




## CONTRIBUTION OF READY-MADE GARMENTS INDUSTRY ON THE ECONOMIC DEVELOPMENT OF BANGLADESH: AN EMPIRICAL ANALYSIS

 Shapan Chandra Majumder<sup>1</sup>

 Jannatul Ferdous<sup>2+</sup>

<sup>1</sup>Associate Professor Department of Economics, Comilla University Cumilla, Bangladesh.

Email: [scmajumder\\_71@yahoo.com](mailto:scmajumder_71@yahoo.com) Tel: +8801720875139

<sup>2</sup>Graduate Student Department of Economics, Comilla University Cumilla, Bangladesh.

Email: [zannat8146@gmail.com](mailto:zannat8146@gmail.com) Tel: +8801682828146



(+ Corresponding author)

### ABSTRACT

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The Ready-Made Garments (RMG) industry holds a strong position in boosting Bangladesh's economy through earning external currencies, contributing in Gross Domestic Product (GDP) and generating employment most notably. Secondary data based this study intended to draw the overall scenario and the growth trend of this industry, mainly to empirically analyze the contribution of ready-made garments industry on the economic development of Bangladesh. The results obtained from the Fully Modified Ordinary Least Squares (FMOLS) model reveal that, ready-made garments export significantly increases gross domestic product growth of Bangladesh. Results of Granger causality test affirmed the appearance of bidirectional causal association between gross domestic product growth and ready-made garments export. Though tremendous growth is achieved in last few decades, but some severe problems are prevailing in this sector those are highly responsible for the declining trend of the contribution of ready-made garments export to Bangladesh's gross domestic product for last five years. Therefore, it is highly recommended to take initiatives for attracting foreign direct investments, making investment friendly monetary and fiscal policies, minimizing dependency on foreign countries for technical and financial support and most importantly for ensuring the safety of workplace.

**Contribution/Originality:** The paper's primary contribution is finding that export of RMG has a significant positive impact on the economic development of Bangladesh employing FMOLS technique and this finding may be beneficial for the RMG industry to initiate imperative steps to produce international quality standard products for more export earnings.

### 1. INTRODUCTION

After achieving independence in 1971, many development thinkers supposed Bangladesh would remain locked in a 'below poverty level equilibrium trap' permanently. But this thinking proved wrong within a short space of time when Bangladesh is started to be attached with the intercontinental economy by way of its imports and exports; and factor and commodity markets with 40% degree of trade-openness. This fast growth of Bangladesh's economy is strongly powered by the RMG sector, which emerged in the late 1970's as one of the leading sectors of Bangladesh. The RMG industry has introduced Bangladesh to the earth through its tag, 'Made in Bangladesh' and become a multi-billion-dollar export industry of Bangladesh. Bangladesh has become a 'basketful of wonders' now,

which was once termed as a 'bottomless basket' by cynics (Rahman & Ehasan, 2017). Currently in the world market, RMG sector is known as the top representative of Bangladesh (Adnan, Rakib, & Rahman, 2015).

Bangladesh started to export ready-made garments products since 1976 (Rock, 2001). In transforming our country's economy, the contribution of this sector is noteworthy. It has accomplished a tremendous growth during last three decades and become the second largest garment exporter of world. RMG industry of Bangladesh was accounted for 84.21% of total exports in FY2018-19 (BGMEA, 2020). According to Robbani (2000) a giant position in Bangladesh economy has constructed by the RMG sector by endowing a substantial portion of foreign exchange earnings. This sector is contributing not only through foreign currency earnings, but also through employment generation most importantly and also performing a title role in women empowerment by creating employment options for them. About four million workers are now working in this sector, where 50 percent workers are rural illiterate. So, this sector is remarkably participating in economic development as well as in social development of Bangladesh.

The RMG sector, which is now considered as the heart of Bangladesh's economy because of its gigantic contributions to our gross domestic products. In FY1994-95, contribution of RMG exports to GDP was 5.87%, which increased to 16.57% in FY2012-13 (BGMEA, 2020). After then, this contribution has started to decline and is on a declining trend till now. In FY2017-18, the contribution of RMG exports to GDP is 11.17%, is the lowest among last consecutive five years, which is really disappointing. According to business experts and trade analysts, sluggish private investment, old-fashioned working way and lack of business diversification are crucially responsible for this negative trend in the RMG sector (TextileToday, 2019). Even Bangladesh's RMG exports to world is \$27949.19 million in FY2019-20, which also decreased from previous fiscal year 2018-19, when its figure was \$34133.27 million (BGMEA, 2020). RMG exports to world feared to fall about \$10 billion in 2020 because of Covid-19 pandemic (The Business Standard, 2020). In January-April, 2019 the RMG export earning was \$11.40 million, but it also came down to \$8.45 million in January-April, 2020 (The Business Standard, 2020). In this circumstances, it is getting uncertain day by day whether it will be possible or not to achieve \$50 billion export earnings target from this sector by 2021 which was targeted by the government previously.

