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EMPIRICAL ANALYSIS OF INDIA'S FOREIGN TRADE AND ECONOMIC GROWTH

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ABSTRACT

The present study is an attempt to examine long run relationship among India's GDP, Exports and Imports for which yearly time series data from 1995 to 2018 has been collected. Data for India's GDP has been collected from RBI website and India's export and import data has been collected form Ministry of Commerce and Industry website. The Augmented Dickey-Fuller unit root test for stationarity found that studied variables become stationary at first order of difference. While, Johnson cointegration test revealed long run cointegration between India's GDP, exports and imports. The results of VECM Granger causality test exhibited bi-directional relationship between India's GDP and India's exports, whereas uni-directional relation has been found between India's GDP and India's imports. These results have significant implication for India's export import policy and to achieve a target of $5 trillion economy till 2024-2025.

1. INTRODUCTION

In the era of mercantilism East India Company of Great Britain accumulated wealth in the form of gold reserves through trade for Great Britain. Consequently, Great Britain became a developed country and ruled the world. Later on, this accumulation of wealth was considered as a crucial dynamic factor in the evolution of society by Adam Smith in his book "Wealth of Nation" **(**Herlitz, L.1964). Adam Smith criticised the mercantilism approach by arguing that real wealth of a nation consists of availability of goods and services to its citizens. For which he developed the theory of absolute advantage of international trade, which was extended by Ricardo who gave theory of comparative advantage of international trade. Since than international trade has increased by many folds. Further, international trade was supported by the General Agreement on Tariffs and Trade (GATT) of 1947. Later on it was institutionalised by WTO (1995). WTO trade rules provide assurance and stability to consumers and producers about secure supplies of input material, components, services and greater choice of the finished products. Because WTO ensure free and

fair-trade practices to its member countries and it leads to a more prosperity and peaceful economic growth. After becoming the member of WTO China's Growth Domestic Product (GDP) growth rate has been noticed around 10%. Sun, P. & Heshmati, A. (2010) established that increasing participation in the global trade practices has helped the China in reaping the static and dynamic benefits by stimulating rapid national economic growth. Its international trade structure and volume of high tech exports has resulted into significantly positive effect of regional productivity of China. Because of international trade, eastern region of China has been industrialising very rapidly in comparison to central and western regions in terms of both international trade and economic development. Were M. (2015) found positive impact of trade on economic growth of developed and developing countries. Though, he noticed insignificant effects on least developed countries of Africa. Above it, he found that trade as a key determinant of foreign direct investment (FDI) across different country including least developed countries. The International trade also enhance domestic investment in both developing countries and the least developed countries.

