

IMPACT OF EXCHANGE RATE SYSTEM ON IMPORTS AND EXPORTS: SPECIAL REFERENCE WITH SRI LANKA AFTER 1977

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ABSTRACT: This study investigates the impact of exchange rate on exports and imports in Sri Lanka's trade after liberalization policy. The multiple regression models were used to analyze the time series data for the period of 1980 to 2014. Ordinary Least Squares method is applied to check the relation between dependent variable (imports and exports) and independent variables (Exchange rate and inflation). The results of OLS show that exchange rate system has positive and significant effect on exports and imports in Sri Lanka after liberalization policy. The findings of the study indicate that exports and imports are increased during the post liberalization period. Therefore the free floating Exchange rate system could be able to increasing the exports and imports in the open economy in Sri Lanka. Sri Lanka is the import dependent country. Therefore, the import expenditure is higher than the exports revenue. It leads to the budget deficit. To control this situation the government must be control the import items and inflationary situation in Sri Lanka. The government should take a necessary action against this problem.

Keywords: Imports, Exports, Exchange Rate System, Liberalization Policy

1. INTRODUCTION

This study examines the impact of exchange rate system on imports and exports in Sri Lanka after 1977. The exchange rate movements and exchange rate regimes assume very high priority in the management of macro-economic policies in the economy. The exchange rate movements has direct impact on the export competitiveness, cost of imported raw material and consumer products, cost of serving foreign borrowings, services sectors such as tourism, foreign direct investments, the general inflation, the price stability, general employment and income of the economy.

International trade transactions in Sri Lanka are largely carried out in US dollars. Therefore, the external value of the Sri Lankan Rupee in terms of the US Dollar denotes very high significance over other freely convertible foreign currencies. Foreign exchange transactions for international trade are being predominately carried out by licensed commercial banks. However, approved foreign exchange dealers in the private sector also play an important role particularly for foreign exchange transactions pertaining to non-trade domain.

In the recent past, the Sri Lankan Rupee has been gradually appreciating vice versa major foreign currencies mainly due to the US Dollar losing its value steadily in international financial markets recently. Increasing foreign exchange inflows from the services sector, workers' remittances and financial flows from the international sovereign bond issues and gradual increase of export revenue are some of the other reasons attributed to the appreciation of the Rupee.

The Central Bank of Sri Lanka intervenes regularly in the market to mitigate excessive volatility in the exchange rate and to ensure competitiveness of exports would not be eroded due to undue appreciation of the Rupee. According to the Central Bank of Sri Lanka, during 2010 both Nominal Effective Exchange Rate (NEER) and Real Effective

Exchange Rate (REER) appreciated against the entire major currencies except the Japanese Yen and Indian Rupee. It is observed that Sri Lanka maintains a managed exchange rate policy. In other words, the market forces do not solely determine the external value of local currency.

Soon after independence in 1948, Sri Lanka adopted a highly regulated financial, fiscal, and industrial policy along with inward-oriented import substituting trade and overvalued exchange rate system. The resulting economic growth was not satisfactory. Thus, in order to achieve a high and sustained economic growth and rapid development, since 1977, most of the trade and industrial policies have aimed at higher growth in the export sector. International competitiveness, faster growth of export-oriented industries, tariff rationalization, access to bigger markets, encouraging imports of intermediate capital goods were the main objectives of the exchange rate and trade policies of government. The trade deficit widened as the import bill increased under the influence of the government's development program and defence expenditure.

Since the independence in 1948, Sri Lanka has gone through different exchange rate regime from fixed exchange rate to floating exchange rate regime. These changes had different effects on nominal, real effective exchange rate and trade balance and balance of payments over the years. The Sri Lanka Rupee was pegged to sterling pounds under the Bretton Woods system in 1948. After it was pegged to the dollar in 1971 it started to depreciate with the dollar. In a major reform in November 1977, multiple exchange-rates were introduced. Then, the rupee depreciated further relative to United States dollar. Sri Lanka introduced floating exchange rate system in August 1990.

Western countries were the major export destinations and Asian countries were the major import suppliers. The USA and U.K are Sri Lanka's major export destination. India and Japan are major sources of Sri Lankan imports. The composition of exports demonstrated the continuing dominance of industrial exports followed by agricultural and mineral exports. USA and EU are the major destinations for the export of textiles and garments. Establishment of Free Trade Arrangements (FTA) between India and Sri Lanka has accelerated the development of national economies, promoting mutually beneficial bilateral trade and strengthening intra-regional economic cooperation. It leads to encourage the international trade.

