The Influence of Budget Deficits on Interest Rates: An Empirical Analysis in the Sri Lankan Context

Colombo Economic Journal (CEJ)
Volume 2 Issue 2, December 2024: PP 55-69
ISSN 2950-7480 (Print)
ISSN 2961-5437 (Online)

Published by Department of Economics, University of Colombo, Sri Lanka
Website: https://arts.cmb.ac.lk/econ/colombo-economic-journal-cej/

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Received: 01 September, 2024, **Revised**: 25 October, 2024, **Accepted**: 18 November, 2024.

Abstract

Since Sri Lanka liberalized its economy in 1977, it has persistently faced challenges with budget deficits, leading to a substantial increase in public debt. These consistent deficits have raised concerns about the economic impact, especially regarding higher interest rates and reduced investment. This study aims to examine the effects of budget deficits on interest rates in Sri Lanka using the Autoregressive Distributed Lag (ARDL) bound testing approach, impulse response function, variance decomposition analysis, and VAR causality analysis. The data considered for this analysis covers the period from 1990 to 2019. The findings from the impulse response, variance decomposition, and VAR causality analysis illustrate that the effect of interest rates, increasing government fiscal deficits are initially gradual. This explains that higher government deficits reduce the available funds for loans, and discourage private-sector investment. Further, the findings revealed the neutrality of the budget deficit on the interest rate. Also, the economic growth rate and consumer price index have a significant and negative influence in the short-run and long-run. In addition, the positive fluence of the budget deficit, a negative impact of economic growth, and trade balance ensure the crowding–out effect, suggest that increasing government borrowing may reduce private-sector investment and output expansion during the study period. It is recommended that the government of Sri Lanka implement an efficient tax system and that target specific sectors like education, research, and infrastructure which enhance the productive capacity and stimulate private sector investments in these areas.

Keywords: *Interest rate, Budget deficit, ARDL model, Granger causality, Sri Lanka*

JEL Classification: E43, H60, C53

Introduction

When government expenditure exceeds the revenue, the budget faces a deficit and tries to borrow fund from other available sources. According to Keynesian economists, a budget deficit plays an important role in stabilizing economic growth and limiting the rise in unemployment. However, it causes significant economic problems such as crowding out of the private sector, higher interest rates, future tax rises and even potential for inflation (Quayes and Jamal, 2007). However, most developing countries prepare a deficit budget since this help promote economic welfare and economic growth at macro level (Aisen and Hauner, 2013). Because of the stimulus of private demand or the depressing effect on aggregate saving, conventional models predict that interest rates will rise in response to the increase in the deficit Garcia and Ramajo (2004). From a Ricardian perspective, however, increases in the deficit will not be transmitted to interest rates since they do not affect individuals' wealth (Akinboade,2004).

Sri Lanka as a developing country has been experiencing a deficit budget since the adoption of the open economy policy in 1977, the budget deficit has increased significantly in proportion to GDP (Various Central Bank annual reports) (Francis and Amirthalingm, 2020). Low government revenue (low tax rate, ineffective tax collection) and increased public spending (food subsidies, defense spending and etc.) are potential contributory factors that widen budget deficit (Chowdury and Saleh, 2008). However, Kelikume (2016) indicated that if Sub-Saharan African economies stay within the approved range of debt sustainability ratio, growing government borrowing does not affect the interest rates.

The increased budget deficit is affecting Sri Lanka's Gross Domestic Production (GDP), inflation, interest rates, public debt, exchange rates and many other economic indicators IMF(2023), CBSL (2023), Ministry of Finance (2022) and World Economic Outlook (WEO, 2023) which creates vicious cycle, where government borrowing reduces private investment, impeding the country's economic progress. Therefore, the purpose of this study is to examine the impact of the budget deficit on interest rates in Sri Lanka. It is also investigated whether the budget deficit is causing a crowding-out effect in Sri Lanka through the interest rate.

This study is divided into five sections. The first section describes the topic of this paper. The empirical literature is examined in section two, and technique and data source are discussed in section three. Section four discusses the results, and section five—the final section— presents the conclusion.

Review of Literature

The relationship between budget deficits and interest rates was studied by several academics and researchers. Their empirical evidence, however, revealed contradictory results regarding deficit and interest rates.

Quayes and Jamal (2007) found that the budget deficit had a positive impact on long-term interest rates of bonds and leads to the impulse crowding out effect in the US from 1947 to 2002. Uwilingiye and Upta (2009) analyzed the link between budget deficit and interest rate in South Africa using Johansen and Granger Causality test by applying quarterly data from 1961 – 2005 and they concluded that budget deficit reduces private investment by raising interest rates. Further, they applied yearly data from 1961 to 2005 and confirmed there is no causal relationship between budget deficit and interest rate in these countries. According to Garcia and Ramajo (2004), budget deficits did not seem to increase long-run nominal interest rates in Spain throughout the sample period of 1964 - 2000. The same findings were proposed by Onurah (2013) in Nigeria from 1981 to 2012. He considered the Ricardian equivalence proposition theory for the analysis of variables. Cebula (1996 and 2014) confirmed that budget deficit has a positive impact on the interest rate and causes crowding effect in the US. Further, he illustrated that a large amount of budget deficit generated debt problems by increasing interest rates.

