



## Revisiting the Tourism-Led Growth Hypothesis for Sri Lanka: Bounds Test Approach to Cointegration

Jayathilake P.M.B

Department of Business Management, Faculty of Management Studies  
Rajarata University of Sri Lanka, Mihintale.  
[bandulapmb@yahoo.com](mailto:bandulapmb@yahoo.com)

### Abstract

*International tourism is one of the major sources of foreign exchange for the developing countries. This paper tests the Tourism-Led-Growth hypothesis in the case of Sri Lankan context employing the bounds test and Johansen approach to cointegration using annual data from 1979 to 2014. A tri-variate model with real gross domestic product, international tourist arrivals and real effective exchange rate was used to investigate the long-run and short-run dynamics of the relationships. Bounds test and Johansen Cointegration test revealed that there is no long-run relationship between international tourism and economic growth. Hence the Tourism-Led-Growth hypothesis is not applicable to Sri Lankan economy. However, Granger causality test suggests bi-directional causality between international tourism to economic growth. Thus, policy interventions that are promoting international tourism would only guarantee the short term economic growth.*

**Keywords:** *Cointegration, Economic growth, International tourism, Tourism-Led Growth hypothesis*

### 1. Introduction

International tourism is generally considered as an industry that is not only brings foreign exchange to the country, but also creates employment opportunities in various sectors; it stimulates the development of the services and in turn economic growth and development of the host countries. The effects of international tourism on developing economies have long been the interest of researchers and policy makers (Clancy, 1999). Over the years, tourism has also been identified as one of the fastest growing economic sectors in Sri Lanka. As a result, the country has given prominent precedence to the industry in pursuing economic growth and economic development. The country witnessed a strong upsurge of tourism after the end of the thirty-year old civil war in 2009. According to the Tourism Development Authority of Sri Lanka, 1,274,593 and

1,527,153 tourists have arrived in 2013 and 2014 respectively (Tourism Development Authority of Sri Lanka, 2014).

There are many studies that have investigated the relationship between international tourism and economic growth (Gunduz&Hatemi, 2005; Jayathilake, 2013; Dritsakis, 2004; Kim et al. 2006; Kreishan, 2015; Shan & Wilson, 2001). However, results of these studies are still inconclusive and ambiguous (Gunduz&Hatemi, 2005). For example, a series of studies has concluded that there is a unidirectional causality from tourism development to economic growth (Dritsakis, 2004; Kreishan, 2015; Balaguer&Cantawella, 2002; Katircioglu, 2009; Kim et al. 2006) while some other studies have revealed a bidirectional causality between two variables (Shan & Wilson, 2001; Lanza et al. 2003; Durbarry, 2002). At the same time, some studies have failed to identify a significant relationship between international tourism and economic growth (Oh, 2005; Katircioglu, 2009). Moreover, no comprehensive empirical investigations are carried out in Sri Lanka yet to investigate the link between international tourism and economic growth. Thus, this study revisits and examines relationship between international tourism and economic growth in order to validate the Tourism-Led-Growth (TLG) hypothesis in Sri Lankan context.

The rest of the paper is organized as follows. Section II reviews the literature on international tourism and economic growth. Section III explains methodological approach of the study. Section IV discusses the results. Finally, section V provides conclusion and policy directives.

## 2. Literature

TLG hypothesis which is directly derived from Export-Led-Growth (ELG) hypothesis postulates that the economic growth of countries can be achieved by expanding international tourism as a nontraditional export. ELG hypothesis and Capital Imports to Growth (TKIG) hypothesis are the traditional thoughts that predominate in the tourism literature. TKIG argues that economic growth can be achieved by increasing in the volume of inputs. In particular, it argues that the foreign exchange earned through tourism is used for importing capital goods to produce products and services which lead to economic growth and development of host countries (Balaguer&Cantawella, 2002; McKinnon, 1964). According to TLG hypothesis, international tourism is considered as a potential strategic factor for economic growth. Balaguer&Cantawella (2002) state that, as tourism closely relates to accommodation facilities, food, transport services and other related services, tourism development increases the host country's production which lead to generates income and new employment in the country. Researchers argue that international tourism has a positive impact on household income, government revenues and balance of payment (Khan et al. 1990; Lim, 1997). Thus, it is widely accepted that international tourism development has a positive impact on economic growth of the host countries (Khan et al. 1990; Lim, 1997).

