Investigating the Validity of Export-Led and Import-Led Growth Hypothesis in Bangladesh

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Abstract
Examining the contributions of export and import is crucial in the context of an emerging country like Bangladesh that has long been experiencing unfavorable balance of payment. This study attempts to investigate the effects of export and import on GDP of Bangladesh using time series data ranging from 1971 to 2015. Ordinary Least Square is used to determine the possession of export and import on economic growth and Johansen co-integration test in to detect the long- run relationship between the variables. The results indicate that export, import, and economic growth have a long run relationship, and to test this we developed the hypothesis that there exists no long-run relationship. The long run and short run causality results support the unidirectional causality from export to economic growth and bidirectional causality between import and GDP. Overall, the results validate the export-led growth hypothesis but do not support the import-led growth hypothesis. These findings suggest the importance of export promotion and import well-ordered policies for Bangladesh.
Keywords: Export, Import, Co-integration, VECM, Causality, Economic Growth.

1. Introduction

Bangladesh is a South-Asian developing country with a bounty of natural resources. Due to the lack of proper utilization of resource and technology problem, Bangladesh has to depend on other countries. Generally Bangladesh is an import oriented country that imports machinery and other necessary accessories of industries (Akhter, M. 2015). In an economy, many factors directed to growth and development (in long run) but export and import are measured as a weapon for economic growth. Export is an essential component of the balance of payment in Bangladesh too that speeds up the economy and makes sure the efficient use of available resources. The ready-made garments, jute, shrimp, leather, raw materials etc. are exported from Bangladesh to other countries. Varieties of goods are possible due to international trade, and it establishes the economic relationship among different countries.

The main socio-economic goal of Bangladesh is poverty lessening. To achieve this goal along with other objectives the Export and Import play an essential role. In recent years, Bangladesh is moving away from its agrarian economy to an industrial economy and emphasis on newly manufactured products such as ready-made garment and medicine. However, the government is introducing new policies and promoting privatization to create an investment-friendly environment that will emerge the developing economy. The economic development of Bangladesh in the last three decades is the consequential effect of the structural change in the various reforms of domestic economic policies, changes in international policies leading towards the considerable growth of the manufacturing and service sectors.

International trade takes place among the countries due to differences in production elements in different countries. The variations of production factors lead to fluctuations in prices of goods and services. And the difference in the rates is the main reason for the international trade. Through international trade, one country builds a relationship with other nations of the world. At present, trade liberation is a familiar spectacle. It serves as one of the vital sources of economic growth because it influences the welfare scenario of the country. Through free trade, the nations with a surplus of goods or services would mechanically fulfill other nations' deficits.

There has been a debate over the suitability of trade policy for promoting economic growth and development. The post-world war II era has shown the dramatic growth of international trade and the creation of a global trading framework based on the principle of open economies. The USA has been at the forefront of these changes. Since the mid-1970s most developing countries shift towards export strategy. The developing countries to achieve a sustainable rate of economic growth have focused on different variables, such as the degree of openness, real exchange rate, tariffs, terms of trade, and export performance. But they should mark on their export-led orientation because most of them depend on the multilateral organization to improve their economic imbalances. Enhancing export would enable developing to recovery their shortcomings.

There is an ongoing empirical investigation, for many decades, about whether export leads to economic growth. While the neoclassical economists view that export leads to a better financial performance Yaghmaian (1994), the empirical researches on the validity of neoclassical view provided mixed results. Studies have been conducted through different techniques in different countries. The early cross-sectional studies supported the neoclassical hypothesis, while time series studies offer mixed conclusions Giles & Williams (2000). Considerable studies devoted to the relationship between export and economic growth, a little attention, however,

has been paid to the relationship between import and economic growth. With a medium of technological improvement, imports can be a significant factor in economic growth. (Esfahani, 1991) argued that without considering the role of import, the observed causality between export and economic growth would be spurious and misleading (Awokuse, 2008).

(Vohra, 2001) examined the role of export for economic growth in India, Pakistan, the Philippines, Malaysia, and Thailand with time series data ranging from 1973 to 1993. The results showed that export significantly affects economic growth when a country is on a stage of economic development. (Ehinomen & Daniel, 2012), examined the relationship between export and economic growth in Nigeria using the annual time series data ranging from 1970 to 2010. ARDL co-integration test suggested a long run relationship between exports and economic growth and Granger causality analysis showed a unidirectional causality between them.