2. REVIEW OF LITERATURE

Zestos, G.K. & Tao, X. (2002) found bidirectional Granger causality running from foreign sector to GDP in Canada. On the contrary a frailer relationship exists between foreign sector and GDP in the United States. Moreover, the study statistically demonstrated that Canada is more open economy relatively the United States and hence more trade dependent too. Leo, M. & Zestos, G. K. (2004) empirical findings of the study confirmed the existence of strong indication of Granger causality from the foreign sector to GDP for all the countries, and there is strong sign of bi-directional cause and effect relationship from GDP to exports and imports for all countries apart from the Netherlands, which depicts weaker evidence of existence for the same. Dritsakis, N. (2007) demonstrated a significant bilateral causal relationship between exports and economic growth for the European Union and for the USA, whereas the study did not demonstrate any signs of long-term relationship or causality between economic growth and exports in case of Japan. Eusuf, M. A. & Mansur, A. (2007) found that real exports and real GDP are cointegrated in Bangladesh, Pakistan and Nepal only. Though Pakistan, Srilanka and Bhutan witnessed export-led growth either in short run or in long run. India, Nepal, and Maldives displayed the contradictory result of growth-led exports. Chiappini, R. (2011) found a Granger causality from outward FDI to exports of goods and services for all 11 European countries, nevertheless the causality was rejected after three years at 10 percent significance level. Further, the study revealed a significant heterogeneity for the Granger causality from export ofgoods and services to outward FDI among. Abbas, S. (2012) found that both in short run and long run causality exist from GDP to exports. The study further depicted that in short run and long run only growth in production cause exports growth, hence government should make effort to develop production which in turn develop trade and economy in long term. Guan, L. J., & Hong, Y. (2012) demonstrated that Granger causality test establishes bi-directional relationship between U.S. exports and its GDP, one-way relationship between U.S. imports and its GDP. Therefore U.S. imports did not Granger cause U.S. GDP growth. Gries, T. & Redlin, M. (2012) demonstrated in long term coefficients depict strong positive causality running openness to growth and vice versa, indicating that international integration is a useful strategy for growth. On the contrary, in short term coefficient displays negative shortrun adjustment, signifying that openness could hamper economy experiencing short term modifications. Additionally, subdivided panel data in long term remains mostly positive and significant, while in short term modification become positive in relation to income level surges. Shakouri, B. &Yazdi, S. (2012) found that mining exports and imports associated to economic growth. Hence, the mining exports sectors growth Granger causes economic growth and consequently, promotes the economic growth of Iran. Chang, T., Simo-Kengne, B.D. & Gupta, R. (2014) found unidirectional Granger causality flowing from economic growth to imports for North West, Mpumalanga, Western Cape and Gauteng, whereas bi-directional Granger causality running between economic growth and imports for KwaZulu-Natal, and no Granger causality running in any direction between imports and economic growth for remaining provinces. Singh, T. (2015) found steady support of exports and investment on output in long run, cointegrating relationship strengthen the positive impact of exports and investment whereas negative influence of imports onoutput. Moreover, unidirectional Granger causality running exports, imports and investment to output. Idris, J., Yusop, Z. & Habibullah, M.S. (2016) found bidirectional causality running between economic growth, openness and trade for OECD countries and developing countries both. Consequently, openness in the economy lead to competitive prices, reliable information and technology advancement plays a pivotal role in encouraging economic growth. Khobai, H. & Mavikela, N. (2017) established long term relationship between the variables and trade openness has strong positive impact on economic growth in long run, likewise foreign direct investment and capital formation boost economic growth in long term. The study also found uni-directional Granger causality from

trade openness, capital formation and foreign direct investment economic growth. Lawan, M.W. (2017) demonstrated the unidirectional causality in case of export-led growth from oil and non-oil exports to GDP and from gross capital formation to non-oil export. The study also exhibited bidirectional causality between oil exports and non-oil exports, population and non-oil exports and non-oil export and foreign reserve. Çevik, E. I., Atukeren, E., & Korkmaz, T. (2019) found the bidirectional Granger causality between from trade openness to real economic growth and from real economic growth to trade openness in Turkey during 1950-2014. Henceforth, there is sign of a feedback relationship.

3. STATEMENT OF THE PROBLEM AND OBJECTIVE OF THE STUDY

The reviewed literature established that there is a long run bidirectional causality relationship between exports and GDP growth rate of Canada, U.S.A., European union, and Iran. However, it has not been found true in case of Netherland and Japan. But U.S. imports did not Granger cause U.S. GDP growth. The literature also demonstrated that Canada is more open economy in relation to United States and hence more trade dependent in comparison to U.S.A. Further, it has been pointed out that long term coefficients depict strong positive causality running openness to growth and vice-versa. Means, international integration is a useful strategy for growth. One of the study found that real exports and real GDP are co-integrated in Bangladesh, Pakistan and Nepal among the South Asian countries. But India, Nepal, and Maldives displayed the contradictory result of growth-led exports. Further, it has been found that mining exports sectors growth Granger causes economic growth of Iran and India is also a major exporter of mining produce. The literature also highlighted that there is a bidirectional causality running between economic growth, openness and trade for OECD countries and developing countries. The trade openness has strong positive impact on economic growth in long run, likewise foreign direct investment and capital formation boost economic growth in long term. The study also found uni-directional Granger causality from trade openness, capital formation and foreign direct investment economic growth.

