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DYNAMIC RELATIONSHIP BETWEEN TOURISM AND FINANCIAL DEVELOPMENT IN SRI LANKA

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Abstract

The objective of this study is to examine the dynamic relationship between tourism industry and financial development in Sri Lanka for the period of 1970-2018. In this study, the following analytical techniques: visual inspection, unit root test, and ARDL Bounds cointegration techniques are employed. The test result of visual inspection indicates that tourism industry has a positive relationship with financial development in Sri Lanka. The Augmented Dickey-Fuller unit root test results show that the variables used in this study are in mixed order. ARDL test results indicate that the variable of tourism has a long-run relationship with financial development. Further, the estimated coefficient of tourism shows a positive and significant relationship with financial development in both the long-run and short-run. Further this study is a pioneer by investigating the relationship between tourism industry and financial development in Sri Lanka. Because it is noted that in the case of Sri Lanka none of the researches so far examine the relationship between tourism and financial development.

Keywords: tourism receipts, financial development, ARDL bounds test, Sri Lanka

1. Introduction

Over the last few decades an extensive body of literature has studied the consequences of tourism activities in countries' economies (Ohlan, 2017). In general, tourism industry is one of the largest industries in most developing countries which has more than 11% of global GDP at average and nearly 313 people have been engaged in tourism-related business in each year. In order to motivate the tourism industry, 4.5% in total investment in the world is invested in tourism industry at every year. In that respect, 882.4 billion dollars had been invested in the tourism-related business in 2017. Based on the statistics of UNWTO (2017), in the tourism activities, about 1326 billion tourists had been participated in 2017 which generated 1.5 trillion dollars' income in the world. Thus, by generating the income in huge level, it can be concluded that the tourism industry is an important factor in determining the countries' economies (Katircioglu, et al., 2018).

Sri Lanka is famous among international tourists due to having beautiful tourism places, hotels and hospitalities. In the case of Sri Lankan tourism, it has a long history due to strategic location and uniqueness (Naradda Gamage et al., 2017). However, the tourism in Sri Lanka has been systematically organized by starting the Ceylon Tourist Board and Ceylon Hotels Corporation in 1966. Sri Lankan tourism industry faced ups and downs situation due to various reasons, especially political violence, Easter attack, internal conflict, etc. Despite unavoidable situation, Sri Lanka's tourism industry records an irreplaceable situation (Jayathilake, 2013).

Foreign exchange earned by tourism industry in Sri Lanka was US$ 3.6 million in 1970 which increased as US$ 4380 million in 2018. From these figures, it can be understood how tourism industry in Sri Lanka is important in generating the economic empowerment. Further, when tourism demand in Sri Lanka increases, it is needed to increase the tourism-related activities especially food production, hotels, and banks to attract tourists (Asumadu-

Sarkodie & Owusu,2016). In this circumstance, the financial development in Sri Lanka may be induced by developing the banking sectors for tourism demand. Therefore, it can be hypothesised that the tourism industry in Sri Lanka relates with financial development. Even though most literature have studied the effects of tourism in Sri Lankan's economy, none of the literature examined the relationship between the tourism industry and financial development using the macro-level data. Therefore, it is being a researchable issue when examining the impact of tourism in Sri Lanka. Therefore, the main impulse of this study is to seek the answer to the research question of if tourism industry in Sri Lanka induce financial development. For that, the objective of this study is to examine the dynamic relationship between tourism industry and financial development in Sri Lanka.

Following the introduction given in 1st section, this study is structured as follows: 2nd section presents the review of literature, the research method is explained in 3rd section, 4th section of this study gives the results and discussion and final section concludes this study.