Being a small open economy, the continuously improving liberal economic environment and the greater freedom in trade, investment and payments have benefited Sri Lanka in maintaining its growth momentum and in strengthening the ability to face recurrent external shocks during the last three decades. Sri Lanka remained firmly committed to the multilateral trading system, being a founder member of the World Trade Organization (WTO).

The aim of this study is to examine how the exchange rate changes affect the imports cost and exports earnings.

2. METHODOLOGY

Both qualitative and quantitative methods were used for this study. Quantitative data is highly applied in this study. Mainly secondary data was used in this study. Because of the reports are available. The study sample is from 1980-2014 based on annual data. Secondary data sources are analysed via the Minitab software and the qualitative data has analysed as tabulation, percentage method and graphical method.

The following multiple regression models, namely, linear-linear, linear-log, log-linear and log-log model have been used in this study and the best model was selected based

on various model selection statistics. They are following model, divided into three formats to analyze the data. Here mainly focused on the Exchange rate system on imports and exports. So the dependent variable is two: Exports and Imports. Independent variable is one is Exchange rate. To obtain the purpose of this study, the regression model separated based on dependent variable. Further, the total trade (Exports + Imports) has calculated to fit one regression model to obtain the study targets. One independent variable is not enough to run the model, because of the VIF cannot be calculated. Therefore Inflation annual average data also calculated as independent variable with Exchange rate.

$$Y = \beta_0 + \beta_1 ER_{ijt} + \beta_2 IF_{ijt} + U_{ijt}$$

Where,

Y = Exports + Imports

ER = Exchange Rate

IF = Inflation

U = Error term

T = Time

$$Y = \beta_0 + \beta_1 X_{ijt} + \beta_2 X_{ijt} + U$$

Model one is,

$$Y = \beta_0 + \beta_1 ER_{ijt} + \beta_2 IF_{ijt} + U_{ijt}$$

Where,

Y = Exports

ER = Exchange Rate

IF = Inflation

U = Error term

Model second is,

$$Y = \beta_0 + \beta_1 ER_{ijt} + \beta_2 IF_{ijt} + U_{ijt}$$

Where,

Y = Imports

ER = Exchange Rate

IF = Inflation

U = Error term

3. RESULT AND DISCUSSION

Exports Situation:

$$Y_{EX.SL} = \beta_0 + \beta_1 ER_{ijt} + \beta_2 IF_{ijt} + U$$

Estimated

Note: Log stands for natural log

DL = 1.141 ≤ DW ≥ DU = 1.370;

DL = 1.343 ≤ DW ≥ DU = 1.584

Significant value: 1% = ***, 5% = **, 10% = *

Table 1: Regression models and model selection

Model	Adj R ² (%)	P value	F Value	D statistic	VIF
EX.SL _{ij} = β ₀ + β ₁ (EX.RATE SL) + β ₂ (INF SL)+U _{ij}	0.0	0.431	0.87	2.36733	1.1-1.1
LOG EX.SL _{ij} = β ₀ + β ₁ (EX.RATE SL) + β ₂ (INF SL) +U _{ij}	35.5	0.003	7.60	1.27234	1.1-1.1
EX.SL _{ij} = β ₀ + β ₁ Log(EX.RATE SL) + β ₂ Log(INF SL) +U _{ij}	1.1	0.320	1.18	2.37253	1.1-1.1
LOG EX.SL _{ij} = β ₀ + β ₁ Log(EX.RATE SL) + β ₂ Log(INF SL) +U _{ij}	47.2	0.000	11.72	1.43764	1.3-1.3

According to the above model selection (Table 1), the entire model has a good in VIF. It ranges between 1.1-1.3. However, linear model adjusted R² is critically low (0%) and P value is high. Therefore the linear model was rejected. Linear log model is rejected by the high P value and lower F value while, adjusted R² is very low (1.1%). Log-linear and log-log model are suitable for this analysis. However, the log-linear model has lower R² than log-log model. Further F value is higher in the log-log model. Therefore, I have selected the log-log model to analyse this time series data. Further, given the appendix no: 4 the values of all model selection statistics, namely, adjusted R square (47.2%); 'F' value (11.72) and VIF are very good in all models. Further, Variance Inflating Factor (VIF) specified between 1.1-1.3 in the above model. This indicates that there is no serious multicollinearity among the variables. Moreover, among the regression model the Durbin Watson value also in accepted area in the all model. The above models lies between the value of DL =1.27234 ≤ Durbin Watson ≤ DU 2.37253. There is no Auto correlation among the all models, but the log-log model is better than other models such R², F and F values. Therefore I have to use the log-log model. Further H₀ is accepted.

