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Readymade Garments (RMG) Sector and Its Contribution to Bangladesh's Export Earnings: An Empirical Study

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ABSTRACT: The Ready-Made Garments (RMG) sector is the main engine of Bangladesh's export-led growth. It contributes more than 80% of total export earnings and creates large-scale employment, especially for women. This study examines how RMG exports affect Bangladesh's total export earnings during FY1990–91 to FY2024–25. The key objectives are to measure the extent to which RMG exports drive total export growth, analyze the trend and persistence of RMG's share in exports, test the long-run relationship between RMG and total exports, and evaluate the stability of this relationship over time. The study employs a quantitative research design using secondary time-series data sourced from the Export Promotion Bureau, Bangladesh Bank, Bangladesh Bureau of Statistics (BBS), and the Bangladesh Garment Manufacturers and Exporters Association (BGMEA). The analytical framework integrates descriptive trend analysis, a log-linear regression model, and econometric techniques including the Augmented Dickey-Fuller (ADF) test, Autoregressive Distributed Lag (ARDL) model, Error Correction Model (ECM), and stability diagnostics. Empirical results show that the long-run ARDL coefficient (0.956, $p < 0.01$) and the short-run coefficient (0.947, $p < 0.01$) confirm a strong, positive, and statistically significant relationship between RMG exports and total export earnings. The ARDL bounds test ($F = 8.401$) and the error correction term (−0.436, $p < 0.01$) indicate a stable long-run cointegrating relationship, while the ECM results show that 43.6% of any short-term disequilibrium is corrected each year. Correlation analysis ($r = 0.982$) further supports a strong link between RMG and total exports, and stability tests confirm that this relationship is consistent over time. The study concludes that Bangladesh's export performance depends heavily on RMG. To ensure sustainable growth, export diversification and improvement in RMG competitiveness are essential.

KEYWORDS: Ready-Made Garments (RMG), Total Export Earnings, ARDL Model, ECM, Cointegration, Bangladesh

1.0 INTRODUCTION

The ready-made garments (RMG) industry has been the backbone of Bangladesh's export sector for more than four decades. It is playing a pivotal role in the country's economic transformation. In FY2024–25, Bangladesh earned US$39.35 billion from RMG exports, representing about 81.5% of total merchandise exports (US$48.30 billion) and contributing approximately 8.5% of nominal GDP. Employing nearly 3.5–4 million workers across roughly 3,500 factories. The sector stands as a cornerstone of employment generation, particularly for women, who constitute more than half of the total workforce. These figures establish the RMG industry not only as the primary engine of foreign exchange earnings but also as a driver of social transformation through job creation and women's empowerment. The emergence of Bangladesh's RMG industry can be traced back to the late 1970s, when the nation began shifting from an agriculture-based economy to a more industrialized structure (Majumdar & Ferdaus, 2020). In 1974, only nine factories were operating, including Reaz, Jewel, and Paris Garments (Hossain & Moon, 2014). Desh Garments, established in 1978 in Chittagong, marked the beginning of organized garment manufacturing (The Daily Star, 2015). Bangladesh exported its first consignment of apparel in 1978, earning just US$69,000 through Reaz Garments (Bhattacharya & Rahman, 2002). From these modest beginnings, the RMG sector has expanded dramatically—underpinned by the Multi-Fiber Arrangement (MFA). The establishment of Export Processing Zones (EPZs), and supportive trade policies—to become the world's second-largest apparel exporter after China (Chowdhury & Quaddus, 2015; Campaign, 2012; Hossain & Roy, 2016; Ferdous, 2015; Ahmed, 2009). The USA,

Canada, and EU countries are the main importers of Bangladesh's ready-made garment goods (Export Promotion Bureau, 2024). By implementing reforms and attracting foreign capital, the government has stimulated a market-oriented economy. Bangladesh is striving to expand and diversify its range of exports and target markets. The apparel sector is diverse, with its worth determined by yarn, cloth, design, standards, color, and brand. (BGMEA, 2023). Through its backward and forward linkage industries, the RMG sector has consistently brought dynamism to both exports and the local economy.

As of December 2024, the Mapped in Bangladesh (MiB) database lists 3,555 export-oriented factories. The sector comprises two main categories—woven garments (approximately 48%) and knitwear (about 52%)—with a robust network of backward linkages in textiles, accessories, and packaging (BGMEA, 2023). Its dynamism has been reinforced by government policy support such as bonded warehouse facilities, cash incentives, and favorable trade agreements, as well as preferential access to major markets like the EU, US, and Canada under the Generalized System of Preferences (GSP) and Everything but Arms (EBA) initiatives. The USA, Canada, and EU remain the primary destinations for Bangladesh's apparel exports (Export Promotion Bureau, 2024). The RMG sector's contribution to Bangladesh's exports has been monumental. In FY1983–84, RMG exports amounted to just US$31.57 million, accounting for 3.89% of total exports of US$811 million. By FY2024–25, this figure had risen to US$39.35 billion—representing 81.49% of total export receipts of US$48.28 billion (BGMEA, 2024). Beyond its direct economic contributions, the sector has generated significant multiplier effects through its forward and backward linkages, stimulating domestic industries such as textiles, transport, and packaging. Despite its remarkable success, Bangladesh's export base remains narrow and heavily concentrated in garments, making the economy highly vulnerable to external shocks, changing trade policies, and compliance requirements. This concentration risk is particularly significant as Bangladesh approaches graduation from the Least Developed Country (LDC) category in 2026. While the EU and UK will extend duty-free market access until 2029, Bangladesh may subsequently face tariffs of up to 10–12% on apparel exports unless new trade arrangements (such as GSP+) are negotiated. Such changes could reduce export competitiveness, undermine foreign exchange earnings, and strain the balance of payments. Furthermore, increasing competition from countries such as Vietnam and Cambodia, along with tightening international labor and environmental compliance standards, poses significant challenges to sustaining growth.

