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**THE ECONOMETRIC ESTIMATION OF ELASTICITIES OF DEMAND FOR INDIA'S EXPORTS AND IMPORTS****P. SUHAIL****FACULTY****THE B SCHOOL INTERNATIONAL****KOTTAKKAL****V.R. REMA JYOTHIRMAYI****LECTURER OF ECONOMICS****RAJAGIRI HSS****KOCHI****ABSTRACT**

Trade elasticity represents the measure of the proportionate change in imports and exports due to change in the related variables like Gross Domestic Product (GDP), relative prices, etc. This study estimates the export and import demand elasticities of India for the period of 1975-76 to 2006-07. The study verifies the implication of the Marshall-Lerner condition and the Houthaker-Magee hypothesis in post and pre reform period. The study employs a log linear regression model in the estimation procedure. More over the study employs the dummy variable technique to captures the effect of economic reforms on the elasticities of exports and imports and their implications. The estimation is done by using E-Views (Econometric views) software and used the advanced package of Newey-West Heteroscedastic Autocorrelation Consistent Standard Errors & Covariance Estimate. The study concludes that India has a competitive advantage in its export in the international market. It is observed that the growth of economy of the importing countries rather than price of the exporting goods will play a very important role in promoting Indian exports. The study finds that there is a significant difference in the elasticities and its implications in the two periods.

**KEYWORDS**

Dummy variable technique, Houthakker-Magee hypothesis, Log linear regression, Marshall-Lerner condition, Trade elasticity.

**JEL CLASSIFICATION**

F1, F4

**INTRODUCTION**

The elasticity captures the magnitude of change in one variable due to a proportionate change in a related variable. In other words it is the responsiveness of change in a variable to a change in a related variable. Trade elasticity represents the measure of the proportionate change in imports and exports due to change in the related variables like Gross Domestic Product (GDP) of a country, GDP of the trading nation, relative prices, etc.

Trade elasticities have long occupied economists' interest because these elasticities have important policy implications (Sinha 2001). The price and income elasticities are very crucial in understanding the international linkages, payment adjustments and policy formulations (Brar 1995). Relative price and income elasticity of exports indicate the scope for export led growth policy of a nation (Rao and Singh 2007). The sensitivity of exports and imports demand to changes in income and price variables has various implications on trade related activities of an economy. The knowledge on trade elasticities is important in formulating policies regarding exchange rate system, tariff, and non tariff restrictions on trade. According to the magnitude of elasticity, the commodities can be classified as low elastic middle elastic and highly elastic (Nilsson 2007). The country can make structural changes in export composition according to the changes in world economic scenario.

A priori information about the magnitude and nature of elasticities is indispensable for the success of certain policy instruments, like devaluation. The greater emphasis on the export promotion of those products which have low income elasticities in importing countries result in the wastage of resources. The demand deficiency has been highlighted as the major reason for the poor performance of the developing countries in international trade. But there are counter arguments that it is not due to low income elasticity but because of growing domestic demand pressure. To understand this, the knowledge of trade elasticity is important.

**Marshall-Lerner condition**

The estimates of trade elasticities play a central role in explaining the implications of Marshall-Lerner conditions for an economy. Marshall-Lerner condition tells about the effectiveness of devaluation as policy measure to correct the disequilibrium in balance of payments. In other words the estimate of trade elasticities is used to study the efficiency of exchange rate mechanism in correcting the balance of payment disequilibrium. The efficiency of exchange rate mechanism can be analyzed by examining the Marshall-Lerner condition. It states that if the sum of price elasticity of exports and imports is greater than one, the devaluation would improve trade balances. If it is equal to one, there is no impact on trade balance. And if it is less than one, devaluation would result in further worsening trade balances.

**HOUTHAKKER-MAGEE HYPOTHESIS**

The estimates of trade elasticities are used to study the relevance of Houthakker-Magee hypothesis. The policy implications of trade elasticity can also be tested by using Houthakker-Magee hypothesis. It was proposed by Houthakker and Magee in 1969 for Japan. It examines whether the income elasticity of exports and imports are different or not. If the host country (India) and other countries of the world grow at a same rate, the adverse effect on balance of payments will be observed, if the income elasticity of imports exceeds that of exports. On the other hand, if income elasticity of exports exceeds that of imports there will be positive effects on balance of payments (Houthakker and Magee 1969).

