Master Thesis

A Quantitative Study of Econometrical Indicators Influencing the Growth of Export Goods and Services in The Context of Bangladesh

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The Graduate School of Hansung University

Major in International Market Analysis

Dept. of International Trade and Economics

Azhar Uddin

Master Thesis

Advisor Professor InSeon Kim

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Abstract

A Quantitative Study of Econometrical Indicators Influencing the Growth of Export Goods and Services in The Context of Bangladesh

- 방글라데시의 수출상품과 서비스 성장에 영향을 미치는 계량적 지표에 관한 연구 -

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This study emphasizes quantitative analysis where the relationship of dependent and independent variables is tested from 1991-2020. After independence Bangladesh had to struggle with the poverty a lot, there after nation started to consider herself an agricultural-focused country but as the time demanded Bangladesh has switched its focus to industrialization emphasizing on clothing industry as this is commonly known that Bangladesh is a very densely populated country the labor force is their competitive advantage, yet female labor force has a negative impact on it exporting industry. On the other hand, Trade openness has opened the door for Bangladesh as this variable influences her economy to grow at a certain level. It is also to be mentioned that trade openness

is growing in a gradual pattern. Thirdly, in the '90s Bangladesh started emphasizing on clothing industry since then the most contribution to the export industry has remained ready-made garments. However, currently, the growth rate of ready-made garments is not crossing its previous mark therefore the contribution of the relationship remains constant. Lastly, the real interest rate of Bangladesh has remained almost constant though interest rates have a negative influence on export goods and services.

Keywords: Economics, Readymade garments, export goods and services, r eal interest rate, female labor force, quantitative test, regression analysis, Bangladesh's context

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Chapter 1: Introduction

READY-MADE GARMENTS is one of the largest contributors in exporting field of Bangladesh. Growth of labor force has been the key factor for large production for READY-MADE GARMENTS. Few researches, including (Hoque, 2001; Abdul *et al.*, 2010; Ahmed, Greenleaf and Sacks, 2014; K. M. Ayatullah Hosne Asif, 2017), has clearly established that growth of labor force is an essential element to the growth of READY-MADE GARMENTS production. However, there are conflicting views and an overall lack of research regarding how best to manage the growth READY-MADE GARMENTS export growth in highly dynamic environment where labor force is rapidly and continuously evolving.

This research aims to gain an understanding of the impact of Female Labor Force (% Total Labor Force), Trade openness (% GDP), Ready-Made Garments export output, Real Interest Rate (% GDP) Export Goods and Services (%GDP) growth in Bangladesh's context.

"READY-MADE GARMENTS production started independently right after the independence of Bangladesh in 1971 with three major garment factories named Reaz, Juwel and lastly Paris garment. However, READY-MADE GARMENTS export started on 1978 and surprisingly the rise of READY-MADE GARMENTS Within next three decades of liberation evolved significantly in which reached 69 thousand USD 1977-1978 fiscal years to 21515.15.73 USD in 2012-2013 fiscal years. additionally South Korean based corporation Daewoo merged with Desh garment for the very first time in the history of Bangladesh which was totally export oriented garment in 1979." (Tanjim Hossain and Mawa Moon, 2014)

According to (The World Bank, 2021), the labor force has increased significantly in the context of Bangladesh which influenced READY-MADE GARMENTS to grow accordingly. The easy supply of labor has enforced Bangladesh to produce READY-MADE GARMENTS in a quite inexpensive manner which created world's attention to pick Bangladesh as one of the largest READY-MADE GARMENTS manufacturer. (BGMEA, 2020) export index indicates that Bangladesh ranked as the second largest clothing exporter in the world after China in 2010 by exporting worth of 17914.46 million USD.

Beginning of READY-MADE GARMENTS export growth was not stated as smooth as it is now, READY-MADE GARMENTS export was not even in the list of exporting items. However, the gradually export has been the prime factor of effect in the body of national economy of Bangladesh (Raihan *et al.*, 2002). Author identifies that, READY-MADE GARMENTS has significant effect on the growth of micro economy including analyzing few other sub factors.

Visualization have been used to support the study. The paper highly talks about the aim of current study but only focusing on the GDP. Therefore, it is required to have an empirical study in relation with the growth of READY-MADE GARMENTS and Export Goods and Services (%GDP).

(Taslim and Haque, 2011) states the major contribution of READY-MADE GARMENTS in the national economy growth after global recession using Herfindahl-Hirschman Index. The study sums, the growth has the best value in the growth of local economy.

one of the key factors that the growth of READY-MADE GARMENTS export is its low production cost. and that is being supplied by the human capital itself. Recognized of developing country made the labor market very cheap and also the supply of human capital is significant (K. M. Ayatullah Hosne Asif, 2017). In the present paper wants to what is

the impact of this labor force in READY-MADE GARMENTS sector. and in what measure does this factor effecting the Export Goods and Services (%GDP) growth. as the previous concluded that, lower wage and the population growth is effecting the positive relation in labor force in overall economy. (Hoque, 2001; Ali, 2015)

The growth of Bangladesh is growing gradually as the READY-MADE GARMENTS of the prime factor of the contribution, according to the (IMF, 2017; The World Bank, 2021) READY-MADE GARMENTS export has been upward and as being the major contributor to the economy of Bangladesh, Export Goods and Services (%GDP) has also been upward recorded till 2010.

READY-MADE GARMENTS export is growing along with the Export Goods and Services (%GDP) and has been the key contributor as the easy supply of the labor force has the cause of economy to boom significantly in the context of Bangladesh. However, it is matter of concern as (The World Bank, 2021) shows the declined growth of labor force of Bangladesh from 1990-2010. the matter to concern is the negative growth cause READY-MADE GARMENTS 's export industry.

