EFFECT OF REER ON EXPORTS: AN ANECDOTE FROM INDIA

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Abstract-

One of the crucial affairs in case of exchange rate, specifically in underdeveloped and developing economies is the impact of REER (Real Effective Exchange Rate) on macro-economic variables. This paper examined the effect of REER on exports of India. The objectives of this paper are to examine the effect of REER on exports of India for a period of nine and a half year i.e., from April 1, 2004 to September 30, 2013 and to study the real implications of fluctuations of REER for Indian exports. A large number of techniques have been employed, namely, ADF (Augmented Dickey Fuller) test, Co-integration, VECM (Vector Error Correction Model), Variance Decomposition Analysis, Impulse Response, and Granger Causality test. The results confirm the dominant role of REER to Exports and exports makes greater adjustment to restore long run equilibrium. We find that the increase in the REER leads to a decrease in the value of India's merchandise exports as measured in dollar. In view of the Indian economy's dependence on exports and the Reserve Bank of India's managed exchange rate policy, our empirical results indicate a currency appreciation and volatility, in general, have an adverse effect on India's exports.

Keywords- REER, Indian Exports, Implications.

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SECTION 1: INTRODUCTION

In today's era, the world economy is much more intertwined as compared to few years back since a lot of trade is taking place among various nations. The exchange rate, which shows the strength of a country's currency in comparison with the currencies of other countries, reflects the economic status of the country in relation to other countries. The exchange rate is regarded as the key variable in an open economy because of its interaction with other intrinsic and extrinsic variables. National and international economic developments and economic policies widely influence the exchange rate. In contrast, the rate of exchange is a variable that has an impact on economic indicators as well as the economic efficiency of the nation. Prediction of currency migration is possibly one of the toughest activities in economics since it has a large number of variables influencing the market movement. Over a longer time span, the currency movement is regulated by balance of payments, interest rate differentials, fiscal deficit, inflation, global economic conditions, etc. One of the crucial affairs in case of exchange rate, specifically in underdeveloped and developing economies is the impact of REER (Real Effective Exchange Rate) on macro-economic variables.

The purpose of this paper is to examine the effect of REER on exports of India. REER i.e. the real effective exchange rate is the weighted average of a country's currency relative to an index or basket of other major currencies adjusted for the effects of inflation. The weights are determined by comparing the relative trade balances, in terms of one country's currency, with each other currency in index.[1]

Exchange rate policy of India has emerged over time in sync with the progressive broadening up of the economy as chunk of the extensive scheme of liberalization and macroeconomic reforms since the early 1990's. Since independence, exchange rate policy of India has experienced a switch from a system of par value to a basket peg system and from a basket peg system to a managed float system of exchange rate. Prior to the liberalization of 1991, India was widely and deliberately detached from the world markets, to safeguard its economy and to attain self-sufficiency. External trade was restricted by export taxes, import tariffs, and a number of quantitative restrictions. After independence, India's exports were sluggish for the first 15 years, because of general disregard of trade policy by that period's government. In the same period,

[1] Investopedia

imports consisted predominantly of raw materials, machinery, and consumer goods, due to industrialization being in budding stage.

Buttressed by the steps taken by the Indian government to boost exports in the occurrence of the global financial crisis of 2008, export growth of India has reached an all time high of 40.5 percent in 2010-11 since independence. Although it declined to 21.3 percent in 2011-12, yet it was still higher than the compound annual growth rate of 20.3 percent for the period 2004-05 to 2011-12. The value of India's foreign trade has risen sharply since liberalization, with the contribution of total trade in goods and services to the GDP increasing to 50.9% in 2010–12 from 16% in 1990–91. For merchandise trade, India accounts for 1.6% of exports and 2.63% of imports and for commercial services trade, 3.23% of exports and 3.07% of imports worldwide.[2] Major trading partners of India are China, the European Union, the United Arab Emirates and the United States of America. In 2011-12, principal export commodities included engineering goods, petroleum products, gems and jewellery, agricultural products, chemicals and pharmaceuticals, textiles and garments, iron ore and other minerals. However, major import commodities included petroleum, crude oil and related products, capital goods and gold and silver.

The objectives of the study are:

1. To examine the effect of REER on exports of India for a period of nine and a half year i.e., from April 1, 2004 to September 30, 2013.
2. To study the real implications of fluctuations of REER for Indian exports.

