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An empirical analysis the impact of exports and imports in post liberalization period on exchange rates in Indian economy

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ABSTRACT

This study uses time series of financial year data. The chief objective of study is to examine whether the impact of exports and imports in post liberalization period effect the exchange rate of end year in India. The financial year exchange value of Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen as well as Exports and Imports has been used for the study. The data period is from 1991-1992 to 2017-2018. All time series contains total of 27 observations. The data are collected from database of handbook of statistics on the Indian economy and reserve bank reports. For the purpose of analyzing data, I have used Eviews and got the results. It can be conclude that higher the exports will result strong value of rupee against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen, but imports will not create the strong value of rupee against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen.

KEY WORDS: financial, liberalization, handbook, exchange rate, exports and imports

I. INTRODUCTION:

India beneath its New Economic Policy approached International Banks for development of the country. These agencies asked Indian Government to unlock its restrictions on trade complete by the private sector and amid India and other countries. Indian Government decided to the conditions of lending agencies and announced New Economic Policy (NEP) which consisted extensive range of reforms. The essential aspire of liberalization was to set an end to those limits which became obstructions in the development and growth of the nation. It was based on the belief that economic globalization/liberalization worked in the direction of the integration of national economies into the international economy through trade, foreign direct investment, short-term capital flows, international flow of workers and humankind, and flow of technology. But in the procedure of liberalizing the economy, the state's position has transformed in prioritizing a strong military, police and lawful structures, and functions to defend private property rights and makes sure correct functioning of markets. Exchange rate refers to the cost of one country's currency expressed in terms of the currency of a further country. It is an input financial variable that affects choices made by exporters, importers, bankers, financial institutions, foreign investors, businesses, tourists and policymakers in the developed as well as developing world.

II. REVIEW OF THE LITERATURE:

Ramesh C. Paudel (2014) in his examined the impact of liberalisation reform on export performance of India. The empirical analysis involves estimating an export demand-supply model for manufacturing and merchandised exports, applying ARDL approach to cointegration using annual data for the period 1975-2008. The results suggested that manufacturing and merchandise export demand are mainly determined by world demand, while manufacturing export supply is determined by domestic manufacturing output, FDI and overall liberalisation initiated in the early 1990s. Opposing to the viewed that failed to detect a significant negative impact of trade protection on export performance; however, overall liberalisations reforms seem to had positive impact in India's manufacturing export performance but this is not true in the context of merchandised export performance. Dr. Priyanka Sahni (2014)in her analyzed the trends in India's exports using the time series data for the period 1980-81 to 2010-11. The Government of India introduced economic reforms since 1991 especially in the trade sector, so, in order to see the impact of economic reforms on India's export performance, the whole time period has been divided into two sub-periods 1980-81 to 1991-92 (pre-reform period) and 1992-93 to 2010-11 (post-reform

period). The study concluded that India's exports performance improved significantly during the post-reform period and there has been a perceptible change in the value, composition and direction of India's exports.

Statement of the problem: The big problem for Indian economy had a steady nominal exchange rate in conditions of dollar of United States, which start bound Indian economy to bring in export incentive scheme of reforms in 1991 such as concessional tariff for importing equipment to produce the exportable goods, duty exemption and allowance on tax. Problem of India's balance of payment could be solved by rapid growth of exports, amplify in foreign investment, a rational exchange rate and a stable government.

Research Gap: In this argument shows that, a number of studies on Indian export performance in the reform period. So far no methodical econometric empirical evident has been undertaken surrounding both supply side and demand side determinants of the export, imports and exchange rate against Indian rupee performance in post libralisation period. This learns contributes to overpass this gap in the literature analysing "An empirical analysis the impact of exports and imports in post liberalization period on exchange rates in Indian economy".

Objectives: The chief objective of study is empirical whether the impact of exports and imports in post liberalization period effect the exchange rate of end year in India.

HYPOTHESES OF THE STUDY:

H01 = There is an attendance of unit root in the series. (Non-stationary level)
H02 = There is no significant the impact of exports and imports on exchange rates in post liberalization period.

