THE STUDY OF EXPORTS IN RELATION WITH EXCHANGE RATE AND INFLATION IN INDIA

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ABSTRACT

This is study analysis the exchange rate and inflation have been a significant impact in Indian Export from the period of 1996- 2013. Unit -root test and ARDL Co-integration test has been used for analysis in this study.

Introduction

The export is dependent on other variables like exchange rate, inflation, interest rate, gross domestic product and import for instant some of the export need raw material from import of unfinished goods where the other variables also change along with the export because these variables are close related with each other. The variable which is independent became dependent and dependent become independent in certain circumstances due the economic activities that the export influencing the exchange rate and inflation and vice versa

The exchange rate and its impact on trade is an important aspect between the countries in international trade. The exchange rate have two types of element which effect the trade balance one is the price effect in the short- run and the another one is volume effect in the long –run. The price effect implies that deprecation of the domestic country's currency will cause imports to be more expensive for buyer and domestic exporter's to be cheaper for foreign buyer. The volume effect in the long-run will increase the volume of trade which improve the balance of payment. So in the short-run the price is anticipated to dominate but in the long –run the volume effect dominate and improve the trade balance significantly   Export performance has greater role in the growth and development of the country. India's share in world export share so the continuous decline. India's share in world exports declined continuously from 2 percent in 1950 to 1 percent in 1960's and .65 percent in 1970(Deepak Nayyar 1976). Export performance is predominated by agricultural products and minerals like coal etc before 1980's.There was significant changes in India's export after 1980s.The 1980-81 saw the growth of the manufactures such as textiles, garments, gems and jewellery and light engineering goods have shown an upward movements. In 1980s the export of agricultural product remained virtually stagnant, but there was rise of manufacturing sector in India's exports.1991 there was acute shortage of the foreign exchange, which led to the change in the outward oriented strategy. The export in 1991 was still dominant by the agricultural products and minerals. The India's export is affected by the share of the India's exports in world shares, relative price of the India's export to the price of other countries, exchange rate etc.The non-price factors, including quality of products, changes in trade policy reforms etc affect the export performance of the country. The present aim to study the factors affected the performance of the India's export

performance.   One of important issue in International trade is study of the comparative advantage of the country. There has been the lots theoretical discussion regarding the comparative advantage from the Ricardo to till the modern day. The Ricaridian Principle of the comparative advantage explained specialisation and trade lead to the growth of International trade which is beneficial for the both trading countries. The comparative advantage is beneficial for the both producers and consumer. The underlining reason for the comparative advantage was remained unexplained by the Ricardican comparative advantage Theory it was left to the Hekscher Ohlin theory to explain the reason for the comparative advantage. The factor endowments are reason behind the comparative advantage of the country. The supply conditions are reason behind the comparative advantages that is labour, capital etc. The country with abundant supply of labour, is labour intensive country, it can produce the labour intensive goods cheaply and trade with other countries and get benefit of the comparative advantage. The present study aims at theoretical reason behind the factor affecting the international trade. The major factors affecting the India's export performance relative price of the India's export to the price of the other countries, exchange rate etc.quality of the products, changes in trade policy reforms. The Major factors affecting the demand aspect of the India's export performance .The Potential Demand, Price Competitiveness and Trade Barriers. The price competitiveness can be further divided into the Domestic Price, Competitors 'Domestic price and Relative exchange rate adjustment (NilanjanBanik 2001).

The Major Theoretical developments and the variables advocated to Explain Export \Import Behaviour. We here try to understand few important theoretical in comparative advantages and Variables to understand them. heckscher Ohlin model is two commodities and two country model like Ricardian model on comparative advantage, based on labour productivity .The country will export or import due to the difference in comparative factor productivity is higher or lower.

The exchange rate risk which is not easy to mitigate because of the liberalisation of the capital flows in name of foreign direct investment and foreign institutional investment has been increased rapidly since in last two decades the cross border financial   transaction makes currency crisis in the emerging economy that is also one of reason for increased or decreased in the international trade which is adversely affected by exchange rate fluctuation So that the firms are heavy feared about the cost of production that has goes up especially in the export sector

The impact of exchange rate changes on trade balance is ambiguous that is co-efficient of real exchange rate could be positive or negative. The j- curve hypothesis suggest that the partial derivative of trade balance with respect to exchange rate will be negative in the short-run and positive in the long- run

Real effective exchange rate =where e is the nominal bilateral exchange rate expressed as the number of domestic currency units per foreign currency units P* is the price level in foreign country (CPI) and P is the price level of the home country (India's WPI)