Many studies have examined long-term and short-term dynamics of the relationship between international tourism and economic growth. Balaguer and Cantawella (2002) studied the long-term effect of international tourism on economic growth in Spain and found a positive relationship between tourism and economic growth and confirm TLG hypothesis for Spain. Kreisha (2010) found a positive unidirectional long-term linkage

from tourist receipts to economic growth for the period spanning from 1970 -2009 in Jordan. Mirsha et al. (2011) studied the dynamics of the relationship between tourism sector expansion and economic growth in India. Their results show that there is a positive relationship between tourism and economic growth in the country over the period of 1978 – 2009 and a unidirectional causality runs from tourism activities to economic growth of the country. Kim et al. (2006) found bidirectional causality between tourism expansion and economic growth for Taiwan from Granger causality test and cointegration approach. Samina et al. (2007) examined the causality and long run relationship between economic growth and tourism development in 20 developing countries using P-VAR approach during 1995. Their findings confirmed the TLG hypothesis in which there is a positive and long run relationship between economic growth and tourism development in the selected countries. They further found a bilateral causality between economic growth and tourism development. Lee and Chang (2008) shed light for new insight of link between tourism and economic growth. They used panel data approach to investigate the relationship between tourism development and economic growth for Organization for Economic Co-operation and Development (OECD) countries and non-OECD countries. They found that tourism development has a greater impact of economic growth of non-OECD countries than OECD countries. Further, they identified a unidirectional causality runs from tourism development to economic growth in OECD countries and bidirectional causality relationship in non-OECD countries. They concluded that real effective exchange rate has a significant impact on economic growth. Zortuk (2009) investigated the link between tourism development and economic growth of Turkey using the data for period of 1990-2008. They used Vector Error Correction method and Granger Causality test and found that there is a unidirectional causality from tourism development to economic growth exists between the two variables.

Samina et al. (2007.) concluded that there is a strong relationship between tourism receipt and economic expansion in Pakistan. Kasimati (2011) utilized a tri-variate model of real GDP, international tourist arrivals and real effective exchange rate to examine the relationship between tourism and economic growth in Greece. He finds a long term positive relationship for the period of 1960-2010 between tourism and economic. However, Granger Causality test and vector error correction model have not supported short run relationship and directional causality between the variables.

On the contrary findings of some studies do not support a positive relationship between tourism development and economic growth and TLG hypothesis (Oh, 2005; Lee & Chang, 2008; Katircioglu, 2009). Oh (2005) studied the long-term link between the tourism receipts and economic growth in South Korea. He finds no evidence to confirm TLG hypothesis from cointegration test for the period of 1975-200. Sequeira and Campos (2005) conclude that there is no significant relationship between tourism and economic growth using the panel data analysis. Katircioglu (2009) examined relationship between international tourism and economic growth in Turkey using data from 1960 to 2006. He found no any cointegration between international tourism and economic growth and rejected TLG hypothesis for the Turkish Economy

### 3. Data and Methodology

This study used a tri-variate model to examine the relevance of the TLG hypothesis to Sri Lanka using annual data for the period of 1979 – 2014. The variables used in the study are volume of international tourism, economic growth and real effective exchange rate. Though various indicators such as receipt of tourism, number of tourist arrivals, number of night spent by tourists, etc are being widely used to measure the volume of international tourism (Gunduz and Hatemi, 2005), this study uses international tourist arrivals (TOUR) for measuring international tourism volume to avoid the multicollinearity problem that could emerge when tourism receipts are used (Katircioglu, 2009). Real Gross Domestic Product (GDP) is used to measure economic growth as it works as a good proxy for the underline variable over other economic indicators. In order to deal with potential omitted variables problem, Real Effective Exchange Rate (REER) was added to the model (Balaguer and Cantavella, 2002). Data were obtained from World Bank Indicators and several publications of Central Bank of Sri Lanka and Tourism Development Authority of Sri Lanka. All data series were transformed to their natural logarithms (ln) to avoid possible problem of heteroscedasticity. Stationarity of the series were tested employing the Augmented Dickey-Fuller (ADF) (Dickey & Fuller, 1981) and the Phillips-Perron (PP) (Phillips & Perron, 1988) tests. Table 1 presents results of the ADF and PP tests.

