The Effect of Exchange Rate on Foreign Direct Investment in Sri Lanka

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Abstract: Foreign Direct Investment plays vital role in the international economy after the Second World War. Most of studies examined how foreign direct investment contribute to their economic development at that time they identified some of factors restrict foreign direct investment contribution to the economy. Therefore current study examined relationship between exchange rate and foreign direct investment using secondary data. Independent variable was Exchange rate, dependent variable was foreign direct investment. Researchers used monthly basis data from the period of January 2003 to December 2015 and collected data were analyzed using statistical methods such as descriptive analysis, correlation and regression analysis are conducted to identify the relationship. According to results of Pearson correlation analysis and coefficient analysis had supported to prove the hypotheses. Based on the findings of Pearson correlation analysis, there is a relationship between the exchange rate and Foreign Direct Investment. According to coefficient analysis, United State Dollar exchange rate has positively related with Foreign Direct Investment and negatively related with Japan Yen. And also Euro and Pound Sterling partially related with Foreign Direct Investment. The findings of this study would suggested that to attract more Foreign Direct Investment in Sri Lanka the governments need to make policies such as monetary policy to maintain the stable exchange rate.

Keywords: Exchange Rate, Foreign Direct Investment, Sri Lanka.

1. INTRODUCTION

Foreign direct investment plays vital role in the economy mainly developing countries' economies need foreign direct investment to develop their economy. In this situation exchange rate act as middle role therefore exchange rate also important factor in this scenario. According to Jayasekara (2014) determined various factores affecting to FDI in sri lanka.Then thirteen Factores have been occurred as FDI determinance including exchange rate.Such as, GDP growth rate, inflation, infrastructure quality, lending interest rate, labour force, literacy rate of labour force, official exchange rate, taxes on international trade, consumption, population growth rate, international trade volume, government consumption expenditure and corporate income tax.

The study found that exchange rate stability is a major concern for investors. It affects the value of investment as well as the remittance of profits. However, previous studies (Busse, 2010, Cambazoglu, 2016, Chaudhary, 2012, Dhakal et al, 2010))have shown mixed results in respect of the relationship of FDI with official exchange rate. FDI consider different oriented. Then one of the FDI theories based on exchange rates at macro level. That theory has referred that analysis the relationship of FDI flows and exchange rate changes and considered the FDI as a tool of exchange rate risk reduction.

Most of developed countries have two or more than two stock exchange markets to control local and foreign investment. But CSE is the only one stock exchange in Sri Lanka with the contribution of local & foreign investors. Foreign investment is much important to develop Sri Lanka economy. Therefore this research is being carried out to identify foreign investment and how it reacts to exchange rate fluctuations. After thirty years war period foreign investors get much more confident for invest in Sri Lanka, (Dayaratne, 2014) which will help to develop our economy. Changes of the foreign exchange rate are one of the major reasons for changing FDI. Rupee depreciation has made shares cheaper for foreign investors.

Research problem:

CSE is a major component of financial sector in Sri Lanka and it takes part in the growth of economy. Financial sector highly contribute to the Sri Lankan economy as well. CSE is the major financial absorb source in the Sri Lanka. The CSE attracted the attention of both local and foreign direct investors and grew rapidly in the recent decades. However, published literature on this market is hard to find as it has not received a great deal of attention among academic researchers. In this context, it is important to examine the economic role of the CSE and foreign investment in CSE. Then examination is also important with respect to regulatory changes and policy making decisions about the future of the stock market.

2. LITERATURE REVIEW

Theoretical Review:

Most countries use their own currencies as a medium of exchange, similar to the Rupee in Sri Lanka and the Dollar in the United States. The rate at which one currency may be exchanged against another is called "the exchange rate". (Khan et al. 2012) .The exchange rate is formally defined as the number of units of one currency that can be exchanged for a unit of another. Thus, it is the price at which the national currency is valued in relation to a foreign currency. (Busse, 2010).

According to investopedia foreign direct investment (FDI) is investors are investment made in a company or individuals in one country and earn interest in another country. , in the form of either establishing business operations or acquiring business assets in the other country, such as ownership or monitoring interest in a foreign company.

Empirical Review:

In the track of Jayasekara (2013) examined the exchange rate, exchange rate Volatility and FDI in Sri Lanka during the period 1978-2012. Adopted variables are Inverd foreign diret investment, Gross domestic product, Real exchange rate, Standed deviation of exchange rate, foreign reserves, infrastructure, expected exchange rate, Inflation, Trade Shocks. Found that through using Zellner's seemingly unrelated regression model to estimate the FDI and exchange rate volatility equetions, significant relationship with standard deviation of exchange rate, total electricity provision and year. Further, exchange rate volatility has statistically significant relationship with FDI, inflation and trade shocks over the period of study. 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.