There are various parameter is using for measuring inflation they are whole price index (WPI) consumer price index (CPI). India is following whole sale price index for measuring inflation. In this study we taken the period from 1981 to 2013 ever ten year the base year has been change the base year start with 100 after ten is over again it start with 100 mostly it was measured monthly wise both in industrial and agriculture sector but we are taken the data for yearly basis data for computing for more than 30 year the above given table have both all commodities and non food articles for our study the year 1981 -82, 1999-93 and 2004 -05 was the base year in Indian whole sale price index here the inflation always increased since 1980 to 2013 only certain period were in control but it was not decreased yet the price level stability in country is important for economic growth. Price is the important factor for any economic activity and it's also effect growth rate, interest rate and exchange rate subsequently. Because inflation have big impact on every day to day life the time value of money is changing every day .inflation means also know as price level of the nation it's shows that price is important factor every business because price is determining product sales. As for as the trade is concern the price level between two nation will occur the export and import activity .The country whose price level is low will export the product and high -level price country will import the product it is main and important factor which determining the export some other factor is also important for trade between two nation but price is a primary factor for instant the price of the wheat is Rs 1000 in other state in same country this shows that home price level is Rs 1000 but for the same wheat price is Rs 700 in international market automatically people will prefer and go for international market because it price level is low when compare with domestic market through the country .After independent India's highest inflation occurred in September 1974 when the inflation rate was reached 33.3percent this was the period of our worst inflationary episode between November 1973 to December 1974 . India has high inflation after 1980s especially after globalisation in 1991 that's why we are importing more than our export. Mean while our country have high inflation which means supply side constraints this shows that high demand for domestic market so there less possibilities for export .So inflation should be stable for both economic growth and export growth .High inflation which is pushing cost of merchandise production is affecting competitiveness of India export .Higher inflation have a differential between India and major trading partners is a source of pressure on the competitiveness of Indian exports .which containing inflation is main objective of RBI, thus is important even for improving the external balance position

Controlling the inflation is a biggest challenges for any economy is concern import can affect the domestic inflation directly through the price of imports and along with the price index and it's also indirectly affect competition with domestic goods and services so higher import tends to increase inflation and it also disturbs the smoothness of price mechanism when the demand of a nation is higher than domestic output the price of goods and services will arise automatically .some times the price level may turn down because of direct and indirect price effects of cheaper of finished goods intermediate inputs through cheaper imports thus, the low availability of imports will turn down the domestic price level directly at the same time cheaper

imports ,cheaper inputs and foreign competition also reduce their prices increased can also lead to lower inflation but in case of Indian context it is not possible yet because of the cartel formation among the producers and our manufacturing sector is contributing less than the demanded level so importing is unavoidable like this type of situation.

Understanding the price stability is difficult task in the inflation control for example monetary, fiscal and structural variables can influence inflation. However when the country is to open up their economy such as fiscal, monetary and structural variable tools also lose their control over inflation .The price level also influenced by the fluctuation in the exchange rate, foreign investment inflows and balance of payment .According to Milton Freidman (1963)"Inflation is always and every where a monetary phenomenon" the present inflation level crossed beyond the threshold level if the monetary authority lose their hold on inflation then the openness of trade became adverse effect this are current existing inverse relation between inflation and trade openness.

Purchasing power parity theory
PPP theory is broadly divided into two variables (1) absolute PPP (2) relative PPP absolute PPP is a strict interpretation of the law of one price on the other hand the weaker version is known as relative PPP the theory is based on the possibility of arbitrage and therefore makes assumption of zero transport cost. The absolute PPP hypothesis states that the exchange rate between currencies of two countries should equal the ratio of the price level in the two countries

Marshall –Lerner condition
The technical reason why a reduction in value of a nation's currency need not immediately improve its balance of payment the condition states that for currency devaluation to have a positive impact on trade balance, the sum of price elasticity of exports and imports (in absolute value) must be greater than 1.

The net effect on the trade balance will depend on price elasticises if the goods export are elastic to price, their quantity demanded will increase proportionately more than the decrease in price and total export revenue will increase, similarly, if goods imported are elastic, total import expenditure will decrease both will improve the trade balance in future.

This model state that a reduction in value of a nation's currency which will not improve the level of its balance of payment immediately it also further said that for a currency devaluation to have a positive impact on trade balance, the sum of price elasticity of exports and imports (in absolute value)must be greater than 1.

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Marshall leaner condition on price elasticises how every country have many experience with their own economic model including U.S.A in the 1980s when a widening trade balance deficit and decrease in the value of dollar that occurred together over a period of more than three year despite the M-L conditioning holding led to rethinking. This will lead to the suggestion that the short –run and the long – run effect of the real exchange rate on trade balance could be different.