On the research in Srilankan perspective (Professor, 2013), found that export and import had a significant impact on economic growth. In contrast to the discussed literature, Jung & Marshall (1985), found a weak relationship between export and economic growth. They performed causality tests on 37 developing countries, and the majority of them did not support the export-led growth hypothesis. (Joshi, 2012), showed there exists no long-run and short-run causality between export and GDP for India. He explained the reason of no causality between the variables is insufficient export that cannot affect GDP.

In the study covering 62 countries, (Islam, Muhammad Adnan Hye, & Shahbaz, 2012), examined the relationship between import and economic growth by using time series data from 1971 to 2009. The overall results from this study suggest that import is crucial to attaining the sustainable economic growth. The Granger causality results indicated unidirectional causality, from import to economic growth, existed in higher income countries and bidirectional causality in the case of the majority of low-income countries. A panel data analysis on 31 provinces of China using non-parametric estimation, (Chen & Dong, 2012), found a positive and significant impact of both export and import on GDP. An investigation on the causal relationship between export, import and economic growth on the North Korean economy by (Sato & Fukushige, 2011), showed that in the first half period of 1964 to 2008 Granger causality from import to GDP existed, and on the second half the causality reversed. Teka and Zoto, (2013) evaluated that import is more critical for domestic products development of Albania and concluded import is delicate to change in national income.

(Krueger, n.d.) (1985, p. 9) noted, "[...] reduction in capital goods import would reduce the gross domestic product (GDP) growth rate and a reduction in intermediate goods and raw materials imports would adversely affect output and employment".

(Prof & Katircioglu, 2011), examined the import-led hypothesis for North Cyprus and revealed the long-run positive relationship between imports and real income growth, but could not find evidence that import stimulates national income. The economy of South Africa has been examined by (Moroke & Manoto, 2015), and they found the long-run relationship among export, import and economic growth of South Africa and the investigation supports both export-led and import hypothesis. Dutta & Ahmed (2004), found that import price and GDP affect the import volume in India. They found the exchange rate policy is ineffective for controlling imports, as the GDP modify imports more than the import prices.

The amount of export is less than the import in Bangladesh. For this reason, Bangladesh faces a deficit in the balance of trade that leads the currency value of our country to fall.

1.1 Objective of the study

The past studies showed that export or import or both have positive or negative and significant impact on the GDP of various countries. This paper aims to portray the role and position of the export, import on economic growth of Bangladesh. The primary target of this study is to investigate the long run relationship and short-run causality direction among export, import, and GDP for the period 1971-2015 by incorporating regression approach and Johansen co-integration test and VECM estimation. Hence the central hypothesis of this study is, there is no long-run relationship and short-run causality direction among export, import and economic growth.

There are five sections in this study. Subsequent chapters of this paper begin with an overview of the economic performance of the country. The next two parts include the performance and involvement of the Export and Import on GDP. The methodology is described in the later section. Conclusion and recommendations based on findings are presented in the final chapter.

2. Performance of the country
2.1 Changes of GDP Growth

After some years of the liberation war, Bangladesh faced famine and other obstacles that made the growth rate of GDP negative (-4.09% in 1975). However, the economy able to recover the GDP growth rate after that period and it was 3.34, 5.12 and 6.54 percent during 1985,1995s and 2005s respectively. But in 2010 the rate dropped to 5.57%, and the rate steadily increased to 6.65% in 2015.

Figure 1: Annual Growth of GDP in %
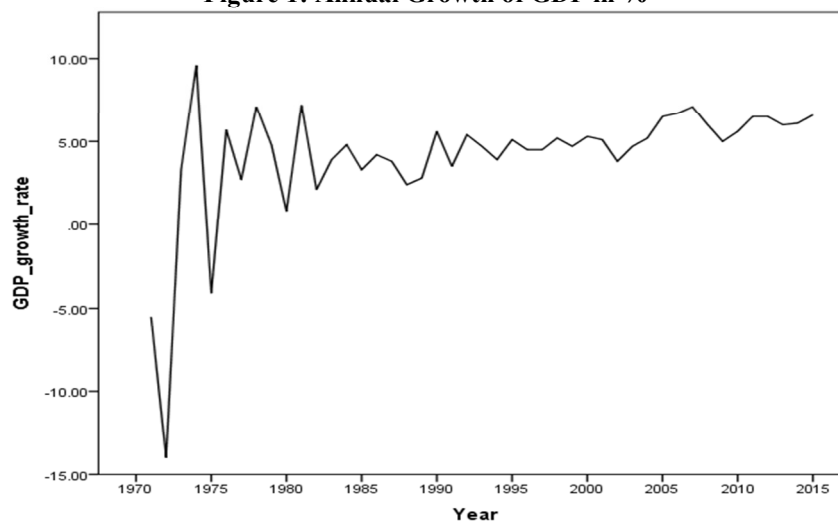
2.2 Trend of Trades