Menike (2006) investigated effect of macro-economic variables on stock prices in emerging Sri Lankan stock market using monthly data for the period from September 1991 to December 2002. As a sample selected which 242 stocks listed on the CSE, further when selecting the sample attention was made on companies which were quoted by January 1991 and which had declared dividends throughout the sample period. Applied that multivariate regression and consider eight macroeconomic variables such Treasury bill rate, as Inflation, money supply, exchange rates, interest rates. Conclude that, stock prices mainly appear to have an inverse relation to exchange rate, concurrent inflation rate and Treasury bill rate in the CSE. And also indicates a direct relation, money supply is mainly positively related to stock prices.

According to survey of Busse et al. (2010) evaluated the FDI and Exchange rate Regimes. Sample has mentioned as much broder, covered the period 1980-2004 . overall sample has consisted of 102 developed and developing host countries and also UNCTAD's (United Nations Conference on Trade and Development) Data extract service provides FDI data. Results are 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.

Ranga & Wijesinghe (2013) which assessed the Relationship between FDI and exchange rate who employed quartaly data from 2001 to 2012. Simple Granger causality test has used to identify the causality between exchange rate and FDI inflows Findings indicated that, there is a 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.

3. METHODOLOGY

According to the research problem and the literature review the relationship between independent variable exchange rate and the dependent variable foreign investment is hypothesized. In other words, this study focus on examining whether change in FDI of CSE has any response to changes of exchange rate.
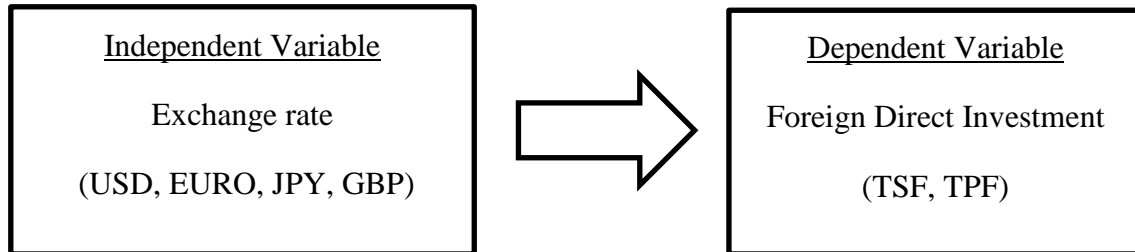

Figure 1:.Conceptual Framework

According to the above conceptual framework researchers developed following hypothesis to address research question.

H1   = There is a relationship between USD and foreign investor's behavior in CSE.

H2   = There is a relationship between EURO exchange rate and foreign investor's behavior in CSE.

H3   = There is a relationship between JPY exchange rate and foreign investor's behavior in CSE.

H4   = There is a relationship between GBP exchange rate and foreign investor's behavior in CSE.

According to this research, there are two dependent variables and four independent variables had been selected. Foreign investor's behavior in CSE that is occur foreign purchase and foreign sales. According to that, TPF and TSF were selected as depended variables. Similarly exchange rate was an independent variable which was USD, EURO JPY and GBP. By identifying the prior researches (Rauf, 2016) those variables selected and the operationalization of these variables is mentioned in the following table.

Table 1. Variable Operationalization

Variables	Symbols	Calculation	Type
Total Sales by Foreigners	TSF	Absolute value of foreign sales in CSE.	Dependent
Total Purchase by Foreigners	TPF	Absolute value of foreign purchase in CSE.	Dependent
United State Dollar	USD	Value of the United States dollars (USD) in terms of Sri Lankan Rupees (LKR).	Independent
Pound Sterling	GBP	Value of the Pound Sterling (GBP)in terms of Sri Lankan Rupees (LKR).	Independent
Japan Yen	JPY	Value of the Japan Yen (JPY)in terms of Sri Lankan Rupees (LKR).	Independent
Euro	EURO	Value of the Euro in terms of Sri Lankan Rupees (LKR).	Independent

Research Sample selected same as population. Then data of Monthly exchange rates and FDI collected from 2003 to 2015. Significance of sampling period that identify before war period and after war period investment Nature in Sri Lanka. Generally primary and secondary data collection methods are used by researchers according to Research techniques which is qualitative or quantitative. This study was conducted quantitative techniques. The study used Statistical Package for Social Sciences software to analyse data and employed descriptive statistic, ANOVA, correlation and regression analysis, correlation to interpret better conclusion.

