

Exchange Rate and Macroeconomic Performance in South Asian Region

Sankarkumar Amirdhavasani, Ph.D Research Scholar, Department of Commerce and Financial Studies, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India. E-mail: amirthasankar15@gmail.com

Murugesan Selvam, Professor and Head, Department of Commerce and Financial Studies, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India.

Gunasekaran Indhumathi, Assistant Professor, Department of Commerce, Mother Teresa Women's University, Kodaikanal, Tamil Nadu, India.

Pavithran Amrutha, Ph.D Research Scholar, Department of Commerce and Financial Studies, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India.

Dhamotharan Dhanasekar, Ph.D Research Scholar, Department of Commerce and Financial Studies, Bharathidasan University, Tiruchirappalli, Tamil Nadu, India.

Abstract--- The aim of this study was to throw light on the relationship between the Exchange Rate and Macro Economic Performance in South Asian Region (Afghanistan, Bangladesh, Bhutan, India and Sri Lanka). The results indicated that there was causal relationship (unidirectional) between Exchange Rate and Imports, Government Total Expenditure and Total Investment in Bangladesh. The correlation analysis also confirmed that Bangladesh is only country, which recorded positive correlation between Exchange Rate and Macro Economic Performance (except Total Investment) of South Asia Region. The findings of this study would be useful to the retail investors and policymakers, to monitor the exchange rate movements.

Keywords--- Exchange Rate, Macro Economic Performance, Granger Causality.

JEL Code--- B22 E00

I. Introduction

The exchange rate is one of the significant factors responsible for the economic growth of India. The exchange rate is influenced by factors like GDP, inflation rate and interest rate. Exchange Rate is the rate at which home currency is exchanged. The decline in currency value is called depreciation. The developing economies usually have self-confidence in import, to meet their internal claim. But emerging economies buy and sell, resulting with the comprehensive economy (**Janus, T., & Riera-Crichton, D. 2015**).

In the dollar-pegged system, the mainstream of East Asian currency had already witnessed this occurrence. Some countries have already faced the problem of the harsh self-confidence on US currency (USD). However, in the mainstream Asian Countries, the sharing of networks, predominantly in the equipment industry, have extended globally. The exchange rate of one currency against the other currency is slanted, by a variety of basic and scientific factors. Such factors from the relationship between supply and demand of equal currencies, economic performance, the attitude for inflation, interest rate differentials, capital inflows and outflows, technical support and resistance levels and so on (**Rodrik, D. 2008**).

The performance of an economy / country could be calculated by real GDP growth rate, rate of inflation, exchange rate, fiscal position, and other variables, which are the major factors affecting the economic growth. Since the exchange rate is exposed to the fundamentals, related to economic factor, the exchange rate should be retained as the foremost indicator of upcoming economic activity (**Pal & Mittal, 2011**). Various studies found that changes in fundamentals of the economy greatly affect stock market indices (**Maysami, R. C., 2005**). The causal relationships between exchange rate and economic growth have been empirically examined, in the previous studies conducted for Less Developed Countries (LDCs) and Newly Industrialized Countries (NICs). The causal effect of exchange rate expansion on economic growth, has been studied using time-series analyses (**Jung and Marshall, 1985**). For Newly Industrialized Countries (NIC) of Asia, **Devereux, M. B., & Engel, C. (2002)** maintained that the causal effects were bidirectional because of feedback effects of macro-economic growth on exchange rate expansion.

II. Review of Literature

Sang Hoon Kang (2008) examined the volatility of foreign exchange rate sequence, corresponding to central bank involvements, monetary policy changes and exchange regime changes. Majority of South East Asian countries have suffered from big unexpected changes in their exchange rate volatility, caused by the 1997 Asian currency disaster. **Tönn Talpsepp (2012)** investigated the impact of currency exchange rate changes on the stock market volatility asymmetry, based on the 14 sample Asian markets. The study indicated a big positive largeness and against the large negativeness.