The export performance is ultimately determined by supply and demand factors. Demand factors include income of the importers and price and non price factors. Supply factors mainly include the factor endowments, cost of production, level of domestic consumption, tax structure and foreign trade policies, etc.

**LITERATURE REVIEW**

The existing literature studies the trade elasticity by estimating export demand function and import demand function. After calculating the magnitude of elasticities the study goes through the policy implications of the trade elasticity and related issues.

**EXPORT DEMAND FUNCTION**

The study by Da Costa (1996) specifies export demand as a function of export prices, real income or industrial activity of trading nations and price of the competitors. By applying a multiple linear regression model, the author estimated the elasticity of demand for India's export for the period of 1953-62. The

study estimated the elasticity at three different levels. That is at aggregate level (for overall exports), the export demand for different individual commodities' exports and the export demand for country wise exports.

Aggregate exports in the study period are observed as extremely inelastic with respect to income (0.21) and moderately inelastic with respect to price (-0.48). In case of individual commodities the study estimated the demand function for different commodities and then aggregating the resultant elasticities with appropriate weights according to the share of particular commodity in the total export basket of India. In case of country wise export, the author used the same technique of aggregation by using the weights for each country in total export of India. The three approaches in estimating the elasticities have yielded broadly the similar results (-0.44 and 0.58 for individual export and -0.20 and 0.57 for country wise exports). Both with respect to price and income the demand for Indian exports appear to be inelastic. Inelastic demand with respect to income shows that demand for products of developing countries is lagging behind the growth of incomes or industrial activities in developed countries. Thus the author concludes that the current rate of economic growth in the advanced countries is not sufficient to guarantee a high rate of expansion of the export of developing countries. The study limited in taking only two variables as the explanatory variable in the model. There can be some other variables like import quotas. Author mentioned the presence of multicollinearity in the model. This can be corrected by correct specification of the model. Even though they estimated the elasticity of substitution, they did not incorporate it with the overall estimates. As it is a time series data the model should be tested for autocorrelation. But the article does not mention about the problem.

Wadhva (1974) estimated the export demand function by using a single equation regression technique with the variables of price and world GDP for the period of 1954 to 1970. During the study period the Indian rupee was devalued in the year 1966. To see if this change in the macro variable affected the export pattern, the author introduced a dummy variable and performed the regression again. Out of these equations the single linear regression found to be having more explanatory power represented by R<sup>2</sup> (goodness of fit). The study by Jaswinder Singh Brar (1995) is one of the studies which used the log-linear functional form. The author used relative price instead of absolute price and world GDP as explanatory variables. All of these studies conclude with same results.

A later study by Kantawala (1996) shows export demand is a function of relative prices in terms of unit value index of export of a country and unit value index of world export and world real income. In the long run, trend also has an influence on exports. All of these studies conclude with same results. This study also used a log linear model of specification and estimated the export demand function for the period of 1969-70 to 1989-90. The study came out with broadly similar results (-0.31 and 0.46 in the short run and -0.33 and 1.99 in the long run) of the earlier study. But as a point of difference, in the long run income elasticity of export is found to be elastic with a value of 1.99. The study by Sinha (2001) addressed the problem of stationarity of the data. By using a log linear regression model the estimated the elasticity of exports for the period of 1950 to 1996. The author used Augmented Dickey-Fuller (ADF) test (Dickey and Fuller 1979) of stationarity. For the export demand functions, all variables were found to be non-stationary in their levels but stationary in their first differences. So the cointegration test was applied to do the further analysis. The Phillips-Hanson fully modified Ordinary Least Squares (OLS) method has been used for regression and Johansen cointegration test is used for stationarity. The cointegration coefficients are estimated by using Vector Error Correction Method (VECM).