Bangladesh initially based on the policy of substituting import and applied varieties of trade restrictions, which has become prominent by its GDP rate. However, it has lately considered to open up its economy to external trade. The share of total trade has almost doubled over two decades (see Table 1).

Table 1: Trend of Trades (% of GDP)

Year	1971	1980	1990	2000	2005	2010	2015
Exports as % of GDP	6.29	5.49	5.91	12.34	14.39	16.02	17.34
Imports as % of GDP	10.73	17.88	13.06	16.98	20.00	21.78	24.75
Total trades as % of GDP	17.02	23.37	18.97	29.32	34.39	37.8	42.09

Source: World Development Indicators, 2017

Exports increased mainly due to additions of some new destinations and generalized system of preferences (GSP) facilities offered by the European Union (EU). Some export support procedures are also in action where we can include simplifying export procedures and helping the private sector achieving efficiency, enhancing technological strength and productivity, ensuring maximum use of local materials in the production of export goods. Encouraging the establishment of backward linkage industries, participate in the international trade fairs and specialized fairs are also in the support of export. We can also target to the developed and expanded infrastructural facilities for influencing export.

2.3 Bangladesh's Export Sector and its Contribution to the Economy:

Total export receipts of Bangladesh (including exports of EPZ) during the financial years, 2015-2016, 2014-2015 and 2013-2014 amounted to Tk. 236803.1 Crore, 226486.2 and Tk. 213374.5 Crore or the US $ 30255.9 million, US $ 29157.3 and the US $ 27454.3 million respectively.

Ready-made garments have emerged individually as the most crucial sector of export. During the year 2015-2016, the earnings through ready-made clothes accounted for $ 20843 million (84.0 %) as compared to $ 20089 million (83.0 %) in 2014-2015. The major exported countries of ready-made garments are U.S.A, Germany and U.K. The contributions of jute which is known as 'Golden Fiber' is $ 728 million in FY 2015-2016 which is 2.9% of total exports and in FY 2014-2015, FY 2013-2014 the contributions was $ 689 million and $ 684 million.

Table 2 shows the other commodities (Fish, shrimps and prawns, Leather and leather manufactures, Home Textile, Petroleum and petroleum products etc.) and EPZ's involvement in export earnings in FY 2013-2014, 2014-2015 and 2015-2016 in a million US $.

Table 2: Commodities based Exports ((In million US$)

Major Commodity	2015-2016	2014-2015	2013-2014
Readymade garments	20 843	20 089	18 866
Jute manufactures	728	689	684
Fish, shrimps, and prawns	455	514	528
Leather and leather manufactures	831	888	883
Home Textile	418	462	497
Raw Jute	161	110	122
Petroleum and petroleum products	28	38	69
Terry Towel	15	16	14
Bicycle	44	57	49
Pharmaceutical products	74	69	65
Handicrafts	10	9	7
Tea	2	4	2
Others	1208	1255	1188
Sub-total	**24 817**	**24 200**	**22 974**
Exports of EPZ	**5439**	**4958**	**4480**
Total exports	**30 256**	**29 157**	**27 454**

Source: Bangladesh Economic Review (2015-2016)

2.4 Country wise exports:

As regards the destination pattern of exports, the U.S.A. was the most prominent buyer who bought goods worth $4080 million (16.4%) during the year 2015-2016 under review as compared to $4052 million (16.7%) and $4062 million (17.7%) in the previous year 2014-2015 and 2013-2014 respectively. The principal items of export to the U.S.A were ready-made garments, fish, shrimps & prawns, jute, leather and leather manufacture, raw jute and handicrafts. The second largest buyer of Bangladeshi goods is Germany amounted to $3791 million (15.3%) during the year 2015-2016 under review as compared to $3862 million (16.0%) and $3705 million (16.1%) during 2014-2015 and 2013-2014 respectively.