Dissanayake (2016) undertook a study on the relationship between budget deficit and selected macroeconomic variables in Sri Lanka using the granger causality test and confirmed that budget deficit has a causal relationship with public debt and inflation but never has a causal relationship with interest rates. Some analysts have found conflicting results in examining the relationship between budget deficit and interest rate. Priyadarshanee and Dayaratna (2013) applied annual data for Sri Lanka from 1960 to 2009 to find that private investment increased as government spending increased.

Further, Kolluri and Giannoros (1987) and Evans (1987) have shown in their study that interest rates fall when the budget deficit increases. Claeys et al. (2012) studied the relationship between the Federal deficit and treasury rate in the U.S based on the VAR test for the period 1976-2003 annual data. They concluded that the Federal deficit increases the interest rate. Furthermore, a high Federal deficit increases domestic and foreign debt and transfers financial resources from future generations to the present generations. According to Francis and Amirthalingam (2019) Hence, tax burdens will increase in the future and will be a negative impact on economic growth . Samirkaş (2014) found that a global budget deficit increases the cost of borrowing and creates a financial imbalance in the capital market by using annual data from 1989-2012 in OECD countries. Also, monitoring and fiscal policies do not directly affect interest rates but influences global factors and therapy affects interest rates. Ibrahim and Kumah (1996) analyze that the crowding-out effect of public debt has a positive impact on the domestic long-term interest rate. The crowding-out effect suggests that private sector spending or investment decreases while the government increases spending, particularly through borrowing. Further, the government's demand for loanable funds raises interest rates, making borrowing more expensive for private businesses and consumers. This leads to a decrease in private investment and consumption, thus crowding out private economic activity. Private investment is essential for long-term growth, and government borrowing to fund deficits result in higher interest rates.

Businesses are holding back on investing in new projects, expansion, or research and development spending because of the higher interest rate. In future, lack of fiscal consolidation in OECD countries causes' the budget deficit to increase interest rates. Maitra (2017) studied the link between the liquidity of money, interest rate and budget deficit in Sri Lanka based on the VAR and Granger causality test for the quarterly data since the global recession (2009-2016). They concluded that liquidity and budget deficit created a positive impact on interest rates in Sri Lanka. Similarly, monitory and fiscal policies has a significant impact on interest rates. Malesevic-Perovic (2016) found that interest rates on government bonds increase government debt increase in G7 countries. This created a crowding out effect in G7 countries from the period 1948 - 2012. Aisen and Hauner (2013) studied the relationship between interest rates and budget deficit in America. They found that budget deficit has a positive impact on the interest rate leading to the crowding out effect. Rani and Kumar (2016) found that there is a long run co-integration relationship between money supply, inflation, interest rate and budget deficit in India by using ARDL approach. Furthermore, the budget deficit has a positive impact on long-term interest rates in India.

Research Methods

The present study analyzed the impact of real interest rate on budget deficit by incorporating economic growth rate, trade balance and consumer price index as supporting variables during the period from 1990 to 2019. The time series data, collected from the World Bank database, the annual reports of the Central Bank and the Ministry of Finance of Sri Lanka, were collected for the purpose.s.

Conceptual Frame work

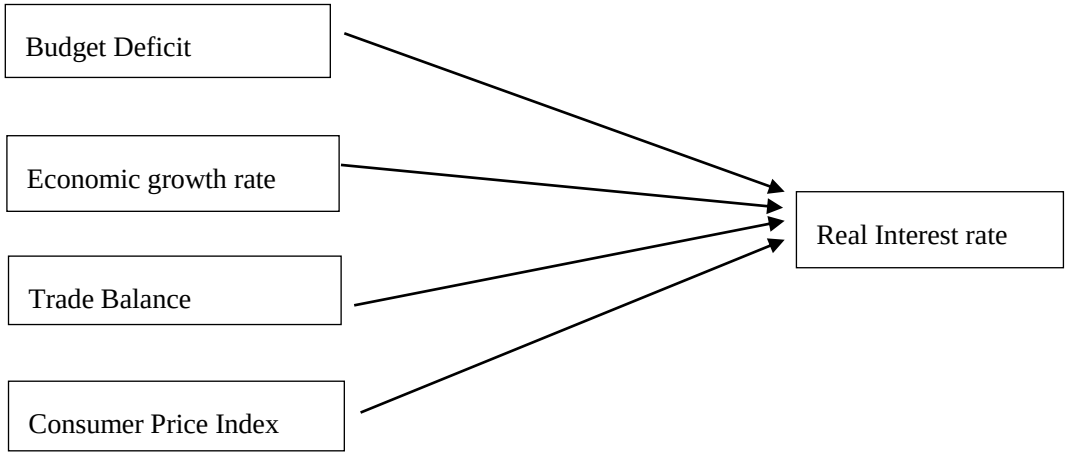

Figure 1: Conceptual Frame work

The above figure expains the relationship between dependent variable and independent variables. In the methods of the econometric estimation technique, the unit root test, and logical methods were included:

The Augmented Dickey-Fuller (ADF) and the Phillips Perron (PP) testing approaches were applied for the analytical instrument to investigate the stationary of the variables.