We all know that Indian economy has witnessed significant high growth rate in last decade. Under this background, it very important to know, whether Indian economic growth rate is export led or import led or vice – versa. Does there is any long run co-integration between India's GDP growth rate, its exports and its imports? Does there is any bi-directional or uni-directional relationship between India's GDP and India's exports and India's imports? So that suitable export- import policy can be designed to achieve the goal of $5 trillion economy in coming years. Therefore, an endeavour has been made here to study the ***"Empirical Analysis of India's Foreign Trade and Economic Growth".***

4. RESEARCH METHODOLOGY

The present empirical research work is based on yearly secondary data of 1995 to 2018 period. India's export (including re exports) and import data has been collected from the website of Directorate General of Foreign Trade, Ministry of Commerce and Industry in crore rupees. India's GDP (Gross Domestic Product in crore rupee) has been collected from Reserve Bank of India website. Previous publications of Economic Survey reports have been considered too to cross check the veracity of the data collected. E-Views 9 software has been used to analyse the data. Firstly, the Augmented Dickey Fuller (ADF) unit root test has been applied to test the stationarity of the data. Secondly, VAR (Vector Auto Regression) model has been developed to determine the number of maximum lags and further, Johansen co-integration test has been employed to discern the relationship. At last, the Granger causality test has been run to establish causal relationships between the variables.

5. EMPIRICAL RESULTS AND ANALYSIS

Table 1 depicts the results of data stationarity by applying Augmented Dickey-Fuller (ADF) unit root test. In ordinary least square time series model data should be stationary to avoid the difficulty of spurious regression. Variables LEXP, LGDP and LIMP are non-stationary at levels or in original form (intercept, trend and intercept and none - see table 1). At first difference the all variables LEXP, LGDP and LIMP turns to be stationary at 1 percent level of significance and single order time series (intercept, trend and intercept and none see table 1). Therefore, condition

of stationarity has been met and it means further statistics can be applied to find the relationship between the various variables.

Table 1: Result of ADF Unit Root test

Variables at levels	Intercept		Trend and Intercept		None	
	t-statistics	P-value	t-statistics	P-value	t-statistics	P-value
LEXP	-2.905	0.064	-0.937	0.928	-4.407	1.000
LGDP	-0.311	0.973	-4.552	0.091	-2.696	0.997
LIMP	-0.925	0.761	-1.104	0.906	-5.041	1.000
at first difference						
ΔLEXP	-6.845	0.000***	-4.531	0.008***	-2.692	0.001***
ΔLGDP	-3.669	0.009***	-4.449	0.000***	-2.274	0.000***
ΔLIMP	-5.027	0.000***	-5.099	0.002***	-2.685	0.006***

(Source: Author's own, *** represents significance level at 1%)

Table 2 shows the results of lag selection for Vector Auto regression (VAR) model. The multivariable system already possesses the condition of establishing VAR model hence, VAR model can be established directly. To identify the maximum lag order different information criterion alike LR (Sequential modified LR test statistic), FPE (final prediction error), AIC (Akaike information criterion), SC (Schwarz information criterion) and HQ (Harman-Quinn information criterion) examined (see table 2). In this case maximum number of lag order is 2 under the different aforementioned criterion. Consequently, VAR (2) model can be developed in accordance of information given by the different tests. To apply Johansen co-integration test further it is stated that optimal lag order is 1.

Table 2: Depicts result of Information Criterion for Lag Selection for VAR model

Lag	LogL	LR	FPE	AIC	SC	HQ
0	59.37608	NA	7.15e-07	-5.637608	-5.488248	-5.608451
1	146.1394	138.8214	3.05e-10	-13.41394	-12.81650	-13.29732
2	158.9281	16.62525*	9.74e-11*	-15.79281*	-13.74729*	-14.58871*
3	178.3473	19.41921	2.25e-10	-14.83473	-13.34113	-14.54316
4	190.2325	8.319637	1.15e-10	-15.12325	-13.18157	-14.54421

(Source: Author's own, * shows maximum number of lags at various information criterion)

Table 3 represents the results of Johansen co-integration Trace test. Johansen co-integration test is also known as JJ test, which is a method of regression coefficients testing based on VAR model. Johansen co-integration test is best fit model for multivariable systems and it is two stage model. First stage of Johansen cointegration model is trace statistic (see table 3) and second stage is maximum eigenvalue (see table 4). The trace statistic value (33.1644) and its respective probability value (0.0197) is significant at 5 percent level of significance (see table 3). Hence it can be concluded that test results depict only one co-integration relationship among studied variables.

