The Twin Deficits Hypothesis in Sri Lanka: An Econometric Analysis

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Introduction

The Twin Deficits Hypothesis (TDH) states that a government budget deficit (BD) leads to current account deficit (CAD) in an open economy (Salvatore, 2006). High BD, by leading to higher interest rates would in turn attract capital inflows and thereby cause an appreciation of the exchange rate. This will make exports more expensive and imports cheaper, thereby worsening the trade deficit, which is the major component in the CAD. In the economics literature, two prime approaches are used to explore the relationship between the CAD and BD of a country: the Keynesian proposition and the Ricardian Equivalence Hypothesis (REH). Based on the Mundell-Fleming framework, the Keynesian view asserts that BD has a statistically significant impact on CAD; there exists a unidirectional causality that runs from BD to CAD. By contrast, the REH posits that a cause and effect relationship does not exist between the two deficits. But, these are not the only posible outcomes between the two deficits. A bi-directional causality between the two deficits could also exist.

For a long period of time, Sri Lanka has experienced persistently high BD as well as CAD. The COVID-19 is likely to further exacerbate the highly vulnerable fiscal and external financial situation of Sri Lankan economy. The anti-COVID-19 measures have lowered economic activities and would further reduce fiscal revenues. The recently announced import restrictions will also reduce the import tax revenues. On the other hand, government expenditure will increase due to additional expenditure incurred on anti-COVID-19 efforts including cash payouts to the affected people. The Export Development Board has estimated that the export of goods and services will drop by $ 7 billion in 2020. The CAD of Sri Lanka's balance of payments is likely to increase from $ 3 billion to $ 6 billion - $ 7 billion (www.ft.lk). These twin

deficits cause macroeconomic imbalances and indebtedness. Hence, this study attempts to examine the relationship between CAD and BD. The findings of the study are expected to guide policymakers to formulate fiscal and monetary policies to avert further BD and CAD.

Saleh et al. (2005) and Sivarajasingham and Balamurali (2011) examined TDH for Sri Lanka only by focusing on the relationship between current account balance (CAB) and BD. Therefore, this study attempts to examine the TDH of Sri Lanka including important variables such as interest rate and exchange rate, which directly influence the twin deficits process.

Objectives

The main objective of this study is to examine the relationship between CAD and BD of Sri Lanka. Also, this study aims to examine the validity of the TDH for Sri Lanka.

Methodology

This study uses the time series data of Sri Lanka over the period 1960-2019 to achieve the above objective. Based on the twin deficit hypothesis, the econometric model of this study is expressed as follows:

$$CAD_t = \beta_0 + \beta_1 BD_t + \beta_2 ER_t + \beta_3 IR_t + u_t \qquad (1)$$

Where, CAD: current account deficit, BD: budget deficit, ER: exchange rate IR: interest rate, u is the error term and the subscript t indicates time. Data for all variables are extracted from Central Bank of Sri Lanka annual resports.

Augmented Dickey- Fuller (ADF) and Ng- Perron unit root test were adopted to test the stationary property of series. AIC was used to select the optimum number of lag of each variable. ARDL Bounds test approach was employed to investigate the existence of cointegration and long run relationship among the variables. The Error Correction version of ARDL model was employed to test the long run adjustment and short run dynamics of CAD. Granger Causality test was employed to check the causality relationship between the variables.

Results and Discussion

The ADF and Ng- Perron tests confirmed that all the variables were stationary at their first difference. Akaike Information Criteria (AIC) suggested the use of ARDL (1, 0, 1, 0) model for this analysis. The results of Bounds test for the selected model is given below:

Table 1: Results of Bounds Test for ARDL (1, 0, 1,0) Model

Panel A: F- Bounds Test (95% level of confidence)				
F- Statistics	Lower Bound		Upper Bound	
12.48	2.79		3.67	
Panel B: Long run Coefficient Estimates				
Constant	BD	ER	IR	R^2
7.4970	1.4845***	-0.0575***	-0.3095**	0.8042
(0.0006)	(0.0000)	(0.0002)	(0.0138)	

Note: P- value is given in parentheses. *, ** and *** indicate variables are statistically significant at 10%, 5% and 1% level of significance respectively.

