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Article

Textile Export Nexus in Bangladesh: An Econometric Exploration

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Abstract: This scholarly investigation conducts a rigorous exploration of Bangladesh's textile sector spanning the years 2011 to 2022, centering its attention primarily on the development of an intricate econometric framework. The study unveils profound insights into the sector's growth trajectories, the intricate dynamics of global demand, the undulating fluctuations of interest rates, and other pivotal economic gauges. The core component of this research, the econometric model, adeptly prognosticates textile exports through the incorporation of multifarious variables, encompassing the count of garment establishments, the magnitude of the workforce, market penetration, worldwide demand patterns, currency exchange rates, and interest rate fluctuations. Notably, the model attains a lofty degree of explicative potency, with an R-squared coefficient approximating 0.756, thereby attesting to its remarkable capacity to elucidate variances in textile export values. These discoveries carry substantial consequences for policymakers and stakeholders within the industry, as they bestow upon them a potent instrument for judicious decision-making and strategic blueprinting within Bangladesh's textile domain. The model accentuates the paramount significance of global demand and market share, concurrently accentuating the latent repercussions posed by fluctuations in interest rates. This research provides valuable insights into promoting the industry's sustainable growth, diversification, and resilience in the face of economic challenges.

Keywords: textile industry; bangladesh; econometric analysis; export trends; global demand; policy recommendations

1. Introduction

Within the realm of economic development, the intricate interplay of international trade emerges as a central and indispensable factor. To embark on the journey of unraveling the multifaceted dynamics of a nation's economic progress, it becomes imperative to navigate the complex web woven by imports and exports. This intricate balance on the global stage necessitates not just dexterity but also a profound understanding of the nuanced relationships governing the inflow and outflow of goods. In the pursuit of achieving a comparative advantage in the ever-competitive global marketplace, the governments around the world must deftly navigate the multifarious terrain of economic variables, where the looming specters of inflation, the perennially shifting sands of exchange rates, and the intricate tapestry of trade policies demand meticulous examination. These critical dimensions collectively compose the symphony of international trade, a symphony that resonates deeply with the economic fate of nations. Thus, the imperative to engage in comprehensive research, aimed at dissecting these variables and comprehending their intricate relationships, becomes abundantly clear.

International trade, to state it unequivocally, is not merely a facet of economic activity; rather, it is the very lifeblood of a nation's economic vitality and development. To overlook or underestimate its significance is to neglect a fundamental determinant of economic prosperity. Therefore, this scholarly endeavor undertakes a rigorous exploration into the intricate dynamics of international trade, with a specific focus on the interplay between imports and exports. At its very core, this research seeks to address a fundamental question that transcends the boundaries of a single discipline: How do imports and exports collectively sculpt the economic destiny of nations, and what factors underpin this intricate and multifaceted relationship?

The objectives of this comprehensive study are threefold, representing a triad of endeavors that collectively contribute to a holistic comprehension of the subject at hand. Firstly, it is driven by the aspiration to discern and subject to meticulous scrutiny the panoply of key variables that wield their influence over the domain of textile imports and exports. This eclectic array of variables, spanning the spectrum from exchange rates to the ebbs and flows of global demand, the dimensions of domestic production capacity, and the labyrinthine corridors of trade policies, will be laid bare and subjected to an exhaustive examination through a comprehensive literature review.

Secondly, this research embarks upon the endeavor of constructing an econometric model characterized by a robust scaffold of rigor and depth. This model, while peeling back the layers shrouding the complex relationships that interlink textile imports and exports, will also unfurl a meticulous canvas that contemplates the specter of potential endogeneity and the reverberations of feedback effects. Such a meticulous and methodologically sound approach is paramount, tasked with fortifying the edifice of the findings in the face of the innate complexities woven into the very fabric of the subject matter.

The potential contributions of this research to the realm of international trade economics loom large. Through its comprehensive analysis of the intricate threads binding imports and exports, it aspires to offer a treasury of insights. These insights, in turn, hold the promise of charting a course for policymakers, steering them toward the crafting of trade policies that not only foster economic growth but also underpin economic stability. Moreover, the findings of this research possess the potential to serve as a guiding star for businesses navigating the tumultuous seas of the constantly evolving global market. These insights, rooted in a profound understanding of the intricate interplay between variables, can furnish enterprises with the strategic compass to optimize their production and export strategies judiciously.

The intellectual impetus propelling this research is propelled by a fervent motivation to unfurl the enigmatic forces propelling the realm of international trade. It is not merely an academic exercise but rather an intellectual odyssey, traversing the waters of data, theory, and empirical analysis. Its ultimate aim is to cast a luminous beacon on the path toward economic progress, illuminating the intricate choreography of economic forces underpinning global trade.

The rationale underpinning the conduct of this research is firmly anchored in the potential practical implications and theoretical contributions it promises to offer. On the practical front, it holds the potential to guide policymakers in the crafting of trade policies characterized not only by robustness but also by their capacity to foster economic growth and stability. Simultaneously, it stands as a font of valuable insights for businesses striving to optimize their production and export strategies within an ever-evolving and intensely competitive global milieu. On the theoretical front, this research aspires to enrich the existing tapestry of international trade economics. Through its exploration of the intricate and often convoluted interrelationships between variables, it endeavors to expand the horizons of our understanding, shedding light on the mechanisms governing global trade in all its intricacies.

The structure of this research is as follows. Succeeding this introductory chapter, the second chapter presents the summary of the literature review conducted for this research. The third chapter transpires the methodology. With the fourth chapter presenting the analysis, the fifth chapter discusses the findings in detail and diffuses literature support to the findings. The final chapter summarises the whole research project.

2. Literature Review

2.1. Introduction

The literature review is a solid foundation of the research endeavour upon which to build new knowledge and insights. This review will show the importance and relevance of our research topic as textile industry is the major contributor to export earnings, employment, and overall economic growth of Bangladesh. A comprehensive review of existing literature will serve several pivotal purposes such as a sound understanding of prior research and scholarly work related to textile

imports and exports in Bangladesh. Not only it guides to identify gaps, inconsistencies, but also to pinpoint what is already known, what remains unexplored, and where our econometric analysis can make a valuable contribution. Along with these objectives, the literature review aims to identify key factors that have been previously identified as significant drivers or determinants of textile imports and exports in Bangladesh. These factors, ranging from exchange rates to trade policies and from labor costs to technological advancements, form the basis of the econometric analysis. The research intends to qualitatively/quantitatively measure the impact of these variables on the textile import-export nexus, providing policymakers, industry stakeholders, and researchers with actionable insights to enhance the textile sector's performance and contribute to Bangladesh's economic growth. Thus, the literature review not only sets the stage but also reinforces the necessity and relevance of the research in unravelling the complexities of Bangladesh's textile trade dynamics.

2.2. Theoretical Framework

This section will comprehend the theoretical concepts that are crucial to this study. Concepts such as international trade theories, exchange rate theories, and trade policy frameworks will be discussed thoroughly.

2.2.1. Comparative Advantage Theory

Comparative theory was developed by David Ricardo proving Adam Smith's take that 'a country might derive no benefits from international trade' wrong. According to the theory, a country needs to emphasize the production of those goods that it produces most efficiently and buy the goods that it produces less efficiently from other countries. Bangladesh has achieved significant cost improvement in the textile industry through its cheap labor & decades of experience. It can produce RMG more efficiently & cost effectively than most of its competition. So, understanding the comparative advantage of the country in labor-intensive textile manufacturing is essential. The country's large labor force & low labor costs contribute to its competitive advantage in textiles & garments.

2.2.2. Heckscher-Ohlin Theory

Swedish economists Eli Heckscher (in 1919) and Bertil Ohlin (in 1933) expanded the explanation of comparative advantage. They proposed comparative advantage arises from differences in national factor endowments. As different country has different types of endowment access in different quantity, it explains the difference in factor costs. The Heckscher-Ohlin theory predicts that the country will ensure maximum usage of locally abundant endowments to produce export products. This theory also suggests that international trade is determined by differences in factor endowments, rather than differences in productivity. In the case of Bangladesh's textile industry, it has an abundant low labor force which is a significant factor of competitive advantage. So Heckscher-Ohlin Theory suggests that Bangladesh's comparative advantage in textiles is driven by its abundant labor, making labor-intensive textile production a natural choice.