To achieve the above objectives, the paper is divided into following section. Section 1, i.e the present section gives an overview of REER and exports and their interrelinkages and section II gives the brief review of literature. Section III deals with Data and methodology, followed by

SECTION II: LITERATURE REVIEW

The following section presents the brief review of literature in this regard. Raithatha (2012) studied the pros and cons of currency appreciation and depreciation as boon and bane for the economic growth. He found that the biggest beneficiaries from appreciation of the rupee are the importers as they have to pay less in terms of dollars, while an appreciating rupee impacts our

[2] Trade Profiles- India, WTO as retrieved on December 28, 2013

export competitiveness adversely. Similarly, the biggest looser from depreciation of the rupee are the importers as they have to pay more in terms of dollars while exports can grow faster if rupee depreciates since exporter can attract overseas buyers. Cheung and Sengupta (2012) examined the effects of real effective exchange rate (REER) on the share of exports of non-financial sector firms of India for the period 2000 to 2010. Their empirical analysis revealed that, on average, there had been a significantly strong negative impact of currency volatility as well as currency appreciation on the export shares of Indian firms. The firms that export services are highly affected by the fluctuations in exchange rate as compared with the firms exporting goods,. Singh (2007)[3] analyzed the sectoral impact of rupee appreciation on export and import. She found that the biggest beneficiaries from the appreciation of the rupee are the importers as they would have to pay less in terms of dollars i.e. more dollar denominated goods can be bought by paying lesser amount of rupee. Among the importers, companies which are likely to benefit are from the energy dependent sectors and capital goods sector. On the other hand, an appreciating rupee impacts our export competitiveness adversely. The impact of a rising rupee on exporters can be offset by a falling inflation and most significantly by a shift in the basket of export goods and services. Veeramani (2008) analyzed the relationship between the REER and exports for the period 1960-2007. It was found that the value of India's merchandise exports, as measured in dollars, fall because of an appreciation in REER. However, the degree of the (negative) association between exports and the REER had declined since 2002. In the case of commercial services, a statistically significant negative effect of real exchange rate appreciation on export was not found. It was also suggested that any slowdown in India's GDP growth would also lead to a fall in the growth rate of exports since the former implies a fall in the potential capacity for export.

Singh (2007) studied the real implications of the appreciation of the rupee on the Indian economy. It was found that the strength of the Indian rupee is an evidence of the latent strength of the Indian economy. A continually appreciating rupee in the long run could lead to dire consequences, as many countries have realised. In the medium to long term, with international market mechanisms in force, an increasing rupee could lead to decreased costs and have a

[3] Singh,Nidhi (2007), Rupee appreciation: Sectoral impacts on Exports and imports, Student's Newsletter of the ICAI, Vol11, No.1, pp- 17-19

marginal impact on India's global competitiveness. In the short-term, the increasing rupee, however, brings challenges and therein lie opportunities. With the rising rupee, the Indian economy has much to gain and little to lose in the long run. Singh (2009) studied the real implications of the rupee depreciation on the economy of India and showed that the Indian economy has less to gain and more to lose due to weaker rupee in the long run. It was found that the depreciation of rupee dampens the inflow of foreign capital, rise in the external debt burdens, and also mount India's oil and fertilizer subsidy bills. The most positive consequence of rupee depreciation is discouraging merchandise imports and the provocation of merchandise exports and thus the terms of trade improve. Agrawal (2011) and Singhal (2012) reviewed the probable reasons for the rupee depreciation and its outlook. It was found that the growth of Indian economy has resulted into the widening of the deficit of current account as imports of both oil as well as non-oil have increased. Current account deficits remained inflated In spite of the dramatic increase in software exports. To relieve the burden of current account deficit, exports should be boosted and more stable long run overseas inflows should be searched. Talwar(2013) focused on the depreciation in the value of rupee in 2013, giving reasons for the current decline in the rupee and why it can continue, the impact of rupee slump on the Indian economy as a whole, and finally gave suggestions to defend the declining rupee. It was found that the global financial and economic upheaval has adversely affected foreign demand for Indian goods, bringing the exports down. The compound effect of slowdown in FII inflows, the trade deficit and weakening growth have catalyzed the abysmal drop in rupee value in the first half of 2013. The key to maintaining a stable exchange rate is controlling inflation through macro-economic measures and managing CAD through policy reforms. The momentum is still bearish and analysts are calling rupee undervalued at current level. The wide-ranging perception is that until the global macroeconomic environment stabilizes, the rupee will continue to slither. Pattnaik, Kapur and Dhal (2003) presented the Indian experience of the exchange rate regime against the scenery of global developments both at the empirical and theoretical levels. It was found that in India, the policy of exchange rate is guided by the urge to curtail excess volatility, help maintain enough level of reserves, prevent the rise of destabilizing speculative actions, and to develop a sequential foreign exchange market. The results also indicated that real shocks were mainly responsible for nominal as well as real exchange rates movements indicating stabilizing role of monetary policy. Kandil (2004) examined the effects of fluctuations in exchange rate on price inflation and real output growth in a sample consisting of twenty-two developing nations including India. It was found that in general, depreciation in exchange rate, both

