

An Empirical Analysis of the Twin Deficits Hypothesis: The Case of Sri Lanka

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INTRODUCTION

Current account balance records and presents a country's transactions with the rest of the world, including the trade balance, net earnings on cross-border investment and net current transfers. It also can be interpreted as the reflection of the net change in national assets which shows a nation's borrowing and lending to the rest of the world (Leszczuk & Pojar, 2016). Government budget deficit is the government expenditure exceeding its revenue. It is not always bad for an economy as it helps to promote growth and can be used as a revival strategy in a crisis (Kalugalla, Jayasundara, & Chandrarathne, 2020).

However, this budget deficit is assumed to create a negative impact on the current account, thus creating a current account deficit. This phenomenon is termed as the twin deficit hypothesis (Miller & Russek, 1989). This hypothesis is particularly established mainly through Mundell-Fleming model and Keynesian absorption theory. Accordingly, Keynesian absorption theory suggests that increasing budget deficit increases the disposable income of the consumers thus creating upward pressure on consumer spending. This encourages consumers to demand more imports which leads to a current account deficit (Saleh & Nair, 2005). As stated in the Mundell-Fleming model, the increase in budget deficit creates a demand on borrowing increasing the market interest rate. This will create capital inflows to the country given that the country adopts free capital movement policies and ultimately appreciates the domestic currency. Accordingly, the appreciated domestic currency would discourage exports and encourage imports to create a current account deficit (Perera & Liyanage, 2011).

In contrast to that, Ricardian Equivalence Hypothesis (REH) explained that there is no direct relationship between the current account deficit

and the budget deficit. It reveals that the budget deficit does not create an impact on the real interest rate and the current account deficit (Barro, 1974). In sum, there is a strong theoretical dilemma behind this relationship between budget deficit and the current account deficit.

Like many other developing countries, Sri Lanka also has experienced a continuous budget deficit as well as a current account deficit. However, this continuous dual deficit has only been tested in few occasions using Twin Deficit hypothesis (i.e; Colombage, 1991, Saleh *et al*, 2005, Perera & Liyanage, 2011) which was also conducted before 2011. In Sri Lanka, the current account deficit has been identified as a major problem for decades as it has created many macroeconomic issues. The downward pressure on the rupee value which occurs through the current account deficit has led to a deterioration in the foreign exchange reserve position, imposition of heavy trade restrictions on imports that obstruct pure liberalization and continuous dependency on external borrowings (International Monetary Fund, 2015). Hence, it is extremely important to identify the existence of twin deficit hypothesis in the context of Sri Lanka and to generate insights for policy directions. Thus, this study attempts to understand the relationship between budget deficit and the current account deficit revisiting twin deficit hypothesis.

LITERATURE REVIEW

The Keynesian open-economy model confirms the positive relationship between government budget deficit and the current account balance using the Investment-Savings approach. Accordingly, National Income (Y) is a function of consumption expenditure, investment expenditure, government expenditure and net exports.

$$Y = C + I + G + NX \quad (1)$$

Alternatively, Y can also be computed by taking the sum of consumption, savings, and taxes.

$$Y = C + S + T \quad (2)$$

Substituting (2) in (1),

$$(X - M) = (S - I) + (T - G) \quad (3)$$

Therefore, Current Account Balance (CA) = (S-I) + (T-G)

If $G > T$ (budget deficit) CA will be negative.

According to equation 3, net exports equal private savings and public savings. Thus, it suggests that having negative public savings (budget deficit) will cause a reduction in the net exports (current account balance) (Saleh & Nair, 2005).

There have been many studies that attempted to examine the twin deficit hypothesis under different contexts and those have provided controversial arguments. Studies such as Darrat (1988), Piersanti (2000) and Abell (1990) have found that the budget deficit causes trade deficit thus supporting the existence of Keynesian hypothesis. In contrast, Studies such as Miller and Russek (1989) and Evans (1988) argue for the inexistence of a relationship between budget deficit and trade deficit.

METHODOLOGY

The objective of this study is to investigate the existence of twin deficit hypothesis in the Sri Lankan context. Accordingly, the main focus of the paper is to test whether there is an impact from the budget deficit (BD) on the current account deficit (CAD) in Sri Lanka. For that, the study uses annual data during the period from 1977 to 2020 extracted from Central Bank Annual reports. The two variables (BD and CAD) were taken as a ratio to GDP to avoid the extreme differences in the absolute values. It is worth notifying that this paper employs Autoregressive Distributed Lag (ARDL) model to examine the relationship between BD and CAD. The Granger-Causality test was performed to determine the direction of causality.