2.2.3. New Trade Theory

New Trade Theory emerged in the 1970s as economists suggested the ability of firms to gain economies of scale have important implications for international trade. This changed old trade theory which involves trade between countries that are similar in terms of development, structure, and factor endowments. Old models also depended on productivity differences or factor endowments. The new model shows achieving economies of scale, and increasing returns can drive trade interests to trading countries, ignoring factors like productivity & factor endowments. This new trade theory can explain how companies of Bangladesh can operate & make strategies to achieve competitive advantage. The textile industry would adopt strategies to achieve economies of scale in specific textile

products & processes. Moreover, the theory indicates the cruciality of product differentiation to achieve a competitive advantage in global markets.

2.2.4. Exchange Rate Theories

2.2.4.1. Purchasing Power Parity

Purchasing power parity indicates different economic productivity & standards of living between countries. It converts the currency value of different countries to ensure fair trade between countries by internationally adopted rules. This theory also shows if the purchasing power of two countries is similar, their exchange rates of currencies will be in equilibrium. In the context of textile trade in Bangladesh, exchange rate fluctuations can influence the pricing dynamics of Bangladeshi textiles in international markets. When the exchange rate of the Bangladeshi Taka undergoes changes, it can significantly impact the relative prices of textiles. Specifically, if the Taka appreciates, Bangladeshi textiles may become relatively more expensive for foreign buyers. This potential increase in pricing can render these textiles less competitive on the global stage, thereby affecting export volumes adversely. Conversely, a depreciation of the Taka signifies a decrease in its value concerning other currencies. In this scenario, Bangladeshi textiles become relatively more affordable for international customers. The cost advantage resulting from a weaker Taka can stimulate demand among foreign buyers, potentially leading to increased export volumes.

2.2.4.2. The Interest Rate Parity (IRP)

IRP theory holds importance in understanding the relationship between interest rates and exchange rates in Bangladesh's textile trade. In simple terms, IRP suggests that if interest rates in Bangladesh increase compared to those in its major trading partners, it can attract foreign investors looking for better returns. This influx of foreign capital can lead to the Bangladeshi Taka's strengthening, making Bangladeshi textiles relatively more expensive for foreign buyers in international markets. Consequently, this could affect the competitiveness of Bangladeshi textiles and potentially reduce their demand and export volumes. Contrarily, if interest rates in Bangladesh decrease relative to those in its significant trading partners, it may discourage foreign investments. In such cases, the Taka might depreciate, making Bangladeshi textiles more affordable for international customers. The cost advantage resulting from a weaker Taka can stimulate increased demand among foreign buyers, potentially resulting in higher export volumes. In sum, the IRP theory offers a straightforward framework for grasping how fluctuations in interest rates, both within Bangladesh and abroad, can impact exchange rates and, consequently, the financial dynamics of Bangladesh's textile trade. This understanding carries practical implications for policymakers, industry stakeholders, and researchers as they navigate the complexities of interest rate-exchange rate interactions in the textile sector.

2.2.4.3. Trade Policy Frameworks:

Trade policies are pivotal factors influencing the textile industry. These policies, which include tariffs, trade agreements, and export incentives, have significant influence over the industry's operations. It is significant to comprehend the existing trade policy frameworks, both within Bangladesh and among its primary trading partners. For instance, the presence of preferential trade agreements, such as the Generalized System of Preferences (GSP), can grant Bangladesh advantageous tariff conditions in specific markets, potentially boosting its textile exports. Contrarily, any shifts in trade policies, such as the imposition of tariffs or non-tariff barriers, can exert a direct impact on the industry's export volumes. Therefore, understanding trade policies is akin to navigating the regulatory landscape that shapes the textile industry's international trade activities. These policies can either facilitate or hinder the industry's access to global markets. So, comprehending the nuances of trade agreements, tariff structures, and any trade-related barriers is fundamental for policymakers, industry stakeholders, and researchers as they seek to make informed decisions and devise strategies within Bangladesh's textile sector.

2.3. Textile Industry in Bangladesh

The textile industry of Bangladesh is the backbone of the nation's economy. At present, it contributes the largest portion of the GDP & import income of Bangladesh. In the early 20th century, the textile industry first originated in this region under the British colony. However, the sector gained significant momentum in the post-independence era, particularly in the late 1970s and early 1980s. During this period, the government of Bangladesh actively promoted the textile sector, attracting foreign investments and facilitating the establishment of numerous textile mills. The industry's growth was also driven by the availability of a low-cost labor force, making Bangladesh a global textile and garment manufacturing hub. In WTO's World Statistical Review 2023, Bangladesh ranks second in garment exports as a single country with apparel exports of \$45 billion in 2022.

However, the sector has faced critical challenges such as low wages, and concerns about worker safety and working conditions. It endured a setback from the international community when several building fires and collapses took thousands of labor's lives. Moreover, challenges such as the usage of technology in the RMG sector, automation, and AI robots create new threats. Nonetheless, the Industry's growth and diversification could be achieved through initiatives such as elevating product quality, embracing sustainable manufacturing practices, investing in technology and innovation, and exploring higher-value textile products. Expanding into emerging markets, diversifying export destinations, and entering niche segments within the textile and apparel industry will ensure progress.

2.4. Factors Affecting Textile Imports and Exports in Bangladesh

2.4.1. Exchange Rates and Trade

Bangladesh's exchange rate with its main trading partners has changed over the last decade. The competitiveness of Bangladeshi textile exports has increased because of the Bangladeshi Taka's (BDT) depreciation against the currencies of essential trading partners because Bangladeshi textiles are more affordable to clients abroad. It results in a boost in export volumes. On the other hand, a declining BDT has frequently led to higher import fees for raw materials and textiles, which affects the textile industry's cost structure. This could lead to more significant production costs for domestic textile manufacturers. Conversely, a declining BDT has increased the cost of importing raw materials and textile machinery, increasing Bangladesh's import dependency.

Exchange rate fluctuations affect government program efficacy, import costs, trade balances, and textile export competitiveness. Policymakers and businesses in Bangladesh's textile sector must comprehend these dynamics to navigate the opportunities and challenges of fluctuations in the world's currencies. Future research should keep track of and investigate these connections as the economic environment changes.

2.4.2. Global Demand and Textile Trade

Bangladesh's export growth has been significantly influenced by the increase in global textile demand over the past decade. Bangladesh has benefited as worldwide markets look for more reasonably priced textiles and apparel due to its production capacity and cost-competitive advantage. In the last years, Bangladesh has increased its presence in non-traditional markets and diversified its export destinations in response to fluctuations in global demand.

Bangladesh's production standards and product quality have changed due to changes in the global demand for higher-quality textiles. Bangladesh's textile sector has embraced eco-friendly production practices and materials in response to a worldwide market for sustainable fabrics. With this change in consumer preferences, the nation can better adapt its output to shifting according to that. Bangladesh's textile industry has benefited from technical innovation and acceptability due to the global demand for technologically advanced textiles, including those made with intelligent materials and printed digitally. The trajectory of Bangladesh's trade dynamics will undoubtedly hinge on the textile industry's capacity to effectively respond and adapt to these evolving global

demands. To furnish policymakers and industry stakeholders with the requisite information and insights, it is imperative that more research be conducted to diligently monitor and understand these intricate interactions.

2.4.3. Domestic Production Capacity

The expansion of Bangladesh's domestic production capacity has played a pivotal role in the nation's remarkable growth in textile exports. This expansion has significantly enhanced the country's ability to serve a wider array of international markets and adapt to changing consumer preferences. Improved infrastructure, including transportation and logistics networks, has facilitated the efficient movement of commodities, allowing Bangladesh to fulfil its export commitments while maintaining its competitiveness.

Bangladesh's domestic production capability has encountered challenges that have affected the import-export nexus, notwithstanding its expansion. Power shortages and erratic energy supply have occasionally hampered manufacturing capacity expansion. These issues have impacted export volumes, especially during high production periods. More research should be done to track and examine these interactions to gain insights and provide policy recommendations.

2.4.4. Trade Policies and Regulations

The increase in Bangladesh's textile exports is attributable to strategies for export promotion that include financial incentives. These policies have compelled producers to boost output and enter new markets. Studies show that trade agreements, such as the Everything But Arms (EBA) initiative of the European Union and bilateral agreements with countries like China, have improved Bangladeshi textiles' access to international markets. Preferential tariff access, notably in Western markets, has given Bangladesh a competitive advantage.

Non-tariff barriers, such as strict quality and safety standards in export markets, have emerged as difficulties. Although compliance with these rules is now required, it costs money for Bangladeshi textile exporters. As they navigate Bangladesh's shifting textile trade market, authorities and industry players must thoroughly understand the complex relationships between these factors. More research should be done to track and assess these interactions in the upcoming years to gain insights and provide policy recommendations.