unanticipated and anticipated, decreased real output growth and increased price inflation. Gopal and Jain (2007) observed the impact of exchange rate fluctuations on SMEs in India and suggested the ways to mitigate this impact. They found that the fluctuations in exchange rate can have an adverse impact on SMEs. Each SME is required to determine its exposure to foreign currency risk. It should hedge to the required extent, if the risk is significant. The tools/ methods which can reduce risk include currency diversifications, use of forward contracts, swaps and call/put options. Badhani, Chhimwal and Suyal (2009) observed that there is an impact of appreciation in the Indian Rupee's external value on the prices of stocks of export-oriented industries such as technology and knowledge-based industries, Information Technology (IT). Mishra [2011] attempted to reinvestigate the dynamics of the relationship between exports and economic growth for India over the period 1970 to 2009. It was found that any increase in real GDP would have a positive impact on the growth of exports in the long-run. In other words, India provides the evidence of growth-driven exports over the sample period. Grewal (2013) explored the impact of Rupee – Dollar fluctuation on Indian economy. He found that the depreciation of rupee reduces the inflow of foreign capital, rise in the external debt pressure, and also grow India's oil and fertilizer subsidy bills. The most positive effect of rupee depreciation is the exports stimulation and depressing imports and thus reconstructing the current account deficit.

SECTION III: DATA AND METHODOLOGY

The study is based on secondary data analysis. The data on REER as well as on Indian exports (in US$ million) has been taken on quarterly basis from April 1, 2004 to September 30, 2013. The time series data is taken from RBI website. In order to derive some meaningful results, a large number of techniques have been employed, namely, ADF (Augmented Dickey Fuller) test, Co-integration, VECM (Vector Error Correction Model), Variance Decomposition Analysis, Impulse Response, and Granger Causality test. In statistics and econometrics, an Augmented Dickey–Fuller test (ADF) is a test for a unit root in a time series sample. The augmented Dickey–Fuller (ADF) statistic, used in the test, is a negative number. The more negative it is, the stronger the rejection of the hypothesis that there is a unit roots at some level of confidence. Co-integration is an analytic technique for testing for common trends in multivariate time series and modeling long-run dynamics. Two or more predictive variables in a time-series model are co-integrated when they share a common stochastic drift. Variables are considered co-integrated if a linear combination of them produces a stationary time series. If a set of variables are found to have one or more co-integrating vectors then a suitable estimation technique is a VECM (Vector

Error Correction Model) which adjusts to both short run changes in variables and deviations from equilibrium. The variance decomposition analysis indicates the amount of information each variable contributes to the other variables in the auto regression. It determines how much of the forecast error variance of each of the variables can be explained by exogenous shocks to the other variables. After testing the sample series for short and long term dynamics, it is vital to gauge the direction of causality and to find out this Granger causality test is conducted. It is a statistical concept of causality that is based on prediction. According to Granger causality, if a signal X1 "Granger-causes" (or "G-causes") a signal X2, then past values of X1 should contain information that helps predict X2 above and beyond the information contained in past values of X2 alone. Its mathematical formulation is based on linear regression modeling of stochastic processes. Granger-causality may not tell us the complete story about the interactions between the variables of a system. In applied work, it is often of interest to know the response of one variable to an impulse in another variable in a system that involves a number of further variables as well. One would like to investigate the impulse response relationship between two variables in higher dimensional system. Of course, there is a reaction of one variable to an impulse in another variable; we may call the latter causal for the former.

