

## **An Empirical Analysis of the Impact of Fiscal Policy on Stock and Bond Markets in Sri Lanka**

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### **Introduction**

The world's financial market transactions have increased with a busy and modern life style. In particular, the stock market and the bond market play a key role in establishing a correlation between financial market transactions. Therefore, more and more investors have shown their interest in stock and bond market activities. When focusing on the behaviour of the above markets, deep understanding of the volatility or fluctuations of the markets is important. These markets response to changes in key macro variables, such as inflation, interest rate, monetary policy, money supply and Foreign Direct Investment, etc. Yet, there is no clear understanding of which factors cause the stock and bond markets to actually fluctuate. Some studies give priority to monetary rather than fiscal policy. Some early studies identified fiscal policy as a neglected factor (Sprinkel, 1964), and subsequent studies show that fiscal policy also has a significant impact on stock market volatility (Lapodis, 2009).

In particular, using a theoretical framework, Tobin has explained how monetary policy as well as fiscal policy influence stock market volatility. He states that the growth of money supply and budget deficits create impacts on the stock market (Tobin, 1960). Some empirical evidence shows that the bond market clashes with public sector debt. Government expenditure shocks are expected to be positive for stock and bond yields (Tavares and Valkanow, 2001). They found that fiscal policy generates some impacts on the volatility of both stock and bond markets. Many previous studies have identified that monetary policy has a direct relationship, and fiscal policy an indirect relationship with capital markets. Given this background, it is clear that only a few studies have focused on investigating the impact of fiscal

policy on the stock market and the bond market; thus opening up an avenue to further examine the possible impacts of fiscal policy on capital market behavior.

## Objectives

The objective of this study is to empirically investigate the effects of fiscal policy on the stock and bond markets in Sri Lanka.

## Methodology

The present study employs two models to test for a causal relationship between fiscal policy variables and stock (1987-2018) and bond markets variables (1997-2018), sourced from the Central Bank of Sri Lanka annual report and World Development Indicators of the World Bank database. Stock market index (ST) and bond market yields (BN) are used as the dependent variables in the respective models. The independent variables are: government expenditure (ex), government revenue (tx) and budget deficit (bg) are used as the fiscal policy variables. Three types of data have been used to represent fiscal policy variables. They are, normal fiscal policy values (% of GDP), growth rate data values (c) and the one year lagged values of fiscal policy variables.

The following regression models were estimated to identify the impact of fiscal policy on the stock and bond markets. The model was regressed on two occasions to avoid multicollinearity between government expenditure, government revenue and budget deficit.

$$ST_t = \beta_0 + \beta_1 tx_t + \beta_2 ex_t + \beta_3 ctx_t + \beta_4 cex_t + \beta_5 tx_{t-1} + \beta_6 ex_{t-1} + u_t \quad (1)$$

$$ST_t = \alpha_0 + \alpha_1 bg_t + \alpha_2 cbg_t + \alpha_3 bg_{t-1} + v_t \quad (2)$$

$$BN_t = \beta_0 + \beta_1 tx_t + \beta_2 ex_t + \beta_3 ctx_t + \beta_4 cex_t + \beta_5 tx_{t-1} + \beta_6 ex_{t-1} + u_t \quad (3)$$

$$BN_t = \alpha_0 + \alpha_1 bg_t + \alpha_2 cbg_t + \alpha_3 bg_{t-1} + v_t \quad (4)$$

Further, the pair wise Granger causality test was used to identify the direction of the causal relationship between the variables. ADF unit root test was employed prior to the Granger causality test.

## Results and Discussion

The results of model 1 (see Table 1 below) show that the coefficient of the previous year's government expenditure is statistically significant at 5% level, which indicates a negative correlation with the stock market index; whereas the coefficient of the previous year's government revenue has a positive and significant impact on the stock market. The  $R^2$  value 0.611 reveals that 61% of the variability of the stock market index is described by the explanatory variables of model 1.

Table 1: Results of Model 1 (Dependent Variable: Stock Market Index)

Variables	Coefficients	Std Error	t-stat	p-value
tx <sub>t</sub>	0.052449	0.058196	0.901242	0.3772
ex <sub>t</sub>	-0.033215	0.052388	-0.63402	0.5326
ctx <sub>t</sub>	0.407706	0.685163	0.595049	0.5579
ceX <sub>t</sub>	-1.159547	1.075356	-1.07829	0.2926
tx <sub>t-1</sub>	1.804252	0.508161	3.550556	0.0018***
ex <sub>t-1</sub>	-1.874982	0.845609	-2.21731	0.0372**
_con	-0.00520	0.058543	-0.01185	0.9907
Number of obs.	= 30		R-squared	= 0.61112
F- Statistics	= 15.04		Prob > F	= 0.0009

Note: \*, \*\* and \*\*\* represent variables being significant at 10%, 5% and 1% level of significance respectively.

Table 2 below shows that the coefficient of current and last year budget deficit growth rate has a negative and significant impact on the stock market index. The  $R^2$  value of the model is 0.63, so that 63% of total variability of the stock market is explained by the independent variables of the model.

Table 2: OLS Results of Model 2 (Dependent Variable Stock Market)

Variables	Coefficients	Std Error	t-stat	p-value
bg <sub>t</sub>	0.003241	0.043411	0.074655	0.9411
cbg <sub>t</sub>	-0.600712	0.270629	-2.21969	0.0357**
cbg <sub>t-1</sub>	-0.966925	0.179421	-5.38913	0.0000***
con	0.138021	0.347244	0.397475	0.6944
Number of obs.	= 30		R-squared	= 0.634563
F- Statistics	= 14.47		Prob > F	= 0.0000

Note: \*, \*\* and \*\*\* represent variables being significant at at 10%, 5% and 1% level of significance respectively.

Even though none of the fiscal policy variables have significant impact on the bond market index, government expenditure and budget deficit affect the bond market positively while government revenue has a negative impact on the bond market index<sup>3</sup>.

Results of Granger causality tests (see Table 3) demonstrate that there is a unidirectional causality relationship between government revenue and the stock market index (at 10% level of significance); budget deficit and stock market index (at 5% level of significance) and budget deficit and bond market index (at 10% level of significance).

The Granger causality test results of Fiscal policy variables indicate that they are not correlated with the Bond market. But only the budget deficit is correlated.

Table 3: Results of Granger Causality Test<sup>4</sup>

Dependent Variables: Stock Market		
Hypothesis	F-Statistic	P-Value
tx – ST	2.93887	0.0722***
bg - ST	7.87318	0.0023*
Dependent Variables: Bond Market		
bg- BN	2.74034	0.0990***

Note: \*, \*\* and \*\*\* represent variables being significant at 10%, 5% and 1% level of significance respectively.

## Conclusions

This study identified that only lagged values of fiscal policy instruments are directly correlated with the stock market whereas fiscal policy variables are not correlated significantly with the bond market. In particular, it implies that there is a tendency of the bond market to be determined by factors other than fiscal factors. The 30 year war that ended in 2009 and internal political crises have affected the bond market more than fiscal factors. Granger causality test found a unidirectional causality relationship flowing from tax revenue to stock market, budget deficit to stock market and budget deficit to bond market. When income taxes go up, investors move away from the stock

<sup>3</sup> Due to page limit, results of these two models are not shown but available up on request.

<sup>4</sup> Only the results of significant variables are presented here due to page limit.

market whereas when income tax rates reduced, investors invest more on the stock market. Therefore, the fiscal policy variables should be appropriately used in formulating stock market and bond market policies.

## **References**

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