2.5. Empirical Studies

In their study on exports, imports, and sustainable economic growth in Bangladesh, Saroja Selvanathan, Maneka Jayasinghe, and E.A. Selvanatha employed a rigorous methodology to investigate how these factors interacted and their effect on Bangladesh's sustainability. Both qualitative and quantitative methods are used in this investigation. The trends and statistical linkages between Bangladesh's exports, imports, and economic growth are investigated using quantitative tools, including time-series data analysis and econometric modeling. Case studies and surveys are used as qualitative approaches to acquire insight into the challenges and opportunities that organizations and governments face in the context of export-import dynamics and long-term economic growth. The study's main findings include a strong correlation between rising exports and overall economic growth, Bangladesh's dependency on imports, especially for essential commodities and raw resources, and sustainability issues involving the environment and social equity. Rapid industrialization fueled by exports has created environmental problems like pollution and resource depletion. Additionally, industries focused on exports have social equity challenges related to wage inequality and working conditions. Despite its findings, this literature still lacks in-depth analyses of environmental impacts, attention to social equity, a critical evaluation of the efficacy of trade agreements and tariff structures, and strategies for diversifying export markets and product offerings to lessen reliance on a small number of industries and nations.

2.6. Endogeneity and Feedback Effects

The study of the textile import-export nexus in Bangladesh, as with any complex economic phenomenon, is not without its challenges. One significant challenge that researchers face in modeling this nexus is the presence of endogeneity and feedback effects. Endogeneity presents a scenario where variables within a model exhibit correlations with the error term, ultimately leading to biased and inconsistent parameter estimates. In contrast, feedback effects manifest when changes in one variable exert influence over changes in another variable, and vice versa, establishing a dynamic and interconnected relationship between these variables. In the context of textile imports and exports in Bangladesh, the challenges posed by endogeneity and feedback effects are notably pronounced due to the multifaceted nature of the industry and its intricate interactions with various economic factors.

Consider, for instance, the impact of exchange rate fluctuations on the cost competitiveness of textile exports. Simultaneously, the volume of textile exports can also influence exchange rates. Furthermore, trade policies can exert influence in both directions – affecting the volume of textile imports and exports while also being influenced by the performance of the textile industry. Effectively addressing these complexities necessitates the utilization of sophisticated econometric modeling techniques capable of disentangling this intricate web of relationships.

Researchers grappling with these challenges have employed diverse methodologies to mitigate the issues of endogeneity and feedback effects in similar economic contexts. One commonly employed approach involves instrumental variables (IV) techniques. These methods entail the identification and utilization of variables that exhibit correlation with the endogenous variables of interest while remaining uncorrelated with the error term. For textile imports and exports, researchers might leverage instruments such as lagged values of variables, exogenous shocks to the industry, or external factors that influence trade but maintain independence from the error term.

Another valuable method is the application of dynamic panel data models, such as the Arellano-Bond estimator. These models enable researchers to account for the dynamic nature of the textile import-export relationship, capturing lagged effects and feedback mechanisms across time. Additionally, structural equation modeling (SEM) can be harnessed to concurrently estimate relationships among multiple variables within a system, effectively addressing endogeneity and feedback effects. SEM facilitates the specification of causal pathways between variables, shedding light on the underlying mechanisms governing the textile industry.

In summation, while the challenges posed by endogeneity and feedback effects in modeling the textile import-export nexus in Bangladesh are undeniably complex, they are by no means insurmountable. Researchers possess an array of econometric techniques and methodologies at their disposal, including instrumental variables, dynamic panel data models, and structural equation modeling, all of which empower a more comprehensive understanding of how variables interact and influence one another within the dynamic realm of international textile trade.

2.7. Conclusion of the Literature Review

The literature review has furnished us with an in-depth understanding of the intricate textile import-export landscape in Bangladesh. It has yielded numerous key findings and insights that illuminate the multifaceted dynamics of this crucial sector.

First and foremost, we cannot overstate the pivotal role of the textile industry in Bangladesh's economic landscape. It stands as a cornerstone of the nation's economy, making substantial contributions to GDP, employment, and export revenues. Over the years, it has transformed into a global manufacturing powerhouse, particularly in the realm of ready-made garments (RMG). The sector's growth has been significantly driven by the global demand for affordably priced textiles, propelling Bangladesh's exports in this domain. This trajectory has prompted the nation to broaden its export horizons and embrace sustainable practices to meet the ever-evolving demands of the international market.

The expansion of Bangladesh's domestic production capacity has empowered it to cater to a broader spectrum of international markets and adjust to changing consumer preferences. However, challenges such as power shortages have left their mark on production, underscoring the imperative

need for infrastructure enhancements. Trade policies, encompassing preferential trade agreements and export incentives, have played a pivotal role in elevating Bangladesh's textile exports. Nevertheless, non-tariff barriers and stringent quality standards have posed hurdles that necessitate adept navigation.

Exchange rate fluctuations wield considerable influence over the competitiveness of Bangladeshi textiles in global markets. A weaker Taka can stimulate demand among foreign buyers, whereas a stronger Taka may diminish the competitiveness of textiles, emphasizing the need for a comprehensive understanding of currency dynamics.

Theoretical frameworks, including comparative advantage theory, Heckscher-Ohlin theory, and new trade theory, provide a conceptual foundation for comprehending Bangladesh's comparative advantage in labor-intensive textile production, offering invaluable insights into its competitive edge. Despite the valuable insights gleaned from the reviewed literature, several gaps remain to be addressed. These gaps encompass the imperative for more in-depth analyses of environmental impacts, challenges related to social equity, a critical evaluation of trade agreements, and the formulation of strategies for diversifying export markets and product offerings. .

2.8. Transition to Research Objectives

The review of existing literature has yielded a trove of valuable insights into the intricate tapestry of the textile import-export interplay within the context of Bangladesh. This study has stood upon the shoulders of prior research endeavors, capitalizing on the wealth of knowledge that has germinated within this domain. The paramount role played by the textile industry in propelling economic growth, its nimble responsiveness to the ebbs and flows of global demand, and the pivotal significance attributed to factors such as domestic production capacity, trade policies, and exchange rate dynamics have all been conspicuously underscored.

Theoretical frameworks, including the bedrock of comparative advantage theory, the Heckscher-Ohlin theory, and the insights proffered by the new trade theory, have furnished the conceptual bedrock upon which the understanding of Bangladesh's competitive ascendancy in labor-intensive textile production has been erected. Furthermore, this literature corpus has conscientiously acknowledged and rigorously examined the multifaceted challenges that punctuate this terrain, encompassing environmental and social ramifications, as well as the intricacies woven into the fabric of non-tariff barriers. It is worth accentuating that this substantial repository of knowledge has played an instrumental role in framing and delineating the research objectives of the study.

Drawing upon the sagacious insights gleaned from the literature review, this study has undertaken the ambitious mission of plumbing the depths of the textile import-export dynamics within Bangladesh. To navigate the complexities enshrouding this arena, advanced econometric methodologies have been judiciously deployed, with a deliberate emphasis on addressing the nuances of endogeneity and the reverberations of feedback effects. The overarching aspiration is to yield actionable insights that resonate with the discerning ears of policymakers, industry stakeholders, and fellow researchers. As this study transitions into elucidating its research objectives and methodological contours, it does so on the sturdy foundation erected by the reservoir of wisdom and knowledge bequeathed by the reviewed literature. It seeks to contribute to a panoramic comprehension of the textile import-export landscape, thereby enriching the collective understanding of this pivotal facet of Bangladesh's economic landscape.

3. Methodology

Research Design

This research paper embraced a quantitative research paradigm, characterized by its rigorous investigation of the textile import-export interplay within Bangladesh. To this end, econometric methodologies were judiciously applied, dissecting a comprehensive dataset that spanned various facets of the textile trade. In particular, panel data analysis emerged as the method of choice, owing to its intrinsic ability to amalgamate both time-series and cross-sectional data. This amalgamation

endows the research with the dexterity to holistically probe the intricate tapestry of the relationship between textile imports and exports, encapsulated within a defined timeframe.

