# Economic Determinants of Budget Deficit in Sri Lanka

**E. M. G. P. Ekenayake and J. G. Sri Ranjith**

*Department of Economics and Statistics, Faculty of Arts*
*University of Peradeniya, Sri Lanka*

***Keywords:*** *Budget Deficit; Economic Growth; Time Series Analysis*

## Introduction

Deficit budget was adopted in both developing and developed countries to adjust macroeconomics policies in 1980s. When considering about Sri Lankan situation, data shows that budget deficit varies between 5 to 10 % of GDP over the last few decades (Central Bank Report, 2014). According to the economic theory, if budget deficit exceeds around 8 % of GDP, it is not a favorable condition for the economy as it creates adverse effects such as reduces national savings, increases borrowings, crowding out and inflation. Therefore, it is worthwhile to understand the reasons behind the budget deficit.

Among the empirical studies, Chihi and Normandin (1960) found that there is a positive co-movement between external trade and budget deficits. Chowdhury and Saleh (2007) explained that current account deficit, savings–investment balance and budget deficit have positive long run relationship. Anojan (2014) concluded that direct tax revenue significantly affect to the budget deficit in Sri Lanka. Given this background it is important to identify the important determinants of budget deficit in Sri Lanka.

## Objectives

This study examines the impact of economic growth, male and female labour force participation rate, tax revenue, government investment, net exports, pension and Samurdhi expenses on budget deficit in Sri Lanka.

## Methodology

The study uses time series data analysis technique to achieve research objectives. Data is used for the period of 1960 to 2015. All the data were obtained from Annual Reports of Central Bank of Sri Lanka and World Bank data base. The general specification of the regression model is given below:

$$Y_t = \alpha_0 + \alpha_1 GR_t + \alpha_2 MLP_t + \alpha_3 FLP_t + \alpha_4 PEN_t + \alpha_5 SAMU_t + \alpha_6 TR_t$$

$$+ \alpha_7 NX_t + \alpha_8 GEI_t + U_t$$

where, $Y_t$ is the dependent variable which indicates budget deficit (% of GDP). $GR_t$ is the growth rate of gross domestic production. $MLP_t$ and $FLP_t$ are Male and Female labour participation rate respectively. $PEN_t$ and $SAMU_t$ are pension expenditure of the government (% of GDP) and Samurdhi/Janasaviya or any other household welfare payment as a % of GDP. $TR_t$ is the tax revenue as a % of GDP. $NX_t$ and $GI_t$ denote net exports and government investment in Sri Lanka respectively as a percentage of GDP. $U_t$ is the random error term. The stationarity of data is checked by using Augmented Dickey Fuller (ADF) test. Johansen Co-integration test is adapted to identify the long run relationship between the variables whereas Vector Error Correction Model (VECM) is used to identify the short run relationships among variables as well as long-run equilibrium of the model.

## Results and Discussion

The ADF unit root test confirms that all variables are first differenced stationary which implies that all variables are integrated in order one. The lag length selection criteria suggested one lag as an optimal. Johansen Co-integration rank test identified one co-integrating relationship among selected variables with confirming long run relationship. And also it suggests to use VECM in the study. The long-run part of the ECM results can be shown as follows:

**DY(-1) = -0.02+ 1.23 DSAMU(-1) – 2.46 DMLP(-1) – 3.34DGR(-1) + 4.58 DFLP(-1)-**
[2.111] [-1.689] [-1.909] [2.350]
**1.939 DTR(-1) - 2.56DPENS(-1) + 7.92DGEI(-1) + 0.023DNX(-1)**
[-0.885] [-0.203] [1.523] [0.454]

Samurdhi expenses and female labour force participation have positive relationship with the budget deficit in the long-run whereas male labour participation rate and GDP growth rate have negative relationship in the long-run. It shows that tax revenue, pension expenses, government investment and net export do not have significant relationship with Sri Lankan government budget deficit in the long-run. The study also reveals that Samurdhi expenses have a positive relationship with budget deficit in the short run. A negative and significant error correction coefficient of (-1.39) budget deficit reveals that 1.39 % disequilibrium is corrected each year.

## Conclusions and Policy Implications

This study defines that increasing of Samurdhi expenses and female labour force participation creates more burden to the budget deficit in the long run whereas male labour participation rate and GDP growth rate affect favorably. Thus, the research confirms that decreasing trends of tax revenue and net export and increasing trends of pension expenses and government investment are not responsible for increasing the budget deficit in Sri Lanka.

## References

Chihi, F and M. Normandin. 2008. External and budget deficits in developing countries. *Journal of International Money and Finance*.