The ADF method employs the subsequent equation to investigate the stationarity of variables:

$$\Delta Y_t = \beta + \gamma_t + \rho Y_{t-1} + \sum_{i=1}^{k} \Delta Y_{t-1} + U_t \quad (1)$$

Where:

Y_t : Specific time series, Δ: First difference operative, k : the lag order, t: the time tendency, β: the coefficient of constant and U_t : the serially uncorrelated random error term with zero mean and constant variance. It shows that ADF is not significantly different from zero if the time series has a unit root, otherwise not.

The Phillips – Perron (PP) unit root approach is another method to examine the stationarity of variables, it differs from the ADF approach. The following equation illustrates the the PP of test the stationarity of variables:

$$\Delta Y_t = \beta' D_t + \pi Y_{t-1} + U_t \quad (2)$$

Where: U_t: I(0) and may be heteroscedasticity.

Econometric Model Specification

To investigate the dynamic relationship between the dependent and independent variables, the present study utilized the subsequent econometric regression model.

$$Y_t = \beta_0 + \beta_n \sum_{i=1}^{n} x_{nt} + U_t \quad (3)$$

where:

Y_t : Real interest rate, x_{nt} : (Budget deficit, Economic growth rate, Trade balance and Consumer price index), β_0 : Coefficient of constant, β_n : Coefficient of independent variables The ARDL technique was used to test the cointegration among the variables and long run correlation between the budget deficit and interest rate in Sri Lanka . The ARDL approach technique states that the dependent variable should be stationary in first difference (I (1)) (Francis et al., 2021) . Also, the variables are in order (1) and (0). The following ARDL model was developed for the present study (Danthanarayan et al., 2024).

$$RI_t = \delta_0 + \delta_1 RI_{t-1} + \delta_2 BD_{t-1} + \delta_3 EGR_{t-1} + \delta_4 TB_{t-1} + \delta_5 CPI_{t-1} + \sum_{i=0}^{p} \beta_{1i} \Delta RI_{t-1} + \sum_{i=0}^{q1} \beta_{2i} \Delta BD_{t-1} + \sum_{i=0}^{q2} \beta_{3i} EGR_{t-1} + \sum_{i=0}^{q3} \beta_{4i} \Delta TB_{t-1} + \sum_{i=0}^{q4} \beta_{5i} CPI_{t-1} + U_t \quad (4)$$

Where, δ_0 is the intercept, δ_1, δ_2, δ_3, and δ_4 are the coefficients of the variables, RI- Real interest rate (%) , BD= Budget Deficit (percentage of GDP), EGR = Economic growth rate (%), TB = Trade Balance (percentage of GDP), CPI= Consumer price index

(Index), Ut is the error term. The long-term relationship among the variables is determined by the F-test in the ARDL cointegration method.

The null hypothesis is tested using the Wald or F-statistic, considering the Unrestricted Error Correction Model while excluding the lagged variables ΔRI, ΔBD, ΔEGR, ΔTB, and ΔCPI. The value of the F-statistic is below the lower critical bounds, indicating no co-integration among the variables in the long run.

$H_0 = \delta_1 = \delta_2 = \delta_3 = 0$ (There is no co-integration among the variables)

$H_1 = \delta_1 \neq \delta_2 \neq \delta_3 \neq 0$ (There is co-integration among the variables)

While there is long-run co-integration exisiting among the variables the succeeding model is estimated.

$$\Delta RI_t = RI_t + \sum_{i=0}^{p} \beta_{1i} \Delta RI_{t-1} + \sum_{i=1}^{q1} \beta_{2i} \Delta BD_{t-1} + \sum_{i=1}^{q2} \beta_{3i} \Delta EGR_{t-1} + \sum_{i=1}^{q3} \beta_{4i} \Delta TB_{t-1} + \sum_{i=1}^{q4} \beta_{5i} \Delta CPI_{t-1} + U_t \quad (5)$$

The subsequent equations specify the short-run dynamics of the ARDL model and the error correction model:

$$\Delta RI_t = \delta_0 + \sum_{i=0}^{p} \beta_{1i} \Delta RI_{t-1} + \sum_{i=1}^{q1} \beta_{2i} \Delta BD_{t-1} + \sum_{i=1}^{q2} \beta_{3i} \Delta EGR_{t-1} + \sum_{i=1}^{q3} \beta_{4i} \Delta TB_{t-1} + \sum_{i=1}^{q4} \beta_{5i} \Delta CPI_{t-1} + \lambda \Delta ECT_{t-1} + V_t \quad (6)$$

Results and Discussion

Before conducting the ARDL bounds test, it is vital to ensure that the variables are not I (2) by addressing their stationarity. The results of the ADF and PP tests are summarized in Table 1.