SECTION IV: ANALYSIS AND INTERPRETATION OF RESULTS

The results of stationarity tests are given in Table 1. It confirms non stationarity of sample data; hence we repeat stationarity tests on return series (estimated as first difference of log prices) which are also provided in Table 1. The table describes the sample series that have been tested using Augmented Dickey Fuller, (ADF) 1981. The ADF test uses the existence of a unit root as the null hypothesis. To double check the robustness of the results, Phillips and Perron (1988) test of stationarity has also been performed for the sample series and then both the test are performed on return series. The sample return series exhibit stationarity thus conforming that both Exports and REER are integrated to the first order, see table 1.If two or more series are themselves non-stationary, but a linear combination of them is stationary, then the series is said to be co-integrated. Given that series are integrated of the same order, co-integration techniques are used to determine the existence of a stable long-run relationship between sample data.

Table 1 Stationarity Test for Sample Series

	ORIGINAL SERIES(Panel A)		RETURN SERIES (Panel B)	
	ADF (T-STATS)	PHILIP PERRON (T-STATS)	ADF (T-STATS)	PHILIP PERRON (T-STATS)
EXPORTS	-1.09	-0.51	**-41.9 8 ****	**-41.9 8 ****
REER	0.78	0.65	**-41.35 ****	**-41.32 ****

The table 1 describes the sample price series that have been tested using Augmented Dickey Fuller (ADF) 1981. The ADF test uses the existence of a unit root as the null hypothesis. To double check the robustness of the results, Phillips and Perron (1988) test of stationarity has also been performed for the price series and then both the test are performed on return series also as shown in Panel-A (price series) and Panel B (Return series) are integrated to I(1). All tests are performed using 5%level of significance (**).

The linkage between sample data is examined using co-integration (Johansen, 1991) analysis that has several advantages. First, co-integration analysis reveals the extent to which two markets move together towards long run equilibrium. Secondly, it allows for divergence of respective markets from long-run equilibrium in the short run. The co-integrating vector identifies the existence of long run equilibrium, while error correction dynamics describes the price discovery process (LEAD LAG) that helps the markets to achieve equilibrium (Schreiber and Schwartz, 1986). Co-integrating methodology fundamentally proceeds with non-stationary nature of level series and minimizes the discrepancy that arises from the deviation of long-run equilibrium. The observed deviations from long-run equilibrium are not only guided by the stochastic process and random shocks in the system. Theoretically it is claimed that if sample series are co-integrated, then it implies presence of causality at least in one direction. On the other hand, if some level series are integrated of the same order, it does not mean that both level series are co-integrated. Co-integration implies linear combinations of both level series cancelling the stochastic trend, thereby producing a stationary series. Johansen's co integration test is more sensitive to the lag length employed. Besides, inappropriate lag length may give rise to problems of either over parameterization or under parameterization. The objective of the estimation is to ensure that there is no serial correlation in the residuals. Here, Akaike information criterion (AIC) is used to select the optimal lag length and all related calculations have been done embedding that lag length. The co-integration results are reported in Table 2.

Table 2. Results of Johansen's Co-Integration Test

Name of variable	Lag Length	Max Eigen Value	Trace Statistics	Critical Value	P- Value
EXPORTS	2*	0.516615	24.97919	15.49471	0.0014
REER		0.335338	8.986494	3.841466	0.0027

This table provides the Johansen's co-integration test, maximal Eigen value and Trace test statistics are used to interpret whether null hypothesis of r=0 is rejected at 5 % level and not rejected where r=1. Rejection of null hypothesis implies that there exists at least one co-integrating vector which confirms a long run equilibrium relationship between the Exports and REER. The null hypothesis is rejected which reveals that two co-integration relationship exists between them.