2. Review of literature

Despite a number of literatures that have studied the different effects of tourism industry, there is no sufficient literature investigating the relationship between tourism industry and financial development. In that respect, in this section this study reviews the available literature. Shahbaz *et al.* (2019) explore the relationship between tourism and financial development in Malaysia over the period of 1975-2016. This study concludes that tourism in Malaysia induces financial development. Another study was made by Shahbaz *et al.* (2017) who inspect the causal relationship between tourism and financial development in Malaysia over the period of 1975-2013. In this study, they find that tourism causes financial development in Malaysia. Further, Ohlan (2017) explores the tourism- financial development in India from 1960-2015. This study finds that tourism Granger cause financial development in India. Katircioglu *et al.* (2018) examine the interaction between tourism and financial development in Turkey. In this study the time series data covers the period of 1960-2015 were employed. This study finds that tourism in Turkey is a major factor in improving the financial development. Taqi *et al.,* (2018) concludes in India that tourism is key factor in promoting the financial development. Cannonier and Burke (2017) finds the tourism promote the financial development in Caribbean countries, for which they used the annual time series data over the period 1980-2013. Kumar and Kumar (2014) investigate the relationship between tourism sector and financial development in Vietnam based on annual time series data over the period 1980-2010. The empirical findings of this study show that the tourism sector induces the financial development in Vietnam. Chen (2007) investigates the financial development of tourism based on the evidence from China and Taiwan which finds that tourism in both countries has a long-run relationship with financial development. All literature reviewed in this study employed different analytical techniques to attain their objective. Despite using different technique, the main intention of such literature is to test the relationship between tourism receipts and financial development. However, due to the fact that there are no studies examining the relationship between tourism receipts and financial development in Sri Lanka, this study tries to bridge this gap.

3. Research method

3.1 Empirical model specification

Having deeply reviewed the literature relating with the relationship between tourism receipts and financial development. This study frames the following mathematical functional specification for testing the financial effect of tourism in Sri Lanka.

(1)

$$FD_t = f(Y_t)$$

where FD_t is financial development indicating the gross domestic credit to the private sector percentage of gross domestic product, Y_t is gross national income, and f represents the functional notation.

In this point, the gross national income of a country can be divided as gross domestic product and tourism receipts. Thus, the mathematical functional specification given in (1) can be modified as follows:

(2)

$$FD_t = f(GDP_t, TE_t)$$

where GDP_t is gross domestic product, and TE_t is tourism receipts.

From the mathematical functional specification given in (2), the econometric model specification for this study can be written as follows:

(3)

$$FD_t = \beta_0 + \beta_1 GDP_t + \beta_2 TE_t + \varepsilon_t$$

where β_0 is the intercept, $\beta_1 - \beta_2$ the coefficients of independent variables, respectively, and ε_t is the white noise error term.

3.2 Data

The data used in this study were time series covering the period from 1970-2018. The variables employed in this study were financial development, gross domestic product, and tourism receipts. The data for the variables of financial development and the gross domestic product were collected form the World Bank database, while the tourism receipts were gathered from the website of Sri Lanka tourism development authority (SLTDA). All the data for the series used in this study were transformed into natural logarithmic form for removing the problem of heteroscedasticity.

3.3 Analytical technique

In order to attain the objective of this study, the visual inspection under exploratory data analysis and unit root, cointegration technique, diagnostic test, and the Granger causality test under inferential data analysis were employed.

In the case of visual inspection, the scatter plots with confidence ellipse were employed. The purpose of using the visual inspection is to find useful novel relationship about the variables used in this study. In fact, by using the visual inspection, it can be examined the structure of the relationship between tourism receipts and financial development in Sri Lanka (Tukey, 1980). Next to the visual inspection, this study used some inferential techniques, in which the first is the unit root test which is important since this study uses the time series data. In that respect, this study considered the Augmented Dickey-Fuller (ADF) unit root test for testing the order of the integration of the variables used in this study. Once confirmed the order of the variables, the autoregressive distributed lag (ARDL) cointegration technique was employed to test whether the variables used in this study have a long-run relationship between them. The empirical model specification of this study can be written as follows:

(4)

$$\Delta lnFD_t = \beta_0 + \sum_{i=1}^{n_1} \beta_{1i}\, \Delta lnFD_t + \sum_{i=0}^{n_2} \beta_{2i}\, \Delta lnGDP_t + \sum_{i=0}^{n_3} \beta_{3i}\, \Delta lnTE_t + \beta_4 lnFD_{t-1} + \beta_5 lnGDP_{t-1} + \beta_6 lnTE_{t-1} + \varepsilon_t$$

where Δ is 1st difference operator; $n_1 - n_3$ are the optimal lag length, ε_t is the random error term, β_0 is constant term, $\beta_{1i} - \beta_{3i}$ are the short-run coefficient of variables, $\beta_{4i} - \beta_{6i}$ are the long-run coefficient of variables.

