# The Impact of External Debt on Foreign Direct Investment in Sri Lanka

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## Introduction

Foreign Direct Investment (FDI) is an important avenue to earn foreign exchange, resolve the external debt problem, and promote economic growth. The literature has revealed that FDI is influenced mainly by external debt and also other factors such as inflation rate, interest rate, and trade openness (Muzurura, 2016). A high level of external debt results in harmful effects on an economy by reallocating FDI from productive investment to resolving external debt issues (Krugman, 1988). Hence, the relationship between external debt and FDI is considered an important factor since the developing countries are highly dependent on foreign debt to accelerate economic growth and fulfill their development needs (Mugambi, 2016).

In Sri Lanka, the Government's debt to GDP ratio was increased by 76.9% while FDI was increased by only 17.3% in 2017 while in 2018, the foreign debt recorded one of the largest increases since 1977 (Central Bank of Sri Lanka, 2018). It is noted that attracting FDI is an essential strategy to earn foreign reserves to pay the external debt and solve the public debt problem in Sri Lanka. Therefore, finding solutions to maintain public debt and attract FDI becomes an issue of high concern in the country. However, the relationship between external debt and FDI has not been explored widely in Sri Lanka. Hence, this research attempts to examine the impact of external debt on FDI and expected to provide a very important role in the current public debt problem as well as FDI flows in Sri Lanka.

## Objectives

The overall objective of this study is to analyze the impact of external debt on foreign direct investment in Sri Lanka.

## Methodology

The Neoclassical Theory of FDI (Solow, 1956) and the Theory of Debt Overhang (Krugman, 1988) is used to develop the research framework for this study. In this study, Time series data from 1978 to 2017 are used and the sources of data are from the Central Bank of Sri Lanka and World Development Indicators of the World Bank Report of 2018. The study adopted Foreign Direct Investment (FDI) as the dependent variable; and External Debt (EXD), Interest Rate (INT), Inflation Rate (INF), and Openness of the Economy (OPN) are taken as independent variables to develop the following functional form:

$$FDI = f(EXD, INT, INF, OPN) \quad (1)$$

The above model has transformed into a Multiple Linear Regression Model (MLRM) as given below:

$$FDI_t = \beta_0 + \beta_1 EXD_t + \beta_2 INT_t + \beta_3 INF_t + \beta_4 OPN_t + \varepsilon_t \quad (2)$$

Two variables in the above model were transformed into natural logarithm Form (NLF), which are Foreign Direct Investment (lnFDI) and External Debt (lnEXD). The model is given below:

$$lnFDI_t = \beta_0 + \beta_1 lnEXD_t + \beta_2 INT_t + \beta_3 INF_t + \beta_4 OPN_t + \varepsilon_t \quad (3)$$

The study used the Augmented Dickey-Fuller (ADF) test to check for the stationarity of variables and Akaike Information Criteria (AIC) to select the optimum number of lags. Result of the ADF tests revealed that the order of integration are mixed (see Table 1 in appendix) with I(0) and I(1), which suggests the use of Auto-Regressive Distributed Lag (ARDL) model to estimate the parameters. The result of AIC advocates the use of ARDL (1,1,0,0,0) model as the best model among top 20 models. Therefore, ARDL Bounds testing approach was used to test for cointegration between the variables. Hence, the ARDL model derived for this study is given below:

$$\begin{aligned}\Delta lnFDI_t = {} & \beta_0 + \beta_1 lnFDI_{t-1} + \beta_2 lnEXD_{t-1} + \beta_3 INT_{t-1} + \beta_4 INF_{t-1} + \\ & \beta_5 OPN_{t-1} + \textstyle\sum_{i=1}^{q_1} \alpha_{1i} \Delta lnFDI_{t-i} + \sum_{i=0}^{q_2} \alpha_{2i} \Delta lnEXD_{t-i} + \\ & \textstyle\sum_{i=0}^{q_3} \alpha_{3i} \Delta INT_{t-i} + \sum_{i=0}^{q_4} \alpha_{4i} \Delta INF_{t-i} + \sum_{i=0}^{q_5} \alpha_{5i} \Delta OPN_{t-i} + u_i \quad (4)\end{aligned}$$

This study also adopted the Error Correction version of the ARDL model to test the short-run relationship between the variables as well as to find the long-run adjustment. Data were analyzed using Excel and E-views software.

## Results and Discussion

Correlation analysis confirmed the absence of multicollinearity problems among the independent variables. Model fitting tests concluded that the residuals of the model are normally distributed, with absence of autocorrelation, heteroscedasticity, and omitted variables issues in the model. Thus, it was proved that the model was free of specification errors, and the CUSUM test showed that the model is dynamically stable and accurate at the 95% confidence level (See Figure 1 in Appendix). The table below presents the results of the Bounds test of the ARDL model.

Table 2: Results of the Bounds Test

| Test Statistic | Value | Significance. | I(0) | I(1) |
|---|---|---|---|---|
| | | | Asymptotic: n=1000 | |
| F-statistic | 9.844109 | 10% | 2.2 | 3.09 |
| K | 4 | 5% | 2.56 | 3.49 |
| | | 1% | 3.29 | 4.37 |

The above results revealed that there is co-integration among the variables included in the model. The results of the long-run relationship (see Table 3 below) implied that external debt has a significant and positive impact on foreign direct investment at 1% significance level, i.e., 1 percent increase in external debt induce foreign direct investment by 144 percent in the long-run. Further, the interest rate has a significant negative impact on FDI while inflation and openness have a significant positive impact on FDI.