Inadequate and poor infrastructural and seaport facilities are the mentionable obstacles currently facing our RMG sector (Rahman & Anwar, 2007). Several issues such as, conflicts between RMG industry owners and employees, workforce safety, shortages of electricity and gas supply and emerging rivals in the quota-free international trade market are also identified by Islam, Rakib, and Adnan (2016). Rising concern for sustainability and profitability, are the biggest upcoming threats for the RMG sector of Bangladesh. Furthermore, too much dependency on the RMG sector can be a harmful phenomenon for Bangladesh's economy. Despite many difficulties facing this sector, it is continued to show its robust performance. Cheap labor, favorable trade policies and special incentives on foreign investment are the remarkable reasons lying behind the foreign investors' interest of investment in Bangladesh. In 2016, the RMG sector received \$489.67 million total foreign direct investment (FDI), which was \$230 million in 2008. The well-known contribution of RMG sector to Bangladesh economy is highly-appreciable. To save our economy, greater initiatives should be taken to settle down the problems and challenges are currently facing this sector.

The notability of the ready-made garments industry is sky-scraping in economy of Bangladesh as it is accelerating its economic growth. In the above background, this study attempts to examine the contribution of RMG industry in the economic development of Bangladesh empirically over the period 1984-2019 by implementing some econometric approaches covering unit root test, cointegration test. FMOLS method is used to get the measure of long-run elasticities of the parameters. The specific objectives are; to show the history and current situation of RMG sector in Bangladesh and to render some suggestions that may be helpful to overcome the current problems of the ready-made garments industries of Bangladesh. Most of the existing research papers relevant to this study topic are descriptive and authors have perceived a little number of literatures where the authors strived to test the

relationship between export of RMG and economic growth empirically. The motivation worked behind undertaking this study is to empirically investigate whether there exists positive association between export of RMG and economic growth.

After examining, the study has detected a significant positive influence of RMG export on economic growth of Bangladesh and also found bidirectional causal link between them. Based on these empirical findings, it can be recommended to stimulate the production of ready-made garment products maintaining international quality standard for export earnings. Quality of products have to be upgraded as well as increasing the quantity, because not quantity, it is quality which works as a weapon for attracting foreign investment and export order. Hence, this study may contribute to the literatures and may deliver imperative messages to the policy formulators and government of Bangladesh to initiate plausible measures to protect the lifeline of the economy of Bangladesh. The remainder of the paper is structured as follows. An overview of RMG sector of Bangladesh is presented in section 2. Findings of relevant literatures are presented in section 3. Section 4 describes the empirical model specification and data. Methods of empirical analyses are described in section 5. Section 6 discusses empirical results. Some recommendations are provided in the section 7 and the paper is concluded in section 8.

## 2. OVERVIEW OF RMG SECTOR OF BANGLADESH

RMG sector inaugurated as a small non-traditional export sector in Bangladesh in late 1970s. In 1974, the first garment industry established in Dhaka. In the time of beginning, only 9 garments industries were in our country. Reaz Garments, Jewel Garments and Paris Garments were the three largest industries at that time. Later, 'Desh Garments' was established as the first well-planned industry in 1978 in Chittagong. From 1980 Bangladeshi RMG industry did not need to look back. Under private sector, 50 factories were there in 1983 and over the last three decades the number of RMG factories has enlarged. Most of the factories are locally owned and about 1% of these factories are operating under the export processing zones (EPZ) located in Dhaka and Chittagong city.

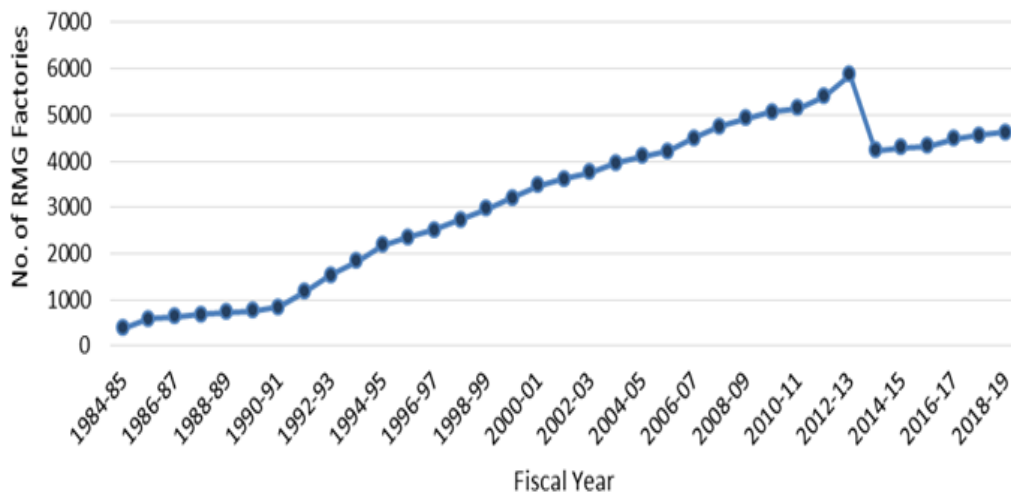


Figure-1. Growth Trend of RMG Factories in Bangladesh from FY 1984-85 to FY 2018-19.

