

THE IMPACT OF EXCHANGE RATE ON FOREIGN DIRECT INVESTMENT IN SRI LANKA: (1985 – 2021)

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Abstract

This study investigates the impact of exchange rate on FDI in Sri Lanka during the period of 1985 to 2021. In order to reach the objective of this research, Augmented Dickey- Fuller (ADF) test to check the stationary property of data, the Auto Regressive Distributed Lag (ARDL) model developed to find the long run relationship, the Error Correction Model was employed to test the long run adjustment and short run dynamics of FDI and Granger Causality Test was employed to check the causality relationship. This study used Foreign Direct Investment (FDI) is used an endogenous variable and the independent variables are Exchange Rate (ER), Gross Domestic Product (GDP) and Interest Rate (IR) for the period of 1985 to 2021. This study found that in short run, GDP and Exchange rate have a negative impact on FDI. While the Interest rate has positive impact on FDI. GDP has a significant and negative impact on FDI. The Exchange rate has a significant and positive impact on FDI. Further, Interest rate has a significant and positive impact on FDI. The findings of this study suggests that, in order to attract more FDI in Sri Lanka, the country needs to maintain the stable Exchange rate.

Keywords: Foreign Direct Investment, Exchange Rate, Gross Domestic Product and Interest Rate

Introduction

Foreign Direct Investment is a tool of collecting investment of foreign assets by the domestic countries or organizations. It refers that FDI is a form of investment made by the foreign countries into the domestic countries. It is a component of a country's national financial accounts. Developing countries like Sri Lanka give a crucial role to foreign Direct Investment for their development and emerging their market. Specially Developing countries used the Foreign Direct Investment for energy consumption, infrastructure development and increase their employment rate. The FDI helps to increase the capital flow and technological flow.

FDI is important in adopting new technologies, skills and managerial capabilities in the different sectors of the economy which are traditionally difficult to raise through use of domestic savings. It creates new job opportunities in terms of setting of the business, recruitment and training of the locals. FDI is important for developing countries as it benefits resources necessary to optimize the level of economic development (Imoughele & Ismaila, 2015).

Exchange rate is the value of the national currency in terms of another country's national currency. Exchange Rate stability is a major concern for investors as it affects the value of investment as well as the remittance of

profits. Exchange rate depreciation creates competitive advantages in international trade. Even it is a serious issue, it makes the trade balance favorable, moves the balance of payment towards the surplus, impacts on FDI, and boosts the country's economy. FDI is considered as a tool of exchange rate risk reduction.

Theoretically, exchange rates affect FDI because the rate at which one currency is expressed in terms of another will determine how viable an investment will be. Currencies appreciate and depreciate according to prevailing market conditions. It means if a currency depreciates against the currency of another country FDI will increase because of the increase in purchasing power. On the other hand there is a negative relationship between FDI and Exchange rate due to the substitution effect. Therefore, Exchange Rate is one of the determinants of FDI. The relationship that exists between exchange rates and FDI being that if the currency loses its value, FDI is expected to increase while if a currency gains value, FDI is expected to reduce (Madura & Fox, 2011).

In case of Sri Lanka, experiencing currency depreciation since 1977, it is unable to experience the benefits of the depreciation in order to solve the balance of payment deficit problem (Thahara et al., 2020).

According to the (Giroud & Ivarsson, 2020), FDI decrease in 2019 compared with previous year at 1.6 Billion to US Dollar to 758 million US Dollar. In 2018, India, China, Singapore and Hong Kong were the largest investment countries in Sri Lanka. Using a FDI Sri Lanka recorded a fast growth rate using a FDI in communication and posts, manufacturing, IT and tourism. Compared with a China in energy sector and India in telecommunication is attractively shaped. And also Sri Lanka government expects the around 4 billion US Dollar in 2022. From September 2019, it was declined to 501 US Dollar at 65 percentage due to the Easter Sunday attack in April 2019. Moreover, Sri Lanka takes several actions to attract the FDI by creation of free zones, reduce subsidies of consumer goods and food and also country's geographical factors and potential helps to attract the FDI. 2019 Sri Lankan government reduced the restriction on foreign ownership in freight forwarding by 40 percentage to attract the foreign investors. Hence, FDI is crucial to the development of country and exchange rate is one of the influencing factors of FDI. Therefore, Sri Lanka as following managed floating exchange rate, this research empirically analyzes the impact of exchange rate on FDI in Sri Lanka during the period of 1985 to 2021.