Table: 2 Regression results for the Log-Log Model (1980-2015).

Predictor	Co. efficient	T value	P value
Constant	-1.218	-0.46	0.651
Exchange Rate	1.8078	4.12	0.000 ***
Inflation	-0.2125	-0.39	0.703

Estimated
 $\alpha = 0.1^*$; 0.05^{**} ; 0.01^{***}

However, Exchange rate system largely influences on Exports and inflation do not influence on Exports in Sri Lanka. Though, the Exchange rate is only positively influence on Exports earning while other inflation is negatively influence on Sri Lanka's economy. That is, if the Exchange rate increased by 1 percent, the exports earning has to increase about 1.2 percent, thus exchange rate system helps to growth openness economy in Sri Lanka. Therefore, the free floating Exchange rate system could be able to increasing the exports revenue in Sri Lanka.

Import situation:

$$Y_{IM,SL} = \beta_0 + \beta_1 ER_{ijt} + \beta_2 IF_{ijt} + U$$

Table 3: Regression models and model selection

Model	Adj R ² (%)	P value	F Value	D statistic	VIF
IM.SL _{ijt} = $\beta_0 + \beta_1(EX.RATE SL) + \beta_2(INF SL) + U_{ij}$	2.6	0.252	1.44	2.47262	1.1-1.1
LOG IM.SL _{ijt} = $\beta_0 + \beta_1(EX.RATE SL) + \beta_2(INF SL) + U_{ij}$	44.8	0.000	11.13	2.26269	1.0-1.0
IM.SL _{ijt} = $\beta_0 + \beta_1 \text{Log}(EX.RATE SL) + \beta_2 \text{Log}(INF SL) + U_{ij}$	2.9	0.240	1.50	2.45272	1.1-1.1
LOG IM.SL _{ijt} = $\beta_0 + \beta_1 \text{Log}(EX.RATE SL) + \beta_2 \text{Log}(INF SL) + U_{ij}$	45.3	0.000	11.37	2.19623	1.0-1.0

Estimated

Note: Log stands for natural log

DL = 1.141 ≤ DW ≥ DU = 1.370;

DL = 1.343 ≤ DW ≥ DU = 1.584

Significant value: 1% = ***, 5% = **, 10% = *

According to the above model selection, the entire model has a good in VIF. It ranges between 1.0-1.1. However, linear model adjusted R² and linear log model have critically low, 2.6% and 2.9% respectively. Also both have high P value and lower F value. Therefore the linear model and linear log model were rejected. Log-linear and log-log model are suitable for this analysis. However, the log-linear model has lower R² than log-log model. Further, log-log model has F value is comparatively higher than the log-linear model. Therefore, I have selected the log-log model to analyse this time series data. Further, given the appendix no: 8 the values of all model selection statistics, namely, adjusted R square (45.3%); 'F' value (11.37) and VIF are very good in all models. Further, Variance Inflating Factor (VIF) specified between 1.0-1.0 in the above log-log model. This indicates that there is no serious multicollinearity among the variables.

Moreover, among the regression model the Durbin Watson value also in accepted area in the all model. The above models lies between the value of DL = 2.19623 ≤ Durbin Watson ≤ DU 2.47262. There is no Auto correlation among the all models, but the log-log model has lower D statistics. However, R², P and F values are better than other models. Therefore I have to choose the log-log model. Further Hois accepted without any autocorrelation problem.

Table: 4 Regression results for the Log-Log Model (1980-2015).

Predictor	Co. efficient	T value	P value
Constant	-2.163	1.974	0.285
Exchange Rate	1.9646	0.4125	0.000 ***
Inflation	0.0175	0.3899	0.965

Estimated

$\alpha = 0.1^*$; 0.05^{**} ; 0.01^{***}

However, Exchange rate system and inflation influence on Imports in Sri Lanka. Though, Exchange rate system is negatively influence on Sri Lanka's economy. That is, if the Exchange rate increased by 1 percent, the Imports expenditure has to increase about 2.16 percent, thus exchange rate system does not help to growth openness economy in Sri

Lanka. Further, if the Exchange rate increased by 1 percent, inflation also increasing by 0.01percent.this will causes the domestic price level also. Therefore the free floating Exchange rate system could not be able to reducing the Imports cost in Sri Lanka.It will causes the negative impact of the economy and leads to budget deficit.

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