Table 1: Unit Root Test

Variables	ADF test (Intercept Only)			PP test (Intercept Only)		
	Level	1st difference	Remark	Level	1st difference	Remark
Real interest rate	0.1313	0.0000 ***	I (1)	0.1313	0.0000 ***	I (1)
Budget deficit (GDP %)	0.0244 **	-	I (0)	0.0262 **	-	I (0)
Economic growth rate (%)	0.0045 ***	-	I (0)	0.0045 ***	-	I (0)
Trade balance (GDP %)	0.0122 **	-	I (0)	0.0001 ***	-	I (0)
Consumer Price Index	0.0787	0.0136 **	I (1)	0.0787	0.0137 **	I (1)

Note: Significant at 10%, 5% and 1% are *, **, and *** respectively

As per Table 1, the Real interest rate and Consumer Price Index are not at stationary level, but they are stationary at the first difference I(1). On the other hand, Budget deficit, Economic growth rate, and Trade balance are stationary at level, indicating that they are I(0) variables.Thus, the empirical variables were mixed with I (0) and I (1), suggesting the application of the ARDL bounds test approach.

Table 2: VAR lag order selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-262.3760	NA	135.5111	19.09829	19.33618	19.17101
1	-153.2416	171.4970*	0.344050*	13.08868*	14.51605*	13.52504*
2	-129.9763	28.25065	0.470660	13.21260	15.82943	14.01259

* indicates lag order selected by the criterion
Source: Author's Computation using EViews 9

Note:* shows the lag order selected by the criterion at a 5% significance level.

Table 2 shows that the FPE, AIC, and HQ criteria recommend lag 1. Additionally, the polynomial graph in Figure 1 confirms the appropriate lag length selection for the VAR approach.

Table 3: ARDL (1, 1, 1, 1, 1) Bounds test for Cointegration

Critical Values	Value	Significant	Upper bounds I (0)	Lower bounds I (1)
F - Statistic	14.93225	10%	2.2	3.09
		5%	2.56	3.49

Table 3 shows the results of the ADRL bounds cointegration test. The calculated value of the F-statistic describes the normalized regression of the interest rate. The computed value of the F-statistic (14.93225) exceeds the upper critical bounds at 10% and 5% significance levels, leading to the rejection of the null hypothesis of no cointegration among variables. Therefore, according to the ARDL bounds test, it can be concluded that there is a long-term relationship among the variables.Table 4 illustrates the empirical findings of the long-run cointegration selected by the AIC through the bound tests ARDL (1, 1, 1, 1, 1).

Table 4: Estimated ARDL (1, 1, 1, 1, 1) Long-Run Coefficients

Variables	Coefficient	t-statistics	P-value
Budget Deficit	2.212169	4.178027	0.0005***
Economic growth rate	-1.241388	-2.916418	0.0089***
Trade Balance	-0.823721	-2.021015	0.0576**
lncpi	-4.745342	-5.392897	0.0000***

C	42.24836	5.628309	0.0000

Note: Significant at 10%, 5% and 1% are *, **, and *** respectively

Given the long-run coefficients, the budget deficit has a significant positive impact on interest rates throughout the study. The finding is supported by findings of Lumengo Bonga-Bonga (2012) in South Africa; Quayes and Jamal (2007) in the U.S.A; Pandit (2005) in Nepal; Cebula (1996 & 2014) in the United States; Uwilingiye & Gupta (2009) in South Africa. A 1% raise in the budget deficit results in a 2.21% increase in the interest rate, everything else remains constant. Additionally, the economic growth rate anticipated negative impact on the interest rate throughout the study. Further, a 1% rise in the economic growth rate deters the interest rate by around 1.24%, while keeping other variables constant. Further, the trade balance has a negative significant impact on the interest rate. At the same time, the consumer price index has a significant impact on the interest rate for the study period which shows that one percent increase in the consumer price index reduces the interest rate by about 4.74 % when keeping other factors constant. Table 5 shows the evaluated short-run coefficients and the Error Correction Term (ECM), which implies how quickly the model adjusts to long-term equilibrium. The error correction term in this model is correctly signed and highly significant, revealing that the model is adjusting towards long-term equilibrium and indicating a stable long-term relationship.

Table 5: Error Correction Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.911732	1.668063	-0.546581	0.5914
D(RIR(-1))	-0.463731	0.130407	-3.556022	0.0023
D(BD)	0.790291	0.479510	1.648124	0.1167
D(BD(-1))	1.186422	0.482202	2.460423	0.0242
D(GDP(-1))	-0.283115	0.302425	-0.936149	0.3616
D(LCPI)	-38.35290	16.77029	-2.286955	0.0345
D(LCPI(-1))	47.73498	17.71501	2.694607	0.0148
D(TB)	0.051678	0.302738	0.170700	0.8664
D(TB(-1))	-0.989470	0.296859	-3.333131	0.0037
ECT(-1)	-0.520111	0.277413	-1.874863	0.0271

Note: Significant at 10%, 5% and 1% are *, **, and *** respectively

The value of the error correction term (-0.52) assert that short-term deviations will be corrected in the long run at a rate of about 52% per year. Further budget deficit has a significant positive impact on interest rate in the short-run, economic growth rate has a significant negative impact on interest rate in the short-run, and the consumer price index has a mixed impact on interest rate in the short run, but trade balance has no relationship with interest rate in the short run. Table 6 demonstrates the causality results of the variables considered for the present study. The appropriate lag length for this study is selected using AIC lag selection.The findings suggest no causality between the interest rate and the budget deficit, but there is a causality between the budget deficit

and the interest rate. This indicates that in Sri Lanka, a unidirectional causality exists from budget deficit to interest rate. Further, trade balance and consumer price index cause the interest rate.