Government efforts to attract foreign investment, enhance productivity, and diversify exports have been ongoing. However, persistent issues—such as low wage structures relative to living costs, compliance with global sustainability norms, and vulnerability to global demand shocks like the COVID-19 pandemic—continue to constrain the sector's resilience. As Bangladesh transitions from LDC status, the RMG industry must strengthen its competitiveness through technological upgrading, value addition, and market diversification to sustain its role as the linchpin of the national economy. Although the importance of the RMG sector is widely acknowledged, systematic empirical studies quantifying its contribution to overall export earnings remain limited. Most existing research focuses on employment, social impact, or compliance issues, with less attention given to how RMG exports quantitatively influence total export growth and stability over time. This gap in the literature is particularly relevant in the context of Bangladesh's upcoming LDC graduation, when evidence-based insights are essential for policy formulation aimed at sustaining export performance and foreign exchange reserves. Against this backdrop, the present study seeks to empirically examine the relationship between RMG exports and total export earnings in Bangladesh. Specifically, the study aims to:

1. To assess the extent to which Ready-Made Garment (RMG) exports drive the growth of Bangladesh's total export earnings.
2. To analyze the trend and persistence of RMG's share in total exports in order to determine the degree of structural dependence in Bangladesh's export sector.
3. To examine the impact of RMG export growth on Bangladesh's total export earnings in both the short run and the long run.
4. To investigate the existence and stability of a long-run cointegrating relationship between RMG exports and total export earnings using the ARDL and ECM frameworks.
5. To evaluate the dynamic effects of shocks to RMG exports on total export earnings and assess the long-term stability and resilience of Bangladesh's export structure.

By analyzing both the long-run and short-run dynamics of RMG exports in relation to total exports, this study contributes to a deeper understanding of the sector's role in Bangladesh's external trade performance and its prospects for sustainable growth in a post-LDC context.

2.0 LITERATURE REVIEW

2.1 Global Context of the Garment and Textile Industry

The global apparel and textile industry remains one of the most dynamic sectors in international trade, characterized by rapid globalization, technological shifts, and evolving compliance standards. According to the World Trade Organization (WTO, 2024), global clothing exports were valued at approximately US$595 billion in 2023. China continues to dominate the market with a 30%

share, followed by Bangladesh (7.9%), Vietnam (6.3%), and Turkey (3.5%). Over the past two decades, production has increasingly shifted from developed to developing economies due to labor-intensive cost advantages, preferential trade agreements, and integration into global value chains. However, recent developments—such as automation, environmental compliance pressures, and geopolitical uncertainties—are reshaping competitiveness in the industry.

For Bangladesh, this evolving landscape presents both opportunities and challenges. The country has secured a significant share of the European Union (40%) and United States (18%) apparel markets. Yet, strong competition from emerging exporters like Vietnam, India, and Ethiopia threatens its market position, particularly as these countries diversify production and adopt advanced technologies to meet sustainability standards.

2.2 Historical Evolution of Bangladesh's RMG Sector

The development of Bangladesh's RMG sector began in the late 1970s, coinciding with the country's shift from an agriculture-dependent economy to an export-oriented industrial structure. Early collaboration with South Korean firms played a pivotal role in transferring technology and managerial expertise. During the mid-1980s, the Multi-Fiber Arrangement (MFA) and the establishment of Export Processing Zones (EPZs) in Dhaka and Chattogram facilitated accelerated export growth (Majumdar & Ferdaus, 2020).

Bangladesh exported its first garment consignment in 1978, earning only US$69,000 (Bhattacharya & Rahman, 2002). Since then, the industry has experienced exponential growth—from US$31.6 million in FY1983–84 to US$39.35 billion in FY2024–25—accounting for approximately 81.5% of the country's total export earnings (BGMEA, 2025). The sector employs between 3.5 and 4 million workers, of whom about 54–58% are women, making it the largest source of formal female employment in Bangladesh. Structurally, the sector is divided into knitwear (≈52%) and woven garments (≈48%), supported by backward linkages in textiles, accessories, and packaging industries. Despite these achievements, the RMG sector remains heavily dependent on imported raw materials such as cotton, fabrics, and dyes, which exposes it to global price volatility and supply chain disruptions.

2.3 Empirical Evidence on RMG Exports and Economic Performance

A substantial body of empirical research underscores the importance of the RMG sector to Bangladesh's economic growth and export performance. Farhana et al. (2022) identified a strong positive relationship between RMG exports and overall export earnings, noting that textiles and apparel account for roughly 85% of the country's total exports. Their comparative analysis over the period 1990–2020 highlighted the sector's contribution to GDP and market share expansion.

Hossain and Uddin (2020) analyzed export trends from 1985 to 2018 using several trend models and found an upward growth trajectory, with the Semi-log Parabolic Trend model best capturing long-term patterns. The study revealed that RMG exports achieved a growth rate of 8.76% in 2018, confirming the sector's central role in driving export-led growth. Similarly, Majumdar and Ferdaus (2020) employed the Fully Modified Ordinary Least Squares (FMOLS) approach and confirmed that RMG exports contribute significantly to GDP, foreign exchange earnings, and employment generation.