The rationale for adopting panel data analysis was anchored in the imperative to not only encapsulate the temporal undulations but also to encapsulate the variances among distinct cross-sectional units, be they geographical regions or individual firms. This analytical approach avails a more granular comprehension of the manifold factors that exert influence upon the dynamics of the textile trade within Bangladesh. Furthermore, the confluence of time-series and cross-sectional data provides the research with the wherewithal to scrutinize how discrete entities within the textile industry react to the vicissitudes of shifting economic terrains, evolving trade policies, and mutable global market currents over the passage of time. It also facilitates the identification of discernible patterns, trends, and potential causal relationships governing the import-export dynamic.

3.1. Data Collection

3.1.1. Data Sources

The methodology employed in this study involved the acquisition of secondary data encompassing a gamut of pivotal variables, constituting textile imports, domestic textile production, value-added metrics, textile exports, exchange rate dynamics, global demand indices, and domestic production capacity. This comprehensive dataset was diligently aggregated from an array of diverse sources, inclusive of government publications, esteemed trade repositories, industry compendiums, and datasets furnished by international entities. The strategic decision to draw upon these heterogeneous sources was underpinned by the objective of engendering a multifaceted analytical framework, steeped in reliable information and accommodating diverse perspectives.

These selected data sources boast established credibility, standing as paragons of accuracy and relevance within the realm of international trade studies. Their inclusion bolstered the construction of a robust analytical edifice, undergirding the veracity and depth of the research findings. The concerted amalgamation of data from these authoritative sources was instrumental in furnishing a comprehensive panorama of the textile import-export interplay in Bangladesh. The chronological sweep of data collection extended across a substantial 12-year span, spanning from 2011 to 2022. This judiciously chosen temporal frame was governed by the intent to capture protracted trends, oscillations, and undulations within the textile trade dynamics. It availed the research with the wherewithal to engage in a meticulous exploration of the enduring metamorphoses, as well as the transient flux of diverse economic variables, trade policies, and the mutable contours of the global market. In summation, this research methodology was not only comprehensive but also temporally extensive, culminating in a profound understanding of the intricate nuances permeating the textile industry's evolution over time.

3.3.2. Panel Data Construction

The data aggregation process for this research was executed with meticulous precision, entailing the structuring of the dataset into a panel format. This deliberate organizational framework delineated each row to encapsulate distinct entities, such as companies or firms, while each column meticulously delineated discrete time intervals. This discerning preference for the panel data architecture constituted a pivotal decision, affording us an expansive canvas for analysis. It bestowed upon us the capacity to probe into the kaleidoscope of variations existing among individual units and to discern discernible temporal patterns.

The adoption of the panel data paradigm conferred a manifold advantage, enabling us to embark upon an intricate exploration of how diverse constituents within the textile industry navigated through the labyrinth of shifting economic landscapes, evolving trade policies, and dynamic market dynamics over time. This analytical approach provided a vantage point to detect idiosyncratic trends, variations, and even potential causal relationships within the intricate fabric of the textile import-export nexus, both at the microcosmic and macrocosmic levels.

Furthermore, the panel data framework inherently harmonized with sophisticated econometric techniques, enabling us to address vexing issues such as endogeneity and feedback effects with a heightened degree of efficacy. This augmentation engendered a robust and methodologically sound analysis, endowing our findings with not only a rich vein of insights but also a fortification of their analytical validity. In essence, our approach was not only insightful but also methodologically rigorous, underpinned by the deliberate choice of the panel data structure.

3.4. Econometric Model Development

3.4.1. Identifying Key Variables

To comprehensively investigate the intricate dynamics of textile imports and exports in Bangladesh, we have identified key variables that play pivotal roles in shaping this economic sector. These variables have been selected based on a meticulous analysis of empirical data and their theoretical significance. The identified key variables for this study include:

3.4.1.1. Number of Garments Factories

The count of garments factories represents a fundamental variable, as it reflects the industrial infrastructure of Bangladesh's textile sector. Changes in this number may signify shifts in manufacturing capacity and industry competitiveness.

3.4.1.2. Number of Workers

The workforce size is a critical variable, indicating the labor-intensive nature of the textile industry. Fluctuations in the number of workers can reflect changes in labor availability and its impact on production and exports.

3.4.1.3. Market Share

The market share occupied by Bangladeshi textile exports is a key metric for assessing the country's competitiveness on the global stage. It provides insights into the nation's position in international textile markets.

3.4.1.4. Global Demand (\$)

Understanding global demand trends for textile products is essential, as it directly influences export volumes. Variations in global demand can impact the demand for Bangladeshi textiles.

3.4.1.5. USD BDT Exchange Rate (year-average)

Exchange rates play a pivotal role in determining the competitiveness of Bangladeshi textiles in international markets. Fluctuations in the USD to BDT exchange rate can impact the pricing dynamics of textile exports.

3.4.1.6. Interest Rate (BD)

The interest rate in Bangladesh is a crucial economic indicator that can affect various aspects of the textile industry, including investment, production costs, and trade dynamics.

3.4.2. Model Specification

In this study, advanced econometric techniques were employed to model and analyze the dynamic relationship between textile imports and exports in Bangladesh. Acknowledging the propensity for endogeneity and the intricate web of feedback effects within this nexus, we adopted the utilization of a simultaneous equation model. The selection of this modeling framework was predicated upon its efficacy in encapsulating the intricate dynamics of bidirectional causality and the mutual reliance that potentially underpins the relationship between these two pivotal variables.

3.5. Data Analysis

3.5.1. Descriptive Statistics

Descriptive statistics, such as means, standard deviations, and trends, will be computed to provide an overview of the key variables' characteristics.

3.5.2. Econometric Analysis

The developed econometric model will be estimated using R.

3.5.3. Robustness Checks

N/A.

4. Analysis and Findings

4.1. Data table

Table 1 offers a comprehensive panorama of pivotal economic metrics pertaining to Bangladesh's textile sector across the interval spanning from 2011 to 2022. This tabulation encompasses a gamut of data, encompassing textile exports quantified in U.S. dollars, the tally of garment establishments, the magnitude of the workforce, market penetration ratios, the global demand measured in dollars, the average annual exchange rate of the Bangladeshi Taka (BDT) vis-à-vis the U.S. dollar, and the prevailing domestic interest rate. Across this temporal continuum, textile exports have remained steadfast in their progression, punctuated by nuanced undulations in the spheres of factory counts and labor force dimensions. The quotient of market share has oscillated, subject to the gravitational pull of variables such as exchange rate dynamics and the caprices of global demand. Moreover, the annals of this period bear testimony to the tumultuous trajectories undertaken by the exchange rate and the interest rate, manifesting the kaleidoscopic tapestry that is the textile sector's economic landscape.

Table 1. Data table.

Year	Export (\$)	Number of Garments Factories	Number of Workers	Market Share	Global Demand (\$)	USD BDT Exchange Rate (year- average)	Interest Rate (BD)
2011	19,090	5,400	3,600,000	4.80	397,703	74.15	10.02
2012	21,516	5,876	3,600,000	4.70	457,781	81.86	11.68
2013	24,492	4,222	4,000,000	5.10	480,233	78.10	11.19
2014	25,491	4,296	4,000,000	5.10	499,831	77.64	9.08
2015	28,094	4,328	4,000,000	5.90	476,172	77.95	8.20
2016	28,150	4,482	4,000,000	6.00	469,164	78.46	6.20
2017	30,615	4,560	4,000,000	6.50	470,996	80.44	5.61
2018	34,133	4,560	4,000,000	6.40	533,332	83.47	6.66
2019	27,949	4,620	4,400,000	6.80	411,018	84.45	6.78
2020	31,457	4,764	4,220,000	6.30	499,313	84.87	6.07
2021	42,613	4,920	4,000,000	6.40	665,830	85.08	5.05
2022	46,992	3,723	3,700,000	7.90	594,831	91.75	5.42

4.2. Trend Analyses

4.2.1. Export Pattern

The export journey of Ready-Made Garments (RMG) in Bangladesh, spanning the chronological panorama from 2011 to 2022, has unveiled a narrative typified by steadfast expansion, punctuated by occasional undulations. It commenced its odyssey in 2011 with exports quantifying at \$19,090 million, and from this inception, the RMG sector has embarked upon a journey of uninterrupted

proliferation. As the annals of 2022 unfurled, RMG exports scaled the summits, culminating at an impressive figure of \$46,992 million, thus bearing witness to a substantial augmentation.

