).

In recent years Sao Tome and Principe (STP) have seen their tourist arrival increase significantly, thereby its effect on the economy became more evident, which justifies the growing interest that government entities have shown in stimulating this industry. Despite that, there is a lack of studies regarding the relationship between tourism and economic growth of this country. In this context, this research will test the TLGH in STP as follows:

The research is divided into six parts. The first section introduces and contextualizes the study also presents the research's objectives. The second section gives a brief presentation of STP with a focus on its tourism sector. The Review of literature to support this research is presented in the third section, followed by the fourth section that shows the methodology and the econometric model used in this study. In the fifth section, the results are presented and discussed. Finally, the last part gives a conclusion and some recommendations for this research and future studies.

2. STP TOURISM

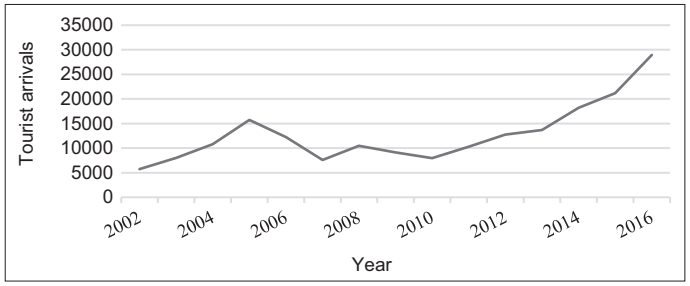
STP is a small west African country with a total of 1001 square kilometers of surface and a population of around 200.000 (INE, 2019). STP have several potentialities to develop and promote tourism based on its cultural and environmental characteristics. Thus it would help to reduce the effect of external dependence. (Loloum et al., 2010). However, tourism in STP has been facing numerous constraints affecting the growth of the industry; the rood network deficit, poor infrastructure, including port and airport (Laloum et al., 2010).

Although the government recognizes tourism as an essential sector for the economy of STP, there are some gaps in the official tourism statistic such as international arrivals, tourism receipts (TR), number, and type of accommodation.

The general direction for tourism in STP reported that between 2010 and 2016, the number of tourists visiting the destination went from 8 thousand to 29 thousand, an increase of 263%, as shown in Figure 1. The economic contribution of the tourism industry for 2016 represented 14% of the national GDP (DGTH, 2018). In 2017 the economic contribution of tourism to GDP stood at 24.3%, and the contribution to employment, as well as jobs indirectly supported by the industry, was 23.6% of total employment in other terms tourism industry provided 14,500 jobs (WTTC, 2018). In this context, tourism has been understood in STP, in a consensual way, as a priority sector for the development of the country.

Over the years, this country has been facing several socio-economic challenges, including unemployment, income and social inequality, poverty, and so forth. The African development Bank

Figure 1: Sao Tome and Principe International tourist arrivals



Source: General Direction for Tourism (2018)

reported that in 2018, the real GDP growth was 4.1%. However, the country was classified as being in debt distress with a total public debt of 51.7% of GDP and a current account deficit of about 6.7% of GDP (AfDB, 2019). To address the economic challenges the government is implementing some reforms with a focus on alternative sectors with significant economic impact. As previously stated, tourism is one of the sector highlighted by the government as an important contributor to economic growth and development of STP. Therefore, this research aims to study the relationship between tourism and economic growth of STP.

3. LITERATURE REVIEW

The literature seeks a theoretical basis to justify the relationship between the development of the tourism industry and economic growth. The study of this relationship is essential for policymakers in the less developed countries since tourism policies became one of their primary concern (Rout et al., 2018).

The purpose of this section is to review the most relevant literature for this research regarding TLGH. The TLGH derived from export-led growth hypothesis (ELGH), this hypothesis postulates that economic growth can be generated not only by an increase in the amount of labor and capital but also through an increase in export (Brida et al., 2013).

The increasing importance of tourism for the economy of several countries leads to the proliferation of empirical studies testing the economic impact of tourism (Song et al., 2012; Tabash, 2017). Tourism contributes to several economic sectors; it creates jobs, adds value, also plays a central role in compensating the balance-of-payments deficits and budget deficits (Oh, 2005). Besides, international tourism is one of the main sources of foreign exchange earnings in the economy (Ozturk and Acaravci, 2009; Ramphul, 2017). In the long-run, International tourism has a positive effect on the economy through the generation of employment, the rise in incomes, infrastructure development, and accumulation of human capital (Brida et al., 2010).