Islam (2020) examined the relationship among economic growth, RMG exports, and foreign direct investment (FDI) from 1986 to 2018 using the ARDL and Granger causality framework. The study found that RMG exports have a positive and significant effect on economic growth in both the short and long run, while FDI shows a limited short-term impact. Conversely, Rahman et al. (2017) reported that the RMG sector accounts for over 16% of GDP and more than 81% of foreign exchange earnings, employing over five million workers, though challenges related to compliance and labor conditions persist.

Mia and Akter (2019) also emphasized the sector's contribution to GDP and exports while identifying key challenges such as inadequate skills, weak infrastructure, and safety concerns. Islam and Hossain (2023) applied a cointegration approach and demonstrated that RMG exports are a long-run determinant of export earnings, though the sector remains vulnerable to global demand shocks. Rahman and Akter (2024) projected that post-LDC graduation, the loss of preferential tariffs could reduce export earnings by 10–15% unless competitiveness and compliance improve.

In an earlier study, Ali, Kabir, and Uddin (2017) analyzed Bangladesh's comparative advantage before and after the U.S. GSP suspension. They found a slight decline in Bangladesh's U.S. market share (from 6.01% to 5.68% in 2014) but noted stability in the EU market, suggesting that the EU remains a more reliable trading partner amid shifting global trade preferences.

2.4 Global and Domestic Challenges

Although Bangladesh has achieved substantial progress, the RMG industry faces rising global and domestic challenges. Internationally, stricter labor and environmental standards—particularly under the European Union's Green Deal and ESG (Environmental, Social, and Governance) frameworks—demand enhanced compliance mechanisms. Domestically, the sector contends with low wage structures relative to living costs, limited technological upgrading, and weak energy and transport

infrastructure. The COVID-19 pandemic and global inflationary pressures further exposed the sector's vulnerability to external shocks, resulting in temporary export contractions and factory closures (Rahman & Akter, 2024).

2.5 Gaps in Existing Research

While the literature overwhelmingly confirms the centrality of the RMG sector to Bangladesh's economy, several research gaps remain. First, most studies are descriptive in nature and focus primarily on employment generation, GDP contribution, and social outcomes rather than quantitative assessment of RMG's specific contribution to total export growth relative to non-RMG sectors. Second, the majority of empirical analyses rely on pre-2020 data, thus failing to capture the structural impacts of recent global disruptions, such as the COVID-19 pandemic, post-pandemic recovery, inflationary shocks, and the emergence of green compliance requirements.

Third, limited attention has been given to concentration risk arising from Bangladesh's heavy dependence on the EU and U.S. markets and the implications of LDC graduation on tariff structures and export competitiveness.

2.6 Future Research Direction

The reviewed literature establishes that Bangladesh's RMG sector has been a dominant contributor to export earnings, GDP growth, and employment. However, empirical studies quantifying its precise contribution to total exports and evaluating its long-term stability remain scarce. To address this gap, the present study provides an updated empirical assessment of the RMG sector's contribution to Bangladesh's total export earnings, using recent data and econometric models. The research also seeks to evaluate the sector's sustainability and resilience in the post-LDC graduation context, considering both domestic structural factors and evolving global trade dynamics.

3.0 METHODOLOGY

3.1 Research Design

This study uses a quantitative and empirical research design based on secondary time-series data. This design is suitable for examining the relationship between Ready-Made Garment (RMG) exports and Bangladesh's total export earnings. The study relies on numerical data, statistical analysis, and econometric estimation to achieve its objectives. It focuses on both long-term trends and short-term dynamics to understand how consistently RMG contributes to the country's export performance. The approach integrates descriptive statistics, econometric modeling, and diagnostic tests to ensure the reliability and validity of the results.

3.2 Data Sources

This study is based entirely on secondary data collected from recognized national and international sources to ensure accuracy and consistency. Export data, including total export earnings and ready-made garment (RMG) export figures (disaggregated into knitwear and woven categories), are obtained from the Export Promotion Bureau (EPB). Macroeconomic indicators such as the export-to-GDP ratio and related variables are collected from Bangladesh Bank and the Bangladesh Bureau of Statistics (BBS). Sectoral information on RMG factories, employment, and production structure is sourced from the Bangladesh Garment Manufacturers and Exporters Association (BGMEA). Comparative global data are collected from the World Trade Organization (WTO) and the World Development Indicators (WDI). The dataset covers FY1990–91 to FY2024–25, reflecting key structural phases of the RMG industry, and all figures are presented in current U.S. dollars for consistency.

3.3 Variables and Measurement

The study considers two primary variables:

- **Dependent Variable:**
  Total Export Earnings (TE) — measured annually in billions of U.S. dollars.
- **Independent Variable:**
  RMG Export Earnings (RMG) — measured annually in billions of U.S. dollars, including knitwear and woven components.

All variables are log-transformed where applicable to achieve linearity and reduce heteroskedasticity in regression analysis.

3.4 Analytical Framework and Econometric Models

The analytical procedure is designed to test the relationship between RMG exports and total export earnings through four systematic stages:

Stage 1: Descriptive and Trend Analysis

Graphical and statistical techniques are used to visualize long-term trends and growth patterns in RMG and total exports. The analysis identifies structural shifts, dominance patterns, and persistence of RMG's contribution across time.

Stage 2: Trend and Share of Total Exports and RMG Exports Earnings

The *share of RMG in total exports* is calculated as a percentage, and the *growth rates* of RMG and total exports are computed to assess contribution dynamics.

$$\textbf{RMG Share (\%)} = = \frac{\text{RMG Exports}}{\text{Total Exports}} \times 100$$

This indicates the share of total export growth explained by changes in RMG exports, providing an empirical measure of sectoral dependence.