According to Garg and Ramesh (2007) export demand is a function of real exchange rate and world GDP. They estimated the export elasticity for the period of 1970-71 to 2002-2003 by employing log linear regression model. The results of different studies differs each other to considerable extent. The summary results of different studies are presented in (Table I).

TABLE I: SUMMARY RESULTS OF EXPORT ELASTICITIES: SELECTED STUDIES

Study	Period	Price elasticity	Income elasticity	Functional form	Method	General approach
Da Costa	1953-62	-0.43	0.21	Linear	OLS	Selected commodities to selected countries
Charan D Wadhva	1954-70	-0.35	0.58	Linear	OLS	Aggregate exports
Jaswinder Singh	1974-91	-0.47	0.51	Log-linear	OLS	Selected commodities to selected countries
Kantawala	1969-70 1989-90	-0.68	1.99	Log-linear	OLS	Selected commodities
Dipendra Sinha	1960-96	-0.55	0.45	Log-linear	P-H OLS*	Aggregate export of selected countries
Garg & Ramesh	1970-02	(ER=0)	2.47	Log-linear	P-H OLS	Aggregate

Source: compiled by the authors

## THE IMPORT DEMAND FUNCTION

The study by Wadhva (1974) explains the import demand function in terms of price and income (GDP) of India. The author used a linear regression model and estimated the import elasticity for the period of 1954-70. According to the study by Kantawala (1996), import demand of a country is a function of relative prices in terms of unit value index of import of a country, domestic price index in a country and real gross national product of the country. This study also used the same variables of price and income with slight difference by relative prices in the case of prices and used index values instead of actual values. These differences might have caused for the slight differences in results. But as a methodological efficiency, it has been corrected for auto correlation and tested for the assumption of homoscedasticity.

The study by Sinha (2001) addressed the issue of stationarity in the estimation. The author estimated the function for the period from 1950 to 1996 by using a log-linear function. According to Garg and Ramesh (2007) the import demand is also a function of real exchange rate and India's income (Real GDP). They estimate the import elasticities for the period of 1970-71 to 2002-2003 by applying log linear regression. The summary results of the different studies are presented in (Table II).

TABLE II: SUMMARY RESULTS OF IMPORT ELASTICITIES: SELECTED STUDIES

Summary results of import elasticities: Selected studies						
Study	Period	Price elasticity	Income elasticity	Functional form	Method	General approach
Charan D Wadhva	1954-70	-0.2	1.6	Linear	OLS	Aggregate imports
Kantawala	1969-70 1989-90	-0.33	2.3	Log-linear	OLS	Selected commodities
Dipendra Sinha	1960-96	-0.51	-0.11	Log-linear	P-H OLS	Aggregate import of selected countries
Garg & Ramesh	1970-02	-0.9 (ER)	0.9	Log-linear	P-H OLS	Aggregate

Source: compiled by the authors

Price elasticity of exports varies from 0 to 0.68 and income elasticity varies from 0.21 to 2.47. Whereas, the price elasticity of imports vary from 0.2 to 0.9 and the income elasticity of imports varies from -0.11 to 1.6. The study conducted by (Deepak and Ramesh 2007) found a zero elasticity of exports with respect to exchange rate. This implies that the exchange rate is not at all a variable in determining the export demand.

## OBJECTIVES OF THE STUDY

Most of the studies are conducted in the context of pre-reform period. Even though some studies have incorporated the periods after reform in their studies, they have not done the analysis to analyze the effect of economic reforms on the coefficients of elasticities. As a result of economic reforms, the policies of the government have become more trade friendly. Reduction of tariff and other restriction on trade and the measures like devaluation gave more exposure to the economy or integration with the world economy. These trade friendly measures will give opportunities to foreign companies and nations to import more with less cost. But there is a possibility that with the exposure and collaboration with the foreign companies, to diversify the economy and to get advancement in the technology of production to produce more commodities which otherwise would have been imported. This will result in a change in the magnitude of elasticity of