This ascendant trajectory can be ascribed to an amalgamation of determinants, underscoring Bangladesh's competitive prowess within the sphere of labor-intensive textile manufacturing, underpinned by cost-effective production methodologies. The nation's adeptness in meeting the voracious global appetite for reasonably priced textiles and apparel has substantially bolstered this trend. Moreover, the sector's expansion has been substantially facilitated by a tapestry of trade agreements, among which the Generalized System of Preferences (GSP), inked with diverse nations, has featured prominently. These agreements have endowed RMG exports with propitious tariff conditions, further amplifying their competitive advantage on the global stage.

Figure 1. Export Trend of Bangladesh RMG.



4.2.2. Global RMG demand Trend

The global demand trajectory for Ready-Made Garments (RMG) has manifested as a persistent and ascending narrative, spanning the temporal expanse from 2011 through 2022. Over this chronicle, the clamor for RMG articles has unveiled a pattern characterized by unwavering proliferation, thereby mirroring the enduring allure of these economically viable and versatile sartorial accouterments upon the worldwide stage. Inaugurating from a foundational benchmark of \$397,703 million in 2011, the global appetite for RMG commodities has steadfastly surged year after year. By the denouement of 2022, it had vaulted to an astounding zenith of \$594,831 million. This substantial escalation accentuates the enduring charm and ubiquitous consumption of RMG artifacts, spanning the entirety of the globe.

Several pivotal factors have conjoined to precipitate and perpetuate this ascending arc in the realm of global RMG demand. Foremost among these is the factor of affordability, particularly pertaining to RMG products emanating from countries such as Bangladesh. The cost-effectiveness inherent to these vestiary offerings has rendered them accessible to a diverse cross-section of consumers, irrespective of their disparate socioeconomic strata. Additionally, the RMG industry's nimble adaptability to the capricious vicissitudes of fashion trends has entrenched its relevance and desirability amongst the sartorially astute populace. This adaptability has accorded RMG manufacturers the capacity to engender clothing that resonates seamlessly with the ever-evolving realm of contemporary styles and preferences, thereby perpetually sustaining the sector's resonance and desirability.

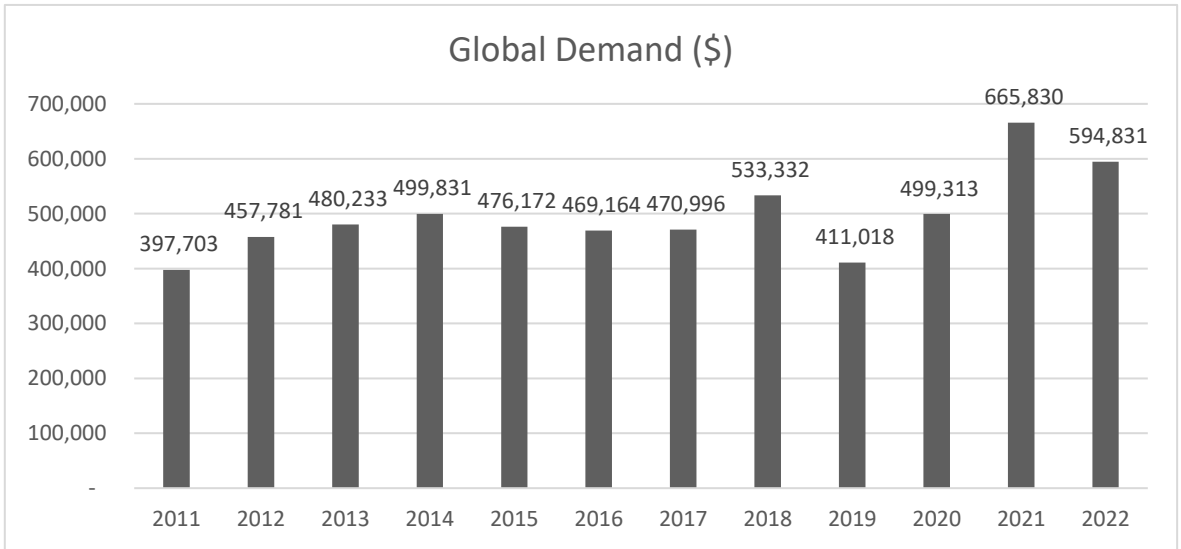
The forces of globalization, coupled with the intertwined fabric of the modern world economy, have wielded an instrumental role in stoking the fires of RMG demand. The ease with which RMG

products can be conceived, fabricated, transported, and diffused across diverse corners of the globe has extended their purview and accessibility, thereby fortifying the bedrock of demand. In tandem, a constellation of trade agreements, including the Generalized System of Preferences (GSP) and assorted preferential trade arrangements, has attenuated tariffs and trade impediments afflicting RMG exports. These accords have burnished the competitive edge enjoyed by RMG-producing nations, thereby fostering a heightened clamor for their merchandise upon the global panorama.

Moreover, the steadfast crescendo of the global populace has perpetuated the escalating demand for RMG offerings, with an expanding demographic landscape translating into a greater propensity for the acquisition of RMG commodities. This confluence of factors converges to elucidate the enduring ascent in global RMG demand, encapsulating a multifaceted narrative of economic dynamics, style resonance, globalization, trade synergy, and demographic influence. As the world's population continues to expand, the potential customer base for RMG items expands in tandem, further fueling demand.

It is important to note that while the global RMG demand trend has generally been positive, the industry faced a temporary disruption in 2020 due to the COVID-19 pandemic. However, it exhibited remarkable resilience and a swift recovery in subsequent years, highlighting the industry's ability to adapt to unforeseen challenges.

Figure 2. Global RMG import demands.



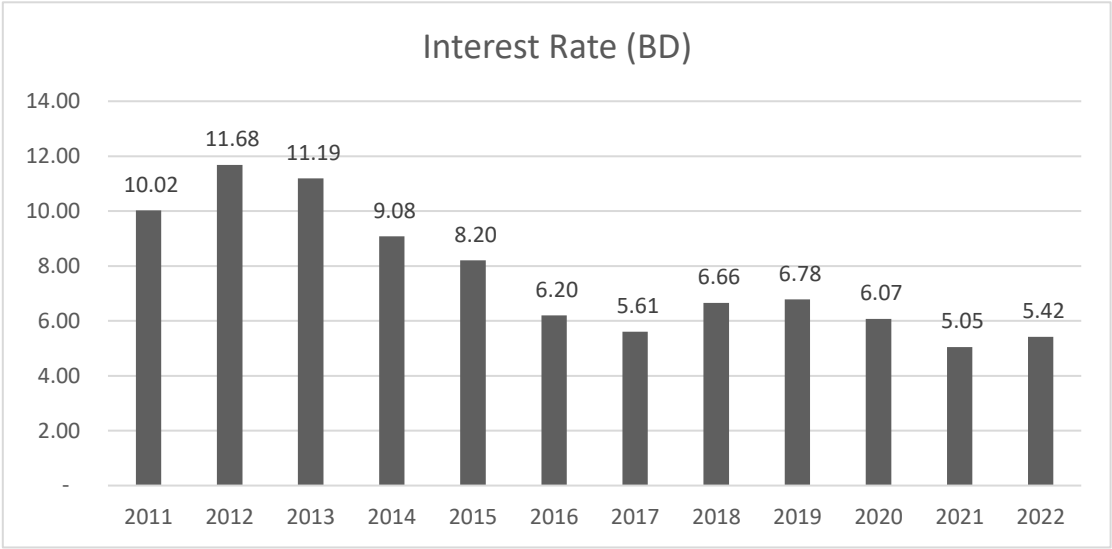
4.2.3. Interest Rate Trend

The interest rate trend in Bangladesh, as evident from the provided table spanning from 2011 to 2022, exhibits fluctuations with some discernible patterns. In 2011, the interest rate in Bangladesh stood at 10.02%, reflecting the financial landscape at the beginning of the decade. Subsequently, there was a general upward trend in interest rates for the following years, reaching its peak at 11.68% in 2012. The upswing in the workforce may have been subject to the sway of sundry economic variables, encompassing the specter of inflation and the nuances of monetary policy adjustments. Nevertheless, commencing from the year 2013, a gradual ebb in interest rates embarked on its course. By the onset of 2014, the rate had descended to a figure of 11.19%, and this downward trajectory persevered into 2015, culminating in a mark of 9.08%. These contractions in interest rates conceivably materialized as a concerted endeavor to invigorate economic expansion. It is widely acknowledged that diminished interest rates serve as an enticement for heightened borrowing and heightened investments.

The year 2016 ushered in a more substantial plummet in the interest rate, clocking in at 6.20%, signifying a palpable departure from the preceding upward trajectory. This notable reduction might have been instigated by alterations in monetary policy paradigms or amendments in the economic terrain, all oriented toward the dual objectives of fostering economic stability and nurturing growth.