Table 1 Result of unit root test

Variable	ADF Test				PP Test			
	Level		1 <sup>st</sup> difference		Level		1 <sup>st</sup> difference	
	t	P	t	p	t	p	t	p
lnGDP	1.815	0.999	-- 3.757	0.008	1.755	0.999	-4.276	0.002
lnTOUR	- 1.004	0.740	- 4.036	0.004	-1.29	0.622	3.793	0.007
lnREER	0.268	0.973	- 4.709	0.001	-0.032	0.948	-4.731	0.001

The unit root result confirms that all the series, lnGDP, lnTOUR and lnREER, are integrated at their first difference  $I(1)$ .

The bound test for cointegration with the Autoregressive Distributed Lag (ARDL) approach was then employed to investigate long-term relationship between the underline variables. One of the foremost advantages of the ARDL is its applicability to irrespective of the order of integration of the variables,  $I(0)$  or  $I(1)$ . Following equations are examined on the basis of ARDL modeling (Pesaran et al. 2001).

$$\begin{aligned} \Delta \ln GDP_t &= \alpha_{\ln GDP} \\ &+ \sum_{i=1}^n \beta_{1i} \Delta \ln GDP_{t-1} \\ &+ \sum_{i=1}^n \beta_{2i} \Delta \ln TOUR_{t-1} + \sum_{i=1}^n \beta_{3i} \Delta \ln REER_{t-1} + \lambda_1 \ln GDP_{t-1} \\ &+ \lambda_2 \ln TOUR_{t-1} + \lambda_3 \ln REER_{t-1} + \varepsilon_{1t} \end{aligned} \quad (1)$$

$$\begin{aligned} \Delta \ln TOUR_t &= \alpha_{\ln TOUR} + \sum_{i=1}^n B_{1i} \Delta \ln TOUR_{t-1} + \sum_{i=1}^n B_{2i} \Delta \ln GDP_{t-1} + \\ &\sum_{i=1}^n B_{3i} \Delta \ln REER_{t-1} + \delta_1 \ln TOUR_{t-1} + \delta_2 \ln GDP_{t-1} + \delta_3 \ln REER_{t-1} + \varepsilon_{2t} \end{aligned} \quad (2)$$

Where,  $\Delta$  is the difference operator,  $\ln GDP$  is the natural log of the dependent variable and in  $\ln TOUR$  and  $\ln REER$  are natural logs of the independent variables.  $\varepsilon$  is serially independent random error with zero mean and finite covariance matrix.

Long-term relationship between the variables was investigated using the F-test. In Equation (1), the null hypothesis of no cointegration is  $H_0 : \lambda_1 = \lambda_2 = \lambda_3 = 0$  against the alternative hypothesis of  $H_1 : \lambda_1 \neq \lambda_2 \neq \lambda_3 \neq 0$ . Similarly, in Equation (2), the null hypothesis of no cointegration is  $H_0 : \delta_1 = \delta_2 = \delta_3 = 0$  against the alternative hypothesis of  $H_1 : \delta_1 \neq \delta_2 \neq \delta_3 \neq 0$ . Table 2 shows the critical F values for ARDL modeling approach.

Table 2: Critical values for Bounds test approach to cointegration

k=3	0.05		0.01	
	I(0)	I(1)	I(0)	I(1)
F	2.45	3.63	3.42	4.84

Source: Pesaran et al. (2001), Notes:  $k$  is the number of regressors for the dependent variable in ARDL models,

Further, Johansen Cointegration test was further employed to investigate the long-term relationship between the tri-variate systems (Johansen, 1988; Johansen & Jeselius, 1990). Finally, the short-term dynamics of the relationship between international tourism, economic growth and real effective exchange rate and directional causality among the variables were examined by employing unrestricted Vector Autoregressive (VAR) and Granger Causality tests.

#### 4. Results and Discussion

Table 3 shows the results of ARDL model with F statistics for bounds test for cointegration and statistics of diagnosis and stability tests. The statistics for diagnosis and stability tests (bottom pane in Table 3) indicate that results are free from serial correlation and Heteroscedasticity problems. The results reveal that, all coefficients of

the long-term regressors in both equations are not significant at 0.05. F statistics ( $F_1=2.101$ ,  $F_2=2.37$ ) further suggest that there is no level relationship (long-term relationship) between  $\ln\text{GDP}$ ,  $\ln\text{TOUR}$  and  $\ln\text{REER}$ . Thus, it is possible to conclude that there is no long-term relationship between economic growth, international tourism and real effective exchange rate in Sri Lanka during the period considered.