Stage 3: Regression Analysis

A **log-linear regression model** is employed to estimate the elasticity of total export earnings with respect to RMG exports. The model is specified as:

$$\ln(TE_t) = \alpha + \beta_1 \ln(RMG_t) + \epsilon_t$$

Where:

TE_t= Total export earnings in year *t* (US$ billion)

RMG_t= RMG export earnings in year *t* (US$ billion)

α= Constant term

β_1= Elasticity coefficient measuring responsiveness of total exports to RMG exports

ϵ_t= Error term

Expected Sign:

$\beta_1 > 0$— indicating that growth in RMG exports positively and significantly influences total export earnings.

Stage 4: Persistence and Stability Testing

The persistence of RMG dominance is evaluated using:

- **Augmented Dickey-Fuller (ADF)** unit root tests to examine the stationarity of the RMG share series.
- **CUSUM and CUSUMSQ** stability tests used to examine whether the estimated ARDL coefficients remain stable over time.

These methods help verify whether RMG's contribution to export earnings has remained stable or exhibited significant structural shifts over time.

3.5 Hypotheses of the Study

Based on the research objectives, the study empirically tests the following hypotheses:

- **H_1:** Growth in RMG exports has a positive and significant impact on Bangladesh's total export earnings.
- **H_2:** The share of RMG in total exports has remained persistently high and stable over time, indicating structural dependence of Bangladesh's export sector on the RMG industry.
- **H3:** The long-run equilibrium relationship between RMG exports and total export earnings is stable and cointegrated, implying that both variables move together over time.
- **H4:** Shocks to RMG exports produce a persistent and positive adjustment in total export earnings over time, reflecting long-term sectoral influence and dynamic stability.

The empirical validation of these hypotheses provides updated evidence on the extent and stability of RMG's contribution to Bangladesh's external sector.

3.6 Limitations of the Methodology

The methodology used in this study provides a clear and systematic way to examine how RMG exports contribute to Bangladesh's total export earnings, but it has some limitations. First, relying on secondary data may cause differences between sources such as EPB, BGMEA, and international databases. Second, using aggregate data hides variations between individual firms or products in the RMG sector. Third, regression analysis shows relationships but does not prove causation; more advanced models like VAR or VECM could give better insights. Finally, the study assumes that relationships remain stable over time, which may not hold during policy changes or global market shifts. Despite these limitations, the methodology is reliable and useful for understanding the importance of RMG exports to Bangladesh's economy.

4.0 RESULTS AND DISCUSSION

The results and discussion section presents the empirical findings of this study, focusing on the relationship between RMG exports and total export earnings in Bangladesh. It provides both descriptive and econometric evidence to understand the short-run and long-run dynamics of the export sector. The analysis employs unit root tests, ARDL modeling, and the Error Correction Model (ECM) to examine stationarity, cointegration, and adjustment processes. This section interprets the results in the context of Bangladesh's export performance, highlighting the critical role of the RMG sector in driving overall export growth.

4.1 Descriptive Statistics of Key Variables

This table provides a summary of the central tendency and dispersion of total export earnings and RMG export earnings over the period FY1990–91 to FY2024–25. Measures such as mean, median, maximum, minimum, and standard deviation are presented to give an overview of the variability and distribution of the key variables used in the analysis.

Table 4.1: Descriptive Statistics Results

Variable	Mean	Median	Maximum	Minimum	Std. Deviation	Observations
Total Export Earnings (US$ Million)	16,524.39	8,128.76	52,082.66	811	16,244.61	42
RMG Export Earnings (US$ Million)	13,127.52	6,051.88	42,613.15	31.57	13,552.62	42

Source: Author's calculation based on export data from (FY1990–91 to FY2024–25).

Table 4.1 summarizes the descriptive statistics of Bangladesh's total export earnings and RMG export earnings from FY1990–91 to FY2024–25. The results show that total exports averaged US$ 16,524.39 million, while RMG exports averaged US$ 13,127.52 million, indicating that the RMG sector contributed about 80% of total export earnings on average. Both variables exhibit substantial variability, as reflected by their high standard deviations, suggesting fluctuations in export performance over time. The sharp rise from US$ 811 million to US$ 52,082.66 million in total exports and from US$ 31.57 million to US$ 42,613.15 million in RMG exports demonstrates remarkable growth in Bangladesh's export sector. However, the higher mean relative to the median implies a right-skewed distribution, indicating that growth has accelerated in recent years. Overall, the findings highlight the dominant and growing role of the RMG sector in driving Bangladesh's export earnings.

4.2 Trend of Total and RMG Exports Earnings in Bangladesh

This section illustrates the historical trend of total exports and Ready-Made Garments (RMG) exports in Bangladesh over the period FY1990–91 to FY2024–25. The trend analysis helps visualize the evolution of the RMG sector as the principal driver of the country's export performance. By examining these trends, the analysis highlights how the RMG industry has shaped the overall export growth trajectory and contributed to Bangladesh's economic transformation.