\* Phillip-Hanson fully modified OLS



imports. The integration of the economy has resulted in advancement of the technology and expansion of so many domestic industries. Some of the Indian business houses like Tata, have grown to the status of global companies. India has become the exporter of some advanced manufactured goods after economic reform. The stiff competition with the global companies compelled the domestic producers to concentrate on the improvement of the quality of their products and the cost reduction techniques. These movements have improved the competitiveness of Indian products in the international market. This will result in changing the magnitude of elasticity of exports. To capture these policy effects on trade elasticity the estimation is to be done with appropriate methodology. In the pre-reform period, India had a highly regulated structure of international trade. So the market forces like price and income may not have much effect on the quantum of trade. When an economy goes global or open economic structure, the allocation efficiency will increase and the market forces like price and income will have effects on the quantum of trade. In the estimation of trade elasticity of India, the effect of reform policies is also to be analyzed. In the post reform period the composition and destination of trade has changed significantly.

The present study has the following objectives:

- 1) To estimate the elasticities of demand for India's exports and imports for the period of 1975-76 to 2006-07.
- 2) To examine the effects of economic reforms on the magnitude of elasticities.
- 3) To verify the implications of Marshall-Lerner condition for Indian economy.
- 4) To verify the implication of Houthaker-Magee hypothesis in the context of Indian economy.

## METHODOLOGY

The export and import demand elasticities have been calculated by estimating export and import demand functions. Multiple regression models have been used for the estimation of export and import demand functions. The export quantity index is the dependent variable and the export price and the world GDP index are the independent variables in the export demand equation. The import quantity index is the dependent variable and import price and India's GDP index are the independent variables in the import demand equation. A log linear specification has been adopted because it is the better specification in the estimation of elasticities. By using log linear model, the estimated regression coefficient itself will represent the estimates of elasticities and these will enable to do further statistical tests to validate and justify the results. Whereas, in the normal linear model the elasticity coefficients will have to be calculated from the estimated regression coefficients. But, the estimation of standard error of these estimates of elasticities is very difficult. This will create difficulty in testing the statistical significance of the estimated elasticity coefficients. The dummy variable technique has been employed to find out the effect of economic reform on the magnitude of trade elasticities. By adopting dummy variable technique, the model has been able to capture the effect of one qualitative factor that is change in the trade policies along with the factors of price of trading goods and the income (GDP) of the trading nations. The analysis is done by using E-Views package and all the models are estimated by using Newey-West Heteroscedastic Autocorrelation Consistent Standard Errors & Covariance Estimate. The estimation problems of time series analysis like autocorrelation and heteroscedasticity has been rectified by using this advanced package.

In this study, the elasticity of export and import with respect to price and income (GDP) is estimated by using the total export and import data during the period of 1975-76 to 2006-07. Export and import quantity indices are taken for the quantum of trade. And for income the world GDP index and India's GDP index are taken in case for export and import respectively. For the price values, the export and import unit value indexes are taken. The dummy variable technique is employed to analyze the effect of economic reforms.

## DATA

The data are collected from the Reserve Bank of India (RBI) Handbook of Statistics on Indian Economy (2007-08), Report on Currency and Finance by RBI (1979-80 and 1985-86) and the International Financial Statistics (2001 and 2008) by International Monetary Fund (IMF). The data on India's export and import quantity indices and unit value indices of India's export and import have been collected from RBI databases. The GDP indices of India and world, and the world export and import price indices have been collected from the International Monetary Fund statistics. Some of the data are given in the percentages on indices over years and those data have been converted into index values. For the purpose of estimation indices in different base years have been converted into same base year (1978-79) following RBI data base.

## MODEL SPECIFICATION

A log linear regression model is used for the estimation. The model specification at the aggregate level is as follows:

### EXPORT DEMAND FUNCTION

$$\ln QX_t = b_0 + b_0^*D + b_1 \ln RP_t + b_1^*D \ln RP_t + b_2 \ln Y_w + b_2^*D \ln Y_w + u_t \quad (1)$$

Where:  $QX_t$  is the export quantity index of India,  $RP_t$  is the relative price (Export price index of India/ World Import Price Index) of export and  $Y_w$  is the World GDP Index. The value of dummy variable=1 for the pre-reform period (1975-76 to 1990-91) and is 0 for the post reform period (1991-92 to 2006-07). In this function  $b_1$  represents the price elasticity of export for the second period (post reform period) and  $b_1^*$  represents the differential coefficients. The price elasticity of the first period is calculated by adding these two coefficients ( $b_1$  and  $b_1^*$ ).  $B_2$  represents the income elasticity of the second period and  $b_2^*$  represents the differential coefficient. The income elasticity of the first period is calculated by adding these two coefficients ( $b_2$  and  $b_2^*$ ).