III. DATA AND METHODOLOGY:

The impact of exports and imports in post liberalization period effect the exchange rate of end year (EURO, POUND, SDR, USD and YEN) in India. The financial year exchange rate against Indian rupee of Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen as well as Exports and Imports has been used for the study. The financial data collected from 1991-1992 to 2017-2018. All financial year contains total of 27 observations. The data are collected from database handbook of statistics on the Indian economy and reserve bank reports. I have used Eviews software find the result. The present study makes use of the diversity of econometric models to carry out the empirical analysis and those models explained in the below the next tables.

EMPIRICAL RESULTS AND DISCUSSION:

Table No. 1 Correlation matrix between all variables

Post liberalization period							
	Exports	**Imports**	**Deutsche Mark/Euro**	**Pound Sterling**	**Special Drawing Rights**	**US Dollar**	**Japanese Yen**
Exports	1						
Imports	0.996621	1					
Deutsche Mark/ Euro	0.861063	0.863199	1				
Pound Sterling	0.784873	0.772186	0.899338	1			
Special Drawing Rights	0.932566	0.925822	0.940442	0.901572	1		
Us Dollar	0.886545	0.869801	0.853437	0.863436	0.954893	1	
Japanese Yen	0.918289	0.925536	0.898965	0.758354	0.936268	0.858077	1

Above Table No.1 shows the liner correlation between exports, imports and Exchange rate of against Indian rupee. The correlation coefficient is positive and statistically significant at the 0.01 level. The correlation coefficient between exports and Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen

are positive correlation. Imports have positive relationship between Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen. So, that Export plays a significant role in exchange rate of against rupee in Indian economy.

REGRESSION ANALYSIS OF LEAST SQUARE MODEL: In the regression model India's Exports and Imports is used as the independent variable, and Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen used as a depended variable. liberalisation has long been a strong trend and foreign trade of exports and imports has become even more important, which affects GDP growth, consequently India's Total Export, Total Import, and Foreign Exchange are also used as an independent variable. Following the Table No. 2 and 3 Regression analysis between impact of exports and imports in post liberalization period on Exchange rate against Indian rupee of Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen in Indian economy.

Table No.2. Regression analysis between impact of Exports on Exchange rate against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen

Variable	Coefficient value	Std. Error value	t-Statistic value	Prob.value	R quare value	F-statistic value
C(EURO)	30.78910	3.064748	10.04621	0.0000	0.74	
EXPORTS	0.002624	0.000310	8.466717	0.0000		71.68530 (0.000000)
C(POUND)	61.14183	2.564960	23.83735	0.0000	0.616026	
EXPORTS	0.001642	0.000259	6.333131	0.0000		40.10855 (0.000001)
C(SDR)	50.78673	1.649499	30.78918	0.0000	0.869680	
EXPORTS	0.002154	0.000167	12.91649	0.0000		166.8358 (0.000000)
C(USD)	36.52828	1.390727	26.26560	0.0000	0.785961	
EXPORTS	0.001347	0.000141	9.581296	0.0000		91.80123 (0.000000)
C(YEN)	32.42817	1.285653	25.22310	0.0000		
EXPORTS	0.001508	0.000130	11.59716	0.0000	0.843255	134.4942 (0.000000)
Dependent Variable: Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen), **Independent variable:** Exports						

From the Table No.2 above, the null hypothesis can be rejected at the 5% significance level since the associated t-value is significant. The coefficient estimate for Exports and Foreign Exchange rate against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen are also statistically significant. Coefficient value of determination, R square value has remarkably high, value which indicating that very good fit between the variables or in other words in all variables is more than 60.0% of the variance in Exports can be explained by Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen. According to regression analysis contribution of Exports in change in exchange rate against Indian rupee of (Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen) volatility is very little and impact cannot be developed in a straight line but not directly impact can be measured and variation also happens the way of indirect effect in different section of the economy.

Table No. 3 Regression analysis between impact of Imports on Exchange rate against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen in Indian economy.