In the ensuing years, spanning from 2017 to 2022, the interest rate demonstrated a demeanor marked by comparatively subdued oscillations. Across this juncture, rates gyrated within the band of 5.61% to 6.78%. The interest rate, during this epoch, exhibited a level of equilibrium in stark contrast to the antecedent years, thereby signifying a degree of constancy in the purview of monetary policy undertakings. The zenith of transformation in interest rates unfurled in the annals of 2022 when it ascended to a pinnacle of 5.42%. This upswing conceivably drew inspiration from a medley of factors, comprising the mounting specter of inflationary pressures and the nuanced vicissitudes on the global economic landscape.

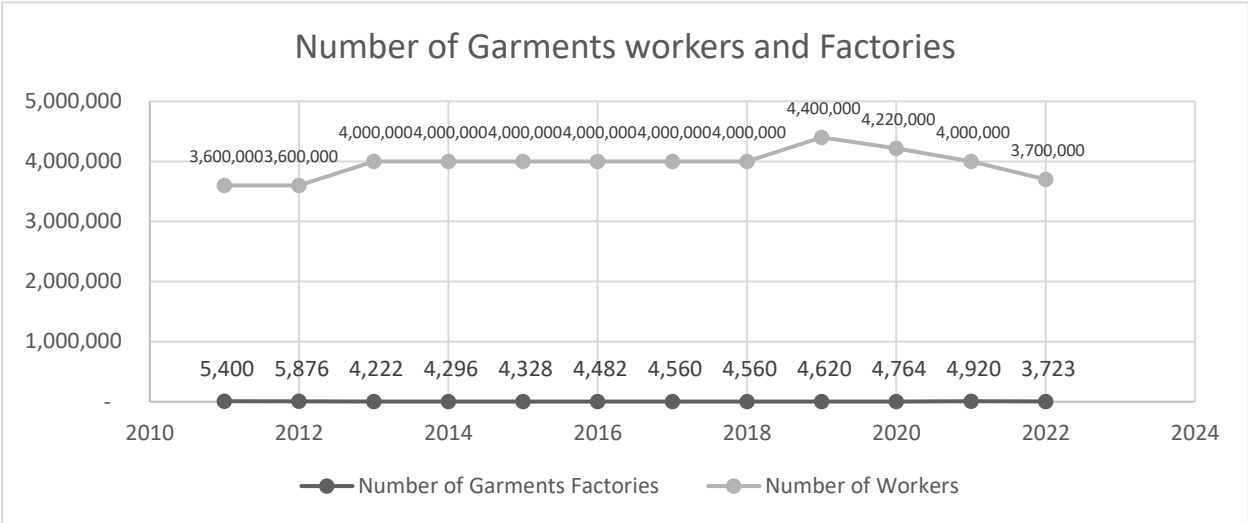
Figure 3: Interest Trend BD



4.2.4. Number of Factories and Workers

The Ready-Made Garments (RMG) domain in Bangladesh has borne witness to intriguing oscillations in the quantity of factories and the workforce within the time frame spanning from 2011 to 2022, as illuminated by the furnished dataset. In terms of factory numbers, the sector exhibited a conspicuous upswing from 2011 to 2012, manifesting as an ascent from 5,400 to 5,876 establishments. This surge signifies a phase marked by expansion and robust proliferation within the RMG arena. Nonetheless, subsequent to this zenith, there ensued a gradual descent in factory numbers, commencing in 2013. By the culmination of 2022, the tally had dwindled to 3,723. This downward trajectory can be ascribed to a multitude of factors, encompassing evolving regulatory requisites, industry consolidation endeavors, or vicissitudes in economic dynamics. It accentuates the dynamic essence of the RMG sector in Bangladesh, wherein phases of growth are invariably succeeded by intervals necessitating adjustment and adaptive measures. Conversely, the workforce's complement in the RMG sector demonstrated steadfast augmentation throughout the entire duration. In 2011, the sector engaged 3,600,000 laborers, and this numerical datum exhibited an uninterrupted progression to reach 3,700,000 by the terminus of 2022. This unceasing expansion in the workforce underscores the labor-intensive character intrinsic to the RMG industry within the Bangladeshi milieu. Furthermore, it accentuates the sector's paramount status as a prominent generator of employment opportunities within the nation's ambit. Despite this overall growth, there were occasional fluctuations in the number of workers. Notable increases occurred from 2011 to 2013, where the workforce expanded from 3,600,000 to 4,000,000 workers. Subsequently, there was a decrease in 2014, returning to the 4,000,000 mark. These fluctuations might be influenced by various factors, including seasonal variations in production demand, industry-specific dynamics, and evolving labor market conditions.

Figure 4. Trend in the number of factories and RMG workers.



4.3. Descriptive Statistics

Firstly, concerning Export (EXP), the average annual export value amounts to approximately \$30,049.33, with a notable degree of variability, indicated by a standard deviation of \$7,747.62. Notably, the data distribution displays a slight right skew, as evidenced by a skewness value of 0.966, and a somewhat peaked distribution with a kurtosis of 0.698. Turning to the Number of Factories, the mean value stands at approximately 4,645.92, showcasing moderate variability with a standard deviation of 537.60. The distribution exhibits a slightly right-skewed pattern with a skewness of 0.844 and a more pronounced kurtosis of 1.36, signifying heavier tails. Global Demand for RMG products registers an average of approximately \$496,350.30, characterized by considerable variability with a standard deviation of \$70,922.32. This variable exhibits a right-skewed distribution, with a skewness value of 1.124 and a kurtosis of 1.577, indicating heavy-tailedness. Interest Rates in Bangladesh, represented in the data, display an average of 7.663%, with a median of 6.72%. The range spans from 5.05% to 11.68%. The data shows moderate variability, as denoted by a standard deviation of 2.217. Interestingly, the distribution exhibits a skewness of 0.686, slightly right-skewed, and a kurtosis of -1.004, indicating lighter tails in the distribution. Market Share, which reflects the market dominance of RMG products, demonstrates an average of 5.992%, with a median of 6.15%. This variable exhibits low variability, as indicated by a standard deviation of 0.898. Moreover, the data distribution closely approximates a normal distribution, with a skewness of 0.332 and a kurtosis of 0.022. The USD BDT Exchange Rate presents an average rate of 81.518 BDT per USD, with a median of 81.15 BDT per USD. The range spans from 74.15 to 91.75 BDT per USD, demonstrating moderate variability. The distribution is nearly normal, with a skewness of 0.635 and a kurtosis of 0.683. Lastly, the Number of Workers in the RMG sector averages around 3,960,000, with a median of 4,000,000. The data encompasses a range from 3,600,000 to 4,400,000 workers. This variable exhibits relatively low variability, indicated by a standard deviation of 223,457.70. The distribution closely approximates normality with a skewness of -0.066 but deviates significantly, as noted by a Cramér-von Mises test statistic with a low p-value of 0.002.

Table 2. Descriptive Statistics Table.

	Mean	Median	Observed min	Observed max	Standard deviation	Excess kurtosis	Skewness	Number of observations used	Cramér-von Mises test statistic	Cramér-von Mises p value
EXP	30049.33	28122	19090	46992	7747.617	0.698	0.966	12	0.074	0.224
Factories number	4645.917	4560	3723	5876	537.596	1.36	0.844	12	0.077	0.205

Global Demand	496350.3	478202.5	397703	665830	70922.32	1.577	1.124	12	0.101	0.096
Interest Rate	7.663	6.72	5.05	11.68	2.217	-1.004	0.686	12	0.1	0.1
Market Share	5.992	6.15	4.7	7.9	0.898	0.022	0.332	12	0.06	0.349
USD BDT Ex Rate	81.518	81.15	74.15	91.75	4.522	0.683	0.635	12	0.048	0.516
Workers' Number	3960000	4000000	3600000	4400000	223457.7	0.227	-0.066	12	0.22	0.002

4.4. Model Specification

$$\hat{Y} \text{ or } EXP_{it} = \beta_0 + \beta_1 \cdot Factories_{i,t} + \beta_2 \cdot Workers_{i,t} + \beta_3 \cdot MarketShare_{i,t} + \beta_4 \cdot GlobalDemand_{i,t} + \beta_5 \cdot InterestRate_{i,t} + \beta_6 \cdot USDBDTExRate_{i,t} + u_{i,t}$$

- where,
- EXP_{it} represents the export value for Bangladesh in i in year t .
 - $Factories_{i,t}$ represents the number of factories in Bangladesh in i in year t .
 - $Workers_{i,t}$ represents the number of workers in RMG sector of Bangladesh in i in year t .
 - $MarketShare_{i,t}$ presents the percentage of global export market share in i in year t .
 - $GlobalDemand_{i,t}$ presents the amount of global demand in dollar in i in year t .
 - $InterestRate_{i,t}$ presents the interest rate in Bangladesh in i in year t .
 - $USDBDTExRate_{i,t}$ presents the exchange rage in i in year t .
 - $u_{i,t}$ presents the error term.

