

## **The impact of exchange rate volatility on Sri Lanka's export growth**

**S. J. Francis\***

*Hector Kobbekaduwa Agrarian Research and Training Institute, Colombo,  
Sri Lanka.*

**M. Ganeshamoorthy**

*Department of Economics, University of Colombo, Sri Lanka.*

*\*Corresponding author: [sjoesfrans@gmail.com](mailto:sjoesfrans@gmail.com)*

### **Introduction**

The world is richly endowed with plenty of different assets, primary resources such as oil, gold and many of natural resources like natural Gas and also with secondary resources like technology and skills naturally the countries are interdependent because there is no country has all the resources to produce all the goods and services that it needs. The international trade allows the wealthy countries to share their resources one to another to full fill the Gab of needs based on their demand and interest.

Sri Lanka one of the developing countries and it is endowed with many resources with rubber and plant tea and garment, natural harbors and labor. The exports in Sri Lanka decreased to 817 USD Million in December from 835.20 USD Million in November, 2015. Exports in Sri Lanka averaged 692.15 USD Million from 2003 until 2015, reaching an all-time high of 1069.90 USD Million in March of 2014 and a record low of 304.80 USD Million in April of 2003.

Sri Lanka exports mostly textiles and garments (40% of total exports) and tea (17%). Others include: spices, gems, coconut products, rubber and fish. Main export partners are United States, United Kingdom, Germany, Belgium and Italy. Sri Lankan policy makers interested to a closer look at exchange rate movements to improve their trade and current account balances. Simply stated, depreciation of a country's currency makes its exports cheaper and its imports more costly. In the reality, in Sri Lanka exported products contain a large proportion than imported components. Imported components therefore become more costly for any given exporter and are not necessarily substitutable with domestically-produced products.

The choice of regime can affect economic growth directly through its effects on the adjustment of the economy to economic shocks, and indirectly through its impact on other important determinants of growth, such as international trade, investment, capital flows, financial sector and monetary institution development. But the most important determinant is export that is highly affected by the fluctuation of exchange rate.

Exchange rate volatility refers to the amount of risk about the range of changes in a currency's value. A higher volatility means that a currency's value can potentially be spread out over a larger range of values, this means that the price of the currency can change dramatically over a short time period in either direction. A lower volatility means that a currency's value does not fluctuate drastically, but changes in value at a steady pace over some time period.

Moreover Exchange rate changes affect firms differently to each country. Firms are facing a number of risks when engaging in international trade, in particular economic and commercial risks. These are determined by macroeconomic conditions of the country, such as exchange rates and their volatility. Firms are using risk management tools to mitigate the impact of such risks, especially in the short term. These techniques for securing exchange rate risk are sometimes complex, however, and do not cover all operations of the firms.

Despite these consensus, the present economic situation seems to justify revisiting the question of the impacts of exchange rates and their volatility on export growth. This study aims to help clarify the role of exchange rates in international trade, i.e. to what extent do exchange rates and their volatility impact on Sri Lanka's Export growth. Thus, main objective of the study is to examine the relationship between the exchange rate volatility on Sri Lanka's exports.

### **Methodology**

Basically the research problem and research design determine the method of data analysis and the selection of the method of data collection base on the research objective and some practical issue. In this research we used the secondary data to answer the research problem. The existing literature on secondary data collection provides a number of data collection sources and methods.

The Central Bank of Sri Lanka is considered as the main source that we collect all the necessary data to examine the relationship between the exchange rate volatility and the export behavior to the main five export partners (USA, UK, Belgium, Italy and Germany) from Sri Lanka as well as we were able to collect the data from the International Monetary Fund (IMF), here follow the data sources are IMF publications, Sri Lanka : Central Bank Annual reports, various issues, Monthly Bulletin various issues, Economic review and [www.Tradingeconomic.com](http://www.Tradingeconomic.com).

This study employs quarterly data spanning from 2000 Q1 to 2015 Q4 for, real export and real import, Real Gross domestic Product (GDP) of Sri Lanka, Price index all variables are directly collected except for real exchange rate volatility and real exchange rate (RER). The value figure of Sri Lankan export is collected from trade economic website provided from Central Bank of Sri Lanka. The GDP

of Sri Lanka are gathered from Central Bank quarterly and Price index also collected from Central Bank well as the nominal exchange rate quarterly data. The study employed empirical econometrics time series analysis on Exchange Rate Volatility in Sri Lanka's Export Growth by testing using ADF unit root test, Johansen Co-integration test, Vector Error Correction (VEC) modelling and Granger casualty test. Ordinary Least Square method (OLS) is used to estimate and explain the regression model of the study.

### **Results and discussion**

Augmented Dickey Fuller test was used to determine the level of integration of the variables in the model. The result of unit root test is presented in Appendix. To Employ the Export model to examine the impact of real exchange rate volatility on Export in Sri-Lanka, First, the stationary of each series is examined by using the Dicky-Fuller, augmented Dicky –Fuller (ADF) test. This is done in order to avoid running a spurious regression. Since the methodology of this test is well known, the details are omitted. ADF test fail to reject the null hypotheses of existence of a unite of a unite root in log levels but reject the same null hypotheses in the log first difference of the series. So all the time series variables are integrated in the same order in the first difference level for all five countries as Appendix 1, Table 1 and Table 2 and Table 3 and Table 4, shows the Augmented Dicky –Fuller Test.