J-curve

J curve effect is time-series graph in which the curve falls into negative level and then raises to a higher level or move towards upward than the before decline stage. A country's international trade have well experience in their trade balance due to the j-curve effect if a countries currency becomes devaluation or depreciation. The total value of import (Goods purchased from aboard) exceed its total value of exports (Goods sold to aboard) which resulting in a trade deficit. But the currency devaluation initially reduces the price of its exports the competitiveness related to lower export price it makes the export to increase in international trade and consequently the country's level of exports gradually recovers from earlier level and the country move back to a trade surplus.

The trade balance and j-curve

The depreciation of the real exchange rate is deterioration in the short –run because most of the exports and imports are order of several months in advance which make the level of import increase that implies fall in the current account. The imported raw material or product which is important to produce finished goods for that the firm require time to adopt the new technology meanwhile the exporter is also need time to increase their sales in abroad .In the long-run the adjustment in technology and improve the firms capacity have take place and the real exchange rate depreciation may improve the export and current account

Review of literature

Paul de gravwe (1988) study says that the exports have a significant impact after the flexible exchange rate which was initiated in the earlier 1970's The political economic mechanism have the fixed exchange rate that has been changed into floating exchange rate has reduced the share of industrialised countries exports more than half of their trade Further it argued that both in short-run and long-run the exchange rate uncertainty has a negative effect on trade. This led to swing in the real exchange rate of major currency and most of government make some changes in the name of misalignment that is used to adjust the problem of trade sector. The relationship between the real exchange rate and international trade is highly associated with movement of market force of demand and supply factor which influencing by various factors of economics

Augustine c.Arize   Thomas osang Daniel j slottjee(2005) study was made in the eight Latin American countries from the period of 1973 - 2004 to investigates the impact of real exchange rate volatility on the export sector it shows that there is a negative   and statically significant impact on the long-run   relationship between export growth and exchange rate volatility . The variability of exchange rate in short-run also find out some strong evidence that have a negative impact on growth of export .Latin American countries aim to stabilize the exchange rate to increase the volume of trade they had enter into a bilateral trade with North American free trade agreement even after liberalisation take place in trade may not boom in the export sector in their countries and moved towards balance of payment deficits which happen because of the volatility in exchange rate

Caballero and Corbo(1989) this study was conducted with the countries include Chile, Colombia ,Peru ,Philippines, Thailand and turkey to find out the relationship between the real exchange rate and export uncertainty .The price elasticity of exports among the country's estimation pointed out some shock result shows that the short-run's annual standard deviation of real exchange rate 5 increased it have an impact on decline in Colombia growth of export by 2.5 percent and its effect the Thailand and turkey with 20 percent of their export were decreased .This clearly shows that the developing countries are highly affected because of exchange rate volatility which impact the growth of export .

Paul R kurugman (1986) this study present the large exchange rate shocks the rise of the U.S. dollar from the 1980 to 1985 to know the relationship between exchange rate and trade flows the large fluctuation in the exchange rate which lead to entry into the market or exit from the market due to the large capital inflow from foreign countries which also lead to appreciation in currency that will make reduce the earnings from exchange rate which effect the export. So here relationship between trade and exchange rate will change when some shocks is not happen but it became plausible when some shock is happen thus the decline in the dollar is manageable trade behaviour.

Clark (1973) the firm producing goods in a perfect competition market purely for export which does induce imported raw material and not domestic purpose. The exporter may receive profit only on the foreign currency hence the exports in the domestic currency will depend on according to change of exchange rate movement. The firms cost of production and hedging of currency how much risk they have to face in the uncertainty of exchange rate which is directly linked with the domestic currency receipts in future and this variability in the exchange rate determining the profitability of the firms

Gros Daniel (1987) the exporting firm can adopt their price and cost of production according to the movement of world price .Basically the exporter they want earn more and sell their product when the international price are high like wish the sell less if the international price are low. The profit making strategic of the firm is to take advantage of   the volatility in real exchange rate for their maximise the revenue

generation .The planned for profit of product what the produce along with wind fall of exchange rate uncertainty in the foreign exchange market.

Robert A Men dell (1961) examined differently in his optimum currency theory said that exchange rate uncertainly is an incentive for export' s point of view but international trade flows make some stability in real exchange rate this is different approach and also reduce the exchange rate volatility in market. They followed reverse causality correlation test which effect of international trade on real exchange rate.