Over the years, numerous scholars developed studies testing TLGH. As mentioned before, pioneer research was carried out by Balaguer and Cantavella-Jordà in 2002. They applied a model with three-variable (the real gross domestic product [GDP], international tourism, and the real effective exchange rate) to test the TLGH for Spain in a period between 1975 and 1997. The econometric study showed that there is a long-run stable

relationship between economic growth and tourism expansion that means earning from international tourism affects the economic growth of Spain.

Afterward, in 2004, Dritsakis conducted a study testing the TLGH in Greece for a period between 1960 and 2000 by applying a Multivariate Auto-Regressive (VAR) model. The findings revealed the existence of a co-integration relationship among the variables, furthermore a Granger causality between international tourism, exchange rate, and economic growth. The results showed that tourism revenue and exchange rate have a positive effect economic on economic growth (Dritsakis, 2004).

Eugenio-Martín et al. (2004) applied the Arellano-Bond dynamic panel data to study the relationship between tourism and economic growth of Latin American countries from 1985 to 1998, and they also used the least square (LS) panel data to analyze the factors influencing the number of arrivals of tourists in a destination country. The results indicate a positive relationship between tourism and economic growth in low- and middle-income countries, but not in the case of more developed countries. It was also found that the choice of tourist destination is more affected by the GDP per capita, infrastructure, life expectancy, and level education in a destination than the price of goods and services (Eugenio-Martín et al., 2004).

In 2015, the economic impact of tourism for N-11 countries, specifically Iran, Pakistan, Indonesia, Mexico, Turkey, South Korea, Vietnam, Bangladesh, Egypt, the Philippines, and Nigeria was measured by applying dynamic ordinary LS and fully modified ordinary LSs methods, the results showed that there is a long-run relationship between tourism arrivals and GDP growth (Kum et al., 2015).

In one of the most recent studies, Tabash examined the long term relationship between economic growth and TRs over the period 1995-2014 by applying Johansen cointegration and Granger causality test. The results found that there is a long-run relationship between tourism and economic growth in the case of Palestine, also in a unidirectional way, tourism granger causes economic growth (Tabash, 2017). Tang and Ozturk (2017) conclude that the TLGH is valid and tourism expansion would effectively stimulate long-term economic growth in Egypt.

The literature on the relationship between economic growth and tourism development is quite extensive. From our preceding discussion, it appears that there is a relationship between tourism and economic growth. Contributing to the existing literature, the TLGH will be applied in the case of STP since there are gaps in studies concerning the impact of this sector on the economic growth of STP.

4. METHODOLOGY AND ECONOMETRIC MODEL

This research seeks to investigate the effect of the tourism sector on STP´s economy using an econometric model. Therefore in this section, the methodology will be described, including the econometric model used to analyze the data.

In line with the purpose of this research, the following annual data are included in the model: GDP, Real exchange rate (ER), TRs, and foreign direct investment (FDI). All the data are annual observations from 1997 to 2018 (unit expressed in the US dollar). The data was collected from secondary sources, videlicet, world bank (WB), international monetary fund, Central Bank, and National Institute of Statistics of STP. The length of observations in this research is conditional upon the availability of data for developing countries.

All the series are transformed in natural logarithm form to avoid the problem of heteroscedasticity. The following econometric model is suggested to be estimated:

$$lGDP_t = B_0 + B_1 lTR_t + B_2 lER_t + B_3 lFDI_t + u_t$$

The below descriptive statistic Table 1 reports a summary of all the observations concerning this research. This Table 1 includes the number of observations, mean, maximum, minimum, and standard deviation for each variable.

The first step in the econometric analysis of this study is to check whether the variables contain a unit root or not. This test is an essential step in the choice of the model. The Augmented Dickey and Fuller (ADF) unit root test (1971; 1981) and Phillips and Perron (PP) unit root test (1988) are applied to test the stationarity of the series. The ADF test and PP test give a similar result; nevertheless, both of them are used in this research to compare and reinforce the results.

The DF and PP are used to test the null hypotheses for unit root as follows:

- If P-value is higher than 0.05: The null hypothesis for unit root (H_0) cannot be rejected, which means the data has a unit root and is non-stationary
- If P -value is equal or lower than 0.05: The null hypothesis for unit root (H_0) can be rejected, which means the data does not has unit root and is stationary.

Fallowing result for unit root test, when all the variables are I(1) that means integrated in order one, the cointegration test can be performed. The Johansens cointegration test is employed to test for the existence of a long-run relationship between the variables and to determine the number of the co-integrating vectors. Johansen and Juselius (1990) developed two tests: the trace test and the maximal eigenvalue test.