Maximal Eigen value and trace test statistics are used to interpret whether null hypothesis of r =0 is rejected at 5% level and not rejected when r =1. Rejection of the null hypothesis implies there exists at least one co-integrating vector which confirms a long run equilibrium relationship between the two (Exports AND REER).Thus they share a common long run information. To understand short run dynamics between the variables Error Correction Framework is used. The error correction model takes into account the lag terms in the technical equation that invites the short run adjustment towards the long run. This is the advantage of the error correction model in evaluating price discovery. The presence of error correction dynamics in a particular system confirms the price discovery process that enables the market to converge towards equilibrium. In addition, the model shows not only the degree of disequilibrium from one period that is corrected in the next, but also the relative magnitude of adjustment that occurs in both markets in achieving equilibrium. Moreover, co-integration analysis indicates how two markets (such as futures and spot commodity markets) reveal pricing information identified through the price difference between the respective markets. The implication of co integration is that the sample series respond disproportionately in the short run, but they converge to equilibrium in the long run under the condition that both variables are innovative and efficient.

The following table 2 exhibits the results of VECM

Table 2 : Vector Error Correction Estimates

Sample (adjusted): 3 38
Included observations: 36 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
INDIA_S_EXPORTS_US$ _MILL(-1)	1.000000
EXCHANGE_RATE(-1)	-4302.697
	(1062.26)
	[-4.05053]
C	151615.1

Error Correction:	D(INDIA_S_EXPORTS_US$_MILL)	D(EXCHANGE_RATE)
CointEq1	-0.164632	2.32E-05
	(0.04418)	(1.7E-05)
	[-3.72607]	[1.34975]
D(INDIA_S_EXPORTS_US$_MILL(-1))	-0.167451	-2.77E-05
	(0.16079)	(6.2E-05)
	[-1.04141]	[-0.44312]
D(EXCHANGE_RATE(-1))	-1083.543	0.238573
	(448.000)	(0.17409)
	[-2.41862]	[1.37037]
C	-2288.341	-0.245933
	(858.822)	(0.33374)
	[-2.66451]	[-0.73690]
R-squared	0.327682	0.109542
Adj. R-squared	0.264652	0.026061
Sum sq. resids	6.65E+08	100.4862
S.E. equation	4560.099	1.772059
F-statistic	5.198837	1.312184
Log likelihood	-352.2653	-69.55881
Akaike AIC	19.79252	4.086600
Schwarz SC	19.96846	4.262547
Mean dependent	-1526.517	-0.305278
S.D. dependent	5317.749	1.795611

Determinant resid covariance (dof adj.)	41809276
Determinant resid covariance	33034490
Log likelihood	-413.7987
Akaike information criterion	23.54437
Schwarz criterion	23.98424

The results reveal dominant role of REER vis a vis Exports ,as is evident the ECT of REER is less than exports and is significant at 5 % level with T-Statistics..This is evident from results that the only adjustment is done by Exorts in short run to attain equilibrium. The dominant role of REER in determining exports is also confirmed by Variance Decomposition analysis shown in Table 3,followed by Graphical Presentation of the same by Impulse Response Method showing that the rate of adjustment is more in case exports to achieve equilibrium. The variance decomposition enables us to assess the economic significance of these impacts as the Percentages of the forecast error for a variable sum to one. This structure of result showing the information share shows that most of the changes of Exports and REER are because of REER, and more information flows from REER TO Exports. The information share and variance decomposition confirms the dominant role of REER in price discovery (lead –lag dynamics).

