

## **Impact of Terms of Trade on Economic Growth: Empirical Evidence from Sri Lanka**

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### **Introduction**

The terms of trade is used as an indicator of a country's economic condition. It is measured by domestic export price divided by the price of imports (Sherbourne, 2009). In the presence of world global integrations or disintegrations, where export prices converge or diverge worldwide, terms of trade have even more influence on economic growth (Wong, 2009; Blattman, Hwang & Williamson, 2003). An improvement of an economy's terms of trade is a result of a rise in the price of exports relative to the price of imports and a deterioration is induced by a rise of the price of imports relative to the price of exports over a given time period. Declining of terms of trade is one of the main reasons for an income gap between developed and developing countries. Increase in terms of trade would lead to increase in investment and thus economic growth will increase (Jawaid and Raza, 2012).

A number of studies have been extensively arguing the impact of terms of trade on economic growth. Most of them identified a positive effect (e.g. Jawaid and Raza 2012; Mputu 2016) while some of the studies reported an adverse effect (e.g., Kalumbu and Sheefeni 2014; Jebran et al 2018). This indicates that there is no consensus among the researchers regarding the relationship between terms of trade and economic growth. In sum, according to the existing literature, terms of trade plays a significant role in determining the growth. In this regard, although the government of Sri Lanka (SL) has made a tremendous effort to increase the terms of trade through the

implementation of favorable export and import policies since 1977, the amount of terms of trade in SL is still very low and has high fluctuations. Moreover, the impact of terms of trade on economic growth in Sri Lanka remains scantily researched in recent time and it is a widely debated issue. Thus, this study attempts to examine the influence of terms of trade on economic growth.

### **Objective**

The main objective of this study is to examine the relationship between terms of trade and economic growth in Sri Lanka.

### **Methodology**

This study follows the Prebisch-Singer Hypothesis (1950) and the model used by Jawaid and Raza (2012) and Mputu (2016) has been modified appropriately to construct an econometric model for this study by including exchange rate as a new variable, which is given in Equation (1):

$$Y_t = \alpha_0 + \alpha_1 INV_t + \alpha_2 LFPR_t + \alpha_3 TOT_t + \alpha_4 CPI_t + \alpha_5 ER_t + \varepsilon_t \quad (1)$$

where,  $Y_t$ : real GDP (dependent variable);  $INV$ : investment;  $LFPR$ : Labor Force Participation Rate;  $TOT$ : Terms of trade;  $CPI$ : Consumer Price Index; and  $ER$ : Exchange rate.  $\varepsilon_t$  is a white noise error term. We used annual time series data covering the period 1990-2016 for this study. All the series were extracted from annual reports of Central Bank of Sri Lanka and the World Development Indicator (WDI) data base.

In the first step of the estimation procedure of equation (1), Augmented Dicky-Fuller (ADF), Phillips Perron (PP) and Ng-Perron unit root tests were conducted to test the order of integration. Secondly, lag length selection criteria such as AIC, SIC, LR, FPE and HQIC were utilized to select the optimum lag length that can be included in the model. Thirdly, once we confirmed the order of integration, the co-integration test was conducted using Johansen approach to test for the existence of the number of cointegrating equations and long run relationship between variables in equation (1). Then, the Error Correction Model (ECM) was employed to test

the short-run relationship as well as long-run adjustment between variables using the following model:

$$\Delta Z_t = \alpha_0 + \Pi Z_{t-1} + \sum_{i=1}^{p-1} \Phi_i^* \Delta Z_{t-i} + u_t \quad (2)$$

Where  $\Pi$  and the  $\Phi^*$  are functions of the  $\Phi$ 's. If  $\Pi = 0$ , then there is no cointegration, If  $\Pi$  has full rank,  $K$ , then the  $x$ 's cannot be  $I(1)$  but are stationary and  $\Pi = \alpha\beta'$ , where,  $\alpha$  is the  $(6 \times 1)$  vector of speed of adjustment coefficient,  $\beta'$  is the  $(1 \times 6)$  vector of cointegrating coefficients,  $Z_t = [Y_t, INV_t, LFPR_t, TOT_t, CPI_t, ER_t]'$  vector of endogenous variables,  $Z_{t-i}$  is the lagged value of the variables,  $Z_{t-1}$  is the error correction term and  $u_t$  is the white noise error term. Finally, we adapted VEC Granger Causality/Block Exogeneity Wald Tests to check the causality relationship between the variables.

### Results and Discussion

The unit root tests confirmed that all the variables are stationary at their first difference, suggesting that they are integrated in order one  $[I(1)]$  and All lag length selection criteria tests suggested the use of one lag as optimal lag length for this study. The trace statistics of Johansen co-integration technique identified three co-integrating equations at 5% level of significance. Thus, long-run relationship between the variables is given in Table 1 below:

Table 1: Results of Long run Relationship (Dep. Variable: Real GDP)

CPI	ER	TOT	LFPR	INV
-1.908048	2.121823	1.715826	-3.923052	0.823527
(25.6285)	(13.6697)	(15.5757)	(6.3787)	(6.0673)

Note: t values are given in parenthesis

The above table reveals that as expected by theory and some of the existing empirical literature, terms of trade (e.g., Jawaid and Raza 2012; Mputu 2016), investment (e.g., Mputu; Jebran et al 2018), and exchange rate (e.g., Kogid et al 2012) have a positive and statistically significant impact on real GDP while CPI affects real GDP negatively in the long run. Kasidi and Mwakanemela (2012) also identified similar findings regarding the impact of CPI on GDP. Further, Labor Force Participation Rate affects real GDP negatively in contrast to the theory and some of existing empirical studies

(e.g., Shahid 2014; Raleva 2014). An inefficient labor market and negative net-migration could be the reason for this negative effect. Table 2 below denotes the coefficients of speed of adjustment results from ECM:

Table 2: Results of the Speed of Adjustment Coefficients

	D(Y)	D(CPI)	D(ER)	D(TOT)	D(LFPR)	D(INV)
Coint	-0.5546	0.0280	0.1145	-0.6696	-0.0386	0.4850
Eq1	[-1.938]	[ 0.174]	[ 0.594]	[-1.308]	[-0.501]	[ 3.587]

Note: t values are given in parenthesis

Negative and significant (at 10%) speed of adjustments (-0.554) coefficient of real GDP reveals that 55% disequilibrium is corrected each year which means that one period after exogenous shocks, real GDP moves backward towards long run steady state line with a speed of 55.4% in each period. Further, this study did not find any short run link and causality relationship between the variables<sup>10</sup>.

## Conclusion

The present study investigates the impact of terms of trade (TOT) on economic growth in Sri Lanka. The co-integration tests revealed a positive and significant relationship between TOT and economic growth, ER and real GDP, INV and real GDP with a negative and statistically significant relationship between LFPR and real GDP and CPI and real GDP in the long-run. However, there is no short run relationship and causality link between the variables under considered in this study. Also, the results show that there is an adjustment towards the steady state soon after the exogenous shocks with a speed of 55.4% in each period. So, policy makers should focus on diversifying Sri Lankan exports to ensure economic growth in the country.

## References

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<sup>10</sup>Due to the page constraint, the result of short run relationship and causality relationships are not presented here but available upon request.

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