Stephen P Magee (1973) Advanced study was made to improvement the export growth. Initially in the short-run the J-curve affects the export deterioration but in long –run there is some positive progressiveness in trade which take place because of currency depreciation or devaluation. Most of the empirical studies came to conclusion is that J-curve effect in long –run have a significant impact of exchange rate on trade balance.

Kulkarni et al (1989) by using regression analysis found that exchange rate variability affects the volume of exports negatively in India during 1970 to 1985. Uma rani (1993) OLS technique found that India's bilateral export and imports are adversely affected by the volatile nature of exchange rate.

Unit-root test

Log conversion

LEPR= EXPORT
LREER= EXCHANGE RATE
LWPI= WHOLESALE PRICE

Null Hypothesis: LEPRT has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, max lag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.072977	0.9954
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 18

Null Hypothesis: D(LEPRT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.381257	0.0005
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 18

Null Hypothesis: LREER has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, max lag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.038960	0.0069
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 18

Null Hypothesis: LWPI has a unit root
Exogenous: Constant
Lag Length: 1 (Automatic - based on SIC, max lag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		1.583459	0.9988
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
and may not be accurate for a sample size of 18

Null Hypothesis: D(LWPI) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.868763	0.0013
Test critical values:	1% level	-3.857386	
	5% level	-3.040391	
	10% level	-2.660551	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations
    and may not be accurate for a sample size of 18

Findings:

I have rescaled, using logarithm, all those three variables to make it unit-less and linear
1. LREER variable is found stationary at level

So now I have 2 variables as I(1) and one variable as I(0). In this situation I cannot proceed with Engel-Grager or Johansens-Jesilius co integration test.

Given that his sample size is very less (20 years) and also considering the above situation the best solution to this problem is ARDL-Cointegration techniques (also known ARDL-Bound testing approach) proposed by Perseran and Shin ().

ARDL-Cointegration test

EQUATION-1 : Export=f(leer, lwpi)
    MODEL SELECTION

Schwarz Criteria
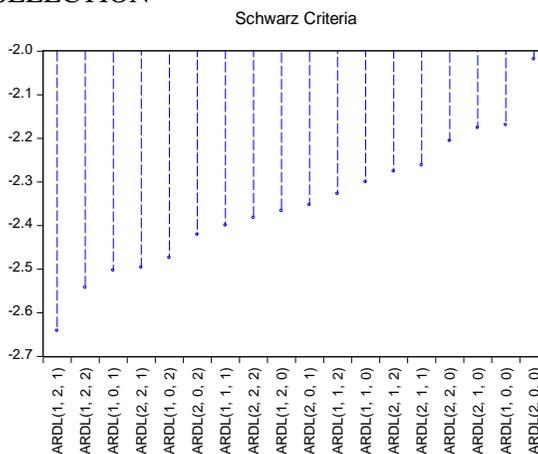
BOUNT-TEST

ARDL Bounds Test
Date: 09/08/15   Time: 21:20
Sample: 1996 2013
Included observations: 18
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	5.882325	2

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	4.19	5.06
5%	4.87	5.85
2.5%	5.79	6.59
1%	6.34	7.52

ARDL Cointegrating And Long Run Form
Dependent Variable: LEPRT

Selected Model: ARDL(1, 2, 1)
Date: 09/08/15   Time: 21:21
Sample: 1994 2013
Included observations: 18

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LREER)	1.098076	0.441832	2.485280	0.0322
D(LREER(-1))	-1.293437	0.581220	-2.225383	0.0502
D(LWPI)	3.682019	0.856716	4.297830	0.0016
D(@TREND())	0.116954	0.033102	3.533109	0.0054
CointEq(-1)	-1.032352	0.306511	-3.368079	0.0071

Cointeq = LEPRT - (3.0867*LREER + 0.9208*LWPI -11.6176 + 0.1133 *@TREND)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LREER	3.086672	0.640294	4.820711	0.0007
LWPI	0.920785	0.672471	1.369255	0.2009
C	-11.617623	3.610246	-3.217959	0.0092
@TREND	0.113289	0.035169	3.221262	0.0092

EQUATION-2 :leer =f(leprt, lwpi)