A. Ngerebo-A & Reginald C. Ibe (2013) investigated the causal relationship between exchange rate and macroeconomics. Tools like Johansen co integration test, estimated equation and granger causality tests were used in this study. The result of the study indicated that there was long-run equilibrium relationship among the indicators. The granger causality test displayed a unidirectional causality between exchange rate and outside investments and growth rate of gross domestic product.

Onyeizugbe Chinedu (2014) investigated the devaluation of the Naira and its impact on the survival of the industrial subsector in Nigeria. The result revealed that manufacturing size consumption did have positive relationship with exchange rate and export. The study recommended that the Government should boost the development of native industrial subsectors. **Abdulkadir I. Ali, (2015)** investigated the estimates of real exchange rate misalignment, by adding deviations of the actual real exchange rate from a manageable route. Tools used were structural breaks and cointegration for the analysis.

Vincent Moyo, Alexander Mapfumo (2015) analyzed the inter connection between economic growth and imports in the short and long run in Zimbabwe. The study examined the Zimbabwean economy generally and found that it experienced positively related trend between gross domestic product and imports over the years. There was short run unidirectional link between gross domestic product and imports, running from imports to gross domestic product. **Olivia S. Jin (2015)**, examined the Korean economy, that seriously depended on international trade. The effect of GDP growth on export expansion was also found to be small and insignificant. **Mahmoud Ramadan Barakat (2016)** examined the relationship between the stock market and macroeconomic factors in two developing economies. The results showed that there was causal relationship between market index and consumer price index (CPI), exchange rate, money supply, and interest rate in Egypt.

III. Design of the Study

3.1. Statement of the Problem

Escalation in the exchange rates creates respective country's currency stronger relative to other currencies. This allows importers of a domestic country, to buy foreign goods comparatively at lower prices, developing greater demand for foreign goods. It is to be noted that the exchange rate and macroeconomic performance ought to be positive but it may be negative in the south Asian region. The macroeconomic performance generally responds after the exchange rate becomes positive and significant. **Sargent and Wallace (1981) and Cumby and Obstfeld (1982)** explained the presence of causality between exchange rates and variables of macroeconomic performance. Such study need to be conducted across the globe on a periodical basis. Against this background, an attempt has been made in this study, to find out the relationship between exchange rate and economic growth in the South Asian Region.

3.2. Need of the Study

The study on the relationship between exchange rate and macro-economic performance, in South Asian Countries, would help to frame policymakers' appropriate policy, to improve the growth of international trade. The findings of the study would help to improve the existing policy of stabilizing the exchange rate.

3.3. Objectives of the Study

The objectives of the study was to analyse the linear and causal relationship between Exchange Rate and Macroeconomic Performance in South Asian Region.

3.4. Hypothesis of the Study

Hypotheses of the study are as follows.

1. NH1: There is no normality between Exchange Rate and Macro Economic Performance in South Asian Region.

2. NH2: There is no linear relationship between Exchange Rate and Macro Economic Performance in South Asian Region.
3. NH3: There is no causal relationship between Exchange Rate and Macro Economic Performance in South Asian Region.

3.5. Methodology of the Study

a) Selection of the Sample

The economies of South Asian Region included countries such as Sri Lanka, Pakistan, Afghanistan, Bangladesh, Nepal, India, Bhutan, and Maldives. But due to the non-availability of data, the study selected a sample of five countries, as follows:

S.No	Name of the Country	Name of the currency considered
1.	Afghanistan	Afghan Afghani
2.	Bangladesh	Bangladeshi Taka
3.	Bhutan	Bhutanese Ngultrum
4.	India	Indian Rupee
5.	Pakistan	Pakistani Rupee

b) Variables Used in the Study

For the purpose of this study, totally seven variables were used.

