Causal Relationship between International Trade and Tourism: Empirical Evidence from Sri Lanka

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Introduction

Sri Lanka has an inherit benefit of having a highly diversified tourism product which could be pitched against any other well established tourism destination in the world. It is highly labor intensive and very significant source in employment which recorded over 1.2 million tourist arrivals in 2013 with 26.7% of growth compared to the previous year (Central Bank Report, 2013). Furthermore, continues performance within the industry is validating by the Master-Card[1] ratings in 2015, 'Colombo' is the city with the best growing tourism sector in the world.

The collaboration of such fast gaining industry with trade protocols and economic growth of a country may vital for an under developed country to achieve an adequate position within modern market structures. Shan and Wilson (2001), and Kadir (2010) use Granger causality test in heterogeneous panels to investigate the nature of causality vary among travel and trade flows of some under developed economies. Their findings indicate that there is a bilateral causality between trade in goods and the tourism expenditure for respective countries, which stimulates us to investigate the domestic phenomena where fewer researches were taken.

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[1] The Master-Card index of Global destination cities ranks cities in terms of the number of their total international overnight visitors' arrivals and the cross border spending by these same visitors.

Objectives

This study indents to observe the nature of causal relationships between the trade volume of goods and tourists' expenditure and number of nights spends in Sri Lanka.

Methodology

This study uses secondary data from Sri Lanka over the period of 1970-2014. For this study we use total trade volume (Trade), total tourist expenditure (TE), total number of nights spend in Sri Lanka (TN) and gross domestic product (GDP). All the variables are transformed in to natural logarithm. All the data were obtained from various reports from the Central Bank of Sri Lanka. Augmented Dickey Fuller (ADF) test is adapted to test the stationarity property of the data. Granger causality test is used to identify the causal relationship between trade and tourism in Sri Lanka. It involves testing the following model:

$$\ln\Delta TRADE_t = \alpha_0 + \sum_{i=1}^{p} \alpha_i \ln\Delta TRADE_{t-i} + \sum_{i=1}^{p} \beta_i \ln\Delta TE_{t-i} + \varepsilon_{1t} \qquad (1)$$

$$\ln\Delta TE_t = \alpha_0 + \sum_{i=1}^{p} \rho_i \ln\Delta TRADE_{t-i} + \sum_{i=1}^{p} \gamma_i \ln\Delta TE_{t-i} + \varepsilon_{2t} \qquad (2)$$

The null hypothesis of equation (1) can be tested as:

$$H_0: \sum_{i=1}^{p} \beta_i = 0$$

If we reject null hypothesis, then there is a causality relationship from growth rate of tourist expenditure to growth rate of total trade volume.

The null hypothesis of equation (2) can be tested as:

$$H_0: \sum_{i=1}^{p} \rho_i = 0$$

If we reject null hypothesis, then there is a causality relationship from growth rate of total trade volume to growth rate of tourist expenditure.

Likewise other pairs of variables also can be tested.

Results and Discussion

ADF test confirm that all the variables are non-stationary at level and stationary at their first difference suggesting that all the series are integrated in order one [I(1)]. Since all variables transformed to natural logarithms, this study test the nature of causal relationships using percentage change in total trade volume and percentage change of three other independent variables. So, these first differences of logarithms shows a systematic pattern among the total trade volume, tourists expenditure and number of nights expend by tourist while real GDP implies a different behavior (see Figure 1 in Annexure).

The Table 1 below shows the results of granger causality test, which is estimated from E-views software with the version of 6.

Table 1: Granger Causality test Results

Null Hypothesis:	Obs	F-Statistic	Prob.
LOG_RGDP1 does not Granger Cause LOG_TRADE1	42	0.13298	0.8759
LOG_TRADE1 does not Granger Cause LOG_RGDP1		0.02015	0.9801
LOG_TE1 does not Granger Cause LOG_TRADE1	42	6.51486	0.0038
LOG_TRADE1 does not Granger Cause LOG_TE1		0.99815	0.3783
LOG_TN1 does not Granger Cause LOG_TRADE1	42	5.52747	0.0079
LOG_TRADE1 does not Granger Cause LOG_TN1		2.24130	0.1206
LOG_TE1 does not Granger Cause LOG_RGDP1	42	0.51726	0.6004
LOG_RGDP1 does not Granger Cause LOG_TE1		4.39798	0.0193
LOG_TN1 does not Granger Cause LOG_RGDP1	42	0.82538	0.4460
LOG_RGDP1 does not Granger Cause LOG_TN1		2.29713	0.1147
LOG_TN1 does not Granger Cause LOG_TE1	42	0.39515	0.6764
LOG_TE1 does not Granger Cause LOG_TN1		3.51819	0.0399

The above results indicates that there is a significant causality relationship from tourist expenditure to total trade volume (where $0.0038 < 0.05$), from total number of nights spend in Sri Lanka to total trade volume (where $0.0079 < 0.05$), from GDP to total tourist expenditure (where $0.0193 < 0.05$)

and from total tourists expenditure to total number of nights spend in Sri Lanka (where $0.0399 < 0.05$). This implies that there is a unidirectional causality relationship between growth rate of total tourist expenditure and growth rate of total trade volume, between growth rate of total number of nights spend in Sri Lanka and growth rate of total trade volume, between growth rate of GDP and growth rate of total tourists expenditure and between growth rate of total tourists expenditure and growth rate of total number of nights spend in Sri Lanka. Whereas other pairs of variables do not have significant causal relationship.

Conclusion

This study investigates the improvements in total trade volume; both exports and imports has somewhat significant impact from both aspects we consider beneath the tourism sector. Therefore, the existing policy changes and implications favor to tourism industry will be beneficial to improve our trade relations. Recent evidences from China-Sri Lanka bilateral relationship demonstrate how the both trade and a tourism sector coexists in together. Beyond these policy perspectives, more hints for economist and policy makers, where the general expectations are became a truth; more the productivity in Sri Lanka higher the possibilities of tourists expenditure patterns with advance options to stimulate the liquidity perceptions of tourists over years.

References

Shan, J. and Wilson, K 2001, 'Causality between trade and tourism: Empirical evidence from China', *Applied Economics Letters*, vol. 8, pp. 279-283.

Kadir, N 2010, 'The Co-integration and Causality tests for Tourism and Trade in Malayasia'*, International Journal of Economics and Finance*, vol. 2, no.1, pp. 138-143.

Appendixes

Figure1: First Difference of the Logarithms of the Variables