### IMPORT DEMAND FUNCTION

$$\ln QM_t = b_0 + b_0^*D + b_1 \ln RP_t + b_1^*D \ln RP_t + b_2 \ln Y_t + b_2^*D \ln Y_t + u_t \quad (2)$$

Where:  $QM_t$  is the import quantity index of India,  $RPT$  is the relative price (World Export Price Index/ India's Import Price Index) and  $YI$  is the GDP index of India. The value of dummy variable=1 for the pre-reform period (1975-76 to 1990-91) and is 0 for the post reform period (1991-92 to 2006-07). In this function  $b_1$  represents the price elasticity of import for the second period (post reform period) and  $b_1^*$  represents the differential coefficients. The price elasticity of the first period is calculated by adding these two coefficients ( $b_1$  and  $b_1^*$ ).  $B_2$  represents the income elasticity of the second period and  $b_2^*$  represents the differential coefficient. The income elasticity of the first period is calculated by adding these two coefficients ( $b_2$  and  $b_2^*$ ).

## EMPIRICAL RESULTS

The empirical estimated results of the export and import demand functions are presented in Table III and IV

TABLE III: THE RESULTS OF EXPORT DEMAND EQUATION

$R^2$	SE		F-Statistics
0.99 (Adj. $R^2$ :0.9922)	0.072		792.0
Variable	Coefficient	SE	t-Statistic
Constant	-10.86*	0.99	-10.97
D1	9.74*	1.18	8.21
RP	-0.283	0.25	-1.1
D2RP	0.345	0.24	1.4
WGDP	3.28*	0.245	13.36
D3WGDP	-2.035*	0.286	-7.10

Source: Regression result

TABLE IV: THE RESULTS OF IMPORT DEMAND EQUATION

R <sup>2</sup>	SE		F-Statistics
0.99 (Adj. R <sup>2</sup> :0.9916)	0.081		738.94
Variable	Coefficient	SE	t-Statistic
Constant	-7.57*	0.45	-16.84
D1	3.47*	0.83	4.15
RP	0.674*	0.092	7.29
D2RP	0.22	0.196	1.1
IGDP	2.61*	0.087	30.09
D3IGDP	-0.69*	0.17	-4.03

Source: Regression result

The price elasticity coefficients of export in both the periods are found to be not significant. The GDP elasticity of export for the pre-reform period is 1.24 (3.28-2.035) (it is not statistically greater than one, ie inelastic) and for the post reform period is 3.28.

The price elasticity of import for the post reform period is 0.674 and there is no significant difference in the price elasticity between the two periods or in other words they are almost equal. The GDP elasticity of import for the pre reform period is 1.92 (2.61-0.69) and for the post reform period is 2.61.

The coefficients and intercepts in both the periods are statistically different. This implies that there are structural changes in the economy after the reforms in the international trade sector.

## FINDINGS

The estimates of elasticities of demand for India's exports imply that the price of the exports is not an important factor in determining the quantum of export of India. India has a competitive advantage in its export. In other words the quantity of export will not be affected even the prices fluctuate. India's export demand was income inelastic in the pre reform period, where as it has changed into the elastic region in the post reform period. The income elasticity of exports increased from 1.24 (which is not greater than one) in the pre reform period to 3.2 in the post reform period. It indicates the integration of the Indian economy to the global economy after the economic reform. India extended trade relations with different countries after the reform measures in 1991. The increase in the income elasticity of demand for export shows the movement of the economy from a highly regulated structure towards a free economy. In a highly regulated system, the market forces like price and income would not affect the quantity demanded. Whereas, in a free economy, the market forces will have an effect on the demand of the commodity in different magnitude depending up on the nature of the commodity. It is observed from the estimates of the elasticities that it is the income (GDP) of the importing country rather than the price of the export affects the quantum of Indian exports.