Table 3 Result of ARDL modeling

Equation (1)			Equation (2)		
$H_0 : \lambda_1=\lambda_2=\lambda_3=0$			$H_0 : \delta_1=\delta_2=\delta_3=0$		
F = 2.101			=2.37		
Variable	Coefficient	Prob.	Variable	Coefficient	Prob.
C	-0.487	0.029	C	-0.487	0.029
D( $\ln\text{GDP}(-1)$ )	-0.561	0.026	D( $\ln\text{TOUR}(-1)$ )	-0.561	0.026
D( $\ln\text{TOUR}(-1)$ )	0.061	0.013	D( $\ln\text{GDP}(-1)$ )	0.061	0.013
D( $\ln\text{REER}(-1)$ )	0.119	0.162	D( $\ln\text{REER}(-1)$ )	0.119	0.162
$\ln\text{GDP}(-1)$	-0.005	0.695	$\ln\text{TOUR}(-1)$	-0.005	0.695
$\ln\text{TOUR}(-1)$	0.029	0.149	$\ln\text{GDP}(-1)$	0.029	0.149
$\ln\text{REER}(-1)$	0.068	0.162	$\ln\text{REER}(-1)$	0.068	0.162
Jarque-Bera F= 2.645, p = 0.266			Jarque-Bera F= 0.988, p= 0.609		
Breusch-Godfrey F= 0.617, sig F = 0.548			Breusch-Godfrey F= 1.623, sig F = 0.235		
ARCH F= 0.483, sig F = 0.492			ARCH F= 0.006, sig F = 0.937		
CUSUM ( $\alpha = 0.05$ )			CUSUM ( $\alpha = 0.05$ )		

In order to validate the result of ARDL bounds modeling, Johansen cointegration approach was used. Its results are reproduced in Table 4. The results reveal that there exists no cointegration between  $\ln\text{GDP}$ ,  $\ln\text{TOUR}$  and  $\ln\text{REER}$  since trace statistics have not been significant at 0.05. Therefore, this result validates the outcome of ARDL bounds test.

Table 4 Result of Johansen cointegration test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.
None	0.365128	25.36604	29.79707	0.1488
At most 1	0.208853	10.82742	15.49471	0.2223
At most 2	0.098852	3.330740	3.841466	0.0680

Table 5 Result of Granger causality

Null Hypothesis	F-Statistic	Prob.
$\ln\text{TOUR}$ does not Granger Cause $\ln\text{NGDP}$	5.945	0.007
$\ln\text{GDP}$ does not Granger Cause $\ln\text{TOUR}$	3.769	0.036

lnREER does not Granger Cause lnGDP	2.259	0.123
lnGDP does not Granger Cause lnREER	2.599	0.092
lnREER does not Granger Cause lnTOUR	1.569	0.226
lnTOUR does not Granger Cause lnREER	2.804	0.078

In addition to the investigation of long-term relationships, short-term dynamics of the relationship between economic growth, international tourism and real effective exchange rate was examined using unrestricted VAR and Granger causality tests. Error correction procedure cannot be performed in this study since no cointegration found between variables. Unrestricted VAR estimates based on two lag structure suggested by the AIC (Akaike Information Criterion) and the SIC (Schwartz Information Criterion) suggest that lnGDP is influenced by up to two lags of lnGDP and lnTOUR. Results of Granger causality reveal that there is a bi-directional causality between lnGDP and lnTOUR (Table 5). Therefore, international tourism and economic growth causes each other.

## 5. Conclusion

ARDL bounds test for cointegration and Johansen cointegration test reveal that there is no long-term relationship between economic growth, international tourism and real effective exchange rate in Sri Lanka. This result indicates that the Tourism–Led Growth hypothesis does not apply to Sri Lankan economy. However, short-term relationship and causality are established between economic growth and international tourism in Sri Lanka. Thus, promotion of international tourism should be considered as a short-term strategy in pursuing economic growth in Sri Lanka.

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