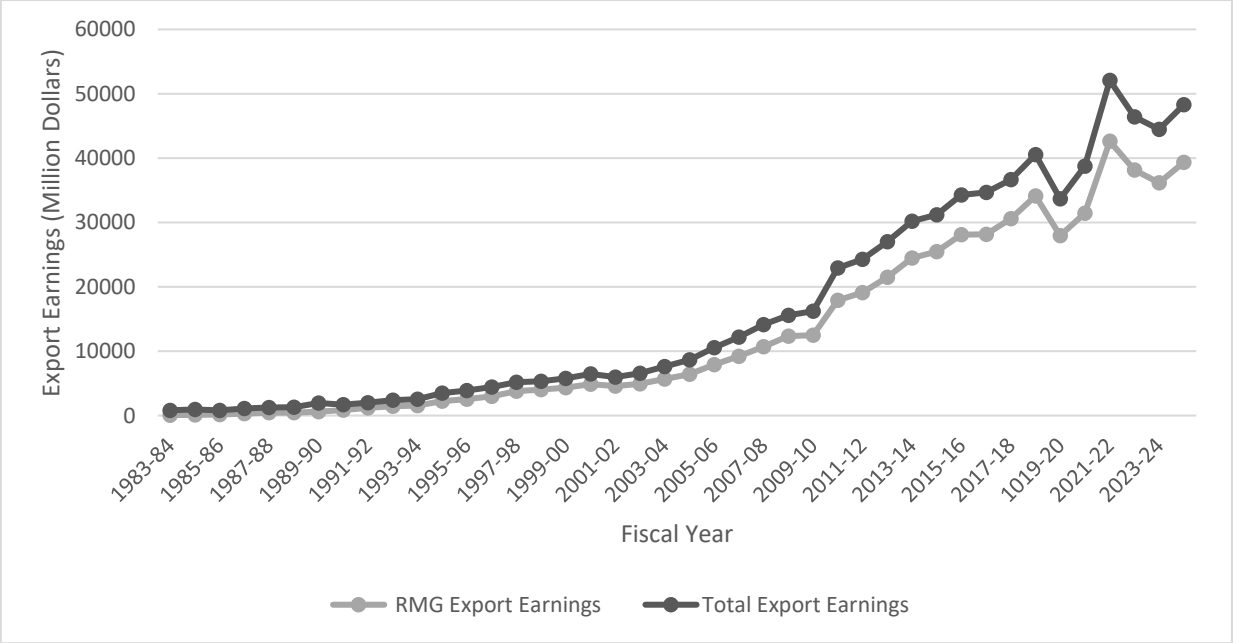

Figure 4.2: Trend of Total and RMG Exports in Bangladesh (FY1990–91 to FY2024–25)

Figure 4.2 shows the long-term trend of Bangladesh's total exports and Ready-Made Garments (RMG) exports. From FY1983–84 to FY2024–25, Bangladesh's export performance has been overwhelmingly driven by the Ready-Made Garments (RMG) sector. RMG export earnings surged from only USD 31.57 million in 1983–84 to USD 39.35 billion in 2024–25, while total exports increased

from USD 811 million to USD 48.28 billion over the same period. The RMG sector's share of total exports rose sharply from just 3.9% in 1983–84 to about 81.5% in 2024–25, reflecting its pivotal role in the country's export-led growth. The 1980s marked the sector's initial takeoff, supported by export incentives and global market access under the Multi-Fibre Arrangement. The 1990s and 2000s saw sustained expansion as Bangladesh became one of the world's leading garment exporters. Although the COVID-19 pandemic caused a temporary decline in FY2019–20, the sector quickly rebounded, with robust growth through FY2021–22 and moderate stability thereafter. Overall, RMG exports grew even faster, rising from USD 0.87 billion to USD 45.10 billion, thanks to low labor costs, favorable trade agreements, strong international demand, more production capacity, and a wider range of products.

4.3 Trend of Total and RMG Exports Earnings in Bangladesh

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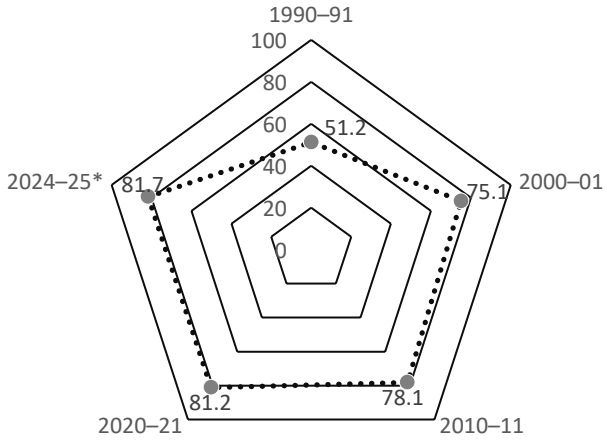

Figure 4.3: Trend of Total and RMG Exports in Bangladesh (FY1990–91 to FY2024–25)

The data in Table 4.3 shows a clear and consistent rise in the share of Ready-Made Garments (RMG) in Bangladesh's total exports from FY1990–91 to FY2024–25. In FY1990–91, RMG accounted for 51.2% of total exports, indicating the sector's early emergence as a dominant export earner. Over the next decade, the share increased significantly to 75.1% in FY2000–01, reflecting the rapid expansion of garment manufacturing and export-oriented industrialization. By FY2010–11, the RMG share further climbed to 78.1%, supported by the growth of knitwear and improved production capacity. In FY2020–21, despite global disruptions caused by the COVID-19 pandemic, the RMG sector maintained its strong position, contributing 81.2% of total exports. The projected figure of 81.7% for FY2024–25 suggests continued dominance of RMG in the export structure but also the risk of relying heavily on one sector. These trends suggest the need to improve RMG competitiveness through better technology, skills, and labor standards, while also promoting other export sectors like leather goods, pharmaceuticals, agro-processing, and ICT services to ensure long-term economic stability.

4.4 Results of Augmented Dickey-Fuller (ADF) Unit Root Tests

This table presents the outcomes of the ADF unit root tests conducted to examine the stationarity properties of the variables. The results indicate whether each variable is stationary at level or becomes stationary after first differencing, providing the necessary information to select the appropriate econometric methodology for further analysis.