ARDL (p, q) model

$$CAD_t = \gamma_i + \sum_{i=1}^p \delta_i CAD_{t-1} + \sum_{i=1}^q \beta_i BD_{t-i} + \varepsilon_{it} \quad (4)$$

Where CAD_t is a vector and the variables in (X_t) are allowed to be purely $I(0)$ or $I(1)$ or co-integrated; B and δ are coefficients; γ is constant; $i = 1, \dots, k$; p and q are optimal lag orders; ε_{it} is error term.

VECM model

$$\Delta CAD_t = \beta_0 + \sum_{i=1}^p \beta_{1i} \Delta CAD_{t-i} + \sum_{i=1}^q \beta_{2i} \Delta BD_{t-i} + \delta ECT_{t-1} + \varepsilon_{it} \quad (5)$$

δ = speed of adjustment parameter

ECT = Error Correction Term

The stationarity property of the data has been tested using Augmented Dickey – Fuller (ADF) test.

Finally, to examine the direction of causality between BD and CAD, Granger-Causality test is used. The test involves the following:

If current account deficit (CAD) ‘Granger-Causes’ Budget Deficit (BD)

$$CAD_t = \sum_{i=1}^p \alpha_i CAD_{t-i} + \sum_{j=1}^q \beta_j BD_{t-j} + U_{1t} \quad (6)$$

If Budget Deficit (BD) ‘Granger-Causes’ current account deficit (CAD)

$$BD_t = \sum_{i=1}^p \alpha_i BD_{t-i} + \sum_{j=1}^q \beta_j CAD_{t-j} + U_{1t} \quad (7)$$

FINDINGS

The stationarity properties of the variables are tested using ADF test. Accordingly, both budget deficit (ratio to GDP) and current account deficit (ratio to GDP) are stationary at levels. Therefore, it fulfills a prerequisite to apply ARDL to the model.

Table 1: Short-run ARDL model

Dependent variable: CAD

Variable	Coefficient	Prob.
CAD_GDP(-1)	0.271967*	0.0249
BD_GDP	0.616563**	0.0001
C	1.821818	0.1651
R-squared	0.437234	
Prob(F-statistic)	0.000010	
Akaike info criterion	4.743701	

*, ** denotes rejection of the hypothesis at 0.05 and 0.01 levels

Source: Compiled by author

Table 1 presents findings for the short-run relationship between current account deficit and the budget deficit using ARDL approach. Accordingly, appropriate lag lengths of the short-run model are CAD_{t-1} and D_t . Lag 1 of CAD is having a positive significant impact on CAD_t and budget deficit is also having a positive significant impact on CAD_t .

To determine the existence of a long run relationship between the variables Bound test for cointegration (Bound F-statistic) is used. Accordingly, it has found that there is a long-run relationship between budget deficit and current account deficit.

Table 2: Estimated long-run coefficients

Variable	Coefficient	Prob.
BD_GDP	0.846889*	0.0002
C	2.502385	0.1881
EC = CAD_GDP - (0.8469*BD_GDP + 2.5024)		

* Denotes rejection of the hypothesis at the 0.01 level.

Source: Compiled based on Central Bank data

Estimated long-run coefficients are given in the table 2. Accordingly, there is a positive and significance impact from budget deficit on the current account deficit in the long-run. Compared to the short-run impact of BD on CAD (see Table 1), the magnitude of the long-run impact of BD on CAD is higher.

Table 3: ARDL Error Correction Regression

Dependent variable: CAD

Variable	Coefficient	Prob.
CointEq (-1)*	-0.728033*	0.0000
R-squared	0.530958	
Akaike info criterion (AIC)	4.650678	

* Denotes rejection of the hypothesis at the 0.01 level.

Source: Compiled based on Central Bank data

The table 3 expresses the long run reversion to equilibrium or speed of adjustment parameter. The adjustment parameter value is 0.728. This means the reversion to long-run equilibrium is at an adjustment speed of 72.8 %. Also, the R-squared (coefficient of determination) is 0.53 which confirms that the long-run ARDL Error Correction model is having a good explanatory power.

The stability of the long-run relationship between CAD and BD of ARDL model is tested using CUSUM and CUSUM of Squares tests. It revealed that the current account deficit is stable if the variations of the budget deficit are taken into consideration.