Literature Review

(Hniya et al, 2020) aim to determine the impact of the Real Effective Exchange Rate (REER) and its volatility on Tunisian Foreign Direct Investment (FDI). Inflows for the period from 1980 to 2018. By applying the Auto Regressive Distributed Lag (ARDL) model, they noticed that an increase in exchange rate volatility tends to lower FDI inflows over a long-term horizon. They have also shown that an increase in REER, equivalent to a real appreciation (quotation at certain), will decrease FDI. While in the short term, the relationship between REER and FDI is positive, while volatility retains its negative long term effect.

(Jayasekara, 2016) has found exchange rate volatility has statistically significant relationship with FDI, inflation and trade shocks over the period of study using Zellner's seemingly unrelated regression model to estimate the FDI and exchange rate volatility equations in the study of exchange rate, exchange rate Volatility and FDI in Sri Lanka during the period 1978-2012, Therefore, stability of exchange rate is vital for FDI as well as to the economic stability of the country. Further, the infrastructure quality showed a statistically significant negative relationship with FDI.

(Busse et al., 2013) evaluated the FDI and Exchange rate Regimes. covering the period 1980-2004 They have indicated that the strong and significant effect from fixed rates on bilateral FDI flows in developed economies, but no significant effect for developing countries. In view of that fixed exchange rate regime is quite large, making it a potentially effective policy device for developed countries to increase FDI inflows. Thus, there is no general and uniform impact of stable exchange rates on FDI.

There are two arguments, which include the argument of production flexibility and argument of risk aversion. According to first argument there is a direct relationship between the volatility of FDI and exchange rates, the second argument defines that there is an inverse relationship between these variables respectively. When facing the other side of the coin, the FDI host country can also cause an appreciation of the exchange rate with the outputs or inputs with damping (Ejaz et al., 2012).

As (Gottschalk & Hall, 2008) concluded that the uncertainty of exchange rates in Japan is positively related to foreign direct investment in the countries of South Asia. While (Simbowale Osinubi, 2017) proved that the depreciation of the domestic currency increases the real FDI in Nigeria. According to (Dhakal et al., 2010) the volatility of the exchange rate has a positive impact on FDI in the economies of selected East Asian sample. As (Takagi & Shi, 2011) searched that FDI increases with increased volatility of exchange rates, but decreased depreciation of the Japanese currency against the currency of the host country is Asia.

In case of Sri Lanka, (De Silva, 2019) identifies the clear relationship between exchange rate and FDI in Sri Lanka by considering the FDI as a dependent variable and Expected exchange rate, Real exchange rate, Nominal exchange rate and Exchange rate volatility as explanatory variables by using time series data on the annual basis from 1986 to 2018. He used multiple regression model found that Expected exchange rate has a positive impact on foreign direct investment in Sri Lanka. Nominal exchange rate and Exchange rate volatility have a significant impact on FDI in Sri Lanka.

(Ejaz et al., 2012) assessed the Relationship between FDI and exchange rate using quarterly data from 2001 to 2012. They have found positive effect of exchange rate to determine the short term FDI and there is no any high impact of exchange rate to determine the long term FDI inflows to Sri Lanka using Simple Granger causality test has used to identify the causality between exchange rate and FDI inflows.