The next important trading partner is the U.K. Export earnings from U.K. amounted to$2713million (10.9%) during the year 2014-2015 as compared to $2391 million (9.9%) and $2243 million (9.8%) in the previous year 2014-2015 and 2013-2014 respectively.

France, Spain, Italy, Canada, Belgium, China, Japan and India followed by descending order of magnitude in respect with our export earnings and accounted for $1520 million, $1429 million, $1136 million, $778 million, $703 million, $678 million, $676 million, and $ 636 million respectively in 2015-2016.

Table 3: Country-wise Exports (In million US$)

Country	2015-2016	2014-2015	2013-2014
The U.S.A.	4080	4052	4062
Germany	3791	3862	3705
U.K.	2713	2391	2243
France	1520	1467	1455
Spain	1429	1349	1113
Italy	1136	1201	1056
Canada	778	771	809
Belgium	703	754	693
China	678	720	533
Japan	676	573	503
India	636	463	396
Other Countries	6677	6597	6406
Sub-total	**24 817**	**24 200**	**22 974**
Export of EPZ	**5439**	**4958**	**4480**
Total Exports	**30 256**	**29 157**	**27 454**

Source: Bangladesh Economic Review 2015- 2016

2.5 Bangladesh's Imports Situation and its contribution to the economy:

The significant portion of imports payments is going to Rice and Wheat that means to Food grains. Commodity-wise classification revealed increases over the previous year under oilseeds, chemical, Pharmaceutical products, and Capital machinery. On the other hand, Commodity-wise classification showed decreases from a year earlier were recorded under food grains, milk & cream, spices, raw cotton, sugar etc. Table 5displays the imports according to commodities for FY 2015-2016, 2014-2015 and 2014-2013.

Table 4: Category wise Imports (In million US$)

Major Commodities	2013-2014	2014-2015	2015-2016
Food Grains	1465	1574	1034
Milk & cream	289	310	226
Spices	183	215	204
Oilseeds	508	354	522
Edible oil	1761	1574	1331
Fertilizer	1026	1242	1044
Chemical	1498	1569	1688
Pharmaceutical products	120	112	120
Raw cotton	2426	2275	2152
Sugar	902	743	661
Capital machinery	2332	2612	3053
Others	25 247	24 978	24 944
Subtotal :	**37 757**	**37 558**	**36 979**
Imports of EPZ	**2975**	**3022**	**3119**
TOTAL	**40 732**	**40 579**	**40 097**

Source: Bangladesh economic review 2015- 2016

2.6 Major Imports Partner's Countries:
Total import payments of Bangladesh (including imports of EPZ) during the years 2015-2016 and 2014-15 amounted to US$ 40097.4 million and US$ 40579.3 million respectively, reflecting a 0.4 % decrease in dollar terms. Data presented in Table 4 illustrates imports of Bangladesh from different countries. The Imports from China, Japan, U.S.A, Germany and India are growing faster than other countries.

During FY2015-2016 the imports amount from China is $9669.1 million, which was $8224.3 million and $7550.1 million in FY 2015-2014 and FY2014-2013 respectively. The imports quantity of EPZ is increasing day by day. The imports amount of EPZ in 2015-2016 is$ 3118.6 million, and in FY 2014-2015 & FY 2014-2013 the sum was $3021.8 million & $2975.0 million. The Imports amount from India, Singapore, Japan, Indonesia, and the U.S.A. Germany are $5452.9 million, $1925.1 million, $1643.6 million, $1235.5 million, $1007.6 million, and $798.0 million in FY 2015-2016 respectively.

