# The Dynamics of Relationship among Export, Import and Economic Growth in Bangladesh

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**Abstract:** Import and Export can be used to determine the productivity of a country. Besides, GDP (Gross Domestic Product) is an indicator of economic development. In this paper,the causal relationship among the per capita GDP, Import and export in Bangladesh using Co-integration, ADF and Vector Error Correction Model with a data set of 1979-2018 has been explored. The results indicate that there are long term and short-term relationshipsamong variables. Export directly affects GDP and import indirectly affects GDP. The results suggest that both import and export has a positive impact on GDP and there is a huge opportunity to improve the economic condition. The findings have significant implications from the point of view of the economic and financial development in Bangladesh.

*Key words:* Import, Export, GDP, ADF Test, Johansen Test, VECM, Casual relationship

## I.    Introduction

Import and export are vital elements for a country to meet its daily obligation and economic development. In this world, every country depends on another country because not all countries have the resources and skills needed to produce specific products and services. Bangladesh is a developing country with a huge population for meeting daily demand and hence must import raw materials from other countries. Bangladesh imports dairy products, machinery, and raw materials, on the other hand exports mainly the Ready-Made Garments (RMG) products. Bangladesh made its highest exports so far in January 2019 which amounts to BDT 465.30 billion on the otherhand the highest export of Bangladesh is BDT 279.82 billion occurred in July 2019 and the difference between export and import is huge. GDP has also reached 347.991 billion in 2019. However Bangladesh has toovercome this situation to develop its economic situation. The low cost manpower and availability of resources increase the opportunity to improve its economic condition in Bangladesh.

## II.    Literature Review

Ahmed& Uddin(2009) stated thatexport & remittance has a short-run influence on GDP growth. Besides export enhances in the long run &import does not influence GDP or export growth. Akhter(2015) explored that export

has shown affirmative relation with economic growth, on the other hand import has a negative relation. Hoque& Yusop(2010) found that the liberalization of trade by reducing the tariff on imports substantially increases overall imports in the short term but is significant in the long run. Trade liberalization using the simplification of the non-tariff system has significant but less positive effects on overall imports in long term. Halder(2019) stated that export & import both have positive impact on GDP growth rate but another factor like exchange rate and inflation doesn't impact on GDP growth rate. Hossain& Dias(2004) suggested that both total exports and production exports have had a positive and statistically significant impact both in the long run and in the short term. Sarker(2018) described that total export and manufacture export have an opposite relationship and manufacturing export is the main determination of export in Bangladesh. Shimu& Islam(2018) analyzed that for the rise of each unit of growth rate, inflation rate, real interest rate and the female unemployment rate, the growth rate of RMG export reduces by 1.159, 0.055, 0.034, and 0.068 units respectively. Rana& Biplob(2019) found that for the rise of international trade and GDP growth, exchange rate hesitation raised by none the less for the increase in remittance reduction and the exchange rate volatility. They did not get any serial correlation in their Q-statistics. Hasanet al. (2017) found that in the short run their variableswere very insignificant and they suggested that Bangladesh should execute their upcoming policy; Power System Master Plan (PSMP) properly for increasing GDP. Islam(2019) described that the over-reliance on ready-made garment exports is seen as riskywhile on the other hand, a more balanced growth model with different types of exports seemed plausible. Miyanet al. (2019) explored that the inefficiency of GDP growth rate, in the long run, is fixed or adjusted by 24% in the short term according to the following year. Further, research has shown that short-term effectiveness goes from export to economic growth and economic growth to import. Keho(2017) analyzedexport-led growth hypothesis for a long time using the total GDP. In contrast, when non-exporting isconsidered while determining GDP, exports are the cause of economic growth both in the short and long term. The findings suggest that export promotion policies will contribute to the economic growth of Bangladesh.

## III.        Objectives

Thispaper intends to determine the opportunities for economic development in Bangladesh by analyzingthe variables (export, import and GDP). The relationship among the dependent variable (GDP) and the independent variables (import, export) are analyzed and how they make an impact on GDP was explored. This analysis is based on world bank data (1979-2018) of Bangladesh by employing the ADF test, Johansen test, VECM, Cusum and Cusum Square Modelto explore the long-run relationship among import, export and GDP in Bangladesh. This paper suggests few remedial measures for improving the economic condition of Bangladesh during the analysis period.

## IV.        Methodology

This paper is a time series analysis, it's qualitative in nature, whereas data is quantitative. Secondary data, collected from World Bank website have been used. ADF test has been applied to determine the stationary state of the data set. The Johansen test has been used to test the long-term relationship among variables (GDP, Import and Export). ECM, Cusum and CUSUMQ tests have been applied to test the stability of the relationships among variables.

## V.        Results and Discussions

Augmented Dicky Fuller (ADF) Unit Root Test suggestedthat null hypothesis was failing to reject. Because (Table 01) the test statistics are greater than the critical test which means data are stationary. The graph (Figure 01)of data is constantly in mean 0.05 which directly indicates that data is stationary.