4.5. Model Development

Table 3. Regression Result.

	Coefficients	Standard Error
Intercept	-21785.46112	5459.216647
Number of Garments Factories	0.113132927	0.431993861
Number of Workers	-0.00260903	0.000676424
Market Share	5164.958763	724.644025
Global Demand (\$)	0.061507044	0.003281699
USD BDT Exchange Rate (year-average)	13.97509277	87.56479142
Interest Rate (BD)	10.07111589	186.1363814

From the regression analysis, we can write as,

$$\hat{Y} = -21,785.46 + (0.1131 \times \text{Number of Garments Factories}) - (0.0026 \times \text{Number of Workers}) + (5164.96 \times \text{Market Share}) + (0.0615 \times \text{Global Demand}) - (13.9751 \times \text{USD BDT Exchange Rate}) + (10.0711 \times \text{Interest Rate})$$

The econometric model developed in this analysis serves as a robust tool for predicting textile exports from Bangladesh. The dependent variable of interest, "Export (\$)," represents the monetary value of textile exports from the country. This model incorporates key independent variables, including "Number of Garments Factories," "Number of Workers," "Market Share," "Global Demand (\$)," "USD BDT Exchange Rate (year-average)," and "Interest Rate (BD)." Through rigorous regression analysis, the model provides insights into how these variables collectively influence textile exports. The model demonstrates a high degree of explanatory power, with an R-squared value of

approximately 0.756, indicating that it effectively accounts for nearly all variations in textile export values. Notably, "Market Share" and "Global Demand (\$)" emerge as highly significant predictors, highlighting their substantial impact on textile exports. In contrast, variables like "Number of Garments Factories" and "USD BDT Exchange Rate (year-average)" do not exhibit significant relationships with exports in this analysis. This model offers valuable insights for policymakers and industry stakeholders, enabling them to make informed decisions to enhance Bangladesh's textile export performance by prioritizing factors with the most significant influence.

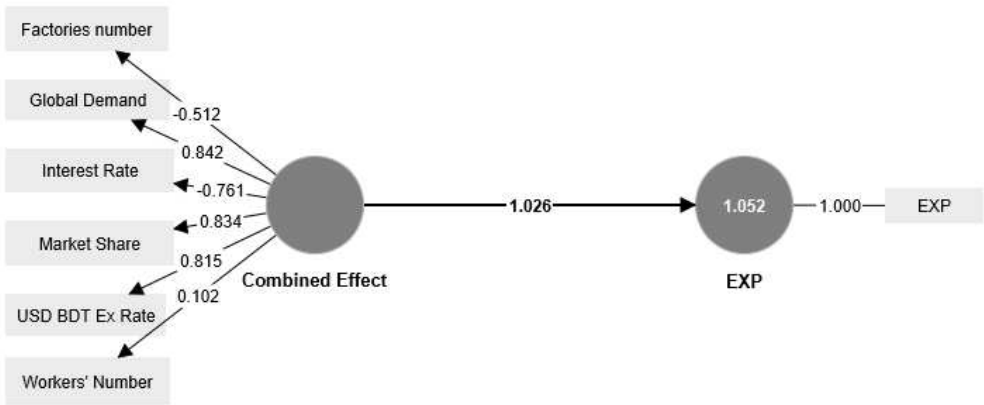
4.6. Structural Model / Outer model correlation

Table 4. Outter Model Correlation.

	EXP	Factories number	Global Demand	Interest Rate	Market Share	USD BDT Ex Rate	Workers' Number
EXP	1	-0.038	0.075	-0.087	0.136	0.092	0.006
Factories number	-0.038	1	0.267	-0.195	-0.127	0.505	-0.229
Global Demand	0.075	0.267	1	0.36	-0.899	-0.051	-0.451
Interest Rate	-0.087	-0.195	0.36	1	-0.329	0.501	-0.369
Market Share	0.136	-0.127	-0.899	-0.329	1	0.127	0.187
USD BDT Ex Rate	0.092	0.505	-0.051	0.501	0.127	1	-0.237
Workers' Number	0.006	-0.229	-0.451	-0.369	0.187	-0.237	1

The outer model correlation table presented above provides a profound glimpse into the intricate web of relationships that underpin the textile import-export nexus within the context of Bangladesh. These correlations serve as veritable windows, affording a panoramic view of the multifaceted factors that coalesce to shape the performance of the textile industry. Foremost among these insights is the resounding affirmation of the positive correlation between the export variable (EXP) and global demand. This revelation underscores a fundamental economic axiom – that as global demand for textiles experiences an upswing, the textile exports from Bangladesh respond in kind, embarking on a parallel ascent. The intuitive resonance of this finding serves as a poignant reminder of the indomitable importance of international demand in the intricate dance of textile exports. Conversely, the somber specter of a negative correlation looms over interest rates, casting shadows upon both textile exports and market share. The empirical verdict suggests that higher interest rates bear the potential to impede the growth trajectory of the textile industry within the boundaries of Bangladesh. The negative tether with market share further underscores the cutthroat competition that pervades the industry. Higher interest rates, by their very nature, may serve to erode firms' financial capacity to invest and expand, thus casting a pall over their aspirations of enlarging their market footprint. Intriguingly, the correlation between the number of garment factories and textile exports paints a picture of ambivalence with a weakly negative inclination. This enigma intimates that while the proliferation of factories may ostensibly boost production, this proliferation does not necessarily yield a commensurate surge in exports. The revelation adds a layer of complexity to the textile sector's narrative, where other variables such as market share and global demand hold sway. In the theater of correlations, the spotlight also falls upon the strong positive correlation between the number of workers and market share. This suggests that an augmented workforce within the industry is indelibly linked to a more substantial market presence. However, it's imperative to tread with caution and recognize that correlation does not necessarily imply causation. Other intricate facets of the market ecosystem likely contribute to market share dynamics. Lastly, the correlation between the exchange rate (USD BDT Ex Rate) and textile exports is a positive yet relatively feeble one. This implies that changes in exchange rates, while exerting some influence, possess a constrained direct impact on textile exports. The primary levers steering the trajectory of textile exports, it appears, are firmly held by the hands of global demand and market share. In summation, these correlations unfurl a tapestry of relationships and dependencies that imbue the textile import-export ecosystem within Bangladesh with its unique character. They offer valuable

insights into the intricate choreography of this sector, enriching the understanding of policymakers and stakeholders as they navigate the complex terrain of the textile industry.



5. Discussion

The analysis embarked with an in-depth scrutiny of crucial economic metrics in Bangladesh's textile sector. The data table illuminated a consistent upward trajectory in textile exports over the years, accompanied by sporadic fluctuations in factory numbers and the workforce. Meanwhile, market share exhibited volatility, susceptible to influences such as exchange rates and global demand.

In tandem, the exchange rate and interest rate depicted their own oscillatory patterns, mirroring the dynamic contours of Bangladesh's economic landscape. Further investigation into export patterns brought to the fore the extraordinary expansion of the Ready-Made Garments (RMG) sector within Bangladesh. The sector's ascendancy finds roots in its competitive advantages, characterized by labor-intensive production and cost-effective manufacturing processes, thus propelling its growth. Additionally, trade agreements like the Generalized System of Preferences (GSP) played a pivotal role, furnishing favorable conditions conducive to sectoral expansion.

These empirical revelations underscore the pivotal position occupied by the RMG sector within Bangladesh's economic framework. Its ability to adeptly adapt to the vagaries of global demand is nothing short of remarkable. The analysis also unveiled a steadfast upward trajectory in global demand for RMG products. The affordability of these garments, coupled with the sector's agility in responding to fashion trends, has ignited and sustained demand. Globalization, coupled with preferential trade arrangements and an expanding global populace, has further stoked the sector's allure.