Post Liberalization Period						
Variable	Coefficient value	Std. Error value	t-Statistic value	Prob.value	R quare value	F-statistic value
C(EURO)	31.31453	2.995174	10.455	0.0000	0.745113	
IMPORTS	0.001735	0.000203	8.5488	0.0000		73.08281 (0.000000)
C(POUND)	61.68163	2.588916	23.825	0.0000	0.596271	
IMPORTS	0.001066	0.000175	6.0764	0.0000		36.92274 (0.000002)
C(SDR)	51.36223	1.699952	30.213	0.0000	0.857146	
IMPORTS	0.001410	0.000115	12.247	0.0000		150.0038 (0.000000)
C(USD)	36.99631	1.459959	25.340	0.0000	0.756554	
IMPORTS	0.000872	9.89E-05	8.8143	0.0000		77.69201 (0.000000)
C(YEN)	32.67392	1.210372	26.994	0.0000	0.856617	149.3581 (0.000000)

IMPORTS	0.001002	8.20E-05	12.221	0.0000		
Dependent Variable: Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen)**, Independent variable:** Imports						

From the table above, the null hypothesis can be rejected at the 5% significance level since the associated t-value is significant. The coefficient value approximation for Imports and Foreign Exchange rate of against Indian rupee of Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen are also statistically significant. Regression in Coefficient value of determination, R square value has extremely high, value which indicating that very good fit between the variables or in other terms in all variables is more than 60.0% of the variance in Imports can be explained by Exchange rate against Indian rupee of Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen only 59% variance explain by Imports. Consequently, the null hypothesis (H02) reject during the foreign trade of exports and imports performance in post liberalization period. There is some welcome evidence for the reason that, during the post liberalization period of the study period of a new dynamism of India's export performance aided by a more supportive domestic industrial policy. After that it has been increased in real terms but the percentage change was reduced in subsequent years till 1994-95 whereas exports of primary products and petroleum product recorded a negative growth. Exports witnessed a sharp upward trend in the year 1999-2000 due to favourable terms of trade for nonoil exporting countries and the improved profit margins for the domestic industry in the national markets. The euphoria did not last long. The growth of exports in the year 2009-10 was the minimum in the entire study period and it may due to the negative growth in both the exports of primary products as well as manufactured products. It is revealed that there is greater volatility in the growth of primary products exports during the study period.

In the initial years petroleum products exports account negative growths in many years and in later period it was in good position. It has a negative growth only in two years i.e. 1991-92 and 2009-10 and non-bulk imports have also negative growth only in two years. It seems that there is always the growing trend in India's imports during the post liberalization period. It is also exposed that together bulk-imports and non-bulk imports has equivalent place in the India's imports and there is no much disparity in their trend during the post liberalization period. In the year 1994-95 growth that was the maximum during the study period and it may due to imports of basic consumption goods in that particular year. It was also seen that there is high instability in the growth of bulk-imports during the study period. Agricultural and allied commodities exports witnessed a sharp acceleration, driven by coffee, rice, cotton, oil meal and spices. Ores and minerals, especially iron ore, continued to post high export growth, although there was some deceleration partly due to strong domestic demand for metals. Exports of other principal items like chemicals and related products, gems and jewellery, textiles and related products, ores and minerals showed a moderation in growth. However, the increase has not been consistent over the years. At the same time as exports have been mostly reliant on world exports and accessibility of exportable surpluses imports have been largely a substance of government policy. It has a negative growth only in two years i.e. 1991-92 and 2009-10 and non-bulk imports have also negative growth only in two years. It seems that there is always the growing trend in India's imports during the post liberalization period. It is also exposed that together bulk-imports and non-bulk imports has equivalent place in the India's imports and there is no much disparity in their trend during the post liberalization period. In the year 1994-95 growth that was the maximum during the study period and it may due to imports of basic consumption goods in that particular year. It was also seen that there is high instability in the growth of bulk-imports during the study period. Imports of gold and silver were the sharp increase in the international prices and turn down in rural demand. Non-oil imports net of gold and silver recorded a sharp growth. Capital goods and export-related items such as pearls and precious stones, raw cashew nuts, textile yarn and fabric are the major sources of the increase. Imports of edible oils rose sharply, reflecting the widening domestic supply demand gap in the wake of the drought. Being that in the Reserve Bank continued to liberalise foreign exchange transactions. Steps are also taken to strengthen risk management systems in banks.