**Table01: Augmented Dicky Fuller (ADF) Unit Root Test**

| Null Hypothesis: D(GDP,2) has a unit root | | | | |
|---|---|---|---|---|
| **Exogenous: Constant** | | | | |
| **Lag Length:** 0 (Automatic - based on SIC, maxlag=9) | | | | |
| | | | **t-Statistic** | **Prob.*** |
| **Augmented Dickey-Fuller test statistic** | | | -7.094902 | 0.0000 |
| **Test critical values:** | 1% level | | -3.621023 | |
| | 5% level | | -2.943427 | |
| | 10% level | | -2.610263 | |
| *MacKinnon (1996) one-sided p-values. | | | | |

*Source: Estimated*

**Figure 01:Augmented Dicky Fuller (ADF) Unit Root Test**

Log Differenced GDP
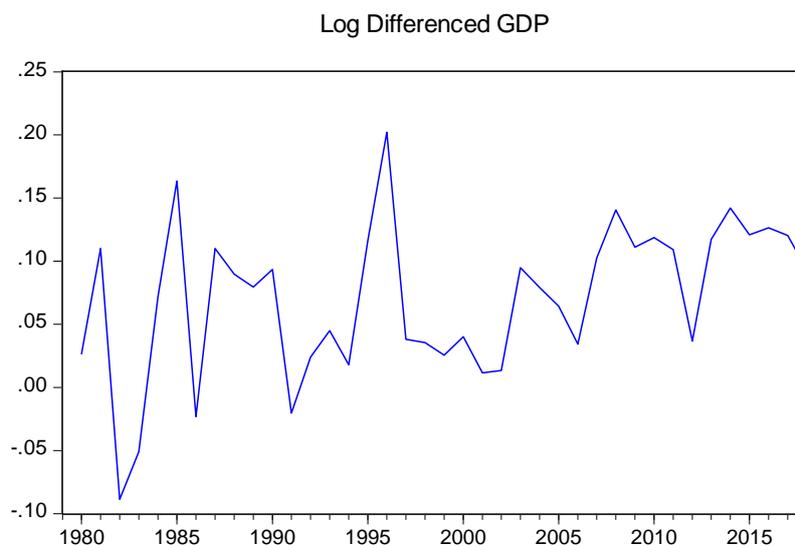


*Source: Estimated*

Johansen Test (Table 02) illustrates that there is a long-term relationship where at most two-co- integration equation exists. The trace value of null hypothesis at most 2 is (0.010754) which is less than 0.05 critical values. In the long run (Table 03) import has a negative impact whereas export has a positive impact. The coefficient is statistically significant at the 1% level.

**Table 02: Johansen Test**

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|---|---|---|
| **None *** | 0.68 | 66.26 | 29.80 | 0.00 | 43.62 | 21.13 | 0.00 |
| **At most 1 *** | 0.49 | 22.64 | 15.49 | 0.00 | 22.63 | 14.26 | 0.00 |
| **At most 2** | 0.00 | 0.011 | 3.84 | 0.92 | 0.012 | 3.84 | 0.92 |

*Source: Estimated*

**Table03: Johansen Test (Normalized Cointegrating Coefficients)**

| Normalized Cointegrating Coefficients(Standard Error in Parentheses) | | |
|---|---|---|
| **GDP** | **IMPORT** | **EXPORT** |
| 1.000000 | 0.000000 | -7.567828 |
| | | (0.42703) |
| 0.000000 | 1.000000 | -1.367967 |
| | | (0.02530) |
| **Adjustment Coefficients (Standard Error in Parentheses)** | | |
| **D(GDP)** | -0.197855 | -0.825192 |
| | (0.02413) | (0.64482) |
| **D(Import)** | 0.009798 | -2.487993 |
| | (0.02173) | (0.58062) |
| **D(Export)** | -0.023043 | -0.445016 |
| | (0.01364) | (0.36451) |

*Source: Estimated*

Vector Error Correction Model: As data is stationary and there is a long-term relationship, VECM is used to determine the stability. In a long-run relationship (table 4) 1%change in import increases 3.84% in GDP. Besides a 1% change in export increases by 6.42% GDP. The previous year deviation from long-run equilibrium is corrected at an adjustable speed of 9.46%. And in the short run relationship (table 5) a percent change in import is associated with a 0.152 % increase in GDP. Finally, a percent change in export is associated with a 1284 % increase in GDP.

**Table 04: Vector Error Correction Model (ECM)**

| Cointegrating Equation: | CointEq1 |
|---|---|
| **GDP (-1)** | 1.000000 |
| **Import(-1)** | -3.843134 |
| | (9.16785) |
| | [-0.41920] |
| **Export(-1)** | -6.422694 |
| | (12.0601) |
| | [-0.53256] |
| **C** | 54.18236 |

*Source: Estimated*

**Table 05: Vector Error Correction Model (ECM)**

| Error Correction | GDP | Import | Export |
|---|---|---|---|
| **Cointegrating Equation 1** | -0.094641 | 0.008383 | -0.013566 |
| **D(GDP(-2))** | -0.230682 | -0.058001 | -0.027585 |
| **D(Import(-2))** | 0.152550 | -2.155013 | -0.128696 |
| **D(Export(-2))** | 0.128032 | 3.544855 | -0.128696 |
| **C** | 0.152550 | -0.370674 | 1.268275 |

*Source: Estimated*

Import and export both have a positive impact on GDP. There are a strong short term and a long-term relationship among variables and CUSUM & CUSUM square test suggests thatdata is not stable over the year (1979-2018) because CUSUM square lies below 5% boundaries.