Figure 1 portrays the RMG factories growth trend in Bangladesh from FY 1984-85 to FY 2018-19. In FY 1984-85, total number of garment factories was 384 which have risen to 4621 in FY 2018-19. This frequent growth is substantially promoted by the Multi Fiber Agreement (MFA) under the Uruguay round of GATT in 1994, dynamic business approaches and protective trade policies of the government of Bangladesh (Hasan, 2013). The MFA-quota brought a blessing to this industry.

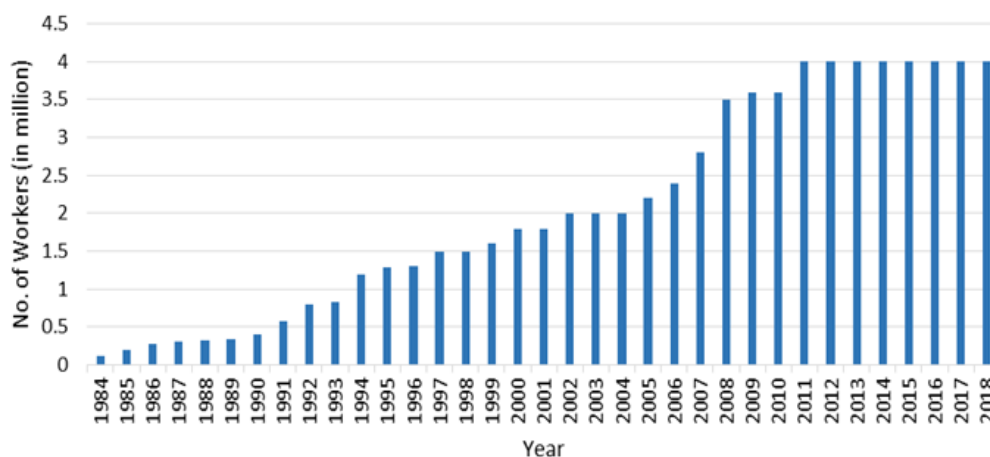


Figure-2. Number of Workers Employed in RMG Sector in 1984-2018.

RMG sector has created huge employment opportunities for the job-seekers. In the time of beginning, its workers were around 0.12 million and currently around 4 million workers are employing in this sector. Figure 2 illustrates growth trend of the workers' in RMG sector.

RMG sector of Bangladesh is utterly export-oriented. USA, Canada and member countries of European Union are the major importer of ready-made garments products of Bangladesh. In these countries, Bangladesh is now known as a small country with a strong appearance (Bhattacharya, Rahman, & Raihan, 2002). These three markets import a significant portion of the country's RMG products alone because of the GSP facilities rendered by the European Union. In FY 2017-18, RMG export has risen by 10.58% to the EU which amounted to about \$19.62 billion. Bangladesh has exported total \$25.94 billion to these three countries in FY 2018-19, which was approximately 76% of total RMG export of that fiscal year. Table 1 captures some of these amounts of export earnings.

Table-1. Total RMG export (million US\$) of Bangladesh to major markets.

Country/Market	Total Export (in million US\$)		
	2016-17	2017-18	2018-19
EU Countries	17750.60	19629.02	21133.08
USA	5204.01	5352.07	6133.72
Canada	946.30	963.15	1179.30

There are although some other countries and non-traditional or emerging markets those also import ready-made garments products from Bangladesh. RMG exports to these emerging markets are rising by around 10% year-on-year because of 4% cash incentives on export to these markets and duty-free market access in China and Japan. Among these emerging markets, 11 countries; Australia, Brazil, China, Chile, India, Japan, Mexico, Russia, South Korea, South Africa and Turkey are the most prospective export destinations for Bangladesh.

Over the last few years, the RMG sector's contribution to Bangladesh's total export has experienced a phenomenal growth and it is regarded as one of the top-rank exports earning sectors of Bangladesh now. In fiscal year 1983-84, its contribution to total export was 3.89%, which has surged to 84.21% in the last fiscal year. Figure 3 shows this growth trend of contribution.

The RMG industry of the country is a dominant sector which is one of the biggest contributors to GDP of Bangladesh. According to BGMEA, total GDP of Bangladesh was TK22,504,793 million, in which, contribution of the RMG sector was TK2,513,471 million in the fiscal year of 2017-18. But for the last five years, the contribution of RMG sector to Bangladesh's GDP has been going down sharply. Figure 4 shows the percentage of RMG sector's contribution to GDP of Bangladesh. As captured in Figure 4 during FY2012-13, RMG sector's contribution was 16.57% to GDP which has declined by about 5% and contributed 11.17% to GDP in the fiscal year of 2017-18.