Table 6: Pairwise Granger Causality Test

(Direction of causality)	(P Value)	Decision
D(Real interest rate) → D(Budget deficit)	0.6759	Reject
D(Budget deficit) → D(Real interest rate)	0.0402 **	Do not reject
D(Real interest rate) → D(Economic growth rate)	0.3778	Reject
D(Economic growth rate) → D(Real interest rate)	0.9107	Reject
D(Real interest rate) → D(Trade balance)	0.6978	Reject
D(Trade balance) → D(Real interest rate)	0.0706 *	Do not reject
D(Real interest rate) →D(lncpi)	0.9962	Reject
D(lncpi)→D(Real interest rate)	0.0038 ***	Do not reject

Note: Significant at 10%, 5% and 1% are *, **, and *** respectively

The estimated model has been verified for acceptability of heteroscedasticity, autocorrelation, and structural instability using a variety of diagnostic tests, and the results are shown in Table 7.

Table 7: Results of Residual Diagnostic Test

Test Statistic	P-value
Breusch- Godfrey Serial Correlation LM test	0.3293
ARCH LM test	0.2012
Ramsey's RESET test	0.0852

Based on Table 7, the Breusch-Godfrey serial correlation LM test value of 0.32 exceeds the 5% significance level, indicating that the error term is normally distributed, and the estimated model shows no serial correlation. The ARCH LM test probability value of 0.2012 suggests no issue with inhomogeneity. Additionally, Ramsey's RESET test value of 0.0852 indicates that the short-run model is well-specified, the function form is correct, and the model is free from omitted variables.

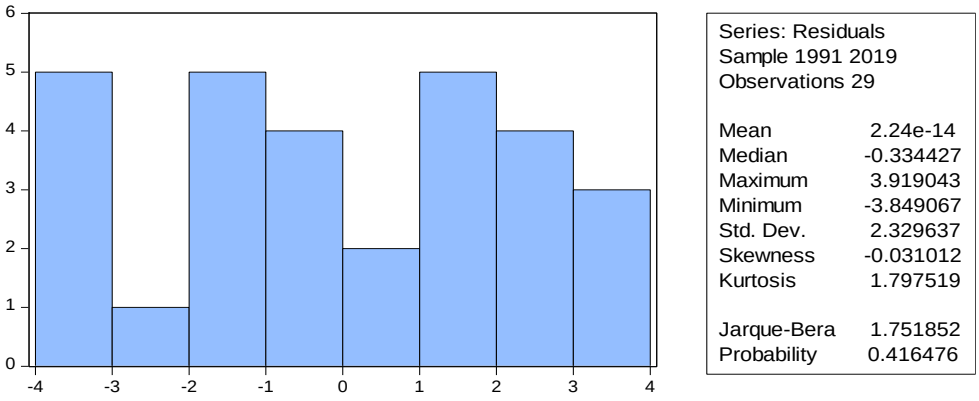

Figure 2: The Normality test

Figure 2 illustrates the Normality test through a Histogram. The Jarque-Bera value (1.75) is less than 3, and its probability value (0.41) is higher than the 5% significant level, indicating that the error is normally distributed.