In order to confirm the long-run relationship between the variables used in this study, the joint null hypothesis of no long-run relationship between the variables $[H_0: \beta_4 = \beta_5 = \beta_6 = 0]$ was tested against the alternative hypothesis of presence the long-run relationship between the variables used in this study $[H_0: \beta_4 \neq \beta_5 \neq \beta_6 \neq 0]$. The hypothesises were tested by comparing the calculated F-test statistic with the critical values proposed by Pesaran *et al.,* (2001). There are three conclusions about the long-run relationship between variables under the

ARDL technique. The 1st conclusion is the long-run relationship between the variables, which would be taken when the calculated F-test statistic was greater than the upper bound critical values at 5% significance level. The 2nd decision is no long-run relationship between the variables used in this study, which will be taken if the calculated F-statistic is under the lower bound critical value at 5% significance level. The final decision of the long-run relationship between the variables under the ARDL method is no-decision about the long-run relationship between the variables. The decision will be taken when the calculated F-statistic lay between the upper and lower bound critical value at 5% significance level.

In case the long-run relationship between the variables used in this study was confirmed, the next step of the ARDL technique is to test the short-run dynamics of the variables used in this study. In order to do that, this study employed the following error correction model (ECM) specification:

(5)

$$\Delta lnFD_t = \beta_0 + \sum_{i=1}^{n_1} \beta_{1i}\, \Delta lnFD_t + \sum_{i=0}^{n_2} \beta_{2i}\, \Delta lnGDP_t + \sum_{i=0}^{n_3} \beta_{3i}\, \Delta lnTE_t + \lambda ECT_{t-1} + \varepsilon_t$$

where λ is the coefficient of error correction term, which is expected to be negative, less than one and statistically significant to move the long-run equilibrium.

To check the robustness of the estimated ARDL model of this study, the Breusch-Godfrey serial correlation LM test, the heteroscedasticity ARCH test and the Jarque-Bera normality test, the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of square residuals (CUSUMSQ) plots were employed.

4. Results and discussion

4.1 Visual inspection

Shown in Figure 1 is the test results of visual inspection, which indicates that tourism receipts in Sri Lanka induces the financial development over the study period.

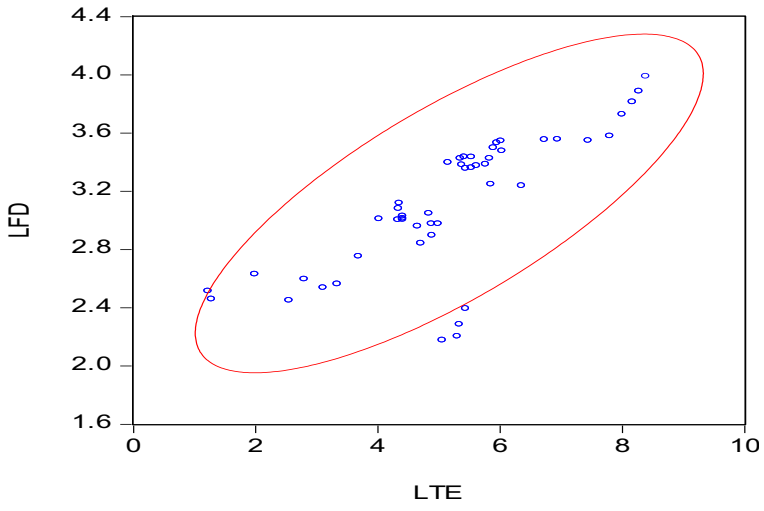

Figure 1. the relationship between tourism receipts and financial development in Sri Lanka
Source: E-views software

4.2 Unit root test

Presented in Table 1 is the unit root test results, which indicates that the variables of financial development, gross domestic product, and tourism receipts are non-stationary at their level, but they become stationary at their 1st difference, *I* (1).