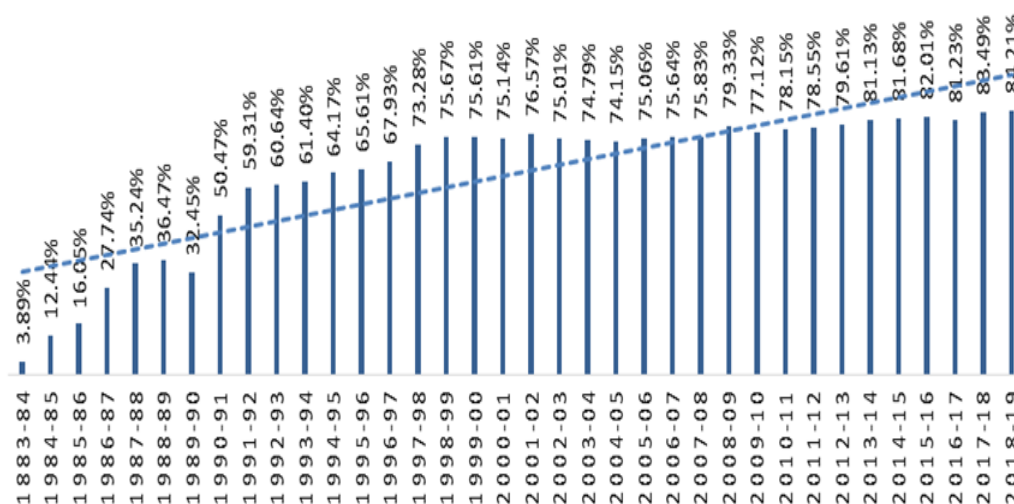


Figure-3. % of Contribution of RMG Export in Total export from FY 1983-84 to FY 2018-19.

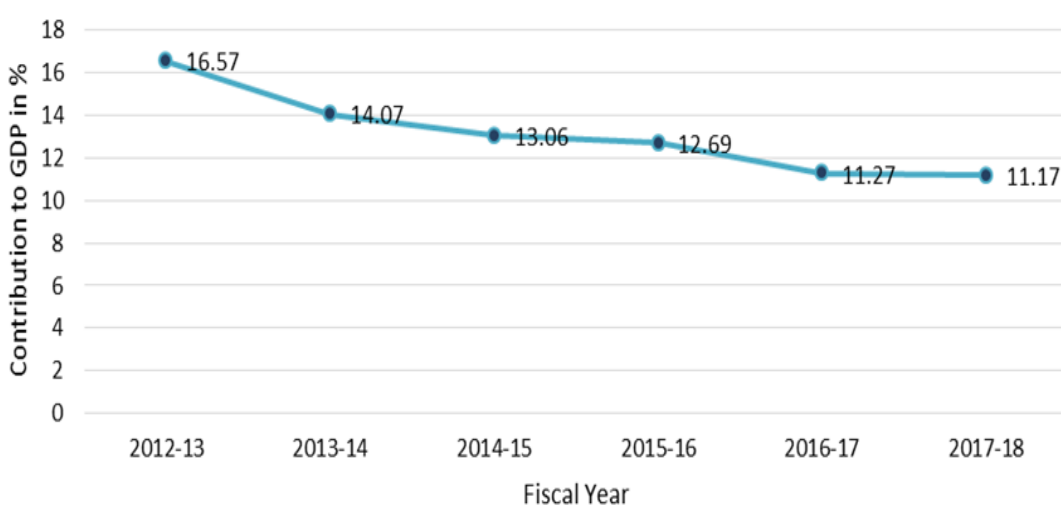


Figure-4. RMG sector's contribution to GDP (%) from FY 2012-13 to FY 2017-18.

### 3. LITERATURE REVIEW

Different researchers have analyzed the RMG sector from the different standpoints. This section tried to render a brief inspection of previous theoretical and empirical studies relevant to this topic and to exhibit the overall scenario and contribution of the RMG sector of Bangladesh to its economic development.

Islam (2020) has explored the contribution of ready-made garments exports earning to economic growth in Bangladesh using time-series annual data from 1986 to 2018. The study applied ARDL bound testing approach and pairwise Granger causality test. The obtained results reveal that, the RMG exports earning has a significant positive impact on economic growth both in the short-run and long-run and a unidirectional causality is stemming from RMG exports earning to economic growth.

Hasan, Mia, Rahman, Ullah, and Ullah (2016) statistically analyzed the impact of RMG export growth to GDP growth of Bangladesh for period 2004-2014 and it is evidenced that, RMG export has positive association with GDP growth of Bangladesh. The authors also said RMG industry is contributing in a distinctive manner to the GDP, foreign exchange earnings, employment generation and industrialization of Bangladesh.

Hossain (2019) investigated the growth and contribution of RMG sector of Bangladesh by gathering data from secondary sources and conducting structural interviews. The author has stated that, this sector is facing hindrances regularly but still growing promptly. Thus the study recommends to take imperative initiatives for the development of this sector by government and other regulatory authorities.