Table 3: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical value	Prob.**
None *	0.658268	33.1644	29.79707	0.0197
At most 1	0.322933	9.5424	15.49471	0.3176
At most 2	0.042816	0.96272	3.841466	0.3265

(*shows significance level at 5%, **shows critical values based on MacKinnon-Haug-Michelis (1999)

Table 4 highlights the results of Johansen co-integration second part which is maximum eigenvalue. The eigenvalue (0.658268) and its respective probability value (0.0218) is significant at 5 percent level of significance (see table 4). The maximum eigenvalue results too corroborate that only one co-integration relationship is existing. Consequently, the Granger Causality test can be applied based on Vector Error Correction Model (VECM).

Table 4: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.658268	23.62202	21.13162	0.0218
At most 1	0.322933	8.579681	14.2646	0.3228
At most 2	0.042816	0.962721	3.841466	0.3265

(*shows significance level at 5%, **shows critical values based on MacKinnon-Haug-Michelis (1999)

Table 5 reveals the results of granger causality test based on vector error correction model. The results are interpreted as firstly, the null hypothesis that India's GDP does not granger cause the India's import is rejected here because the Chi-sq value (1.69277) and its respective probability value (0.0127) is less than 5 percent significant value, though the null hypothesis that India's import does not granger cause India's GDP is not rejected because the Chi-sq value (0.1763) and its respective p-value (0.6746) is greater than 5 percent value of significance (see table 5). Therefore, it can be concluded that there exists unidirectional relationship between India's GDP and India's import. Secondly, the null hypothesis that India's GDP does not granger cause India's export is rejected because the Chi-sq value (0.0184) and its respective probability value (0.0021) is less than the 5 percent significance value, whereas the null hypothesis that India's export does not granger cause India's GDP is rejected because the Chi-sq value (0.0538) and its respective p-value (0.0006) is less than 5 percent significance value (see table 5). Hence it can be stated that there is bidirectional relationship exists between India's GDP and India's export. Thirdly, the null hypothesis i.e. India's export does not granger cause India's import is not rejected because the Chi-sq value (0.90801) and its respective probability value (0.3406) is greater than 5 percent significance value, even though the null hypothesis that India's import does not granger cause India's export is not rejected because Chi-sq value (4.72616) and its respective probability value (0.0297) is greater than 5 percent significant value (see table 5). Henceforth, it can be concluded that there is no relationship exists between India's export and import.

Table 5: Result of Granger Causality test based on VECM

Null Hypothesis	Chi-sq	Df	Prob.
LGDP does not granger cause LIMP	1.69277	1	0.0127*
LIMP does not granger cause LGDP	0.1763	1	0.6746
LGDP does not granger cause LEXP	0.0184	1	0.0021*
LEXP does not granger cause LGDP	0.0538	1	0.0006*
LEXP does not granger cause LIMP	0.90801	1	0.3406
LIMP does not granger cause LEXP	4.72616	1	0.0297

(Source: Author's own, * shows 5% level of significance)

6. CONCLUSION

The empirical results establish that there is a bidirectional relationship between India's GDP and India's export (Zestos, G.K. & Tao, X. 2002, Dritsakis, N. 2007, Abbas, S. 2012 and Çevik, E. I., Atukeren, E., & Korkmaz, T. 2019). This proves that when India's GDP increases the India's export also increases and vice versa, whereas unidirectional relationship has been found between India's GDP and India's imports (Guan, L. J., & Hong, Y. 2012, Chang, T., Simo-Kengne, B.D. & Gupta, R. 2014). It means that when India's GDP increases, India's import also increases. But it is cannot be said that India's import leads to increase in India's GDP. These finding suggest that India should follow export promotion policies to increase its GDP and should discourage the unnecessary imports or should follow import substitute policy. Therefore, Government of India should more focus on make in India policy. In this way, such policies can play very important role in achieving the ambitious target of $5 trillion economy till 2024.

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CONFLICT OF INTEREST

The author have declared that no competing interests exist.

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