4. RESULT AND DISCUSSION

The primary aim of this study was to analyze independent and dependent variables to identify answer for research question where secondary data spanning the period between 2003 and 2015 was used; descriptive analysis, time series and model analysis method, Test of correlation and multiple regression and ANOVA in Statistical Package for Social Sciences to check the relationship between exchange rate and FDI.

Descriptive Analysis:

Table 2: Descriptive Analysis

Variables	Mean	Standard Deviation
TPF	21.880	0.950
TSF	21.700	1.070
USD	171.650	20.110
EURO	148.130	19.940
JPY	1.140	0.230
GBP	192.220	19.300

According to above table 2 when considering mean value of dependent variables, TPF has stated 21.88 and TSF has shown as 27.70., TSF standard deviation value was 0.95. That mean TSF variance is 0.95 in the time period, TPF standard deviation was 1.07. It implies TSF variance in the considered time period. Higher mean value shown by GBP than other rates. It was 192.22. Other exchange rates have recorded Such as USD, EURO and JPY are 171.65, 148.13 and 1.14.respectively.. Standard deviation of exchange rates that have indicated as a higher value is 20.11 of USD. Then that was a riskier exchange rate among selected exchange rates. Then USD has high variances. USD is most tradable currency in the world. Because of that USD vary frequently. As well as, JPY has indicated lower amount of standard Deviation. It means lower risk or variance of exchange rate bear by JPY.
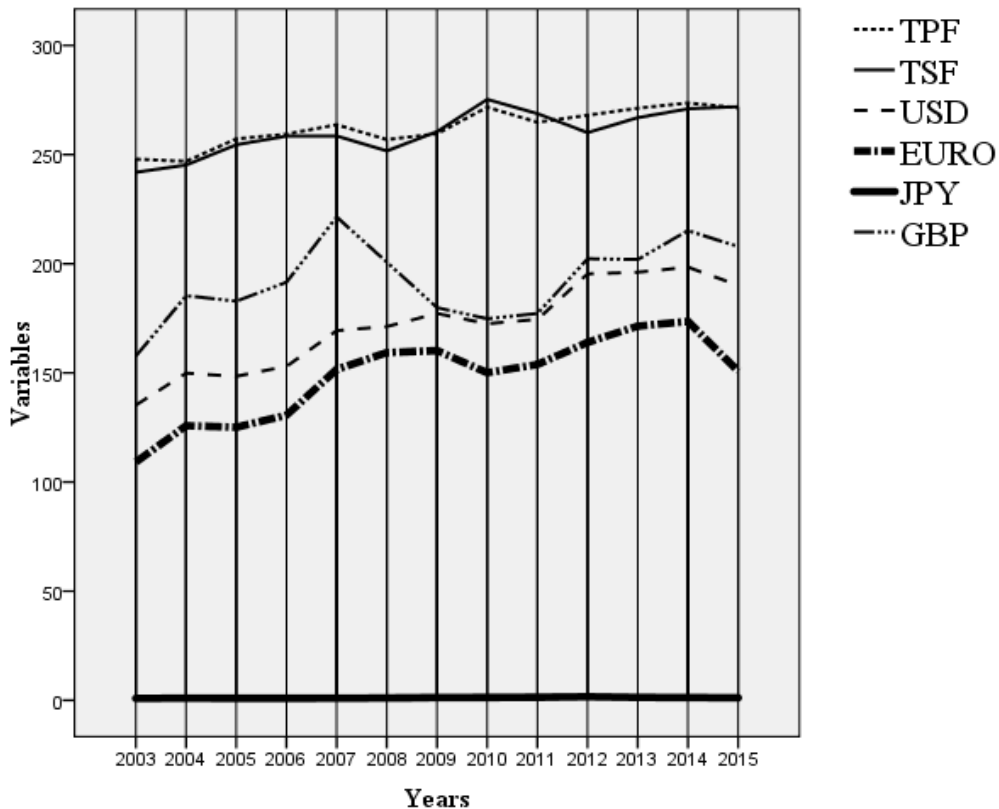
Time Series Analysis:

Figure 2:.Time Series Analysis

This analysis supported to identify exchange rate and FDI behavior after and before civil war period in Sri Lanka. TPF and TSF presented gradually increase in the period As well as TPF and TSF clearly indicated rapidly increased after war, then it continued growth up to 2015. After the civil war TPF and TSF showed rapidly increased and also exchange rate was decreased in that period USD, EURO and GBP exchange rates behavior showed as same. Those variances of before civil war which was high range than after war variance. JPY exchange rate behavior remains same in the period.