Table 5: Country-wise Imports (In million US$)

Country	2015-2016	2014-2015	2013-2014
People's republic of China	9669.1	8224.3	7550.1
India	5452.9	5827.7	6036.0
Singapore	1925.1	2198.5	2407.2
Japan	1643.6	1523.6	1290.7
Indonesia	1235.5	1397.5	1104.9
The republic of Korea	1145.0	1223.1	1199.2
The U.S.A.	1007.6	690.6	836.2
Malaysia	956.7	1299.6	2084.1
Brazil	952.3	928.4	998.0
Hong Kong	805.1	852.2	762.0
Germany	798.0	590.7	593.8
Taiwan	771.1	817.8	919.9
Other countries	10 447.8	11 850.1	19 411.1
Other unclassified imports	**169.1**	**133.4**	**113.8**
Imports of EPZ	**3118.6**	**3021.8**	**2975.0**
Total	**40 097.5**	**40 579.3**	**40 731.9**

Source: Bangladesh Economic Review 2015- 2016

3. Data and Methodology
Annual time series data of Export, Import and GDP are employed in the analysis that is constant at 2010 and has been collected from the World Development Indicators (WDI 2017). These series start in 1971 and end in 2015. We have used EVIEWS as a statistical software package.

For the empirical purpose, the variables are transformed into the logarithm. The suggested model is:

$$\text{Log GDP} = \beta_0 + \beta_1 * \log \text{EXP} + \beta_2 * \log \text{IMP} + e$$

Whereas, β_0= Intercept,β_t =Slope ,GDP = Gross Domestic Product (real gdp), EXP = Exports, IMP = Imports and

e = the error term.

Augmented Dickey-Fuller (ADF) t-tests Dickey, D.A and Fuller, W.A. (1979) and Phillips and Perron (1988) tests (PP) are applied to examine the properties of stationary of the variables. The independent and identical distribution of the residuals is the key assumption of ADF test, whereas another alternative test PP for inspecting the unit root of the variables has been used. If the variables are integrated in order (1), we can use Ordinary least squares and Johenson Co-integration tests for further investigations.

For estimating the parameter of linear regression and to finding out the relationship of GDP with export and import, we use Ordinary Least Squares estimation. Then we proceed with Johansen, S. (1988) and Johansen, S. and Juselius, K. (1990) co-integration test for checking long-run relation among the variables. Akaike information criterion (AIC) and Schwartz Bayesian criterion (SBC) has been used to determine the lag length.

For short-run and long-run causality test, we run Vector Error Correction Model. The error correcting models can be written as,

$$\Delta LogGDP_t = \alpha_1 + \sum_{i=1}^{k} \beta_{1i} \Delta LogGDP_{t-1} + \sum_{i=1}^{k} \theta_{1i} \Delta LogEXP_{t-1} + \sum_{i=1}^{k} \lambda_{1i} \Delta LogIMP_{t-1} + \gamma_1 \varepsilon_{t-1} + \nu_{1t}$$

$$\Delta LogEXP_t = \alpha_2 + \sum_{i=1}^{k} \beta_{2i} \Delta LogEXP_{t-1} + \sum_{i=1}^{k} \theta_{2i} \Delta LogGDP_{t-1} + \sum_{i=1}^{k} \lambda_{2i} \Delta LogIMP_{t-1} + \gamma_2 \varepsilon_{t-1} + \nu_{2t}$$

$$\Delta LogIMP_t = \alpha_3 + \sum_{i=1}^{k} \beta_{3i} \Delta LogIMP_{t-1} + \sum_{i=1}^{k} \theta_{3i} \Delta LogGDP_{t-1} + \sum_{i=1}^{k} \lambda_{3i} \Delta LogEXP_{t-1} + \gamma_3 \varepsilon_{t-1} + \nu_{3t}$$

Here, the speed of adjustment indicates by the coefficient of the error correction term (γ). If the coefficient of ECT is negative and significant, then there is long run causality from independent variable to dependent variable. If the null hypothesis of $\beta_{11} = \beta_{12} = \beta_{13} = \ldots\ldots\ldots = \beta_{1k} = 0$ is not accepted, then there exist short-run causality between the variables.

4. Result and Discussion

To study the dynamic connection among Import, Export and GDP is our essential objective. For the practical purpose, the variables are transformed into the logarithm.