The global economic crisis during 2008 had its impact on the economy of almost all the countries, including India. The impact was that during 2009-10, exports as well as imports and this led to negative imports. As revival in global growth augured well for pick-up in exports and invisibles, higher international commodity prices, for the most part crude oil, impacted the import bill. Superior imports of iron and steel, iron ore, coal, non-ferrous metals, chemicals and machinery also resulted from shortfalls in domestic production in certain sectors. Particularly, imports of iron and steel rose in volume, terms in spite of the request of customs/ defend duties and imposition of floor prices. However, urea imports fell in response to a record domestic production, but other types of fertilizer imports rose in both value and volume terms. The strong revitalization of domestic coal production reduced imports generously. Presently as the international surroundings was improving with global trade outpacing global

growth in 2017 and capital flows to Emerging economies spring backing after short periods of reversals during 2013- 16, it has been unsettled by the strengthening of protectionism and disciplinary strategies that intimidate to slit asunder the institutional fabric of multilateral trade. India's external sector exhibited flexibility in the countenance of terms of trade losses due to the firming up of international crude prices and domestic supply restraints. Because of that, export performance improved in 2017-18 although domestic disruptions impeded a fuller response to the congenial conditions engendered by increasing world trade. Though, a sharp rise in imports partly due to price effects expanded the trade deficit to a five-year elevated (Reserve Bank of India Reports from 1991-1992 to 2017-2018).

UNIT ROOT TEST OF AUGMENTED DICKEY FULLER TEST: The direction of relationship between two variables can be found out with help of correlation. The data set has been converted in level/trend and intercept and first difference for the further analysis. To establish relationship between exports and imports and exchange rate against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen in Indian economy, I had applied Ganger Causality test. But before applying this test, it is essential to check stationarity for all variables. The ADF test is used to check stationarity of all-time series of financial year data.

Table No. 4. Unit root of Augmented Dickey Fuller Test in Post Liberalization Period from 1991-1992 to 2017-2018

Variables	Level/trend and intercept		First Difference/Intercept/None		Decision
	t-statistics	Probability value	t-statistics	Probability value	Reject Null hypothesis
EXPORTS			-4.041458	0.0219	Reject Null hypothesis
IMPORTS			-3.375418	0.0405	Reject Null hypothesis
EURO			-7.736465	0.0000	Reject Null hypothesis
POUND	-3.766368	0.0369			Reject Null hypothesis
SDR	-4.035530	0.0201			Reject Null hypothesis
USD			-5.751006	0.0001	Reject Null hypothesis
YEN			-5.52671	0.0001	Reject Null hypothesis

The Table No.4 shows that all variables under study become stationary at level/trend and intercept and first difference. The ADF-test value of all variables presented in above table. Thus, the all variables are stationary after level/trend and intercept and first difference and that means null hypothesis (H01) of unit root can be rejected. After ADF test for determine stationarity of data, the paire wise Ganger Causality test were performed between Exports to Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen as well as Imports to Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen to check direction of causality between them.

GRANGER – CAUSALITY TEST: A Granger – Causality test to find out whether Exports or Imports causes movements in Exchange rate against Indian rupee.

Table No. 5. Ganger Causality Test between Exports and Exchange rate against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen in post liberalization period.

Null Hypothesis:	Observations	F-Statistic	Prob.
Euro does not Granger Cause Exports		0.96666	0.3974
Exports does not Granger Cause Euro	25	0.06263	0.9395
Pound does not Granger Cause Exports	25	0.10043	0.9049
Exports does not Granger Cause Pound		2.04639	0.1554
SDR does not Granger Cause Exports	25	0.56741	0.5759
Exports does not Granger Cause SDR		5.16677	0.0155
USD does not Granger Cause Exports	25	3.78594	0.0403
Exports does not Granger Cause USD		3.63261	0.0451
Yen does not Granger Cause Exports	25	2.26721	0.1296
Exports does not Granger Cause Yen		2.14326	0.1434