Results of Panel A in Table 1 reveal that there exist cointegrating relationship between the variables since we reject the null hypothesis of no cointegration as the F- Statistic is higher than the upper bound critical value (at 5% level of significance). Since the cointegrating relationship between the variables is confirmed through the Bounds test there should be long run correlation among the variables. Panel B in Table 1 shows that BD has a significant and positive impact on CAD. If BD is increased by 1% of GDP, CAD will be increased by 1.4845% of GDP in the long run, ceteris paribus. Government borrowing to finance the BD leads to higher IR, which in turn would attract capital inflows, thereby causing appreciation of the ER. This will make exports to become expensive and imports cheaper and thereby worsen the CAD. Further, ER and IR have a significant and negative impact on CAD in the long run. These results suggest that depreciation of ER and an increase in IR would improve the CAD. Some of the existing empirical literature on the developing countries also found similar findings (e.g., Epaphra, 2017).

Coefficients of ECT (-1) carry a negative sign, which is highly significant, indicating that there should be an adjustment towards steady state line at the speed of 96.7% in each period one period after the exogenous shocks.

Table 2: Results of Error Correction Version of ARDL (1, 0, 1, 0) Model

Short run coefficient estimates and error correction representation					
Lag order	ΔCAD	ΔBD	ΔER	ΔIR	ECT (-1)
0		0.8828***	0.2270**	-0.2964**	-0.9671**
		(0.0000)	(0.0159)	(0.0118)	(0.0000)
1	0.4165***		-0.2164***		
	(0.0034)		(0.0322)		
R^2= 0.6919					

Note: P- value is given in parentheses. *, ** and *** indicate variables are statistically significant at 10%, 5% and 1% level of significance respectively.

The previous year CAD and current value of BD have positive and significant impacts on CAD. The current value of ER has a positive and significant impact on CAD wheres previous year ER (at lag 1) has a negative and significant impact on CAD. This is consistent with the J- Curve phenomenon, which states that devaluation of the currency will not improve CAB in the immediate period but will significantly impact on the CAB, while making CAB improvement in subsequent periods. Further, IR has a negative and significant impact on CAD in the short run.

The results of the diagnostic tests show that the model is correctly specified and the parameters are correctly estimated by satisfying all the assumption related to the residual (see Table 3 in appendix).

The results of the Granger causality test (see Table 4) identified weak unidirectional causality between BD and CAD that runs from BD to CAD.

Table 4: Results of Granger Causality Test

Null hypothesis	Obs	F- statistics	Prob.
D_BD does not granger cause D_CAD	57	2.4541	0.0588*
D_CAD does not granger cause D_BD	57	1.6235	0.2070

Note: *, ** and *** indicate that variables are statistically significant at 10%, 5% and 1% level of significance respectively.

Conclusion

The empirical results of this study show that, there is a positive and significant relationship between CAD and BD in Sri Lanka both in the long run and in the short run. At the same time, there is a unidirectional causation

that runs from BD to CAD. Therefore, this study concluded that the TDH is confirmed in Sri Lanka. Further, the results of this study support the Keynesian view and REH is not valid for Sri Lanka during the study period. So this conclusion emphasizes that, in order to reduce the CAD in Sri Lanka BD could be used as a policy instrument especially in this COVID- 19 pandemic situation.

References

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Appendix

Table 3: Results of Diagnostic Test

Diagnostic	Test applied	P- Value	Conclusion
Serial correlation	(B-G serial correlation LM test)	0.5021	No serial correlation
Normality	(Jarque- Bera)	0.3108	Error is normal
Heteroskedasticity	(White test)	0.1334	No heteroskedasticity
Omitted variable	(Ramseys' RESET test)	0.1650	No omitted variables