According to Rahman, Habibullah, and Abdullah-Al-Masum (2017) RMG sector is functioning as a catalyst for achieving the sustainable development of Bangladesh since long time and is contributing to country's GDP remarkably. It also keeping a significant role in the improvement of other economic sectors like; railway container services, insurance, banking, tourism etc. They referred RMG industry as a springboard for Bangladesh's national development. The study also identified several structural problems like; lack of road and transportation facilities, inadequate energy supplies, low pressure of gas etc. Similar problems are also identified by Chowdhury, Ali, and Rahman (2005); Rahman and Anwar (2007) and Islam, Faruk, Khatun, and Rahman (2014). Another study by Clark and Kanter (2011) found that, the efficiency level of Bangladeshi RMG workers is not accordance to international level.

Hossain, Noor, Khan, and M. (2016) recognized RMG sector as the backbone of Bangladesh economy which is has raised as the largest foreign currency earner over the last three decades and enacting a key role in the socio-economic impairment of Bangladesh.

Islam et al. (2016) conducted a descriptive research based on the existing literatures. They reveal that, the RMG industry is contributing in a significant manner to the human development and economic development of Bangladesh for the last three decades. The study referred this sector as an important contributor towards the economic growth of Bangladesh. This study also identified some obstacles like; lack of energy resources, inexpert managerial system, weak infrastructural facilities etc. are confronting by RMG sector. Berg, Hedrick, Kempf, and Tochtermann (2011) mentioned weak infrastructures, compliance issues, labor inefficiency, deficient backward linkages and political and economic volatility as the five major challenges for Bangladesh's RMG sector. While, Chowdhury, Ahmed, and Yasmin (2014) pointed major challenges such as shortages of oil and gas, dependency on the imported raw material, inefficiency of the suppliers, low productivity of labor, high rate of interest and skimpy bank finance within the country.

Adnan et al. (2015) accomplished a study to explore the different dimensions of export performance of Bangladesh's ready-made garment industry based on secondary information and the results of the study reveal the absolute supremacy of the RMG sector over the other sectors of Bangladesh. The study has also revealed that, Bangladesh has been exporting low value based products for the most part and most of the products supplied to the EU and USA market. Sattar (2015) has showed how the development of the ready-made garment (RMG) industry is successfully shifting Bangladesh to a major export-oriented economy.

Robbani (2000) observed that, a significant segment of the earnings from foreign exchange came from RMG sector and its contribution is noteworthy towards the development process of Bangladesh. Similar statement also came from Rahman (2002) who said that, the growth of RMG exports is positively influencing the macroeconomic balances of Bangladesh.

Hossain and Hosoe (2017) demonstrated that, an increase in FDI inflow in the RMG sector of Bangladesh promotes both output and exports which further contribute to growth of Bangladesh.

There are a huge number of existing literatures relevant to this study topic, but most of these papers analyzed the contribution of RMG industry on the economic development of Bangladesh in a descriptive manner. To the best of the authors' knowledge, there is a very small amount of empirical works relevant to this concerned topic on Bangladesh perspective does exist. Thus, this empirical study will try to contribute something new to the existing literatures and to provide consistent empirical results which may be helpful for policy formulators in their policy making for the betterment of this sector.

#### 4. EMPIRICAL MODEL SPECIFICATION AND DATA

The bi-variate empirical model used in this study to analyze the contribution RMG industry in economic development of Bangladesh can be formed as follows:

$$LGDPG_t = \beta_0 + \beta_1 LERMG_t + \varepsilon_t \quad (1)$$

In Equation 1, the subscript t denotes the time period,  $\varepsilon_t$  is the error term of residuals,  $\beta_0$  is the intercept and  $\beta_1$  is the elasticity of parameter to be estimated. The dependent variable LGDPG refers to GDP growth, measured in terms of annual %, used as proxy for economic development. The independent variable LERMG means export of RMG, measured in million US\$, used as a proxy to measure the contribution of RMG industry and it is expected to depict a positive association with GDP growth. L means natural logarithm. Both the variables are transformed into their natural logarithmic form to generate more accurate and empirical results.

The study has used annual data from 1984 to 2019 for Bangladesh. Only the secondary sources are utilized to collect necessary information and data. Data of GDP growth (annual %) are retrieved from World Development Indicators (WDI) database 2020 and data of export of RMG (in million US\$) are gathered from the annual report 2020 compiled by BGMEA from the data provided by Export Promotion Bureau (EPB). The other secondary sources include articles of government, online articles and newspapers and journal research papers. Table 2 provides the descriptive statistics for 36 observations and correlative matrix of considered variables. It is realized from Table 2 that, both the variables are negatively skewed and are leptokurtic because of their kurtosis value being greater than 3. The pair-wise correlation matrix confirms a strong positive correlation between the variables.

Table-2. Descriptive statistics and correlative matrix of the variables.