Independent Variables (Macro Economic Performance)	Dependent Variables
Exports (EXP), Government Net Lending (GNL), Government Total Expenditure (GTE), Imports (IMP), Inflation (INF) and Total Investment (TIN)	Exchange Rate (ER)

c) Sources of Data

The study was based on the secondary data. The study used both independent and dependent variables. The required data were collected from International Monetary Fund database. The other required data were collected from reprinted books, journals and websites.

d) Period of Study

This study examined the relationship between exchange rates against USD and macroeconomic performance of South Asian Region, using annual data for a period of 11 years from January 1, 2009 to December 31, 2019.

3.6. Tools Used for Analysis

The present study used the following tools, for examining the relationship between exchange rate against USD and macroeconomic performance of South Asia Region.

1. Descriptive Statistics (to analyses the normality of Exchange Rate against USD and Macro Economic Performance).
2. Correlation (to analyses relationship between Exchange Rate against USD and Macro Economic Performance)
3. Granger Causality (to analyses causal relationship between Exchange Rate against USD and Macro Economic Performance).

3.7. Limitations of the Study

1. The study period was limited to eleven years only.
2. All the limitations, applicable to tools such as Descriptive Statistics, Correlation, and Granger Causality, are applicable to this study also.

IV. Empirical Results and Discussion

4.1. Descriptive Statistics for the Exchange Rate and Macro Economic Performance of South Asian Region

Table -1 shows the results of descriptive statistics (mean, standard deviation and p-value) for Exchange Rate against USD and Macro Economic Performance of South Asian Countries, during the period from 2009 to 2019. The mean values of Afghanistan were at 0.027168 (GTE), -0.04086 (ER), -0.04826 (TIN), -0.28586 (INF), -1.45811 (IMP), -1.77923 (GNL) and -9.076 (EXP), during the study period. GTE recorded positive and highest mean value

(0.027168), among all the sample variables. The mean values of Bangladesh were at 0.414377 (IMP), 0.270075 (EXP), 0.020788 (GNL), 0.003919 (GTE), 0.018953 (TIN), -0.00017 (INF), and -0.01924 (ER), during the study period. Bhutan’s mean values, for sample variables, such as TIN, GTE, ER, IMP, GNL, INF and EXP were at 0.0151176, -0.00117, -0.04312, -0.04562, -0.17613, -0.92315 and -3.25343 respectively, during the study period. It is significant that in India, the mean values of GTE (-0.00483), TIN (-0.00655), GNL (-0.02792), ER (-0.04323), INF (-0.08883), EXP (-0.8168) and IMP (-2.3206) were negative, during the study period. The highest mean values of descriptive analysis were at 0.027168 (for GTE) in Afghanistan, 0.414377 (for IMP) in Bangladesh, 0.051176 (for TIN) in Bhutan, -0.00483 (for GTE) in India and 1.225 (for GTE) in Pakistan. In the case of Standard Deviation, variables such as Exports of Afghanistan (24.79776), Bhutan (11.23893) and Pakistan (20.982), Imports of Bangladesh (1.339371) and India (6.677071) recorded highest values. The p-value of Exports (0.00015) and GTE (0.055884) in Afghanistan, Imports of Bangladesh (0.00061) and Bhutan (0.000359), Exports (0.000), GNL (0.032), GTE (0.000) and TIN (0.000) in Pakistan, earned a value below the significant value of 0.05, during the study period. Hence the hypothesis NH1 - **There is no normality of Exchange Rate and Macro Economic Performance in South Asian Region**, was partially accepted.