Figure 2: log GDP, log EXP, log IMP (constant 2010 million)
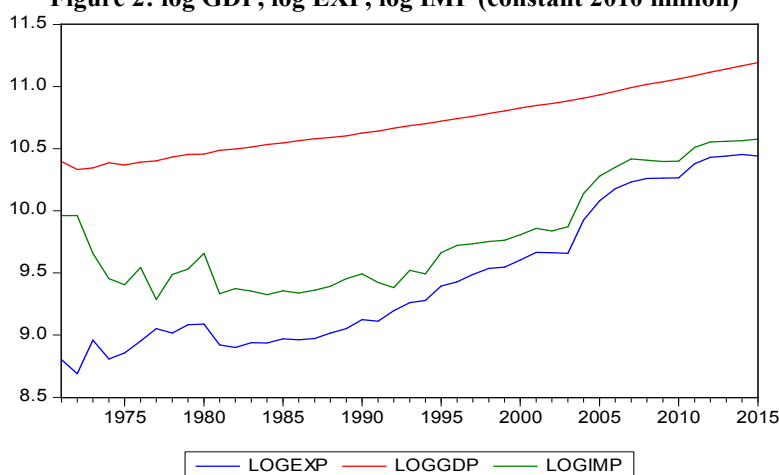
The figure shows log GDP, log EXP, log IMP for the period 1971 to 2015. From this figure, it is clear that GDP (the first line from the above) started to increase around 1976 and continued to grow in 2015. So there is a steady increase in GDP over the period. However, the total import (the second line from the above) increased more-or-less same from 1981 to 1992. But after 1992, the growth of total import increased over the period with some ups and downs. And, it is shown that the total export (the bottom-most line) increased slightly from 1982 and the growth was more or less upward in that period. After 1991, total exports rose rapidly over the next periods.

4.1 Unit Root Test:

First, we test the variables at the level to observing whether there is the presence of stationary property and the

result reveals data are non-stationary. The unit root test is carried out at the 1st difference, and the outcome asserts stationary property of the variables.

The hypothesis of unit root test:

H_0= Series are non-stationary

H_1= Series are stationary

If the probability value of the statistic is more than 5%, it asserts data are non-stationary. While the p-value is less than 5%, we can say it approves stationary data.

The results of the Augmented Dickey-Fuller (ADF) test and the Phillips and Perron (1988) test are reported in Table 6:

Table 6: Unit Root Test (Stationary)

Variables	Test	At level	1st difference	Conclusion
Log GDP	ADF	3.421133(1.0000)	-7.466670(0.0000)	I(1)
	PP	3.297225(1.0000)	-11.71386(0.0000)	I(1)
Log EXP	ADF	0.462259(0.9834)	-4.409165(0.0010)	I(1)
	PP	0.653009(.9897)	-7.676581(0.0000)	I(1)
Log IMP	ADF	0.065710(.9593)	-4.407376(0.0011)	I(1)
	PP	0.001970(.9536)	-6.426869(0.0000)	I(1)

Note: ADF means Augmented Dickey-Fuller Test and PP denoted Phillips Perron Test. P-values is shown in the brackets each adjusted with t-statistic.

Table 6 is expressing results of unit root tests. The present study has employed unit root test before regression analysis. Unit root test is applied to check whether data is stationary or not. Stationary information is used to avoid spurious results. The output file of the results indicates that all the variables are non-stationary at level but stationary at the 1st difference with 5% significance level. So, at 1st difference null hypothesis is rejected and the alternative hypothesis is accepted that refers that the variables in the study are integrated into order one (1).

4.2 Ordinary Least Square Estimation Results

For estimating the parameter of a linear regression model, OLSE is the most straightforward method that minimizes the sum of square errors to fit the function with data. When we have constant mean and variance of the time series data [i.e. No series in a regression model has a unit root], the OLS is the appropriate method to apply. To find out the relationship of GDP with Export and Import, we use ordinary least square estimation.

Table 7: Regression Result

Independent Variables	Co-efficient	t-statistic	Standard Error	Prob.
C	7.11	32.50	0.218	0.00
Log EXP	0.55	14.36	0.038	0.00
Log IMP	-0.164	-3.26	0.050	0.002
R square	0.9504			
F statistic	402.69			
Prob.(F statistic)	0.00			

Table 7 presents the Ordinary Least Square results of the model. All the estimated coefficients have expected sign and significant at 5%. The chart shows that the coefficient of export is 0.55 with corresponding p-value 0.00 which is less than 5%. That asserts that export is positively related to GDP at 5% significance level. Again, the coefficient of import is negative (-0.1648) with associated p-value 0.00 which is less than 5% significance level. It means import has an adverse effect on GDP.