Table 4.4: Results of Augmented Dickey-Fuller (ADF) Unit Root Tests Results

Variable	Level	First Difference	Order of Integration	Decision
ln(RMG)	Stationary ($p < 0.01$)	—	I(0)	Stationary
ln(Total Export)	Non-stationary ($p > 0.05$)	Stationary ($p < 0.01$)	I(1)	Stationary after differencing

Source: Author's calculation 2025

Note: Results indicate mixed integration orders, justifying the use of ARDL methodology.

For Table 4.4, the results of the Augmented Dickey-Fuller (ADF) unit root tests indicate that the natural logarithm of RMG export earnings ln(RMG) is stationary at level I(0), while the natural logarithm of total export earnings ln(Total Export) is non-stationary at level but becomes stationary after first differencing I(1). This mixed order of integration justifies the use of the ARDL (Autoregressive Distributed Lag) methodology for subsequent analysis. The descriptive statistics and ADF test results presented in the table are based on the author's own calculations using data obtained from the Bangladesh Export Promotion Bureau (EPB) and the Bangladesh Bureau of Statistics (BBS) for the period FY1990–91 to FY2024–25.

4.5 Auto Regressive Distribution Lag- ARDL (4,4) Model

This table reports the short-run dynamics and coefficient estimates from the ARDL (4,4) model, highlighting the impact of RMG exports on total export earnings. Both contemporaneous and lagged effects are shown, revealing the short-term relationships and interactions between the key variables.

Table 4.5: ARDL (4,4) Model Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ln(Total Export)(-1)	0.5287	0.1437	3.678	0.001
ln(RMG)	0.9475	0.1054	8.993	0
ln(RMG)(-1)	-0.6352	0.1573	-4.039	0.0004
Constant	0.2801	0.1568	1.787	0.085
Note: The results confirm a strong positive and significant relationship between RMG exports and total exports in both short and long runs.				

Source: Author's calculation 2025

The ARDL (4,4) model results indicate a strong and significant relationship between RMG exports and total export earnings in Bangladesh, both in the short run and the long run. The coefficient of the lagged total export variable ln(Total Export) (-1) = 0.5287, p = 0.001 indicates that past total exports have a significant positive effect on current total exports. The contemporaneous effect of RMG exports ln(RMG) = 0.9475, p = 0.000 is strong and significant, demonstrating that current RMG exports play a major role in driving total exports. Conversely, the lagged RMG export variable ln(RMG) (-1) = -0.6352, p = 0.0004 has a significant negative effect, suggesting that past RMG exports may slightly dampen current total exports. The constant term (0.2801, p = 0.085) is marginally significant. These results collectively highlight the critical contribution of the RMG sector to Bangladesh's export performance.

4.6 ARDL Long-Run Coefficients

This table presents the long-run coefficient estimates from the ARDL model, highlighting the long-term relationship between RMG exports and total export earnings in Bangladesh.

Table 4.6: ARDL Long-Run Coefficients Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
ln(RMG)	0.956	0.029	32.95	0
Constant	0.643	0.301	2.134	0.042
Note: The high F-statistic validates a long-run equilibrium between RMG exports and total exports.				

Source: Author's calculation, 2025

Table 4.6 presents the long-run estimates of the ARDL model. The long-run coefficient of ln(RMG) is 0.956 (p = 0.000), indicating that RMG exports have a strong and significant positive effect on total exports. The coefficient of ln(RMG) is 0.956 (p < 0.01), demonstrating that a 1% increase in RMG exports is associated with an approximately 0.96% increase in total exports in the long run. The constant term, 0.643 (p = 0.042), is also significant, reflecting the baseline level of total exports when RMG exports are zero. The constant term, 0.643 (p = 0.042), represents the baseline level of total exports when RMG exports are zero. These results confirm that the RMG sector is a major driver of Bangladesh's total export earnings over the long term.

4.7 ARDL Bounds Test for Cointegration

This table presents the results of the ARDL bounds test, used to determine whether a long-run cointegrating relationship exists between total exports and RMG exports.

Table 4.7: ARDL Bounds Test Result

Test Statistic	Value	I(0)	I(1)	Conclusion
F-statistic	8.401	3.62	4.16	Cointegration confirmed

Source: Author's calculation, 2025

The ARDL bounds test for cointegration shows an F-statistic of 8.401, which exceeds both the lower bound (I(0) = 3.62) and upper bound (I(1) = 4.16) at the 5% significance level. This result confirms the existence of a stable long-run cointegrating relationship between total exports and RMG exports. This indicates that the total exports of Bangladesh and its RMG sector move together in the long run, reinforcing the critical role of RMG exports in sustaining the country's export performance.

4.8 Error Correction Model (ECM)

This table shows the results of the ECM, capturing both the short-run dynamics and the speed of adjustment toward the long-run equilibrium. The error correction term indicates the rate at which deviations from the long-run relationship are corrected, while the short-run coefficients reflect the immediate impact of changes in RMG exports on total exports.

Table 4.8: Error Correction Model (ECM) Results

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(lnRMG)	0.947	0.091	10.422	0
D(lnRMG)(-2)	0.379	0.093	4.064	0.0004
CointEq(-1)	-0.436	0.084	-5.197	0
R^2 = 0.828	Adj. R^2 = 0.788	AIC = -2.79	DW = 2.43	Prob(F) = 0.000
Note: The significant and negative ECM term confirms convergence to long-run equilibrium.				