The above Table No. 5 shows the F-statistics with p-value which conclude that null hypothesis of Euro does not Granger Cause Exports, Exports does not Granger Cause Euro, Pound does not Granger Cause Exports, Exports

does not Granger Cause Pound, SDR does not Granger Cause Exports, Yen does not Granger Cause Exports, Exports does not Granger Cause Yen, which is rejected at 5% significance level but is not significant. Similarly, the null hypothesis of Exports does not Granger Cause SDR, USD does not Granger Cause Exports, Exports does not Granger cause USD can be rejected at 5% significance level significant on Exports. Thus, it can be concluded that there is unidirectional relationship between Exports and Euro, Pound, as well as Yen and bidirectional causality between Exports and as well as USD in post liberalization period of Indian economy.

Table No. 6. Ganger Causality Test between Imports and Exchange rate against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen in post liberalization period.

Null Hypothesis:	Observations	F-Statistic	Prob.
Euro does not Granger Cause Imports	25	0.78817	0.4683
Imports does not Granger Cause Euro		0.50192	0.6128
Pound does not Granger Cause Imports	25	0.12801	0.8806
Imports does not Granger Cause Pound		1.69627	0.2087
SDR does not Granger Cause Imports	25	0.96229	0.3990
Imports does not Granger Cause SDR		6.49761	0.0067
USD does not Granger Cause Imports	25	7.40545	0.0039
Imports does not Granger Cause USD		3.46790	0.0509
Yen does not Granger Cause Imports	25	0.73791	0.4907
Imports does not Granger Cause Yen		2.58209	0.1006

The above Table No.6 shows the F-statistics with p-value which conclude that null hypothesis of Euro does not Granger Cause Imports, Imports does not Granger Cause Euro, Pound does not Granger Cause Imports, Imports does not Granger Cause Pound, SDR does not Granger Cause Imports, Yen does not Granger Cause Imports, Imports does not Granger Cause Yen, which is rejected at 5% significance level is not significant. Likewise, the null hypothesis of Imports does not Granger Cause SDR, USD does not Granger Cause Imports, Imports does not Granger Cause USD rejected at 5% significance level is significant on Imports. Thus, it can be concluded that there is bidirectional relationship between Import and USD in post liberalization period of Indian economy.

Study limitation:

1. The study collected data only from 1991-1992 to 2017-2018.
2. The current year data from RBI handbook statistics on the Indian economy change in rupees crore it not rupees billion available. I selected data rupees billion till 2017-2018.

IV. CONCLUSIONS & IMPLICATIONS:

Exchange rate is one of the essential indicators of economy's global competitiveness, and therefore, has a strong impact on a country's exports and imports growth. The empirical literature so far in the relationship between exchange rate volatility and volume of trade gives varied evidence. The only limitation of this study is that the seasonal effect in our model has been ignored because 27 yearly data is not available for India. It can be exposed from analysis that the change in exports will influence in positive changes in Indian Rupee against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen. But, Imports are not positively influence on exchange rate between Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen. It can be conclude that higher the exports will result strong value of rupee against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen, but imports will not create the strong value of rupee against Deutsche Mark/ Euro, Pound Sterling, Special Drawing Rights, US Dollar and Japanese Yen. The Government of India, Ministry of Commerce and Industry announced New Foreign Trade Policy on 01st April 2015 for the period 2015-2020, previous this policy recognized as Exports and Imports Policy. After five years foreign trade policy requirements alterations in common, aims at developing export potential, improving export performance, encouraging foreign trade and creating favorable balance of payments position. The rupee's turn down affects everyone in the economy because it provide for directly and indirectly into general inflation, which is a continuing problem even as output growth decelerates, and therefore hits general people firm. There are more than a few ways in which the falling rupee immediately has an inflationary impact, one of the most vital of which is the price of energy. Since the mistaken decontrol of oil prices, it is not only the internationally traded price of fuel but also the exchange rate that determines domestic oil prices. Apart from all the political parties should come jointly in fitting the problem and getting back the investors' confidence. The Export Import Policy is rationalized every year on the 31st of March and the modifications, improvements and new schemes become effectual from April month of every year.

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