The existence of cointegration between variables implies at least one occurrence of Granger causality, and it could be unidirectional or bidirectional. The Granger causality test checks whether the past values of a variable explain the present value of another variable

Table 1: Descriptive statistic

Variables	GDP	TR	ER	FDI
Observations	18	20	18	21
Mean	2.19e+08	2.06e+07	107.8002	2.23e+07
Maximum	4.22e+08	6.91e+07	165.1884	7.91e+07
Minimum	7.16e+07	4100000	70.12465	3000000
Standard of deviation	1.13e+08	2.28e+07	29.5174	1.94e+07

Table 2: Dickey and Fuller test unit root test

Variables	At level t-statistic (P-value)	First difference t-statistic (P-value)	Result
lGDP	−1.291 (0.6334)	−5.096* (0.0000)	I(1)
lTR	−0.213 (0.9370)	−4.148* (0.0008)	I(1)
lREXR	0.678 (0.9894)	-4.335* (0.0004)	I(1)
lFDI	−1.576 (0.4959)	−5.441* (0.0000)	I(1)

* and **denotes rejection of the null hypothesis based on Mackinnon critical values at 1% and 5% respectively

Table 3: Phillips-Perron unit root test

Variables	At level t-statistic (P-value)	First difference t-statistic (P-value)	Result
lGDP	−1.983 (0.2943)	−5.441* (0.0000)	I(1)
lTR	−0.268 (0.9300)	−4.128* (0.0009)	I(1)
lREXR	1.206 (0.9960)	−4.552* (0.0002)	I(1)
lFDI	−1.486 (0.5404)	−5.833* (0.0000)	I(1)

** and *denotes rejection of the null hypothesis based on Mackinnon critical values at 1% and 5% respectively

or not, briefly, this test is able to use a variable to assist and predict the behavior of another variable of interest (Granger, 1986). The mains objective of this test is to check if the past value of X help to predict the present value of variable Y (Tabash, 2017).

5. EMPIRICAL RESULTS ANALYSIS

In this section, all the selected time series data will be tested, and the results will be reported and analyzed. The results are presented as follows:

5.1. Results from Unit Root Test

The first step for this test was the transformation of the series in natural logarithm to stabilize the variance of the series, and afterward check the order of integration of the series. For two series to be cointegrated, it is required that both of them have the same order of integration. Thus, before conducting any test to verify the existence of a long-term relationship between the variables, it is necessary to ensure that they have the same order of integration. The stationarity of the series is tested by applying the ADF test, and the PP reported bellow. The results of the ADF test reported in Table 2 show that at level, the P-value is higher than 0.05, which means the null hypotheses for unit root cannot be rejected; thus, all the variables in their logarithm form are non-stationary at level. Given the results at level, the same test is applied at first difference of each variable. The results showed that P-value is lower than 0.05, so all variables became stationary in order one I(1). Thereby the null hypothesis for unit root can be rejected.

Following the ADF test, the PP test is applied to support the results from ADF test. As reported in Table 3, at level, the P-value for all the variables is higher than 0.05; however, the first difference, the P-value for all the variables is lower than 0.05. Otherwise stated, all the four variables are non-stationary at the level however they are stationary at first difference. The ADF test results are consistent with the PP test results. The variables are stationary with the same order of integration I(1), a requirement for Johannsen co-integration analysis.

5.2. Results from Johansen Cointegration Test

Considering that all the series are stationary at first difference, the co-integration test is conducted based on Johansen's method, which allows determining whether there is a long term relationship between the variables or not. The cointegration test is very sensitive to the choice of lag length, so before conduction this test, it's required to identify the lag length. Therefore based on the lag selection criteria final prediction error, two lags were found to be the best choice for this empirical research.

Table 4: The Johansen cointegration test (Trace test)

Trace test			
Maximum rank	**Eigenvalue**	**Trace statistic**	**5% critical value**
None (0)		74.0850	47.21
At most 1	0.93725	32.5567	29.68
At most 2	0.77351	10.2811	15.41
At most 3	0.48912	0.2067	3.76
At most 4	0.01368		

Table 5: The Johansen cointegration test (MAX-eigenvalue test)

MAX-eigenvalue test			
Maximum rank	**Eigenvalue**	**Maximum statistic**	**5% critical value**
None (0)		41.5283	27.07
At most 1	0.93725	22.2756	20.97
At most 2	0.77351	10.0744	14.07
At most 3	0.48912	0.2067	3.76
At most 4	0.01368		

The Johansen co-integration test includes two tests: the trace test and max-eigenvalue test with similar results. These results are illustrated in Tables 4 and 5. Both tests reported that at maximum rank zero, the trace statistic and maximum statistic exceed critical values, so we reject the null hypothesis for no co-integration. Similarly, at maximum rank one trace statistic and maximum statistic exceeds critical value. Consequently, the null hypothesis for co-integration of 1 equation is also rejected. However, at maximum rank two the critical value exceeds the trace statistic and maximum statistic, so we accept the null hypothesis (null hypothesis: there is co-integration of 2 equation). Thus there is a long-run relationship between the variables. Therefore, if there is cointegration, there is also a Granger causality at least in one direction.