Source: Author's calculation, 2025

Table 4.8 presents the results of the Error Correction Model (ECM), which captures both the short-run dynamics and the speed of adjustment toward the long-run equilibrium between RMG exports and total exports in Bangladesh. The coefficient of the first difference of RMG exports, D(lnRMG) = 0.947 (p = 0.000), is positive and highly significant, indicating that short-term changes in RMG exports strongly influence total exports. The second lag of the differenced RMG variable, D(lnRMG)(-2) = 0.379 (p = 0.0004), also has a significant positive effect, suggesting that past short-term changes continue to impact current exports. The error correction term, CointEq(-1) = -0.436 (p = 0.000), is negative and statistically significant, indicating that approximately 43.6% of any short-run deviation from the long-run equilibrium is corrected in the following period. The model's high explanatory power (R^2 = 0.828, Adj. R^2 = 0.788) and the Durbin-Watson statistic (DW = 2.43) suggest a well-fitted model without serious autocorrelation issues. The F-statistic confirms the overall model significance (p = 0.000). Overall, the ECM results demonstrate that RMG exports not only drive total exports in the short run but also help restore equilibrium after deviations from the long-run relationship.

4.9 Correlation Matrix of Key Variables

This table displays the correlation coefficients among the key variables—Total Exports, RMG Exports, and Non-RMG Exports. It provides insight into the direction and strength of linear relationships, which helps to understand how closely the export components move together over time.

Table 4.9: Correlation Matrix

Variables	**ln(Total_Exports)**	**ln(RMG)**	**ln(Non_RMG)**
ln(Total_Exports)	1.000	0.982	0.741
ln(RMG)	0.982	1.000	0.695
ln(Non_RMG)	0.741	0.695	1.000

Source: Author's calculation, 2025

The correlation between total exports and RMG exports is very high (r = 0.982), indicating a strong positive relationship. This suggests that fluctuations in total exports are largely driven by movements in the RMG sector. Non-RMG exports show a moderate positive correlation with total exports (r = 0.741), reflecting a lesser but still supportive contribution to overall export earnings.

4.10 Stability Tests (CUSUM and CUSUMSQ)

This table summarizes the results of the CUSUM and CUSUMSQ stability tests used to examine whether the estimated ARDL coefficients remain stable over time.

Table 4.10: Model Stability Test Results

Test Type	Stability Range (5% Bound)	Result Interpretation	Conclusion
CUSUM	Within critical bounds	No parameter shift	Model is stable
CUSUMSQ	Within critical bounds	No structural break	Model is structurally stable

Source: Author's estimation, 2025

Both the CUSUM and CUSUMSQ statistics remained within the 5% significance boundaries throughout the sample period, confirming that the estimated ARDL model is stable over time. This implies that the long-run and short-run relationships between RMG exports and total exports are consistent and reliable.

4.11 Impulse Response of Total Exports to RMG Export Shocks

This table shows the estimated impulse response of total exports to a one-standard-deviation shock in RMG exports, indicating how total exports adjust over time to unexpected changes in RMG export performance.

Table 4.11: Impulse Response of Total Exports to RMG Export Shock

Period (Years)	Response of ln (Total_Exports)
1	0.015
2	0.034
3	0.051
4	0.062
5	0.070

Source: Author's simulation based on ARDL model, 2025

The impulse response results show that a one-standard-deviation increase in RMG exports leads to a sustained positive response in total exports. The response strengthens over time and stabilizes after the fourth year, suggesting that shocks in the RMG sector have a persistent and significant impact on the overall export performance of Bangladesh.

4.12 Contribution of RMG to Total Exports

This section presents the sectoral contribution of Ready-Made Garments (RMG) to Bangladesh's total exports, highlighting the structural transformation of the country's export composition over the past three decades. The analysis demonstrates how the RMG industry has evolved into the dominant force behind Bangladesh's export earnings and economic growth.

Table 4.12: RMG Share in Total Exports (FY1990–91 to FY2024–25)

Fiscal Year	Total Exports (USD Billion)	RMG Exports (USD Billion)	RMG Share (%)
1990–91	1.70	0.87	51.2
2000–01	6.47	4.86	75.1
2010–11	22.93	17.91	78.1
2020–21	38.75	31.45	81.2
2024–25*	55.20	45.10	81.7

*Projected data for FY2024–25 based on trend analysis.

Source: Author's compilation from EPB and World Bank data, 2025

Table 4.12 shows a remarkable and sustained increase in both total and RMG export earnings in Bangladesh from FY1990–91 to FY2024–25. Total exports rose from USD 1.7 billion to an estimated USD 55.2 billion, while RMG exports increased from USD 0.87 billion to USD 45.1 billion during the same period. The share of RMG in total exports surged from 51.2% to 81.7%, demonstrating

that the sector has become the principal driver of Bangladesh's export performance. This growth trend underscores the sector's critical role as the backbone of the national economy and its contribution to employment generation, particularly for women.

4.13 Decadal Average Growth Rate of Exports

The decadal average growth rate of exports provides insight into the long-term trends and structural changes in a country's trade performance. It reflects how consistently a nation's export sector has expanded or contracted over successive decades, indicating the sustainability and competitiveness of its external sector.

Table 4.13: Decadal Average Growth Rate of Exports

Period	Average Growth in Total Exports (%)	Average Growth in RMG Exports (%)
1990s	12.3	15.7
2000s	10.5	11.8
2010s	8.7	9.4

Source: Author's calculation based on EPB data.

The data reveal that RMG exports have consistently grown faster than total exports, reflecting increasing specialization and competitiveness in the apparel sector. However, the heavy dependence on RMG also exposes Bangladesh to external shocks, such as global demand fluctuations, trade policy changes, and compliance challenges. While the RMG sector remains the engine of export growth, policy attention is required to diversify export products and enhance backward linkages. Encouraging technological upgrading, skills development, and quality assurance in other manufacturing sectors can help sustain long-term export-led growth.