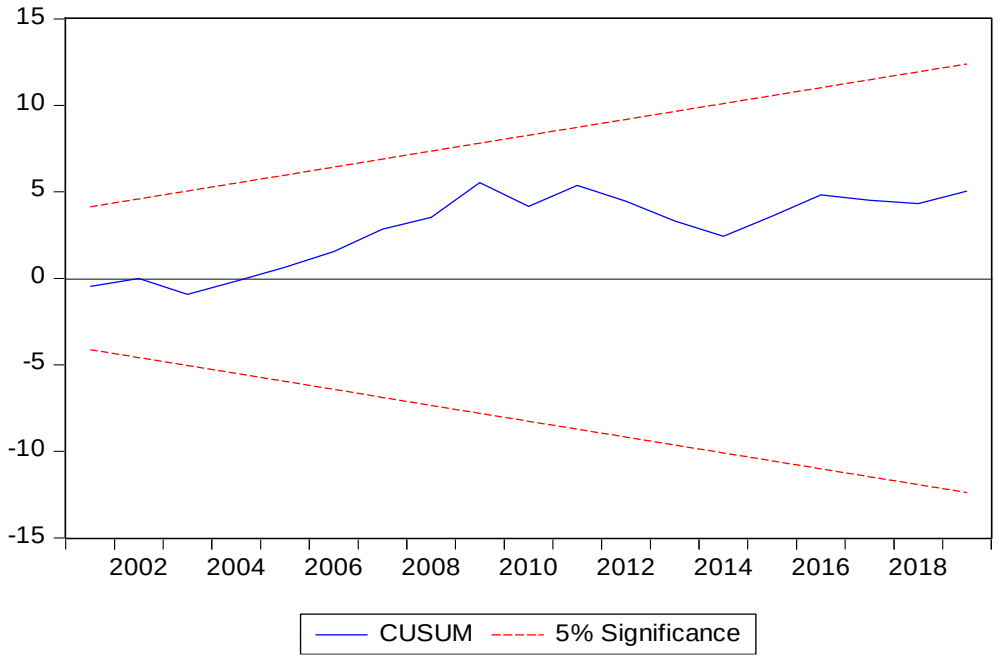

Figure 3: Stability Test

Note: The straight lines represent critical bounds at a 5% significance level

By conducting the cumulative sum (CUSUM) tests, the estimated model checks for long-run and short-run stability. The CUSUM results reveal that both short-run and long-run are reliable and stable. Figure 3 shows the CUSUM test plots based on the

Schwarz-Bayesian criterion. The plots use a 5% significance level and indicate that the null hypothesis of coefficients and the stability of ARDL (1, 1, 1, 1, 1) are accepted.

Impulse response functions are valuable for analyzing the interactions between variables in a vector autoregressive model. They depict the variables' reactions to shocks affecting the system. The figure 4 displays the Impulse Response Functions (IRFs) based on the evaluated VAR equations of this study. It emphasizes how the Real Interest Rate (RIR) responds to shocks in other variables over the decade. Figure 1(a) shows the effect of a positive shock on the budget deficit on interest rates, which appears to be long-lasting, for seven years. This describes that maintaining a regulated budget deficit is crucial to keep interest rates stable. In Figure 1(b), a shock in GDP growth negatively impacts the real interest rate (RIR) in the first eight periods but subsequently has a neutral effect on RIR, as indicated by its relation to the origin. These results imply that budget deficits in Sri Lanka have a detrimental influence on the interest rate in the short run (Dvorný, 2006; Kelikume, 2016). Figure 5 (1(b)) also indicates that one percent innovation in GDP growth results in a positive effect on the real interest rate, implying that currency appreciation in Sri Lanka leads to an increase in interest rates. Impulse responses of the interest rate have a positive shock to inflation cause the interest rate to rise according to the Fisher effect (Figure 5 (1(d)). In particular, the impact of the positive shock to inflation on the interest rate is quite persistent because it lasts seven months. This implies that to stabilize interest rates, inflation must be kept under control. In theory, a raise in real income will boost money demand, which, in turn, directs to an increase in interest rates. Figure 5 (1(c)) illustrates the positive shocks to inflation; money growth and the interest rate do not affect budget deficit.

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.

Figure 1(a) Response of Real Exchange Rare to Budget Deficit

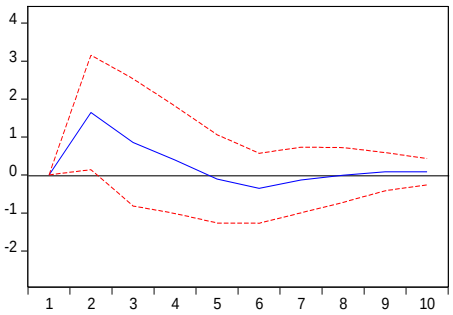

Figure 1(b) Response of Real Exchange Rate to Economic Growth

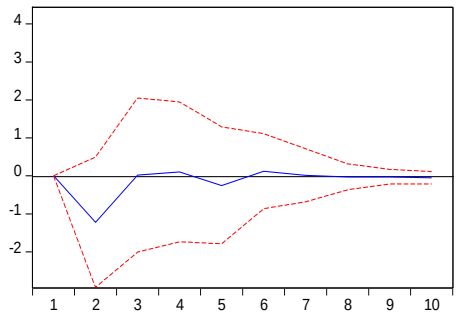

Figure 1 (c) Response of Real echange Rate to Trade balance

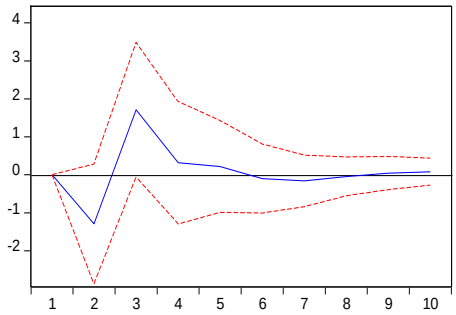

Figure 1 d) Response of Real Exchange Rate to Consumer Price Index

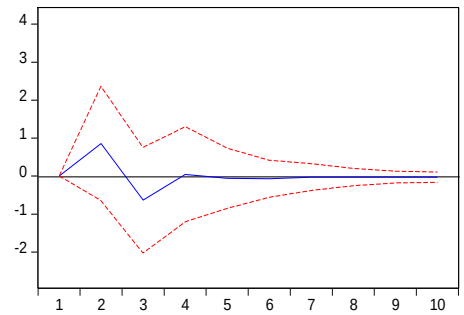

Figure 4: Impulse Response

Figure 4 (1(a)) indicates the effect of the positive shock on the budget deficit on the interest rate is quite persistent because it lasts for seven years. This implies that to stabilize interest rates, the budget deficit must be kept under control.