Table 1. ADF unit root test results

Variable	Augmented Dickey-Fuller (ADF) test		Decision
	I(0)	I(1)	
$\boldsymbol{lnFD_t}$	-1.420 (0.564)	-6.487 (0.000)	*I*(1)
$\boldsymbol{lnGDP_t}$	-2.033 (0.568)	-7.404 (0.000)	*I*(1)
$\boldsymbol{lnTE_t}$	-2.041 (0.268)	-5.791 (0.000)	*I*(1)

Source: E-views software

4.3 Lag selection procedure

Table 2 provides the test results of optimal lag length criteria. Due to the fact that most of the empirical works uses the Akaike Information Criterion (AIC) to select the optimal lag-length model for their studies, this study also employs the AIC to choose the suitable optimal lag-length ARDL model for this study. Based on the test results given in Table 2, this study selects the lag 2 under the Akaike Information Criterion.

Table 2. VAR lag selection criteria

Lag	Lag selection criteria		
	AIC	SC	HQ
0	4.808625	4.929070	4.853526
1	-2.113200	-1.631423*	-1.933598
2	-2.249498*	-1.406389	-1.935195*
3	-2.050929	-0.846847	-1.601925
4	-1.827869	-0.262095	-1.244164

Source: E-views software

Figure 2 shows the appropriate ARDL models for this study which have been produced based on the lag 2 under AIC criterion, in which the ARDL (2, 0, 0) model has the optimal lag value than others. Therefore, this study uses the ARDL (2, 0, 0) model in order to test the long-run relationship between tourism receipts and financial development in Sri Lanka.

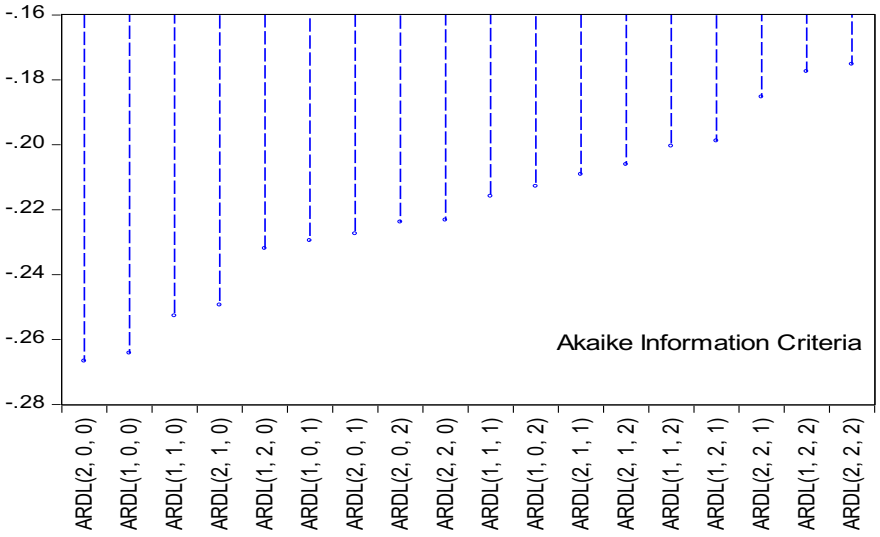

Figure 2. Graph of AIC model selection criterion
Source: E-views software

4.4 Long-run relationship

The test results of long-run relationship between the variables used in this study are given in Table 3. It indicates the calculated *F*-statistic is 3.87 which is greater than the upper bound critical value of 3.83 at 5% significance level. Hence, the null hypothesis that there is no long-run relationship between tourism receipts and financial development in Sri Lanka is rejected at 5% significance level. Therefore, it is concluded that there is a long-run relationship between tourism receipts and financial development in Sri Lanka over the study period.

Table 3. ARDL Bounds test results

Test statistic	Value
F- Statistic	**3.87**
K	3

Significance	*I*(0) Bound	*I*(1) Bound
10%	2.17	3.19
5%	2.72	**3.83**
2.5%	3.22	4.5
1%	3.88	5.3

Source: E-views software

Given in Table 4 are the long-run coefficients of the variables used in this study. In that respect, the variable of gross domestic product positively and significantly affects the financial development at 1% significance level. The estimated coefficient of gross domestic product indicates that 10% increases in gross domestic product induces the financial development by 9.4% which is consistent with studies of Shahbaz *et al.,* (2017); Katircioglu, *et al.,* (2018); Further, the key independent variable of this study is tourism receipts, its' estimated coefficient in the long-run model indicates that it has positive relationship with financial development in Sri Lanka at 5% significance level. In addition to that, the estimated coefficient of tourism receipts indicates that 10% increases in tourism receipts in Sri Lanka promotes the financial development by 18.4%. This finding is in line with the studies of Kumar (2014); Ali, *et al.,* (2018); Khan, *et al.,* (2019).