Methodology

This study used exchange rate as the main independent variable to examine the impact of foreign direct investment and exchange rate, with gross domestic product and interest rate as control variables. Secondary data for the period of 1985-2019 from the Central Bank of Sri Lanka were used for this study. The functional econometric model is expressed as follows:

$$LFDI_t = \beta_0 + \beta_1 LNGDP_t + \beta_2 LNER_t + \beta_3 IR_t + U_t$$

Where Foreign Direct Investment (FDI) is used an endogenous variable and the independent variables are Exchange Rate (ER), Gross Domestic Product (GDP) and Interest Rate (IR). Here, U is the error term and the subscript t indicates time.

Augmented Dickey- Fuller (ADF) unit root test were adopted to test the stationary property of data and the Auto Regressive Distributed Lag (ARDL) model developed by Pesaran et al.(2001) was employed to find the long run and short run relationship and long run adjustment.

The Engel Granger method and Johansen method requires that the all of the variables in equation (1) should be integrated in same order and the error term should be integrated in order zero in order to form the long run relationship. However, if variables in equation (1) have different order, that is I(1) and I(0) we can use new co-integration method which was developed by Pesaran et al., (2001). This procedure, also known as autoregressive distributed lag (ARDL) approach to co-integration. The ARDL co-integration bound testing procedure is given by equation (2):

$$FDI_t = \rho_0 + \vartheta' Z_{t-1} + \sum_{i=1}^P \eta_i \Delta FDI_{t-i} + \sum_{i=0}^P \pi_i' \Delta Z_{t-i} + \delta' D_t + U_t \quad (2)$$

where, $\vartheta' = [\vartheta_1, \dots \dots \dots \vartheta_6]$ refers to the long run coefficients; $Z_{t-1} = [GDP_{t-1} + ER_{t-1} + IR_{t-1}]$ is the vector of explanatory variables with lag one; and refers to the short run dynamic coefficients, $\Delta Z_{t-i} = [GDP_{t-i} + ER_{t-i} + IR_{t-i}]$ denotes the vector of explanatory variables with lag and is the white noise error term. The Error Correction Model was employed to test the long run adjustment and short run dynamics of FDI. Granger Causality Test was employed to check the causality relationship between the variables.

To investigate the existence of long-run relationships between the variables, bound testing procedure is used, which is based on the F-test (Wald test). The F-test is actually a test of the hypothesis of no co-integration among the variables ($H_0: \vartheta_1 = \dots = \vartheta_6 = 0$) against the existence of cointegration among the variables ($H_0: \vartheta_1 \neq \dots \neq \vartheta_6 \neq 0$) in equation (2). Finally, we used Granger causality test to determine the direction of the causality between the variables.

Results and discussion

Table 1: Results of Unit root

Variables	Level	1 st Difference
LNFDI	0.1654	0.0015*
LNGDP	0.9686	0.0018*
LNER	0.003*	0.0000*
IR	0.1671	0.0001*

Note: P- Value is given in parenthesis. * indicates that variables are statistically significant at 1% level.

The ADF test confirmed that all the variables are stationary at their both level and first differences of the variables.. Akaike Information Criteria (AIC) suggested the use of ARDL (2, 2, 4, 4) model for this analysis.

Table 2: The results of ARDL (2, 2, 4,4) Model

Panel A: F- Test for the existence of a cointegration				
F- Bound test 95% level of confidence				
F- Statistics	Lower Bound		Upper Bound	
6.32	2.79		3.67	
Panel B: Long run coefficient estimates				
Constant	LNGDP	LNER	IR	R ²
-8.362067 (0.0004)	-0.6021* (0.0083)	2.5473* (0.0000)	0.0895* (0.0034)	0.87

Note: P- Value is given in parenthesis. * indicates that variables are statistically significant at 1% level.

In Table 2, calculated F- Statistics= 6.32 is higher than the upper bound critical value (at 5% level of significance). Since the cointegrating relationship between the variables is confirmed through the bound test. According to the regression results, GDP has a significant and negative impact on FDI. The ER has a significant and positive impact on FDI. Further IR has a significant and positive impact on FDI.