Table 3: Results of Variance Decomposition Analysis

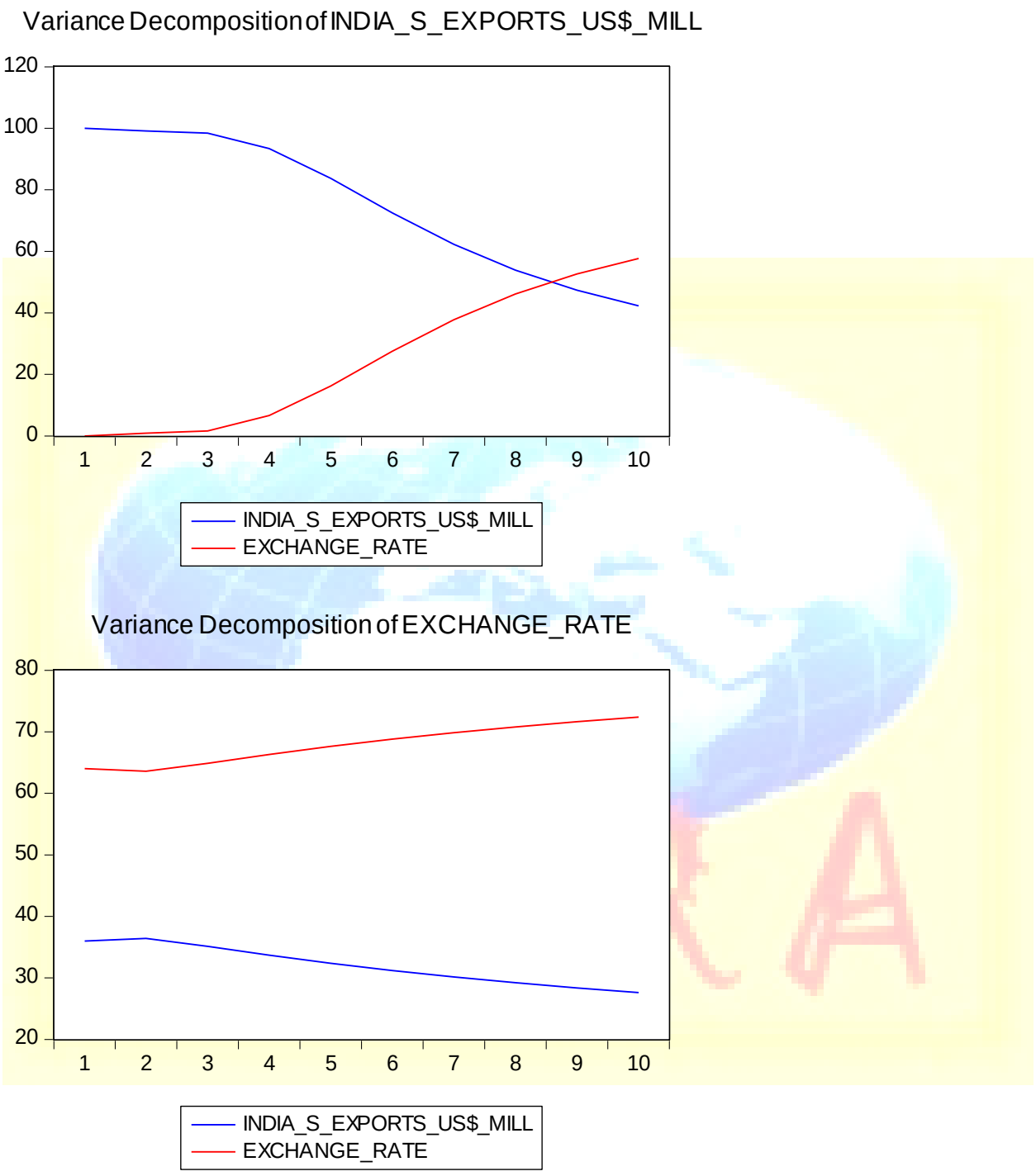
Variance Decomposition of INDIA_S_EXPORTS_US$_MILLIONS:			
Period	**S.E.**	**INDIA_S_EXPORTS_US$_MILL**	**EXCHANGE_RATE**
1	4560.099	100.0000	0.000000
2	5739.535	99.14088	0.859123
3	6237.891	98.42231	1.577689
4	6525.980	93.40906	6.590936
5	6905.134	83.74902	16.25098
6	7424.844	72.49347	27.50653
7	8043.288	62.22001	37.77999
8	8705.142	53.86960	46.13040
9	9372.343	47.35796	52.64204
10	10024.36	42.30406	57.69594
Variance Decomposition of EXCHANGE_RATE:			
Period	**S.E.**	**INDIA_S_EXPORTS_US$_MILL**	**EXCHANGE_RATE**
1	1.772059	35.97231	64.02769
2	2.695042	36.41521	63.58479
3	3.255696	35.11120	64.88880
4	3.599913	33.69815	66.30185
5	3.825134	32.36611	67.63389
6	3.986063	31.18283	68.81717
7	4.112032	30.13926	69.86074
8	4.218517	29.21071	70.78929
9	4.313774	28.37323	71.62677
10	4.402282	27.60872	72.39128