Table 3: Long run Results of the ARDL Model

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LEXD | 1.440012 | 0.134220 | 10.72878 | (0.0000)*** |
| INT | -0.066530 | 0.027020 | -2.462272 | (0.0194)** |
| INF | 0.042089 | 0.020487 | 2.054451 | (0.0482)** |
| OPN | 0.031717 | 0.010446 | 3.036388 | (0.0047)*** |

Note: *, ** and *** represent variable are significance at 10%, 5% and 1% respectively.

The table below shows the results of the short run dynamic relationship and long run adjustment of the selected ARDL model.

Table 4: Results of Error Correction Model (ECM)

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.137295 | 0.139897 | 0.981401 | 0.3342 |
| D(LFDI(-1)) | 0.024503 | 0.171586 | 0.142801 | 0.8874 |
| D(LEXD) | 0.758619 | 1.182608 | 0.641480 | 0.5261 |
| D(LEXD(-1)) | -1.106473 | 1.072601 | -1.031580 | 0.3105 |
| D(INT) | -0.049099 | 0.028384 | -1.729805 | 0.0939* |
| D(INF) | 0.020034 | 0.013900 | 1.441226 | 0.1599 |
| D(OPN) | 0.030797 | 0.019099 | 1.612489 | 0.1173 |
| ECT(-1) | -0.291148 | 0.225929 | -1.288671 | 0.2074 |
| R-squared | 0.228989 | Mean dependent var | | 0.088891 |
| Adj R-squared | 0.049087 | S.D. dependent var | | 0.490545 |

Note: *, ** and *** represent significance of variable at 10%, 5% and 1% respectively.

The above results revealed that none of the regressor in the model have a significant impact on foreign direct investment at 5% level of significance in the short-run. The speed of adjustment coefficient depicts an adjustment towards steady state line with the speed of 29.11% in each period one period after the exogenous shocks. The findings of this study are in line with some of the earlier studies by Abala (2014); and Wabwalaba (2017) who found a positive relationship between external debt and foreign direct investment.

## Conclusion

This study identified that external debt has a positive impact on FDI while other variables also have a significant impact on FDI in the long-run, but none of the variables have a significant impact on FDI in the short-run in Sri Lanka. The study confirms the positive contribution of the external debt to enhance FDI in Sri Lanka. Hence, it is recommended that external debt be well-managed and should be invested in viable projects which lead to earning higher-level returns, that could be used for future debt servicing and promote investment by attracting more FDI and accelerate the economic growth in Sri Lanka.

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## Appendix

Table 1: Results of the Unit Root Test

| Test Types | Variables | ADF test | | PP test | |
|---|---|---|---|---|---|
| | | Intercept | Trend & Itercept | Intercept | Trend & Itercept |
| Level | LFDI | 0.8070 | 0.0062*** | 0.8043 | 0.0040*** |
| | LEXD | 0.9395 | 0.7448 | 0.9301 | 0.2147 |
| | INF | 0.0009*** | 0.0005*** | 0.0010*** | 0.0005*** |
| | INT | 0.1054 | 0.0356** | 0.0959 | 0.2572 |
| | OPN | 0.7768 | 0.8372 | 0.7476 | 0.8023 |
| 1st Difference | LFDI | 0.0000*** | 0.0000*** | 0.0001*** | 0.0000*** |
| | LEXD | 0.0000*** | 0.0000*** | 0.0000*** | 0.0000*** |
| | INF | 0.0000*** | 0.0000*** | 0.0001*** | 0.0000*** |
| | INT | 0.0000*** | 0.0001*** | 0.0000*** | 0.0000*** |
| | OPN | 0.0000*** | 0.0003*** | 0.0001*** | 0.0003*** |

Note:*, ** and *** indicate rejection of null hypothesis at 10%, 5% and 1% respectively.

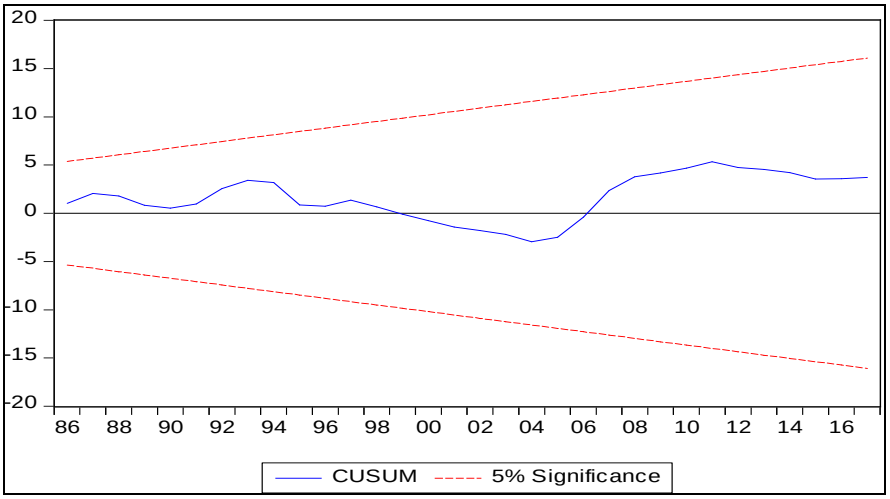


Figure 1: Results of the CUSUM Test