The estimate of price elasticity of demand for India's import is positive and found to be significant against the theoretical explanation of demand theory. According to the law of demand, the estimate of price elasticity coefficient is expected to be negative. The positive price elasticity coefficient does not mean that the quantum of import of India is increasing because of the increase in import prices. India's import basket includes a high share of oil import and some items like machinery and capital goods which are necessary to support our domestic industries. The quantity of import of these commodities can not be reduced even a hike in their prices. So the estimation at the aggregate level will have the dominating effect of these special items like outliers. That might have resulted in getting a positive price elasticity coefficient for aggregate imports. The income elasticity of demand for import increased from 1.92 in the pre reform period to 2.61 in the post reform period. That implies that as economy started growing the aggregate import has also increased.

## MARSHALL-LERNER CONDITION

The estimates of import and export elasticities are important in analyzing the impact of different policy measures related to international trade and to formulate export promotional policies. The Marshall-Lerner condition tells that, if the sum of price elasticity of import and export is greater than one then the devaluation measure will improve the balance of payments position of the country. The estimates in the study period do not satisfy the Marshall-Lerner condition for India. Because, the price elasticity of demand for export is not greater than zero (insignificant) in both the periods and the price elasticity of demand for import is found to be less than one in both the periods. In other words the sum of price elasticities of exports and imports is not greater than one in both the periods.

The above mentioned results reveal that the devaluation measure will not improve the balance of payments position of the country. The Table V shows the export, import and balance of payments data of India from 1986-87 to 2006-07.

TABLE V: EXPORT, IMPORT AND TRADE BALANCE OF INDIA

Year	Export	Import	Trade balance
1986-87	9745	15727	-5982
1987-88	12089	17156	-5067
1988-89	13970	19497	-5527
1989-90	16613	21219	-4607
1990-91	18145	24073	-5927
<b>1991-92</b>	<b>17865</b>	<b>19411</b>	<b>-1545</b>
1992-93	18537	21882	-3344
1993-94	22238	23306	-1068
1994-95	26331	28654	-2324
1995-96	31795	36675	-4880
1996-97	33470	39132	-5663
1997-98	35006	41485	-6478
1998-99	33219	42389	-9170
1999-00	36822	49671	-12848
2000-01	44560	50537	-5976
2001-02	43827	51413	-7587
2002-03	52719	61412	-8693
2003-04	63843	78149	-14307
2004-05	83536	111517	-27982
2005-06	103091	149166	-46075
2006-07	126362	185749	-59388

Source: Handbook of statistics on Indian economy 2008, RBI

The time period presented in table (°) includes the year where Indian rupee was devalued. It is evident from the table (°) that there is no significant improvement in the balance of payments position of the country in the consecutive years as a result of devaluation. That is the data support the findings of the study.

Wadhwa (1974) estimated the trade elasticity by using the data from 1954 to 1970. He estimated the model by using dummy variable to capture the effect of devaluation of 1966 if any. And he estimated the model without using this dummy variable also. The model in which the dummy variable was used did not give better estimates. The model without dummy variable gave a better fit. This is an indication for that the devaluation in 1966 also did not make any significant change in the balance of payments position of the country

#### HOUGHAKKER-MAGEE HYPOTHESIS

It was proposed by Houthakker and Magee in 1969 for Japan. It examines whether the income elasticity of exports and imports of a country are different or not. If India and other countries of the world grow at a same rate, the adverse effect on balance of payments will be observed if the income elasticity of imports exceeds that of exports. On the other hand, if income elasticity of exports exceeds that of imports there will be positive effects on balance of payments (Houthakker and Magee 1969).