Descriptive Statistics (1984-2019)						
Variables	Mean	Std. Dev.	Minimum	Maximum	Skewness	Kurtosis
LGDPG	1.636	0.279	0.882	2.104	-0.649	3.190
LERMG	8.183	1.464	3.452	10.438	-0.798	3.010
Pair-wise Correlation						
			LGDPG			LERMG
LGDPG			1			
LERMG			0.738			1

## 5. METHODOLOGY

### 5.1. Unit Root Test

To know in which order the two variables considered in the empirical model are integrated, it is imperative to check the unit root problem. Amongst available tests for testing the unit root problem, Augmented Dickey-Fuller (ADF) unit root test (Dickey & Fuller, 1979) has been applied in econometric literatures widely. This paper applies the ADF test considering trend and without trend. This test is performed under the null hypothesis of containing unit root problem and the alternative hypothesis of no unit root problem. The equations of ADF tests with intercept and no trend and also with intercept and trend are specified as follows:

$$\Delta Y_t = \delta_0 + \delta_1 Y_{t-1} + \sum_{i=1}^k \alpha_i \Delta Y_{t-i} + \mu_t \tag{2}$$

$$\Delta Y_t = \delta_0 + \delta_1 t + \delta_2 Y_{t-1} + \sum_{i=1}^k \alpha_i \Delta Y_{t-i} + \mu_t \tag{3}$$

In Equations 2 and 3, t and k indicate the time and the numbers of lags respectively.  $\Delta Y_{t-i}$  stand for the 1<sup>st</sup> difference form of the variable with number of lags k. The term  $\mu_t$  balances the errors of autocorrelation and  $\alpha_i$ ,  $\delta_0$ ,  $\delta_1$  and  $\delta_2$  are the parameters to be estimated.

5.2. Cointegration Test

After identifying level of integrations between the variables, it is necessary to check the cointegrating association between the variables taken into the empirical model to estimate the long-run relationships. This study employs Johansen cointegration test (Johansen, 1988; Johansen, 1991) assuming that, there is no cointegration as null hypothesis and there is cointegration as alternative hypothesis. The equation of the test can be specified in the following form:

$$\Delta Y_t = \mu + \sum_{i=1}^k \Gamma_i \Delta Y_{t-i} + \Pi Y_{t-1} + \varepsilon_t \tag{4}$$

In Equation 4,  $\mu$  is a  $(P \times 1)$  vector of constant terms;  $\Delta$  is the difference operator,  $Y_t$  is the  $(P \times 1)$  vector of the used variables in the model,  $\Gamma$  and  $\Pi$  are the  $(P \times P)$  coefficients matrix and  $\varepsilon_t$  is a  $(P \times 1)$  vector of disturbance term. This test is performed based on two tests, one is trace test ( $\lambda_{Trace}$ ) and another is maximum Eigen values test ( $\lambda_{Max}$ ).

5.3. Regression Analysis

Using the Fully-Modified Ordinary Least Squares (FMOLS) model introduced by Phillips and Hansen (1990) the long-run elasticities have been estimated. This approach is appropriate for estimation if it is found that, all the variables are integrated in first difference,  $I(1)$  and can give consistent results in case of small sample. This technique is able to handle serial correlation issue, problem of omitted variable biasness, endogeneity and the issue of measurement errors. According to Adom, Amakye, Barnor, and Quartey (2015) the FMOLS estimator can be expressed as follows:

$$\hat{\theta}_{FMOLS} = \left( \sum_{t=1}^T Z_t Z_t' \right)^{-1} \left( \sum_{t=1}^T Z_t Y_t^+ - T \begin{bmatrix} \lambda_{12}^+ \\ 0 \end{bmatrix} \right) \tag{5}$$

In Equation 5 the terms  $Y_t^+$  and  $\lambda_{12}^+$  are the correction terms for the problem of endogeneity and serial correlation.

5.4. Diagnostic Tests

Some diagnostic tests are also done for confirming how robust the regression model is. This study has applied Breusch-Pagan-Godfrey heteroscedasticity test to detect heteroscedasticity problem. Further, Breusch-Godfrey serial correlation LM test is also performed for testing serial correlation problem. Jarque-Bera (JB) test is used to test normality of the error terms. To know whether regression model is stable or unstable, CUSUM test and CUSUM of Squares test are applied.

5.5. Causality Analysis

To evaluate casual linkages between the variables, pair-wise Granger causality test (Granger, 1969) is done based on the following equations:

$$\Delta Y_t = \gamma_0 + \sum_{z=1}^k \gamma_z Y_{t-1} + \sum_{z=1}^k \lambda_z X_{t-1} + \mu_t \tag{6}$$

$$\Delta X_t = \delta_0 + \sum_{z=1}^k \delta_z X_{t-1} + \sum_{z=1}^k \Psi_z Y_{t-1} + v_t \tag{7}$$

where, in Equation 6 the null hypothesis,  $H_0: \lambda_1 = \lambda_2 = \dots = \lambda_z = 0$ , interprets that, X does not Granger Cause Y. Similarly, the null hypothesis,  $H_0: \Psi_1 = \Psi_2 = \dots = \Psi_z = 0$  in Equation 7 means that, Y does not Granger Cause X.