The R square states in the table indicate that explanatory variables can explain 95% variation of dependent variable GDP.

4.3 Diagnostics tests

Normality Test: One of the assumptions of the classical linear regression model is that the residuals should be normally distributed. We use Jarque Bera test for checking normality distribution of the residuals as non-normality can affect the validity of the t-statistics and F-statistics.

RAMSEY RESET test: To know whether the used model is correctly specified or not, we use Ramsey's Regressions Specification Error Test (RESET) that includes a squared of the fitting term as an explanatory variable into the model.

Test of Heteroskedasticity: The Homoscedasticity assumption of the CLRM refers to the equality of variances of error terms over the sample. If the variances are not equal, the model suffers from Heteroskedasticity that creates the OLS estimates incompetent. Breusch-Pagan-Godfrey test is performed to detect the Heteroskedasticity.

Table 8: Diagnostics tests

	Normality test	RAMSEY test	Heteroskedasticity
Jarque Bera	8.32 (0.15)		
Fitted ^2		-0.06 (0.81)	
Obs* R square			3.86 (0.14)

The table features the results of normality test whereas the JB result is 8.32 with 0.15 p-value. That refers the null with normality test can't be rejected, i.e. all residuals are normally distributed in nature.

The quadratic value of the fitted term is -0.66 with associated p-value 0.81 which is more than 5% significance level. That defines that fitted squared is insignificant and the model is correctly specified.

The p-value of the observed R squared is more than 5% that refers non-rejection of the null hypothesis (no Heteroskedasticity). Hence, the error terms have homoscedasticity properties.

4.4 Test of Co-integration

As all the variables are integrated in the first order, we proceed with Johansen co-integration test for checking co-integration between the variables. The co-integration test assists to examine if log GDP, log IMP, and log EXP are cointegrated or not. For determining the lag length, the most common procedure, Akaike information criterion (AIC) and Schwartz Bayesian criterion (SBC), has been using and the lag length is optimal at 4 in both the standard.

The hypothesis of the co-integration test:

H_0 = There is no co-integration among variables

To label the number of co-integrating courses within the variables, from the yield of Johansen Co-integration Test, the outcomes of the test are reported in Table 9:

Table 9: Johansen Co-integration Test Results (lag 4)

Hypothesized no of CE(s)	Max –Eigen statistic	Critical value (5%)	Trace statistic	Critical value (5%)
None (r=0)	37.29847	21.13162	69.87798	29.79707
At most 1 (r≤1)	20.35113	14.26460	32.57951	15.49471
At most 2 (r≤2)	12.22838	3.841466	12.22838	3.841466

The Trace statistic and Max- Eigen statistic are calculated as per Johansen (1988) and Johansen and Juselius (1990). Granger, C.W. (1987) provided critical values for the co-integration test that have been applied and incorporated in table 8. Critical values calculated for the 5 percent significance level. **r** stands for the rank of the matrix, which denotes the number of the co-integration between the variables.

By using both Trace and Max-Eigen statistics, the null hypothesis of the co-integration test is rejected as the statistic value of both test are larger than their critical values. Moreover, the results express that null with at most two co-integrated track are not acceptable in both operating statistics. That suggests the substantial constructive long-run relationship between the dependent and explanatory variables. Therefore, the empirical examination implies that all the variables (import, export, GDP) are co-integrated and follow a standard long-run path. That's harmonious with the earlier study.

4.5 Vector Error Correction Model (VECM)

The Johenson co-integration test shows that the variables are co-integrated which support there exist causality. To evaluate the causality direction, we perform Vector Error Correction Model (VECM).

From the VECM result, we can write,

LOGGDP=7.790981+ 1.240205 LOGEXP- 0.902547 LOGIMP

4.5.1 Long run causality test:

To assess the long run and short causality between the variables we utilized Granger Causality Test under VECM. The criteria to exist long-run relationship among the variables are the coefficient of ECT have to remain -1 to 0 and the probability should be less than 0.05.

The hypothesis of causality -

H_0 = There is no Granger causality from independent variable to dependent variable.