Schwarz Criteria
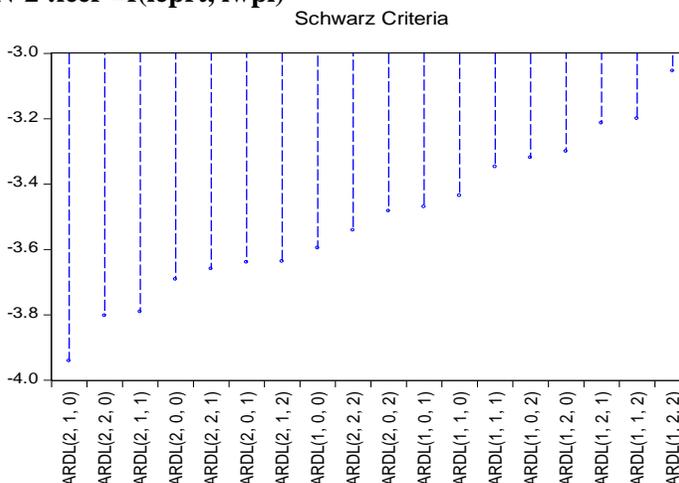
ARDL Bounds Test
Date: 09/08/15   Time: 21:26
Sample: 1996 2013
Included observations: 18
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	10.25253	2

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	4.19	5.06
5%	4.87	5.85
2.5%	5.79	6.59
1%	6.34	7.52

ARDL Cointegrating And Long Run Form

Dependent Variable: LREER
Selected Model: ARDL(2, 1, 0)
Date: 09/08/15   Time: 21:27
Sample: 1994 2013
Included observations: 18

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LREER(-1))	0.807643	0.250074	3.229622	0.0080
D(LEPRT)	0.317529	0.098240	3.232184	0.0080
D(LWPI)	-1.076111	0.348813	-3.085063	0.0104
D(@TREND())	-0.044164	0.016378	-2.696496	0.0208
CointEq(-1)	-2.419426	0.378158	-6.397926	0.0001

  Cointeq = LREER - (0.2563*LEPRT -0.4448*LWPI + 4.7697 -0.0183
    *@TREND)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LEPRT	0.256277	0.042281	6.061321	0.0001
LWPI	-0.444780	0.136018	-3.270000	0.0075
C	4.769674	0.403551	11.819248	0.0000
@TREND	-0.018254	0.005482	-3.329782	0.0067

EQUATION-3: lwpi =f(leprt,lreer)
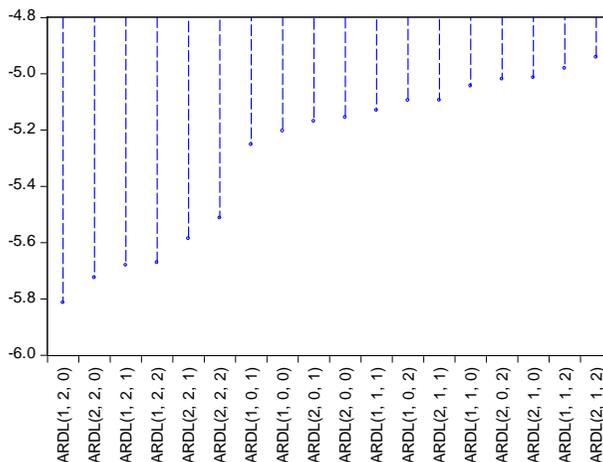
ARDL Bounds Test
Date: 09/08/15   Time: 21:29
Sample: 1996 2013
Included observations: 18
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	0.299760	2

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	4.19	5.06
5%	4.87	5.85
2.5%	5.79	6.59
1%	6.34	7.52

ARDL Co integrating And Long Run Form
Dependent Variable: LWPI
Selected Model: ARDL(1, 2, 0)
Date: 09/08/15   Time: 21:30
Sample: 1994 2013
Included observations: 18

Co integrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LREER)	-0.162975	0.088996	-1.831262	0.0943
D(LREER(-1))	0.310678	0.075553	4.112032	0.0017
D(LEPRT)	0.179876	0.039055	4.605744	0.0008
D(@TREND())	-0.021881	0.007487	-2.922693	0.0139
CointEq(-1)	-0.128740	0.128127	-1.004781	0.3366

Cointeq = LWPI - (-4.2093*LREER + 1.3972*LEPRT + 14.7263 -0.1700
  *@TREND)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LREER	-4.209261	4.360457	-0.965326	0.3551
LEPRT	1.397206	1.311034	1.065728	0.3094
C	14.726267	12.371306	1.190357	0.2590
@TREND	-0.169966	0.208610	-0.814755	0.4325

Conclusion

Unit root need to be tested for, because in the presence of units roots the standard distributions of test statistics are not correct and there is a risk of unit root tests result for the entire variable by comparing the calculated statistics with critical value it is seen that all variables are non-stationary at level, but after making first difference it is seen that all variables are stationary

Long run relationship between the exchange rate and export an attempt has been made to investigate whether Marshall – leaner condition hold or not for the countries taken into consideration generalised impulse response function is used to trace out whether j-curve effects holds or not.

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