X. If null hypothesis is rejected, it will be the confirmation of the existence of causal association between the variables.

## 6. RESULTS AND DISCUSSIONS

The findings obtained from the unit root test of ADF are documented in Table 3 and the results confirm that, the variables taken into the empirical analyses are stationary at 1<sup>st</sup> difference, I(1).

Table-3. Results of unit root tests.

Variables	Level, I(0)		1 <sup>st</sup> difference, I(1)	
	Intercept	Intercept and Trend	Intercept	Intercept and Trend
LGDPG <sub>t</sub>	-1.165	-3.206	-4.983*	-4.843*
LERMG <sub>t</sub>	-3.198	-2.959	-5.216*	-5.000*

Note: The optimal lag selection is based on AIC; \* denote statistical significance of t-statistic at 1% level.

Table 4 displays the results of the selection of optimal lag length and optimal lag 1 is found from the results.

Table-4. Results of tests for lag length selection.

Lags	LogL	LR	FPE	AIC	SC	HQ
0	-42.411	NA	0.051	2.692	2.782	2.722
1	42.472	154.333*	0.000	-2.242*	-1.938*	-2.119*
2	46.992	7.67	0.000*	-2.21	-1.788	-2.089

Note: \* indicates the lag order selected by the criterions. LR: Sequential Modified LR Test Statistic (each test at 5% level); FPE: Final Prediction Error; AIC: Akaike Information Criterion; SC: Schwarz Information Criterion; HQ: Hannan-Quinn Information Criterion.

After being confirmed that, the series are integrated of order 1, Johansen cointegration test has been carried out to find out the long-run cointegrating association between the variables. Outputs derived from the Trace test and Maximum Eigen Value test are given in Table 5. The findings of both tests demonstrate that, there exists two cointegrating equations significant at 5% level which confirm the attendance of long-run cointegrating association between the variables.

Table-5. Results of Johansen cointegration test.

Trace Test				Maximum Eigenvalue Test			
Null Hypothesis	Alternative Hypothesis	Test Statistic	5% Critical Value	No. of Cointegrating Equations	Test Statistic	5% Critical Value	No. of Cointegrating Equations
r = 0	r = 1	37.604**	15.494	2	28.311**	14.265	2
r ≤ 1	r = 2	9.293**	3.841		9.293**	3.841	

Note: r refers to the number of cointegrating equations; the optimal lag selection is based on AIC; \*\* denotes statistical significance at 5% level.

The estimated long-run elasticity of GDP growth with respect to export of RMG using bi-variate FMOLS model for Bangladesh are illustrated in Table 6. LGDPG is dependent variable. The estimated coefficient value attached to LERMG means that, other things held constant, if export of RMG (in million \$US\$) surges by 1%, it leads to 0.136% acceleration in GDP growth (annual %) on average, ceteris paribus. The result is statistically significant at 1% significance level. It suggests that, RMG export is positively linked with GDP growth of Bangladesh. This result is accordant with the findings of Islam (2020) and Islam et al. (2016). To check the robustness of the results retrieved from FMOLS estimator, Dynamic Ordinary Least Squares (DOLS) approach is also used. The results of the DOLS estimator affirm the robustness of the long-run elasticity value attached to LERMG in terms of sign and statistical significance. So, it can be asserted from the findings that, RMG industry has a marked positive contribution in economic development of Bangladesh. For the FMOLS approach, the obtained value of R-squared 0.649 implies that, 64.9% variation in the dependent variable (LGDPG) is explained by the given

independent variable (LERMG). So, this variable is dominant, as it is able to interpret more than 50%. The adjusted R<sup>2</sup> value is 0.639 conveys that, 63.9% variation in dependent variable (LGDPG) is explained by the given independent variable (LERMG), adjusted for degrees of freedom.

Table-6. Results of the long-run elasticities.

Estimators	FMOLS	DOLS
LERMG <sub>t</sub>	0.136* (0.019)	0.198* (0.029)
Constant	0.525* (0.164)	-0.172 (0.298)
R-squared	0.649	0.705
Adjusted R-squared	0.639	0.663
Observations	35	33

Note: The optimal lag selection is based on AIC; the standard errors are given in the parentheses; \* denotes statistical significance of t-statistic at 1% level.

Results of diagnostic tests are given in Table 7. Result of Breusch-Pagan-Godfrey test of heteroscedasticity portray that, there is no heteroscedasticity problem. From this finding, it can be concluded that, the independent variable is a meaningful predictor of data in case of this study. The result obtained from Breusch-Godfrey serial correlation LM test confirms that, variables do not possess any serial-correlation problem. Jarque-Bera test result indicates that, the J-B statistic is 0.9174 and under the normality assumption, the probability of obtaining such a statistic is around 62%, which is quite high. That means error terms are distributed normally.