Table 10: Long run causality under VECM

Dependent variable	Co-efficient of ECT	t-stat	p-value
D(GDP)	-0.068173*	[-3.12202]	0.0044
D(Export)	-0.015957	[-0.04242]	0.9665
D(Import)	-0.904222*	[-2.35337]	0.0264

Table 10 shows that the coefficient of ECT for dependent variable Log GDP is -0.068 and the p-value is

less than 0.05. This result reports that there is causality from Export and Import to GDP in the long-run. On the other hand the ECT coefficient of Log EXP is -0.015, but the p-value is more than 0.05 which proclaims no causality from export and import to GDP. However, Log IMP has -0.90 ECT coefficient with less than 5% probability which shows long-run causality from GDP and Export to Import. The result settles that there is bidirectional causality between GDP and Import and unidirectional causality running from Export to GDP. That states export positively affects economic growth of Bangladesh whereas import affects negatively.

4.5.2 VEC Granger Causality/Block Exogeneity Wald Tests

Causality between two variables refers that by using past value of the independent variable, we can forecast the present dependent variable. To assess the short run causality we used Block Exogeneity Wald Tests. Table 10 reports the result of short-run causality test.

Table 11: Block Exogeneity Wald Test

Null hypotheses	Chi-square	Prob.	Decision
GDP Cause Export	4.869380	0.3010	Reject H_0
Export Cause GDP	10.16477*	0.0377	Accept H_0
Import Cause GDP	18.92942*	0.0008	Accept H_0
GDP Cause Import	10.59453*	0.0315	Accept H_0

The empirical result suggests that there is a short run unidirectional effect from export to GDP at 5% significance level, as the probability value of the Chi-square is less than zero for this hypothesis. This result is consistent with the study of Ee (2016), Al-assaf (2015) and Tang, Lai, & Ozturk (2015). No sufficient evidence is found that conclude that GDP causes export due to more than 0.05 probability value for this hypothesis. But, there is significant bidirectional causality found between GDP and import at 5% significance level. Causality running from import to GDP suggests that Bangladesh imported more capital and finished goods during 1971-2015. The import should be well-ordered, if not it will create unemployment and replacement of domestically produced products. Additionally, it may create the unpleasant action that will hamper economic growth in the future.

5. Conclusion and Recommendation

This study investigated the validity of export-led and import led growth hypotheses in Bangladesh. The long-run relationship between export, import and GDP has been found by co-integration test. The result supports a positive effect of trading on economic growth. In contrast, it reveals an adverse impact of import on GDP. Pistoresi & Rinaldi (2012) recommended Import led growth causality for Italy and Kónya and Singh (2006) found both export and import led growth hypotheses for India.

In Bangladesh, unfavorable balance of trade seems as the receipt from export is not as much of the payments to import. The study finds that there exists a long-run positive relationship between export, import and GDP and unidirectional relation from export to GDP and bidirectional causes between import and GDP in both long and short run in Bangladesh. Considering these results and the economic performance of the variables, we can conclude that policy that promotes export would be a strategy for improving the financial condition of the country. Initial works of literature report the export as an accelerate vehicle of the economic growth and our study agrees with this. Thus, the government should emphasize the implementation of the export leaning policies. To specify some system, we can relate to some recent unwanted accidents happened in the garment industry during 1990-2012 years which includes the fire tragedies of Tazreen garments in 2012. We know the foreign buyer's repercussions as they had ceased working with 49 factories in Bangladesh due to safety issues of workers. Though the rate of export has been increased in last few years, still the question of safety measures exists. In our sense after all the investigations, the cause behind the accident reveals but do the precautionary measures be taken into account to avoid further such loss!. These should be the point to focus on in policymaking. It is considered that the policies that speed up export will boost the economic growth. Moreover, to reduce imports, import duties or quotas or other procedures should be increased that will increase tax revenue and lessen the inclination of purchasing imported products more. The paper recommends studying advance about the reasons of excess import demand that will be effective to implement the new policy.

The conclusion of the study may also require an assumption that the increase in the volume of GDP has the contribution of other factors like- 'technological change' which could be calculated as residuals in the economic growth model. Since this study could not cover the whole aspect of the problem under consideration, because of its limited scope, advance reading in this area is suggested. Furthermore, the impact of import on economic growth of Bangladesh can be evaluated more in future. In sum up, the remarkable optimistic relationship between export and economic growth is established in case of Bangladesh whereas the pessimistic relationship is obtained for the import.

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