**Figure02: CUSUM Test**
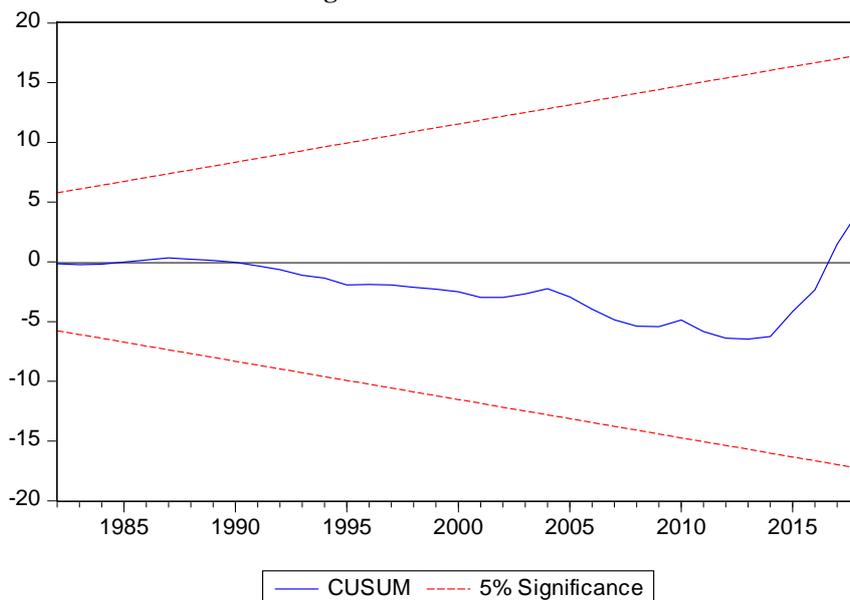


*Source: Estimated.*

**Figure03: CUSUMQ Test**
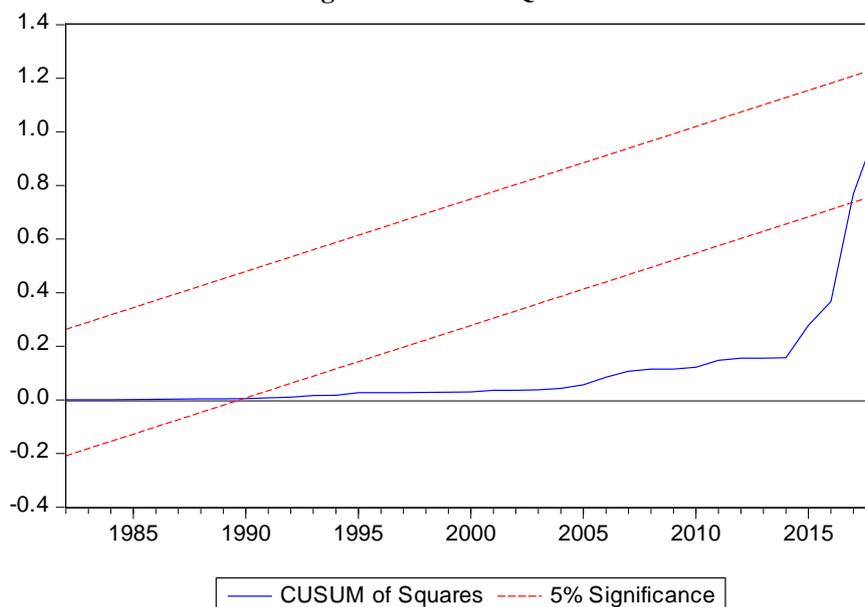


*Source: Estimated.*

## VI. Conclusions and Policy Implications

Import and export have a positive impact on economic development. GDP is an indicator of a country's development. In a country, if imports are greater than exports, it will bear a trade shortage. If it imports are less than exports, it generates a trade surplus. So a country should import less than its export. Exports are directly improving the economy whereas import indirectly improves the economy. Bangladesh is a developing country and its export mainly depends on RMG (Ready Made Garments) but most of the raw materials of RMG have to be imported from other countries. Thusboth import and export have positive impact on GDP of Bangladesh. The

findings suggest that Bangladesh can improve its economic condition by controlling imports and maximizing export. Bangladesh has a huge density of population and for this, it's hard to fulfill their demands. The export will happen if a country has a surplus and surplus will be determined if it properly uses its human resources. As further research direction or limitation of this study, it could be stated that the issues behind import, export, and GDP were not considered in this research.

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