Correlations Analysis:

Table 3: Correlations Analysis

		TPF	TSF	USD	EURO	JPY	GBP
TPF	Pearson Correlation	1					
	Sig. (2-tailed)						
TSF	Pearson Correlation	0.844**	1				
	Sig. (2-tailed)	0.000					
USD	Pearson Correlation	0.648**	0.572**	1			
	Sig. (2-tailed)	0.000	0.000				
EURO	Pearson Correlation	0.601**	0.525**	0.938**	1		
	Sig. (2-tailed)	0.000	0.000	0.000			
JPY	Pearson Correlation	0.485**	0.470**	0.786**	0.723**	1	
	Sig. (2-tailed)	0.000	0.000	0.000	0.000		
GBP	Pearson Correlation	0.437**	0.285**	0.647**	0.655**	0.169*	1
	Sig. (2-tailed)	0.000	0.000	0.000	0.000	0.035	
**. Correlation is significant at the 0.01 level (2-tailed).							
*. Correlation is significant at the 0.05 level (2-tailed).							

The correlation value of USD exchange rate with TPF referred as 0.648 at p = 0.000 As well as the correlation value of USD exchange rate with TSF presented.0.572 at p = 0.000 which illuminate positive significant relationship between FDI and USD exchange rate and also dependent variable FDI with confidence interval of 95%. This means that the data is 95% accurate only there is 0.05% chance.

The correlation value of EURO exchange rate with TPF has been indicated 0.601 at p=0.000 and the correlation value of EURO exchange rate with TSF was 0.525 at p=0.000 which conclude positive significant relationship between FDI and EURO exchange rate. Similarly, Dependent variable of FDI with confidence interval has considered as 95%.

JPY exchange rate with TPF has been mentioned as 0.485 at p=0.000 and the correlation value of JPY exchange rate with TSF has been stated.0.470 at p=0.000 which determine positive significant relationship between FDI and JPY exchange rate. Correlation value of GBP exchange rate with TPF. It was 0 437 at p=0.000 and the correlation value of GBP exchange rate with TSF has been mentioned as 0.285 at p= 0.000 which Express positive significant relationship between FDI and GBP exchange rate.

Based on the findings of correlation analysis, that showed positive significant relationship between exchange rates and FDI. Then obviously recognized USD, EURO, JPY and GBP positively related with TPF. As well as USD, EURO, JPY and GBP positively related with TSF. Furthermore when increase TPF and TSF, exchange rates of USD, EURO, JPY and GBP also increase. Also decrease TPF and TSF, exchange rates of USD, EURO, JPY and GBP also decrease. Whereby could be concluded that exchange rates variance as direct with FDI. These results comply with Albert & Stuart, (2008) and Jayasekara (2015)

Regression Analysis:

Model Summary:

Table 4.: Model Summary (TPF and TSF)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1(TPF)	0.649	0.422	0.406	0.734
2(TSF)	0.586	0.344	0.326	0.876
a. Predictors: (Constant), GBP, JPY, EURO, USD				

According to model 1 TPF R square value was 0.422 which is 42.2% on TPF and TSF R square value was 0.344 which is 34.4%. The result support to conclude R square values which have showed that the exchange rates have affected 34.4% on TFP variance and 42.2% on TSF variance. Then, influence of USD, EURO, JPY and GBP on TSF is higher than influence on TPF in Sri Lanka.

ANOVA

Table .5: ANOVA Analysis (TPF and TSF)

Model		Sum of Squares	Df	Mean Square	F	Sig.
TPF	Regression	59.218	4	14.804	27.517	0.000
	Residual	81.240	151	0.538		
	Total	140.458	155			
TSF	Regression	60.645	4	15.161	19.779	0.000
	Residual	115.750	151	0.767		
	Total	176.395	155			
a. Predictors: (Constant), GBP, JPY, EURO, USD						

The TPF F-value is 27.517 (TPF) and significant value is .000 and TSF F-value = 19.779 and significant value is 0.000.Those result reflected high level of significance and the group of independent variable exchange rate can be used to reliably predict the TSF and TPF. The result support to conclude exchange rate and TPF fit with research at the level of 25.517 and TSF fit with research at the level of 19.779. The results proved Exchange rate and TPF, TSF fit for the current research.