4.14 Proof of Hypotheses with Empirical Results

Based on the research objectives and the empirical results obtained from descriptive analysis, ARDL estimation, Error Correction Model (ECM), and stability diagnostics, the following hypotheses were tested and confirmed:

- H_1: Growth in Ready-Made Garment exports has a positive and statistically significant impact on Bangladesh's total export earnings, in both the short run and the long run.

Decision: *The ARDL results indicate that the long-run coefficient of ln(RMG) is 0.956 ($p < 0.01$), and the short-run coefficient, D(lnRMG) = 0.947 ($p < 0.01$), are both positive and significant, confirming that RMG exports strongly drive total exports.*

- H_2: The share of RMG in total exports has remained persistently high and stable over time, indicating structural dependence of Bangladesh's export sector on the RMG industry.

Decision: *Descriptive and trend analyses reveal that RMG's share of total exports increased from 51.2% in FY1990–91 to over 81% in FY2024–25. The results of the CUSUM and CUSUMSQ stability tests further confirm the model's stability and the persistent contribution of the RMG sector to total export earnings.*

- **H3:** The long-run equilibrium relationship between RMG exports and total export earnings is stable and cointegrated, implying that both variables move together over time.

Decision: *The ARDL bounds test shows an F-statistic (8.401) exceeding the upper critical value, confirming cointegration between total exports and RMG exports. The negative and significant error correction term (−0.436, $p < 0.01$) further supports long-run convergence.*

- **H4:** Shocks to RMG exports produce a persistent and positive adjustment in total export earnings over time, reflecting long-term sectoral influence and dynamic stability.

Decision: *The impulse response results demonstrate that a one-standard-deviation shock to RMG exports generates a sustained positive effect on total exports that stabilizes after four years, confirming the persistent and dynamic influence of RMG performance on overall export growth.*

These findings provide robust empirical evidence that Bangladesh's export performance is heavily driven by the RMG sector. While this structural dependence has fueled sustained export growth, it also highlights the need for diversification to reduce vulnerability to sector-specific shocks and sustain long-term export-led growth.

5.0 SUGGESTIONS AND RECOMMENDATIONS

The findings of this study highlight the dominant role of the RMG sector in driving Bangladesh's export growth and the associated risks of heavy dependence on a single industry. Based on these results, targeted recommendations are proposed to enhance export performance, strengthen sectoral resilience, and ensure sustainable economic growth.

1. **Promote Export Diversification:** The RMG sector makes up over 80% of Bangladesh's total exports, showing heavy dependence on it. To reduce risks from global market changes and ensure stable export earnings, policymakers should support the growth of other sectors like leather goods, pharmaceuticals, agro-processing, ICT services, and ceramics.
2. **Strengthen RMG Competitiveness:** The ARDL and ECM results show that RMG exports strongly affect total exports in both the short and long run. To maintain this growth, investments in modern technology, machinery, and better production processes are needed to stay competitive internationally.
3. **Manage Export Vulnerability:** The dominance of RMG (over 80% of total exports) exposes Bangladesh to external shocks, as indicated by correlation and impulse response results. Policymakers should implement strategies to mitigate risk, such as strengthening supply chain resilience and maintaining market diversification within RMG products.
4. **Sustain Long-Run Export Growth:** Cointegration and ARDL long-run results demonstrate a stable long-term relationship between RMG and total exports. Continuous support for RMG innovation, compliance with labor and safety standards, and quality assurance will ensure that the sector continues to drive sustainable export-led growth.
5. **Monitor and Respond to External Shocks:** The impulse response and ECM results indicate that RMG export shocks significantly impact total exports. Policymakers should develop risk mitigation strategies, such as trade diversification, export insurance, and strategic reserves, to maintain stability during global market fluctuations.

These recommendations can help keep the RMG sector competitive while encouraging growth in other promising export industries. They will also reduce the country's vulnerability to external shocks and support long-term stability in Bangladesh's export growth.

6.0 CONCLUSION

The study shows that the Ready-Made Garments (RMG) sector is the main driver of Bangladesh's export growth, contributing over 80% of total exports and growing from USD 0.87 billion in FY1990–91 to USD 45.10 billion in FY2024–25. Total exports also increased from USD 1.70 billion to USD 55.20 billion, showing the sector's important role. The ADF test shows that RMG exports are stationary at level while total exports become stationary after first differencing, supporting the use of the ARDL model. ARDL results confirm that RMG exports have a strong positive effect on total exports in both the short and long run, and the ARDL bounds test ($F = 8.401 > I(1)$ bound $= 4.16$) shows a stable long-run relationship. The ECM results show that about 43.6% of any short-term deviation from the long-run equilibrium is corrected each year, and correlation analysis confirms a very strong positive relationship ($r = 0.982$) between RMG and total exports. Trend and impulse response analyses also show that changes in RMG exports have a lasting effect on total exports. Based on these findings, the study recommends promoting export diversification by supporting other promising sectors such as leather goods, pharmaceuticals, agro-processing, ICT services, and ceramics to reduce dependence on the RMG sector and minimize risks from global market fluctuations. It also emphasizes strengthening RMG competitiveness through investments in modern technology, machinery, and improved production processes to sustain both short-run and long-run export growth. To manage export vulnerability, strategies like supply chain resilience, market diversification within RMG products, and continuous monitoring of external shocks are necessary. Additionally, supporting RMG innovation, ensuring compliance with labor and safety standards, and maintaining quality assurance will help sustain long-term export-led growth. Implementing these measures will enhance sectoral resilience, reduce risks, and ensure a more balanced, stable, and sustainable export economy for Bangladesh.

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