The variance decompositions (VDCs) analysis described in Table 8 provides additional insight into the findings of the IRFs. The results demonstrate that after ten years, 14.84% of the budget deficit (BD) prediction error variance of interest rates (RIR). In the meantime, 6.2% of the variation in real exchange rates is accounted for by GDP. The trade balance (TB) affects real exchange rates by around 18.86%, whereas inflation (LCPI) only affects real exchange rates by 4.5%. This suggests that the budget deficit and trade balance are the two main sources of real exchange rate volatility in Sri Lanka.

Table 8: Variance Decomposition of Real interest rate:

Period	S.E.	Real interest rate	Budget deficit	GDP	Trade Balance	LCPI

1	3.495977	100.0000	0.000000	0.000000	0.000000	0.000000
2	4.362910	65.24709	14.27158	7.854863	8.766684	3.859785
3	4.954477	56.46496	14.06158	6.093011	18.74795	4.632499
4	4.986269	55.92211	14.52267	6.057979	18.91518	4.582059
5	5.002452	55.70381	14.47156	6.274468	18.98377	4.566391
6	5.029663	55.57594	14.80204	6.265123	18.81905	4.537851
7	5.034163	55.48028	14.84462	6.254758	18.88760	4.532752
8	5.035654	55.49210	14.83584	6.254572	18.88417	4.533324
9	5.039290	55.51471	14.84262	6.248448	18.86422	4.529995
10	5.043231	55.51491	14.84780	6.249420	18.86135	4.526522

Conclusion

This research aimed to explore the impact of budget deficits on the interest rates in Sri Lanka. The study employed time series data from 1990 to 2019, with the budget deficit as the independent variable and the real interest rate as the dependent variable. The ARDL technique was performed to test cointegration among the variables. The findings reveal a positive relationship between budget deficits and the real interest rate in both the long run and short run. The P value of the Granger Causality test between interest rate to budget deficit as well as budget deficit to interest rate are 0.6759 and 0.0402, respectively, which suggests that there is one way causal relationship between budget deficit and the interest rate. Further, this a well-designed tax, adopting a more disciplined approach to public spending, designing fiscal to promote investment, developing conducive environment for private-sector investment, developing coordination between fiscal and monetary policies, boosting exports to improve the trade balance and reduce reliance on foreign borrowing. By adopting these recommendations, Sri Lanka can create an environment that reduces fiscal imbalances, promotes investment, and supports long-term economic growth. Reducing the crowding-out effect while improving the efficiency of public expenditure will be key to achieve sustainable economic development.

Acknowledgements: We are extremely thankful to the Colombo Economic Journal for accepting our manuscript. We extend our gratitude to the journal editor and reviewers for their valuable suggestions which significantly improved our manuscript.

References

Aisen, A., & Hauner, D. (2013). Budget deficits and interest rates: a fresh perspective. *Applied Economics*, *45*(17), 2501–2510. https://doi.org/10.1080/00036846.2012.667 557.

Akinboade, O. A. (2004). The relationship between budget deficit and interest rates in South Africa: some econometric results. *Development Southern Africa*, *21*(2), 289–302. https://doi.org/10.1080/0376835042000219550.

Cebula, R. J. (2014). An empirical investigation into the impact of US federal government budget deficits on the real interest rate yield on intermediate-term treasury issues, 1972–2012. *Applied Economics*, *46*(28), 3483–3493. https://doi.org/10.1080/000368 46.2014.932050.

Cebula, R., (1996). An Empirical Note on the Impact of the Federal Budget Deficit on Ex Ante Real Long-Term, Interest Rates. *Southern Economic Journal,* 63(4), 1094-1099.

Claeys, P., Moreno, R., & Suriñach, J. (2012). Debt, interest rates, and integration of financial markets. *Economic Modelling, 29*(1), 48–59. https://doi.org/10.1016/ j.econmod.2011.05.009.

Chowdhury, K. and Saleh, A. S. (2008), "Testing the Keynesian Proposition of Twin Deficits in the Presence of Trade Liberalisation: Evidence from Sri Lanka", *Middle East Business and Economic Review, 18* (2), 1-13.

fr, C.T., Francis, S.J., & Kumarage, A.S. (2024). Determinants of Financial Shortfalls in State-owned Railway Systems: An ARDL Approach for Sri Lanka Railways. *International Journal of Accounting and Business Finance*. 10(1), 86-116. DOI: 10.4038/ijabf.v10i1.153.

Dell'Erba, S., & Sola, S. (2016). Does fiscal policy affect interest rates? Evidence from a factor-augmented panel. *The B.E. Journal of Macroeconomics, 16*(2), 395 - 437. https://doi.org/10.1515/bejm-2015-0119.