Cholesky Ordering: INDIA_S_EXPORTS_US$_MILL EXCHANGE_RATE

Variance Decomposition of GDP:			
Period	**S.E.**	**GDP**	**REER**
1	0.021135	100.0000	0.000000
2	0.041499	99.36694	0.633061
3	0.060356	99.27548	0.724522
4	0.077998	99.46332	0.536685
5	0.094417	99.49052	0.509478
6	0.109193	99.45497	0.545031
7	0.122684	99.49511	0.504893
8	0.135302	99.52264	0.477360
9	0.146979	99.51388	0.486121
10	0.157813	99.52355	0.476448
Variance Decomposition of REER:			
Period	**S.E.**	**GDP**	**REER**
1	0.032401	4.202403	95.79760
2	0.034714	16.13454	83.86546
3	0.036782	14.37159	85.62841
4	0.039169	12.67922	87.32078
5	0.040446	15.24151	84.75849
6	0.041902	14.55520	85.44480
7	0.042011	14.53168	85.46832
8	0.042925	15.01603	84.98397
9	0.043494	15.45632	84.54368
10	0.043548	15.41913	84.58087

Cholesky Ordering: GDP REER

Figure 1 : Impulse Response Method



The dominant role of REER is confirmed by Co integration, VECM, Variance Decomposition and Impulse response Method. Now to understand the direction of causality we calculate Granger Causality test. The results of which are shown in Table 4.

Table 4: Granger Causality Results

Pairwise Granger Causality Tests

Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
EXCHANGE_RATE does not Granger Cause INDIA_S_EXPORTS_US$_MILL	37	5.02911	0.0316
INDIA_S_EXPORTS_US$_MILL does not Granger Cause EXCHANGE_RATE		0.00044	0.9833

The results of Table 4 are reconfirmed in this table by Variance Decomposition Analysis. There is uni-directional Granger lead relationships between Real GDP and REER and single Granger lead relationships from REER to EXPORTS.

The results exhibit unilateral causality between REER and Exports, with significant P-value (0.00316). In sum the results confirm the dominant role of REER to Exports and exports makes greater adjustment to restore long run equilibrium. The findings are in conformity with prior research, Greenaway at al. (2007), Veeramani (2008), and Cheung and Sengupta (2012).

The paper reports the following findings. In line with the literature, we find co-integration between REER and Exports as reflected co-integration test. We find that the increase in the REER leads to a decrease in the value of India's merchandise exports as measured in dollar. In view of the Indian economy's dependence on exports and the Reserve Bank of India's managed exchange rate policy, our empirical results indicate a currency appreciation and volatility, in general, have an adverse effect on India's exports. Thus, if policy makers wish to promote exports especially as

Indian growth rate keeps faltering in recent times; they ought to focus their efforts on stemming steady appreciation of the exchange rate and reducing volatility.

Should the RBI continue the practice of intervening in the foreign exchange market to smoothen the appreciation of exchange rate is a larger question of overall macroeconomic management. Export promotion should not be the sole criterion in deciding for or against the intervention. Artificial depreciation comes with its cost (including higher inflation and higher interest rates) while the gain in the form of higher export earnings appears to be small. Export policy should instead focus on other measures that can promote exports on a sustained basis.

SECTION V: CONCLUSION

The exchange rate, which shows the strength of a country's currency in comparison with the currencies of other countries, reflects the economic status of the country in relation to other countries. The exchange rate is regarded as the key variable in an open economy because of its interaction with other intrinsic and extrinsic variables. One of the crucial affairs in case of exchange rate, specifically in underdeveloped and developing economies is the impact of REER (Real Effective Exchange Rate) on macro-economic variables. This paper examined the effect of REER on exports of India.

The results exhibit unilateral causality between REER and Exports, with significant P-value (0.00316). In sum the results confirm the dominant role of REER to Exports and exports makes greater adjustment to restore long run equilibrium. We find that the increase in the REER leads to a decrease in the value of India's merchandise exports as measured in dollar. In view of the Indian economy's dependence on exports and the Reserve Bank of India's managed exchange rate policy, our empirical results indicate a currency appreciation and volatility, in general, have an adverse effect on India's exports. Thus, if policy makers wish to promote exports especially as Indian growth rate keeps faltering in recent times; they ought to focus their efforts on stemming steady appreciation of the exchange rate and reducing volatility.

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