The study observes that the income or GDP elasticity of demand for India's import is greater than the income elasticity of demand for its export in the pre reform period. The value of income elasticity of demand for import is 1.92 and that of export is 1.24. It implies that if India and the trading nations grow at the same rate, it will lead to an adverse effect on the balance of payments of the country. Since the import elasticity of import is greater than that of export, the growth of economy will lead to more increase in import of the country than in its export.

But the study finds that the situation has changed significantly in the post reform period. In the post reform period the income (GDP) elasticity of demand for India's export is 3.2 and that of import is 2.61. In other words the income elasticity of export is greater than the income elasticity of import. That implies that the same rate of growth of India and the trading nations will bring positive effect on the balance of payments position of the country. Because the income elasticity of export is greater than that of import, economic growth of India and the trading nations (world) will give greater increase in the export of the country than in its import. This reveals the improvement in the performance of Indian export industries or the betterment of competitive position of Indian goods in the international market after the economic reforms.

It is observed that there is a difference in the coefficient of elasticity of demand for export and import of India between pre reform and post reform periods. In case of aggregate export the income elasticity of demand for export in the post reform period is significantly higher than that of in the pre reform period. In case of aggregate import, the income elasticity of demand in the post reform period is greater than that of in the pre reform period, where as there is no difference in the price elasticity between the two periods.

#### LIMITATIONS OF THE STUDY

In the estimation of trade elasticity, the services trade is excluded and only merchandise trade is considered. The study has not estimated the trade elasticities for individual commodities. The trade basket includes different kinds of goods and services. The magnitude of price and income elasticities differs according to the nature of the commodity. Therefore to get a clear picture and to analyze policy implication the analysis has to be done at disaggregates level. In the discussion of implications of the estimates of export and import elasticities, the study does not consider about the supply constraints which is likely to occur in a developing economy like India. Rather it is assumed that there will be enough supply of commodities for the trade.

#### SCOPE FOR FURTHER RESEARCH

The study can be extended by including the destination or direction and the composition of trade as well into consideration. That is the export of different commodities to different countries can be estimated separately and get the coefficients and analyze the policy implications. Because the demand for export and import will differ depending up on the nature of the economy like developed, developing and under developed and the nature of the commodities like necessities, luxuries etc. These economies differ in their demand for different items of commodities. So the country wise analysis will give better conclusion about the policy and business implications of trade elasticities. The study can be extended further to analyze the effects of the new movements like trade agreement with ASEAN and EU (Which is under discussion).

#### CONCLUSIONS

The study concludes that India has a competitive advantage in its export in the international market. It is observed that the growth of economy of the importing countries rather than price of the exporting goods will play a very important role in promoting Indian exports. The study finds that there is a significant difference in the elasticities and its implications in the two periods.

The income elasticity of demand for export has increased in the post reform period. That is an indication of the economy's integration with the world economy and the resultant improvement in the competitiveness of the Indian goods in the international markets. It was gained through the improvement in quality and adoption of better technology to enhance the operational effectiveness and cost reduction.

The study has been able to bring out the effect of economic reforms on the coefficient of elasticities of demand for India's export and import. It intends to give an addition to the existing literature of trade elasticity. The results of the study will be helpful for the academia to analyze the effects of various policies related to international trade and projects the trends in international trade. The study intends to help the business world to forecast their demand according to the changes in the world economy and adjust their output to meet the demand of domestic as well as the international markets.

Marshall-Lerner condition does not hold well for India in both the periods. It reveals the ineffectiveness of the devaluation as a corrective measure for the balance of payments deficit, because the sum of price elasticity of export and import is less than one (unity) in both the periods. The income elasticity of demand is greater than that of export in the pre reform period. This implies that the same level of growth of India and the world economy will cause to adverse effect on the balance of payment position of the country according to Houthakker-Magee hypothesis. But in the post reform period, the income elasticity of export exceeds that of import and gives the possibility of improving the balance of payments position of the country by the same level of growth of India and the trading nations (world) as proposed by Houthakker-Magee hypothesis. This reflects the variations in the coefficients of elasticities as well as the implication (difference in the implication of Houthakker-Magee hypothesis in both the periods) of the same in the two different periods.

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