Table 3: Error correction representation for the selected ARDL (2, 2, 4, 4) model

Short run coefficient estimates and error correction representation					
Lag order	$\Delta LNFDI$	$\Delta LNGDP$	$\Delta LNER$	ΔIR	ECT (-1)
0		-5.1833* (0.0058)	3.8371 (0.1182)	0.0841* (0.0089)	-0.4044* (0.0000)
1	0.5673** (0.0192)	-2.8265*** (0.0971)	-4.7293*** (0.0759)	-0.0345 (0.2325)	
2			-4.2490*** (0.0533)	-0.1195* (0.0003)	
3			-7.5190* (0.0014)	0.0436 (0.1680)	
R ² =0.92			F- Statistics= 6.32		

Note: P- Value is given in parenthesis. *, **, *** indicates that variables are statistically significant at 1%, 5% and 10% level, respectively.

Accordingly, ECT (-1) carries a negative sign, which is highly significant, indicating that there should be an adjustment towards steady state line in the long run equilibrium at the speed of 40.4% one period after the exogenous shocks.

The coefficient of FDI in the previous year (at lag 1) is positive and significant. This means that, during that period a 1% increase of the FDI leads to an increase 0.5673% in FDI. The current period GDP and previous year GDP (at lag 1) have negative impact on FDI. previous year ER (at lag 1, lag 2 and lag 3) have negative impact on FDI. The IR in the current period has positive impact on FDI in the short run. A 1-unit increase in the IR brought about a 0.0841% increase in FDI. Further, two periods lagged value of IR has a negative and significant impact on FDI.

Table 4: Results of the diagnostic test

Diagnostic		P- Value
Serial correlation:	(Breusch- godfrey serial correlation LM test)	0.1311
Normality:	(Jarque- Bera)	0.7854
Heteroskedasticity:	(White test)	0.4574
Omitted variable:	(Ramsey RESET test)	0.9110

The results of the diagnostic tests show that model is correctly specified and the parameters are correctly estimated. They all exhibit probability values greater than the significant level of 10%.

Table 5: Extracted output of Granger Causality Test

Null hypothesis	Obs	F- statistics	Prob.
D_LNER does not granger cause D_LNFDI	27	6.57151	0.0058*
D_LNFDI does not granger cause D_LNER	27	3.59545	0.0446**

Note: *, ** shows significance at 1% and 5% level.

The Granger Causality test results suggest bi-directional causality that run between the variables. The ER granger cause FDI at the same time FDI granger cause ER.

Conclusion

Foreign Direct Investment is a tool of collecting investment of foreign assets by the domestic countries or organizations. It refers that FDI is a form of investment made by the foreign countries into the domestic countries. Exchange rate is the value of the national currency in terms of another country's national currency. The relationship that exists between exchange rates and FDI being that if the currency loses its value, FDI is expected to increase while if a currency gains value, FDI is expected to reduce. Therefore, this paper analyze the impact of exchange rate on FDI in Sri Lanka.

To analyzed the objective this research take into the account Augmented Dickey- Fuller (ADF) test to check the stationary property of data, the Auto Regressive Distributed Lag (ARDL) model developed to find the long run relationship and short run dynamics, the Error Correction Model was employed to test the long run adjustment and short run dynamics of FDI and Granger Causality Test was employed to check the causality relationship between the variables using from 1985 to 2018. This study used Foreign Direct Investment (FDI) is used an endogenous variable and the independent variables are Exchange Rate (ER), Gross Domestic Product (GDP) and Interest Rate (IR).

This study found that in short run, GDP and Exchange rate have a negative impact on FDI. While the Interest rate has positive impact on FDI. GDP has a significant and negative impact on FDI. The Exchange rate has a significant and positive impact on FDI. Further Interest rate has a significant and positive impact on FDI. The findings of this study suggests that, in order to attract more FDI in Sri Lanka, the country needs to maintain the stable Exchange rate.

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