Table-7. Results of the diagnostic tests of the residuals.

Test Statistics	LM ( $\chi^2$ )
Breusch-Godfrey Serial Correlation	0.5107
J-B Normality Test	0.6241
Breusch-Pagan-Godfrey Heteroscedasticity	0.6410

Figure 5 is indicating the stability of regression model. The coefficients of the regression are not changing systematically because the plot of the regression equation represented by the blue line is within 5% significance interval. Figure 6 is also indicating the stability of regression model. CUSUM of squared residuals plot pertaining the regression equation is within 5% critical bounds of parameter stability, which is alluding that, the regression coefficients are not changing abruptly.

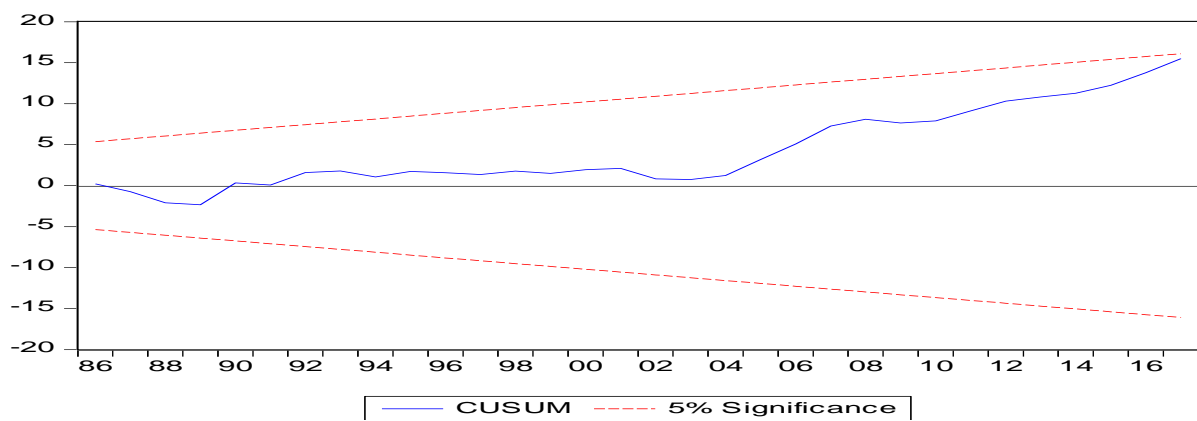




Figure-6. Cumulative sum of squared residuals.

Findings of pairwise Granger causality tests in Table 8 display that, bidirectional causal link is present between GDPG and ERMG at 1% significance level. That means, export of RMG causes GDP growth and export of RMG also caused by GDP growth. But this result contradicts the result found by Islam (2020) who detected a unidirectional causality stemming from export of RMG to GDP growth.

Table-8. Results of pairwise granger causality tests.

Null Hypothesis	F-Statistic	Probability	Direction of causality
LERMG does not Granger Cause LGDPG	18.773	0.0001	Bidirectional Causality
LGDPG does not Granger Cause LERMG	14.400	0.0006	LGDPG↔LERMG

Note: Optimal lag selection is based on AIC.

## 7. RECOMMENDATIONS

Based on these empirical findings, some recommendations are mentioned here which may be helpful for the ready-made garments sector to attain the goal of sustainable development and to overcome confronting lacking and challenges within a short space of time. Production of ready-made garment products maintaining international quality standard for export earnings have to be encouraged. The RMG industry owners should pay attention to worker’s welfare and safety. Sound infrastructure facilities are to be set up. Conventional trade policies should be changed. Investment-friendly fiscal and monetary policies have to be structured to minimize the overburden of existing and probable domestic and foreign investors. Business and product diversification, proper train-up, increasing labor productivity and counselling the workers are urgent. Some initiatives for training and research work to innovate new product ideas need to be taken especially by the BGMEA. Private sector investments should be encouraged by offering financial support at a lower interest from financial institutions. Branding RMG have to be Centre of attention of the RMG industrialists. Government should give special attention to this sector and subsidy facilities to attract foreign direct investments for the potential development of the RMG sector of Bangladesh.

## 8. CONCLUSIONS

This paper has attempted to empirically look over the contribution of RMG industry to the economic development of Bangladesh. From this study, it is now empirically proved that, how much significant the contribution of RMG export to the development process of Bangladesh. Even with the impressive growth of RMG industry and its dazzling prospects, many issues are prevailing there. One of the massive challenges currently faced by this sector is to make sure the work-place security for the workers and to ensure better working place for the millions of female workers. Special emphasize is crucial for this sector. Trade policy reforms should be undertaken

and properly implemented to preserve the potentials of Bangladesh's RMG industry and to achieve the development goals, most importantly to come out of poverty and under-employment. Now it is the responsibility of the industrialists, business leaders and the government to protect RMG sector which has paved the way to make a strong economic ground of Bangladesh and generated a huge amount of job opportunities for millions of rural and illiterate people, especially for women.

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