Table 1: Descriptive Statistics for Exchange Rate and Macro Economic Performance in South Asian Region during the Study period from 2009 to 2019

Countries		Sample Variables						
		Independent Variables						Dependent Variable
		EXP	GNL	GTE	IMP	INF	TIN	ER
Afghanistan	Mean	-9.076	-1.77923	0.027168	-1.45811	-0.28586	-0.04826	-0.04086
	SD	24.79776	2.244546	0.045904	1.787362	1.357249	0.125184	0.055967
	JV	22.18095	0.737996	5.768955	0.224784	4.911686	0.407696	1.029964
	PV	0.00015	0.691427	0.055884	0.893694	0.085791	0.815586	0.597511
Bangladesh	Mean	0.270075	0.020788	0.003919	0.414377	-0.00017	0.018953	-0.01924
	SD	0.810721	0.210593	0.050179	1.339371	0.219741	0.011139	0.039125
	JV	0.812864	1.175202	0.041539	14.64373	2.449986	0.359399	0.244132
	PV	0.666022	0.555659	0.979445	0.000661	0.29376	0.835521	0.88509
Bhutan	Mean	-3.25343	-0.17613	-0.00117	-0.04562	-0.92315	0.051176	-0.04312
	SD	11.23893	1.692056	0.114575	0.229924	1.584057	0.187042	0.057061
	JV	4.882108	0.80374	0.906162	0.42944	0.314337	0.186253	0.347645
	PV	0.087069	0.669068	0.635667	0.806767	0.85456	0.911078	0.840446
India	Mean	-0.8168	-0.02792	-0.00483	-2.3206	-0.08883	-0.00655	-0.04323
	SD	3.248904	0.051213	0.019745	6.677071	0.241323	0.060528	0.05704
	JV	1.121403	0.376738	0.92866	15.86655	0.748867	0.332233	0.353289
	PV	0.570808	0.828309	0.628556	0.000359	0.687679	0.846947	0.838078
Pakistan	Mean	-8.340	-0.074	1.225	-0.074	-0.016	0.536	-0.052
	SD	20.982	0.460	3.826	1.546	0.331	1.712	0.052
	JV	22.310	6.898	22.712	5.292	0.789	22.600	1.130
	PV	0.000	0.032	0.000	0.071	0.674	0.000	0.568

Source: International Monetary Fund, Pacific Exchange Rate and computed by using E-views

Note: TIN- Total Investment, INF – Inflation, IMP – Imports, EXP – Exports, GTE – Government Total Expenditure, GNL – Government Net Lending, ER – Exchange Rate

4.2. Linear Relationship between Exchange Rate and Macro Economic Performance of South Asian Region

The results of correlation for exchange rate against USD and macroeconomic performance, are shown in **Table – 2**. It is clear from the analysis that exchange rate against USD and macroeconomic performance of Afghanistan were not correlated with each other in Afghanistan, except IMP (0.042), that recoded relationship during the study period. Variables such as EXP (0.503), GNL (0.035), IMP (0.263) and INF (0.261) did have relationship, during the study period, in the case of Bangladesh. Variables like EXP with the value of 0.126, INF with the value of 0.181 and TIN with the value of 0.539, recorded positive correlation with exchange rate, against USD, in Bhutan. In India, variables such as IMP and TIN showed positive relationship, with values of 0.183 and 0.257 respectively, during the study period. But variables such as GNL, with the value of 0.417, IMP with the value of 0.345 and INF with a value of 0.118, recorded positive correlation with exchange rate in Pakistan. Bangladesh was the only country that reported more positive correlation with exchange rate against USD, with macro-economic performance variables during the

study period. The correlation analysis of Afghanistan and India revealed the fact that there were more negative correlations with sample variables than positive correlation. Hence NH2 - **There is no linear relationship between Exchange Rate and Macro Economic Performance in South Asian Region** was partially accepted.