5.3. Results from Granger Causality Test

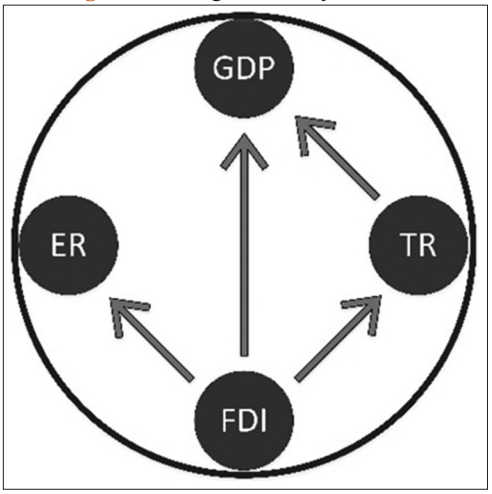
After determining that the series are cointegrated The Granger causality test is applied to investigate the causal relationship among the variables GDP, TR, ER, and FDI. From the Granger test result

Table 6: Granger causality Wald tests

Null hypothesis	Chi-square	Probability
GDP does not granger cause TR	0.30256	0.860
GDP does not granger cause ER	0.8479	0.654
GDP does not granger cause FDI	0.35429	w0.838
TR does not granger cause GDP	18.472	0.000*
TR does not granger cause ER	1.7132	0.425
TR does not granger cause FDI	1.2776	0.528
ER does not granger cause GDP	1.5452	0.462
ER does not granger cause TR	4.3296	0.115
ER does not granger cause FDI	0.76796	0.681
FDI does not granger cause GDP	8.574	0.014**
FDI does not granger cause TR	21.265	0.000*
FDI does not granger cause ER	6.1273	0.047**

* and **denotes rejection of Granger casualty null hypothesis a significance level of 1% and 5%

Figure 2: Granger causality direction



Source: Elaborated by the author based on Granger causality test results

presented in Table 6, under the null hypothesis of non-Granger causality between the variables TR and GDP, the null hypothesis is rejected with a statistical significance of 1%, which means there is a short-run unidirectional relationship between them, running from TRs to GDP. Similarly the null hypothesis for no Granger causality between the variables FDI and GDP also FDI and ER are rejected with a statistical significance of 5. However, the null hypothesis for non-Granger causality between FDI and TR is also rejected with a statistical significance of 1%. In summary, the variable FDI has a unidirectional Granger causal relationship with all the other variables (GDP, TR, REXR), which means, in a short-run change in FDI will affect the GDP, the exchange rate, and the FDI. These results are consistent with existing theory, as FDI and TR are both components of GDP.

The results of the Granger causality test are illustrated and summarized in the following Figure 2.

6. CONCLUSION AND RECOMMENDATIONS

The main objective of this study is to highlight the relationship between tourism and economic growth of STP. At first, the unit root test was performed using the ADF and PP test, identifying that all the series are stationary only after the first difference. Subsequently, the Johansen co-integration test was performed to verify the existence of a long-term relationship between the variable. The results for trace test and maximum eigenvalue test found co-integration of 2 equations. Finally the Granger causality test was applied, the results indicate a unidirectional relationship between TRs and GDP the results are in agreement with the literature. The results Granger test also showed a Granger unidirectional causality between FDI and all the other variables. Therefore, a change in foreign investment would affect the GDP, tourism, and exchange rate.

Has highlighted by the successive governments of STP, tourism expenditure is an alternative form of export that can contribute to economic development generation job and income, improving the country's balance of payment. This research found evidence of this relationship and validated the TLGH in the case of STP. In this context, policies to organize and regulate the proper function of this sector are essential. Besides, the success of tourism industry does not only depends on attentiveness of the destination but also the infrastructure including airport, road network, transport, accommodation, catering, and other basic services. Lack of infrastructure is one of the biggest challenges faced by STP. Therefore future research could be focus on hindrances in tourism development as an economic sector.

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