Chowdhury, K and A. S. Saleh. 2007.Testing the Keynesian proposition of twin deficits in the presence of trade liberalisation: Evidence from Sri Lanka. *Faculty of Business - Economics Working papers.*

Table 1: Results of ADF unit root test

| Variable | Level | | First Difference | |
|---|---|---|---|---|
| | t- Statistics | Probability | t- Statistics | Probability |
| Y | -2.471471 | 0.1280 | -13.26329*** | 0.0000 |
| GR | -5.784975*** | 0.0000 | -5.784975 | 0.0000 |
| MLP | -0.914606 | 0.7763 | -8.622885*** | 0.0000 |
| FLP | -1.456441 | 0.5480 | -7.152003*** | 0.0000 |
| TR | -1.923330 | 0.3195 | -6.622308*** | 0.0000 |
| SAMU | - 3.366333*** | 0.0165 | -3.366333 | 0.0165 |
| PEN | -3.038503*** | 0.0376 | -3.038503 | 0.0376 |
| NX | -3.287849*** | 0.0203 | -3.287849 | 0.0203 |
| GI | -2.644801 | 0.0904 | -10.21072*** | 0.0000 |

Note: *, **, *** represents stationary at 10 %, 5 % and 1 % level of significance respectively

Table 2: Lag order selection criteria

| Lag | LogL | LR | FPE | AIC | SC | HQ |
|---|---|---|---|---|---|---|
| 0 | -1134.5 | NA | 19994 | 42.351 | 42.68* | 42.47* |
| 1 | -1041.4 | 151.56* | 1332* | 41.90* | 45.22 | 43.18 |

Note: * indicates lag order selected by the criterion, LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error, AIC: Akaike information criteria, SC: Schwarz information criteria, HQ: Hannan-Quinn information criteria

Table 3: Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|
| None * | 0.771790 | 233.8973 | 197.3709 | 0.0002 |
| At most 1 | 0.649674 | 154.1129 | 159.5297 | 0.0948 |
| At most 2 | 0.384561 | 97.47272 | 125.6154 | 0.6797 |
| At most 3 | 0.373871 | 71.26007 | 95.75366 | 0.6796 |
| At most 4 | 0.272824 | 45.97734 | 69.81889 | 0.7982 |
| At most 5 | 0.250081 | 28.77366 | 47.85613 | 0.7790 |
| At most 6 | 0.145160 | 13.23300 | 29.79707 | 0.8807 |
| At most 7 | 0.071512 | 4.763603 | 15.49471 | 0.8334 |
| At most 8 | 0.013919 | 0.756911 | 3.841466 | 0.3843 |

Note: Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Table 4: Long-run relationship part of the VECM results

| Variable | Coefficient | Std.error | t-statistic |
|---|---|---|---|
| GR(-1) | -3.34 | 1.749 | 1.90931* |
| MLP(-1) | -2.46 | 1.456 | 1.68941* |
| FLP(-1) | 4.58 | 1.952 | -2.35015** |
| TR(-1) | -1.93 | 2.189 | 0.88561 |
| SAMU(-1) | -1.23 | 0.582 | -2.1112** |
| PENS(-1) | -2.56 | 12.62 | 0.20345 |
| NX(-1) | 0.02 | 0.050 | -0.45478 |
| GEI(-1) | 7.92 | 5.202 | -1.52345 |

Note: *, **, *** represents stationary at 10%, 5% and 1% level of significance respectively

Table 5 :Long-run equilibrium part of VECM results

| Variable | Coefficient | Standard error | t-statistic |
|---|---|---|---|
| CointEq1 | -1.397944 | 0.17638 | -7.92570*** |

Note: *, **, *** represents stationary at 10%, 5% and 1% level of significance respectively

Table 06: Short run part of VECM results

| Variable | Coefficient | Standard error | t-statistic |
|---|---|---|---|
| DY(-1) | -0.05 | 0.155 | -0.3351 |
| DGR(-1) | 2.084195 | 1.53344 | 1.35916 |
| DMLP(-1) | 2.274338 | 1.63789 | 1.38858 |
| DFLP(-1) | -2.389061 | 1.89586 | -1.26015 |
| DTR(-1) | -0.64 | 2.798 | -0.23215 |
| DSAMU(-1) | -1.10 | 0.4542 | 2.4437** |
| DPENS(-1) | 6.300798 | 13.1652 | 0.47860 |
| DNX(-1) | 0.005648 | 0.08615 | 0.06556 |
| DGEI(-1) | -6.063344 | 6.65197 | -0.91151 |
| C | 0.261181 | 5.37939 | 0.04855 |

Note: *, **, *** represents stationary at 10 %, 5 % and 1 % level of significance respectively