Table 4. Long – run coefficient of the variables

Dependent Variables: $\boldsymbol{lnFD_t}$			
Variable	Coefficient	*t*- statistic	*p-value*
$\boldsymbol{lnGDP_t}$	0.094	5.619	0.000*
$\boldsymbol{lnTE_t}$	0.184	2.566	0.013**

Source: E-views software Note: * p<0.01, and ** p<0.05

Table 5 indicates the short-run dynamics of the variables used in this study. The estimated coefficient of the error correction term is statistically different from zero at 1% significance level with a negative sign. The negative sign points out that the response variable of financial development moves in the direction of the long-run equilibrium path. In addition to that, the estimated coefficient of error correction term is (-0.346) which suggests that 34.6% of error will be adjusted every year. Further, the short-run coefficient of both gross domestic product and tourism receipts are significant at 5% level with positive indication. This finding is in line with the studies of Naradda Gamage *et al.,* (2017); Cannonier & Burke, (2017); Taqi, *et al.,* (2018).

Table 5. Short-run dynamics of the variables

Dependent Variables: $\Delta\boldsymbol{lnFD_t}$			
Variable	Coefficient	*t*- statistic	*p-value*
$\Delta\boldsymbol{lnGDP_t}$	0.032	2.637	0.011**
$\Delta\boldsymbol{lnTE_t}$	0.063	2.170	0.035**
ECT_{t-1}	-0.346	-3.134	0.003*

Source: E-views software Note: * p<0.01, ** p<0.05

4.5 Diagnostic test

Shown in Table 6 are the diagnostic test results of the Breusch-Godfrey serial correlation LM test and the heteroscedasticity ARCH test which indicate that the corresponding p-value of the estimated F-statistic for both Breusch-Godfrey serial correlation LM test and the heteroscedasticity ARCH test are greater than 0.05. Therefore, as the corresponding p-values are greater than at 5% significance level, the estimated ARDL (2, 0, 0) model for this study does not suffer from the auto correlation issue and is homoscedasticity.

Table 6. Diagnostic Tests results

Model	Test statistic			
	Breusch-Godfrey Serial Correlation LM Test		Heteroscedasticity ARCH Test	
	F-statistic	Prob.F(2, 41)	F-statistic	Prob.F(2,42)
ARDL (2, 0, 0)	2.123	0.1326	0.020	0.979

Source: E-views software

Table 7 shows the normality test result for the estimated ARDL (2, 0, 0) model which points out that the corresponding p-value of normality test is 0.324. It is greater than 0.05. As the corresponding p-value is greater than 0.05 which is significant at 5% level. Therefore, the null hypothesis that the residuals are normally distributed is not rejected. Thus, the residuals of the estimated ARDL (2, 0, 0) model is normally distributed.

Table 7. Jarque-Bera normality tests

Model	J-B test statistic Chi-square	p-value
ARDL (2, 0, 0)	2.251	0.324

Source: E-views software

Figure 3 and 4 show the plot of cumulative sum of recursive residuals (CUSUM) and the cumulative sum of recursive residuals squared (CUSUMSQ) for the estimated ARDL (2, 0, 0) model, respectively. As the CUSUM and CUSUMSQ lines lay within the critical bounds at 5% significance level, the null hypothesis is that the parameter coefficient constancy is not rejected. Therefore, our findings confirm that the estimated ARDL (2, 0, 0) model is stable over the study period.