David W. F. (1990) Budget Deficits Expected Inflation and Short-Term Real Interest Rates: Evidence for the U.S. *International Economic Journal, 4*(3), 41-53. DOI: 10.1080/10168739000000017.

Dissanayake, D. (2016). Identifying the Relationships between Budget Deficit and Selected Macroeconomic Variables: A Study of Sri Lanka During the Postliberalization Era. SSRN *Electronic Journal,* 246-290. https://doi.org/10.2139 /ssrn.2910354.

Dvorný, Z. (2006). Budget Deficit and Interest Rates. *Prague Economic Papers*, *15*(1), 3-13. doi: 10.18267/j.pep.272

Evans, P. (1987). Do budget deficits raise nominal interest rates?: Evidence from six countries. *Journal of Monetary Economics*, *20*(2), 281-300. https://doi.org/10.1016 /0304-3932(87)90017-1.

Francis, SJ., Ravinthirakumaran, N. & Ganeshamoorthy, M (2021). The Impact of Macroeconomic Variables on Stock Prices in Sri Lanka: A Bounds Testing Approach. *International Journal of Accounting & Business Finance,7*(1) 68 – 91.

Francis, S. J., & Amirthalingam, K. (2020). "Nexus between Government Revenue and Economic Growth in Sri Lanka during 1980-2018: A Time Series Analysis". *Sankhya-International Journal of Management and Technology*, 8 (1), pp. 217-232.

Francis, S. J., & Amirthalingam, K. (2019). Public expenditure and economic growth nexus in Sri Lanka during 1980-2017: A Time Series Analysis. *IHRA Journal*, 6(1), 1-57.

García, A., & Ramajo, J. (2004). Budget deficit and interest rates: empirical evidence for Spain. *Applied Economics Letters*, 11(11), 715–718. https://doi.org/10.1080/135048 5042000236593.

Ibrahim, S. B., & Kumah, F. Y. (1996). Co movements in budget deficits, money, interest rates, exchange rates and the current account balance: some empirical evidence. *Applied Economics*, *28*(1), 117-130.

Kolluri, B. R., & Giannaros, D. S. (1987). Budget deficits and short-term real interest rate forecasting. *Journal of Macroeconomics*, *9*(1), 109–125. https://doi.org/10.1016 /s0164-0704(87)80010-1.

Kelikume, I. (2016). The effect of budget deficit on interest rates in the countries of sub-Saharan Africa: A panel VAR approach. *The Journal of Developing Areas*, *50*(6), 105–120. https://doi.org/10.1353/jda.2016.0145.

Lumengo B. (2012). Budget deficit and long-term interest rates in South Africa. *African Journal of Business Management*, 6(11), 3954 - 3161. https://doi.org/10.5897/ ajbm11.713.

Malesevic-Perovic, L. (2016). Government debt-interest rate nexus in G7 countries over a long horizon. *Panoeconomicus*, *63*(5), 603- 625. https://doi.org/10.2298/pan14072 4023m.

Maitra, B. (2017). Monetary and fiscal factors in nominal interest rate variations in Sri Lanka under a deregulated regime. *Financial Innovation*, *3*(1), 1-17.https ://doi.org/10.1186/s40854-017-0075-8.

Mondal, S. P., & Maitra, B. (2022). Deficits, Debt and Interest Rates in Sri Lanka: Does the Spillover of Foreign Interest Rates Matter? *Margin: The Journal of Applied Economic Research*, *16*(1), 28 - 48. https://doi.org/10.1177/09738010211067399

Onuorah, A. C, & Odita, A. O. (2013). Relationship between Macro-Economic Variables and Budget Deficit. *International Journal of Management Sciences, Research Academy of Social Sciences*, *1*(10), 416-426.

Priyadarshanee, A. A. S., & Dayaratna-Banda, O. G. (2013). The budget deficit and financial crowding out: evidence from Sri Lanka. *Sri Lanka Journal of Economic Research*, *1*(1), 3-28.

Pandit, R. (2005). The impact of fiscal deficit on long-term nominal interest rate in Nepal. *Economic Review, Occasional Paper, 17, 113-132*.

Quayes, S., & Jamal, A. M. M. (2007). Budget Deficits and InteresT Rates: The US Evidence since 1946. *The Singapore Economic Review*, *52*(02), 191–200. https://doi.org/10.1142/s0217590807002646.

Rani, R., & Kumar, N. (2016). Does Fiscal Deficit Affect Interest Rate in India? An Empirical Investigation. *Jindal Journal of Business Research*, *5*(2), 87–103. https://doi.org/10.1177/2278682116680925.

Samirkaş, M. (2014). Effects of budget deficits on inflation, economic growth and interest rates: applications of Turkey in 1980-2013 Period. *Journal of Economics and Development Studies*, *2*(4), 203-210. DOI: 10.15640/jeds.v2n4a1.

Uwilingiye, J., & Gupta, R. (2009). Temporal Causality between Budget Deficit and Interest Rate. *The Indian Economic Journal*, 57(2), 79–96. https://doi.org/10.1177/0019466220090206.