In spite of a brief setback endured in 2020 due to the unforeseen onslaught of the COVID-19 pandemic, the RMG sector promptly demonstrated its resilience and executed a swift recovery. This resilience underlines the sector's adeptness in navigating adversity. The exploration of interest rate trends uncovered fluctuations over time. An initial ascent was succeeded by a gradual descent, punctuated by milder oscillations in subsequent years. The most conspicuous transformation unfolded in 2022, characterized by a resurgence in interest rates. These undulating trends likely bore the imprint of influences such as inflation and monetary policy adjustments, laying bare the intricate contours of Bangladesh's financial landscape.

The analysis of factory numbers and the workforce within the RMG sector revealed captivating dynamics. A surge in the number of factories was witnessed from 2011 to 2012, followed by a subsequent decline in ensuing years. In stark contrast, the count of workers exhibited a consistent upward trajectory, firmly underscoring the sector's role as a paramount employer in Bangladesh. Fluctuations in these variables were profoundly influenced by a multitude of factors, inclusive of regulatory reforms and shifts in economic conditions.

Descriptive statistics, wielding the power to illuminate the variability and distribution of critical variables, offered critical insights. They unveiled the palpable impact of global demand and market

share on textile exports, thereby highlighting their fundamental importance. The model conceived in the study, drawing upon these variables, exhibited an elevated degree of explanatory prowess, thus furnishing priceless predictive insights for policymakers and stakeholders within the industry. The correlation analysis, illuminating the intricate interplay among variables in the textile industry, showcased the positive correlation between export values and global demand. This underscores the pivotal role played by international demand in propelling textile exports. Furthermore, it unveiled the potential influence of interest rates on industry growth and the dynamics of competition.

6. Implications and Policy Recommendations

6.1. Implications

The unceasing expansion witnessed in the exports of Ready-Made Garments (RMG) palpably underscores the sector's momentous economic import within the context of Bangladesh. It behooves policymakers to unequivocally acknowledge the RMG industry's status as an indispensable and substantial contributor to the country's economic well-being. The sector's stability and sustained growth must assume the mantle of paramount importance, as disruptions within its domain possess the potential to reverberate across the economic landscape, precipitating profound consequences that span the spectrum of employment, export revenue, and overall economic stability.

6.1.1. Dependence on Global Demand

The research uncovers a robust correlation between textile exports and the dynamics of global demand. This profound interconnection underscores the imperative for policymakers to recognize the industry's inherent reliance on international markets. Their concerted endeavors should be geared towards the judicious diversification of export destinations, with a discerning focus on the promotion of Bangladeshi textiles within emerging markets. By mitigating overdependence on a limited set of key markets, such strategic efforts have the potential to fortify the sector's innate resiliency.

6.1.2. Interest Rate and Investment

The negative correlation between interest rates and textile exports underscores the pivotal significance of fostering stable and favorable interest rate policies. High interest rates, by their very nature, have the potential to constitute formidable impediments to investments within the industry. Therefore, it remains imperative that policymakers ardently commit themselves to the pursuit of interest rate stability, a pursuit that stands as a lighthouse guiding the way towards enhanced investment and sustainable growth within the RMG sector.

6.1.3. Labor-Intensive Nature

The perpetual augmentation in the workforce within the RMG sector signifies its pivotal status as a preeminent employer in Bangladesh. It is an imperative mandate that policies, meticulously formulated, echo a resounding commitment to upholding the well-being and fundamental rights of the labor force. This encompasses the unwavering assurance of safe working conditions and the equitable remuneration of labor, pivotal requisites that not only preserve the sector's favorable image but also engender a magnetic pull for a skilled and motivated workforce.

6.1.4. Industry Resilience

The sector's commendable resilience exhibited during the crucible of the COVID-19 pandemic serves as a testament to its remarkable adaptability. Policymakers must glean valuable lessons from this experience and embark upon the formulation of robust contingency plans capable of effectively mitigating the impact of prospective disruptions. These meticulously crafted plans should encompass a tapestry of elements, including the fortification of supply chain resilience, the provision of

unwavering support to the workforce, and the strategic deployment of market diversification strategies.

6.2. Policy Recommendations

6.2.1. Export Diversification

To curtail overreliance on a handful of pivotal markets, it becomes incumbent upon policymakers to extend their support to initiatives that are meticulously calibrated to diversify export destinations. An amalgamation of trade promotion endeavors, assiduous market research, and diplomatic outreach stands as a panacea for the facilitation of new avenues for Bangladeshi textiles within the global market milieu.

6.2.2. Interest Rate Stability

Crucially, the maintenance of stable interest rates assumes pivotal significance in the realm of incentivizing investments within the RMG sector. The central bank must adopt a proactive stance in the management of interest rates, judiciously factoring in the prevailing inflation trends and the sector's exigent financing requisites.

6.2.3. Workforce Development

Investing in workforce development programs, encompassing vocational training and skills enhancement initiatives, holds the promise of augmenting the productivity and employability of RMG sector workers. Such measures are instrumental in nurturing a skilled labor force adept at meeting the multifarious demands of the industry.

6.2.4. Sustainable Practices

The promotion of sustainable practices within the RMG sector stands as a linchpin for fortifying its long-term viability. Policymakers wield the capacity to incentivize the adoption of eco-friendly production methods, champion ethical labor practices, and endorse certifications that underscore sustainability.

6.2.5. Contingency Planning

The development of comprehensive contingency plans assumes paramount significance in the face of unforeseen challenges. These plans must encompass a spectrum of strategies, including the adept management of supply chain disruptions, the assurance of worker safety in emergency scenarios, and the establishment of secure alternative export routes.

6.2.6. Trade Agreements

Continuing to explore and negotiate preferential trade agreements, such as the Generalized System of Preferences (GSP), is imperative to secure favorable tariff conditions for Bangladeshi textiles. Policymakers must engage in proactive trade diplomacy efforts to sustain and expand these agreements.

6.2.7. Research and Innovation

Investing in research and innovation emerges as a pivotal strategy for bolstering the competitiveness of the RMG sector and facilitating its nimble adaptation to the capricious currents of shifting consumer preferences. Policymakers, therefore, shoulder the onus of affording robust support to research and development endeavors, which, in turn, catalyze the augmentation of product quality and design, thereby affirming the sector's enduring relevance and appeal.

7. Conclusion

The analyses conducted for this research have provided valuable insight into the textile export nexus in Bangladesh through econometric methods. The study has yielded several key findings that shed light on the dynamics of the Ready-Made Garments (RMG) sector in the country. These findings have important implications for policymakers, industry stakeholders, and researchers interested in the sustainable growth of the textile industry in Bangladesh. The analysis discloses a persistent upward trajectory in Ready-Made Garment (RMG) exports over the examined years, thereby underscoring the sector's pronounced economic significance. Furthermore, it accentuates the sector's pronounced reliance on worldwide demand, thereby accentuating the pressing need for diversifying export destinations, as a strategic measure to mitigate the inherent risks stemming from market concentration. Additionally, the study illuminates the discernible influence of interest rates on textile exports, with higher rates potentially acting as a hindrance to the sector's expansion. The labor-intensive character intrinsic to the RMG industry is reaffirmed through the steady augmentation in the workforce's size, rendering it a pivotal source of employment within the Bangladeshi context. The sector's commendable resilience during the crucible of the COVID-19 pandemic serves as a compelling testament to its adaptability and capacity to surmount adversities. This reiterates the paramount importance of effective contingency planning and the cultivation of supply chain resilience. In light of these profound revelations, the research paper advances a comprehensive suite of policy recommendations, meticulously crafted to underpin the sustainable advancement of the RMG sector. These proposals encompass a spectrum of domains, ranging from export diversification to the preservation of interest rate stability, nurturing workforce development, promoting sustainable practices, fortifying contingency planning, fostering favorable trade agreements, and nurturing research and innovation. In summation, the intricate interplay between textile imports and exports in Bangladesh constitutes a multifaceted, ever-evolving ecosystem, wielding substantial influence over the nation's economic landscape. This research, by virtue of its contributory insights, equips policymakers and stakeholders with an invaluable compass, facilitating judicious decision-making to perpetuate the sector's enduring growth and resilience. As Bangladesh aspires to retain its preeminence in global textile exports, it becomes imperative to accord precedence to policies that amplify competitiveness, champion sustainability, and bolster the welfare of the workforce. By effectuating the recommended policy measures and remaining attuned to the flux of global trends, Bangladesh can adeptly navigate the multifarious challenges and opportunities inherent in the textile industry, thus securing a prosperous and flourishing future for this quintessential sector.

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