Following the Johansen (1992) a systematic test procedure for the export model specification is performed both the Rank and Order and deterministic components for the Co-integrating system simultaneously. The trace statistics for the deterministic component are reported in Table 1 to 5. Having determined that the all variables are integrated in the same order, we moved forward to determine if the variables are co-integrated using the Johansen test. The Cointegration test shows the long-run equilibrium relationship between two or more economic series. In conducting the cointegration test, we utilized unrestricted intercept and no trend in the VAR, the result of this analysis is presented in appendix (Table 6).

### **Conclusion**

The major focus of this research work is to analyze the impact of real exchange rate volatility on Sri Lanka's net-export in bilateral trade between USA, UK and Germany and Belgium and Italy. A risk model for the economies, which was anchored on the risk portfolio school hypothesis, was adopted. This hypothesis posits that risk aversion may not be sufficient to conclude that exchange rate volatility reduces the level of trade. The Johansen cointegration procedure was used to analyze the data set for the countries under consideration. The result of

the restricted cointegration relation suggests that the volatility of exchange rate, depresses export growth in Italy and Germany. The impact on export to USA and United Kingdom and Belgium seems to be export enhancing for all the economies included, the Johansen cointegration relation also indicates the presence of a long-run stable relationship among the variables except Italy. A higher level of export is no doubt necessary for a much needed foreign income earning which will in due course, put a country on a part of economic growth and development. But this may not be possible, when volatility in exchange rate and other unforeseen economic variables are at work, there must be more efforts made to reduce the level of volatility in the exchange rate, to increase foreign demand and encourage export production. This can be achieved, when the key policy actions recommended as follows is adopted.

**Keywords:** *Co-integration, exchange rate volatility, exports, vector error correction (VEC).*

### **Reference**

- Egert, B., & Zumaquero, M. (2008). Exchange Rate Regimes, Foreign Exchange Volatility, and Export Performance in Central and Eastern Europe. *Review of Development Economics*, 12(3), 577-593.
- Hooper, P., & Kohlhagen, S. W. (1978). The effect of exchange rate uncertainty on the prices and volume of international trade. *Journal of International Economics*, 483-511.

## Appendices

Table 1 Unit Root Test for Germany

Germany :		T-Statistic		
variables	Augmented Dickey-Fuller test statistic	1% Level	5% Level	10% Level
REX	-8.370145	-3.542097	-3.542097	-3.542097
RER	-6.077396	-3.542097	-2.910019	-2.592645
VOL	-10.43050	-3.540198	-2.909206	-2.592215
RP	-8.843323	-3.542097	-2.910019	-2.592645

Table 2 Unit Root Test for USA

USA :		T-Statistic		
variables	Augmented Dickey-Fuller test statistic	1% Level	5% Level	10% Level
REX	-12.84910	-3.540198	-2.909206	-2.592215
RER	-5.676546	-3.542097	-2.910019	-2.592645
VOL	-11.38708	-3.540198	-2.909206	-2.592215
RP	-11.15344	-3.540198	-2.909206	-2.592215

Table 3 Unit Root Test for UK

United Kingdom:		T-Statistic		
Variables	Augmented Dickey-Fuller test statistic	1% Level	5% Level	10% Level
REX	-10.78269	-3.540198	-2.909206	-2.592215
RER	-6.576468	-3.542097	-2.910019	-2.592645
VOL	-9.737568	-3.542097	-2.910019	-2.592645
RP	-12.28563	-3.540198	-2.909206	-2.592215

Table 5 Unit Root Test for Italy

Italy :		T-Statistic		
Variables	Augmented Dickey-Fuller test statistic	1% Level	5% Level	10% Level
REX	-10.78269	-3.540198	-2.909206	-2.592215
RER	-6.576468	-3.542097	-2.910019	-2.592645
VOL	-9.737568	-3.542097	-2.910019	-2.592645
RP	-12.28563	-3.540198	-2.909206	-2.592215

Table 6 Cointegration test, linear deterministic trend

United State of America			
<i>Null Hypothesises</i>	<i>Eigenvalue</i>	<i>Trace statistic</i>	<i>0.05 Critical Value</i>
R=0*	0.432382	55.43963	47.85613
R=1	0.183412	20.89498	29.79707
R=2	0.126804	8.535128	15.49471
R=3	0.004315	0.263803	3.841466
United Kingdome			
<i>Null Hypothesises</i>	<i>Eigenvalue</i>	<i>Trace statistic</i>	<i>0.05 Critical Value</i>
R=0*	0.422407	56.19243	47.85613

R=1	0.184469	22.71035	29.79707
R=2	0.139294	10.27148	15.49471
R=3	0.018214	1.121313	3.841466
<b>Germany</b>			
<i>Null Hypotheses</i>	<i>Eigenvalue</i>	<i>Trace statistic</i>	<i>0.05 Critical Value</i>
R=0*	0.341230	53.01133	47.85613
R=1	0.245076	27.55112	29.79707
R=2	0.141929	10.40165	15.49471
R=3	0.017300	1.064508	3.841466
<b>Belguime</b>			
<i>Null Hypotheses</i>	<i>Eigenvalue</i>	<i>Trace statistic</i>	<i>0.05 Critical Value</i>
R=0*	0.400678	63.24487	47.85613
R=1*	0.300131	32.01549	29.79707
R=2	0.122692	10.24693	15.49471
R=3	0.036406	2.262185	3.841466
<b>Italy</b>			
<i>Null Hypotheses</i>	<i>Eigenvalue</i>	<i>Trace statistic</i>	<i>0.05 Critical Value</i>
R=0	0.315373	45.89441	47.85613
R=1	0.189214	22.78262	29.79707
R=2	0.140416	9.987794	15.49471
R=3	0.012351	0.758112	3.841466