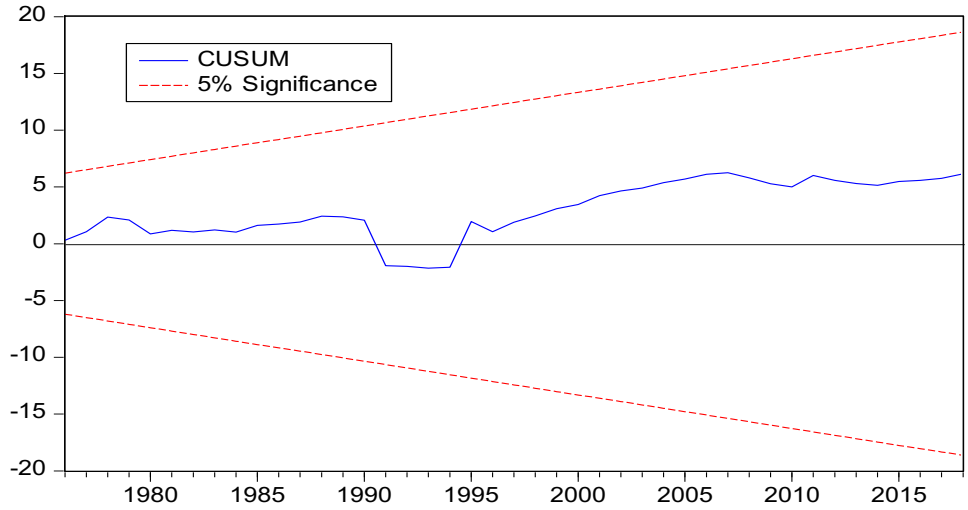

Figure 3. The CUSUM plot for the ARDL (2, 0, 0) model
Source: E-views software

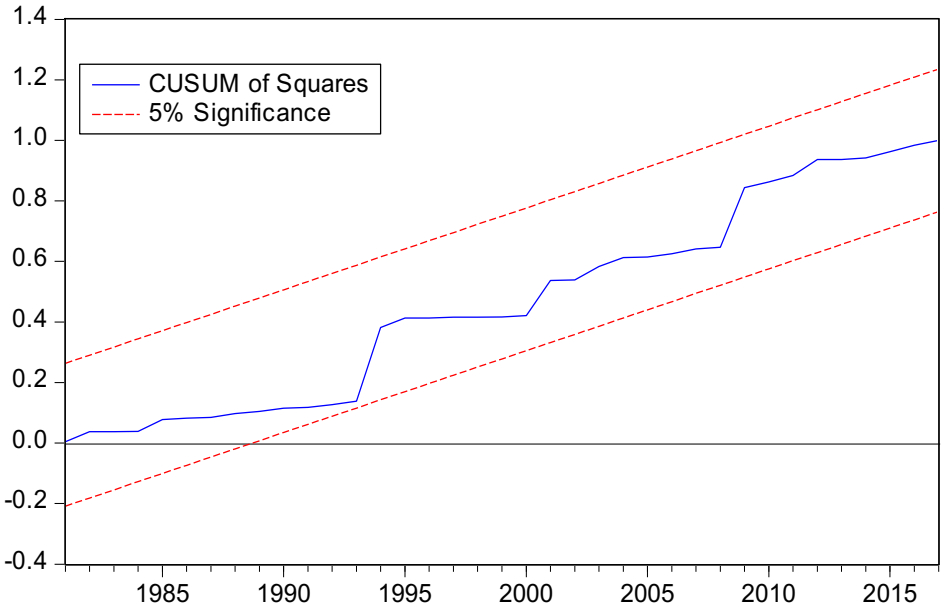

Figure 4. The CUSUMSQ plot for the ARDL (2, 0, 0) model
Source: E-views software

5. Conclusion and policy recommendation

This study has analysed the empirical dynamic relationship between tourism receipts and financial development in Sri Lanka over the period of 1970-2018. The visual inspection confirms that tourism receipts have a positive relationship with financial development in Sri Lanka. The test results from the ADF unit root test reveals that the variables used in this study are stationary at their 1st difference. The ARDL Bounds test results indicate that tourism receipts in Sri Lanka promote financial development in both the long-run and short-run. Further, the estimated coefficient of error correction term discloses that the response variable of this study moves towards the long-run equilibrium path. All the diagnostic tests indicate that the estimated ARDL model for this study is robust. The overall conclusion of this study is that tourism receipts in Sri Lanka is an important factor to promote financial development. As tourism receipts are a significant factor for financial development, this study suggests that policymakers should draw friendly-financial development policies for attracting more tourism receipts. Further, as it is a pioneer study in investigating the relationship between tourism receipts and financial development in Sri Lanka, this study induces the future researchers to bridge the gap of this study.

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