Table 2: Correlation between Exchange Rate and Macro Economic Performance (Sample Variables) of South Asian Region during the Study Period from 2009 to 2019

Countries	Correlation between Exchange Rate and Macroeconomic Performance					
	Coefficient value of Dependent Variables of Macroeconomic Performance					
	EXP	GNL	GTE	IMP	INF	TIN
Afghanistan	-0.362	-0.100	-0.362	0.042	-0.596	-0.318
Bangladesh	0.503	0.035	-0.405	0.263	0.261	-0.494
Bhutan	-0.291	-0.090	0.126	-0.424	0.181	0.539
India	-0.440	-0.157	-0.005	0.183	-0.024	0.257
Pakistan	-0.036	0.417	-0.612	0.345	0.118	-0.613

Source: International Monetary Fund, Pacific Exchange Rate and computed by using E-views

Note: TIN- Total Investment, INF – Inflation, IMP – Imports, EXP – Exports, GTE – Government Total Expenditure, GNL – Government Net Lending, ER – Exchange Rate

4.3. Causal Relationship between Exchange Rate and Macro Economic Performance of South Asian Region

The analysis of causal relationship between exchange rate against USD and macroeconomic performance, for the sample region, is given in **Table-3**, with the results of six independent sample variables (TIN, INF, IMP, EXP, GNL and GTE) and one dependent sample variable (ER). The findings of the Table indicated that out of five sample countries, the variables of macro-economic performance of Bhutan did not have causal relationship with exchange rate of Bhutan. The analysis of Afghanistan revealed that exchange rate did have causal relationship only with total investment, with a value of 0.0298 (lies below 5% significant value), during the sample period. The exchange rate of India did have causal relationship with India’s Government total expenditure, during the sample period, with a value of 0.0572 (nearby 0.05 significant value). Likewise in Pakistan, a variable, namely, Imports, reported the causal relationship with exchange rate (0.0469) during the study period. It is a significant to note that Bangladesh was the only country that recorded more number of causal relationships than other sample countries. Government Total Expenditure (0.0343) and Imports (0.0392) recorded causal relationship with exchange rate of Bangladesh. Further, exchange rate of Bangladesh did have causal relationship with total investment (0.05570 during the sample period. The overall analysis of **Table -3** indicated that less number of causal relationships were recorded between macroeconomic performance and exchange rate during the study period. Hence NH3 - **There is no causal relationship between Exchange Rate and Macro Economic Performance in South Asian Region**, was partially accepted.

Table 3: Granger Causality between Exchange Rate and Macro Economic Performance (Sample Variables) of South Asian Region during the Study Period from 2009 to 2019

Direction of Causality	P-value				
	Afghanistan	Bangladesh	Bhutan	India	Pakistan
ER C EXP	0.0836	0.8041	0.7396	0.7254	0.7564
EXP C ER	0.972	0.614	0.9443	0.0041	0.8704
ER C GNL	0.5404	0.3573	0.7118	0.2826	0.4034
GNL C ER	0.0605	0.4079	0.2473	0.4591	0.0774
ER C GTE	0.1931	0.25	0.3043	0.0572	0.4738
GTE C ER	0.7481	0.0343	0.1898	0.0876	0.2773
ER C IMP	0.7734	0.3296	0.9011	0.8627	0.954
IMP C ER	0.4423	0.0392	0.111	0.3905	0.0469
ER C TIN	0.0298	0.0557	0.9694	0.0962	0.9343
TIN C ER	0.863	0.9445	0.1996	0.8959	0.1138

Source: International Monetary Fund, Pacific Exchange Rate and computed by using E-views

Note: TIN- Total Investment, INF – Inflation, IMP – Imports, EXP – Exports, GTE – Government Total Expenditure, GNL – Government Net Lending, ER – Exchange Rate

V. Conclusion

The study examined the relationship between exchange rate against USD and macroeconomic performance in South Asian Region, using the return data. The normality, by using descriptive statistics, relationship between variables, by using correlation and causal relationship between variables by, using Granger causality test in South Asian Region were studied. There was low but positive relationship between exchange rate and macroeconomic performance in the South Asian Region. The results of this study clearly established that there is need to revise monetary policy framework, suitable to current business environment, in South Asian Countries. It is also important for monetary authorities, to learn from exchange rate management in the past, in order to improve the policy framework and ensure exchange rate stability in South Asian Region. It is desirable to monitor the movements in the exchange rates so as to foster competitiveness at the respective regions.

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