Further, the residuals of the model are normally distributed and the model is free from serial correlation.

Table 4: Granger Causality test results

Null Hypothesis	F-Statistic	Prob.
BD_GDP does not Granger Cause CAD_GDP	3.81923	0.0311*
CAD_GDP does not Granger Cause BD_GDP	0.67953	0.5131

* Denotes rejection of the hypothesis at the 0.05 level.

Source: Compiled based on Central Bank data

Granger Causality results show that there is a causal effect from BD on CAD at 5% significance level (Table 4). At the same time, no causation is observed from CAD to BD. Therefore, the causal effect is unidirectional and the effect is created by budget deficit on the current account deficit. Hence, it confirms the existence of Twin Deficit Hypothesis in Sri Lanka. The same results have been seen in previous studies such as Saleh et al. (2005) and Perera & Liyanage, (2011).

CONCLUSIONS

Fiscal imbalances are found as one of the major reasons behind many economic disturbances of a country (Perera & Liyanage, 2011). Hence, it is important to discuss and identify issues created through sustained budget deficits. Accordingly, the purpose of this study is to examine the relationship between budget deficits and current account deficit to test the validity of Keynesian and the Ricardian views in the Sri Lankan context.

In order to examine the relationship between budget deficit and the current account deficit, the study used ARDL approach. The study found that there is a short-run and long-run relationship between budget deficit and current account deficit during the period of 1977 to 2020. The empirical results support the Keynesian proposition thus revealing that there is a unidirectional causation from budget deficit to current account deficit in Sri Lanka. Further, the study found that the short-run effect between budget deficit and current account deficit is smaller in magnitude than the long run effect. In sum, the current account deficit can be controlled by reducing the fiscal deficit in Sri Lanka.

REFERENCES

- Abell, John D. (1990), 'The Role of the Budget Deficit during the Rise in the Dollar Exchange Rate from 1979–1985', *Southern Economic Journal*, 57(1): 66–74.
- Evans, P. (1988), 'Do Budget Deficits Affect The Current Account?' Unpublished, Ohio State University, Ohio.
- Leszczuk, J., & Pojar, S. (2016). *What is behind Denmark's Current Account Surplus?* European Commission.
- Baharumshah, A., Ismail, H., & Lau, E. (2009). Twin Deficit Hypothesis and Capital Mobility: The ASEAN – 5 Perspective. *Jurnal Pengurusan*.
- Barro, R. (1974). Are Government Bonds Net Wealth? *Journal of Political*, 1095-1117.
- Darrat, A.F. (1988), 'Have Large Budget Deficit Caused Rising Trade Deficits', *Southern Economic Journal*, 55: 879–87.
- International Monetary Fund. (2015). *Fourth Post-Program Monitoring Discussion—Press Release; Staff Report; and Statement By The Executive Director for Sri Lanka*. Washington, D. C: International Monetary Fund.
- Kalugalla, K., Jayasundara, J., & Chandrarathne, S. (2020). The impact of budget deficit on private investment in Sri Lanka. *Journal of Management Matters*, 73-86.
- Kearney, C. and Monadjemi, M. (1990). Fiscal policy and current account performance: international evidence on the twin deficits.

Journal of Macroeconomics, 12(2), 197-219.
doi.org/10.1016/0164-0704(90)90029-A.

Khalid, A.M. And T.W. Guan (1999), 'Causality Tests of Budget and Current Account Deficits: Cross-Country Comparisons', *Empirical Economics*, 24(3): 389-402

Miller, S.M. And F.S. Russek (1989), 'Are the Twin Deficits Really Related', *Contemporary Policy Issues*, 7(4): 91-115.

Nkoro, E., & Uko, A. (2016). Autoregressive Distributed Lag (ARDL) cointegration technique: application and interpretation. *Journal of Statistical and Econometric Methods*, 63-91.

Perera, A., & Liyanage, E. (2011). An Empirical Investigation of the Twin Deficit Hypothesis: Evidence from Sri Lanka. *Staff Studies*, 41-87.

Piersanti, G. (2000), 'Current Account Dynamics And Expected Future Budget Deficits: Some International Evidence', *Journal Of International Money And Finance*, 19(2): 255-71

Saleh, A., & Nair, M. (2005). The Twin Deficits Problem in Sri Lanka. *South Asia Economic Journal*, 221-239.