Coefficient Analysis:

Table 6 : Coefficients Analysis (TPF and TSF)

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	16.481	0.647		25.460	0.000
	USD	0.036	0.011	0.763	3.242	0.001
	EURO	-0.003	0.009	-0.064	-0.350	0.727
	JPY	-0.283	0.605	-0.068	-0.469	0.640
	GBP	0.000	0.006	-0.003	0-.028	0.978
a. Dependent Variable: TPF						
2	(Constant)	17.310	0.773		22.404	0.000
	USD	0.046	0.013	0.862	3.438	0.001
	EURO	0.000	0.010	-0.017	-0.090	0.929
	JPY	-0.727	0.722	-0.155	-1.008	0.315
	GBP	-0.013	0.007	-0.235	-1.856	0.065
a. Dependent Variable: TSF						

Coefficient analysis describes exchange rates impact on TPF and TSF. The coefficient USD exchange rate was 0.036 which shows USD has a significant positive impact at 5% significant level. Then a unit increase in USD exchange rate would lead to increase in the FDI by a factor of 0.036, EURO and JPY result reflected negative and insignificant relationship and GBP result did not reflect any relationship with TPF. According to result USD impact on increase TPF.As well as EURO and JPY lead to decrease TPF. Furthermore GBP no any lead to TPF.

According to the result, USD positively impacts on TSF (0.046) at 5% significant level. The table shows that, there is no relationship between EURO and TSF. It is reported JPY has negative impact on TSF (-0.727) however impact do not significant at 5% significant level. GBP also has Negative impact on TSF. Likewise there is not significant at 5% significant level. Then only USD exchange rate leads to increase TSF. As well as EURO do not any lead to TSF. JPY and GBP lead to decrease TSF. According to the coefficient analysis, USD exchange rate leads to increase TPF and TSF.

Hypotheses Testing:

Table 7: Hypothesis Analysis

Hypotheses	Variables	FDI	Results According to Analysis Tool (Positive/Negative)				
			Expected	Correlation	Results	Coefficient	Results
H1	USD	TPF	Relationship	Positive	Accept	Positive	Accept
		TSF		Positive		Positive	
H2	EURO	TPF	Relationship	Positive	Accept	Negative	Partially Accept
		TSF		Positive		No Relationship	
H3	JPY	TPF	Relationship	Positive	Accept	Negative	Accept
		TSF		Positive		Negative	
H4	GBP	TPF	Relationship	Positive	Accept	No Relationship	Partially Accept
		TSF		Positive		Negative	

H1= There is a relationship between USD and Foreign investor's behavior. Pearson correlation value of USD with TPF was 0.648 at the 0.000 significant level. USD and TSF correlation value was 0.572 at 0.000 significant level. By means of above findings, H1 is totally accepted.

H2= There is a relationship between EURO exchange rate and foreign investor's behavior. Pearson Correlation value of EURO and TPF was 0.601 at 0.000 significant level. EURO and TSF correlation value was 0.525 at 0.000 significant level. According to that, H2 partially accepted.

H3= There is a relationship between JPY exchange rate and foreign investor's behavior Pearson correlation values of JPY and TPF was 0.485 at 0.000 significant level. USD and TSF correlation value was 0.470 at 0.000 significant level. In the view of that H3 had been totally accepted.

H4=There is a relationship between GBP exchange rate and foreign investor's behavior. Pearson correlation values of GBP and TPF was 0.437 at 0.000 significant level. GBP and TSF correlation value was 0.285 at 0.000 significant level. According to findings, H4 is partially accepted.

This study followed that test of relationship between exchange rate and FDI. According to above findings, proved that research objectives also recognized the independent and dependent variables behavior. Then there was a relationship between exchange rate and FDI according to Pearson correlation analysis. However in coefficient analysis, finalized that relationship had included only USD exchange rate and JPY exchange rate with FDI. As well as EURO and JPY exchange rates had not relationship with FDI.

5. CONCLUSION

According to the analysis following results were obtained. Findings of Pearson correlation analysis determined that there is a relationship between exchange rate and FDI. Based on coefficient analysis, USD exchange rate has a positive significant relationship in both TPF and TSF. There is a negative insignificant relationship at TPF but no relationship in TSF. When consider JPY both TPF and TSF showed that there is a negative insignificant relationship. Also GBP exchange rate showed the negative insignificant relationship in TSF but no relationship in TPF. According to results obtained by the analysis, the objectives of the study successfully achieved.

When compare with prior research, jayasekara (2015) comply with this study results. That investigated exchange rate

volatility and FDI in Sri Lanka during the period from 1978 to 2012. Furthermore, Amondi (2012) highligted that there is a relationship between FDI and exchange rate of Horticulture industry in Kenya. It reviled that, there was a relationship between exchange rate and FDI. But this relationship not lies in significant level. At that rate the results partially comply with this study. According to Menike (2006) examined that, Stock price mainly appear to have an inverse relation to exchange rate. According to coefficient analysis of this study, in some incidents, independent variables represented adverse relationship between each dependent variable. Finally could be determined that CSE index has definitely increased after civil war in Sri Lanka.

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