"Population growth Bangladesh is known as one of the densely populated countries in the world. However this factor is used as one of the greatest competitive advantage" (Hoque, 2001). READY-MADE GARMENTS is the top exporter industry in the country. Therefore, it is important to identify the relationship between labor force and READY-MADE GARMENTS export to understand the situation precisely.

Secondly, "The relationship between READY-MADE GARMENTS export and Export Goods and Services (%GDP) is very strong" In the recent decades most of the export shares are coming from READY-MADE GARMENTS (Taslim and Haque, 2011). Therefore, it is important to

examine why READY-MADE GARMENTS has the most contribution to Export Goods and Services (%GDP) and is it because of low cost of production which is driven by labor force. However, most of the Authors Discussed about the wage and broadly about export and import condition about the Bangladesh's economy status. In this study topic is narrowed down and focusing more on to the relation of labor force and READY-MADE GARMENTS export.

Chapter 2: Literature Review

2.1 Theoretical Framework

This chapter includes related literatures and journals related to this paper in which previous author argued and studied about. Also, this section contains gaps that has not been argued or emphasized before in the context of our study. However, as this study tries to emphasize on the measure of evaluation of export of goods and services (%GDP) of Bangladesh, outline is to be discussed in chronological order.

Secondly, this chapter also breakdowns to be tested variables depending on previous literatures and tries to find historical and theoretical knowledge.

Study on Labor market condition (Hoque, 2001), emphasized on the existing labor market conditions in the sector of Ready-Made Garments in back 90's. This paper studied on several gaps regarding the situation, yet the most focused point was to identify whether the challenges or the problems that are labor force facing can be a barrier for ready-made garment expansion or not. The research goal was to find if more investment helps to increase more employment opportunities, in contrast if less investment causes less employment opportunities. On 90's world ban (1990) made a point that at the end of 2020 Bangladesh would need 50 million jobs to handle the global competition as well as local economic growth as author mentioned. To overcome with this situation author also found that, Bangladesh needs to focus on export-oriented industry and ready-made garment is one of them.

This existing paper discussed elaborately about labor force in general whereases our study finds gap in segmenting of labor force and its effect particularly on export goods and services. Therefore, this study continues

to carry the work of (Hoque, 2001) to dig deeper into the results with Female Labor Force and its effect on export goods and services(%GDP).

Export indicators after 2009 global recession (Taslim and Haque, 2011), author focuses to find the export performance of Bangladesh after the global recession of 2009. This journal studies to find the factors that encouraged production cost to rise and apparently increase cost of export. In contrast, author found that, after the recession new beginning of export industry has emerged effectively and efficiently. In this competition Bangladesh had to compete with other establish exporting nation. However, Bangladesh was able to establish successfully the most share as being importer for USA, EU not only the western nation but also, Duty-free trading partners for example Japan and Australia.

Problem that authors addresses, are poor infrastructure such as gas, electricity and many other. These may cause of increase in pre and postproduction of which directly connects to export related cost. Where Bangladesh is known to be one of the low costly outsourcing nations. But in the long run authors suggests emphasizing on more skilled workers and quality products including mass and low-cost product that will be exported.

These opens a door in our case to identify the relationship between trade openness influencing export goods and services, this paper not only plans to find relationship between trade openness but also to other variables that are subject of concern.

Sustainability on apparel manufacturing industry of Bangladesh (K. M. Ayatullah Hosne Asif, 2017), emphasizes on enclose new opportunities towards sustainable exporting industry for better stable economic growth of Bangladesh. Author also, analysis on several challenges such as,

- Fluctuating growth rate of READY-MADE GARMENTS products that are being exported

- Impact of global recession, a matter of great concern
- Safety and security measures to protect working environment
- Increase in price of energy
- Trade policies that conflict the interest of economic growth

Taking this into consideration this paper wants to understand in what measure does trade policies are barrier to the export of goods and services. To find out this study focuses on the relationship between trade openness and export of goods and services. If the relationships are positive this paper denies the previous hypothesis.2.2 Descriptive Data Source

2.2.1 Export goods and services (%GDP) towards the economic growth

In most of the papers Export goods and services are being used as independent variable and often showed results regarding cause and effect additionally relationship between other econometrical indicators. In contrast, this study aims to know how this variable responds when export goods and services are implemented as dependent variable. One of the main reason this variable is used as dependent variable in this study is because this wasn't used as dependent variable in number of cases in the context of Bangladesh. Secondly export goods and services has a decent amount of contribution in Bangladesh's GDP itself. To support this theory an analysis of export goods and services and GDP are shown below

Table 1 relation between GDP & Export Goods and Services (1960-2020)

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	9121334347	2504277413	3.642301887	0.00057131 4
EXPORT G&S ($USD)	6.014885951	0.163691835	36.74518012	2.33893E-42

Source: (*World Bank 2021*,)

Author's Calculation using (*World Bank 2021*) data. However, GDP was calculated as dependent variable, this is to show that how much export goods and services has impact in Bangladesh's economy when GDP is considered as the economic indicator. Therefore, it is matter of concern to investigate the factors that are leaving reasonable impact on Export Goods and Services which are also significant, or p-value is below 0.05.

According to the study of (Akbar Ahmed and Gazi Salah Uddin, 2009) trend of economic growth (GDP) is fairly significant yet the study identifies that export growth has less supporting evidence to support export leading impact. However, exporting goods and services (%GDP) has the significant evidence of having short-run impact to countries real GDP growth. In that author's study gross domestic product was considered as DV and export goods and services were considered as in of the independent variable where cause and effect analysis was test.

One the other hand paper called by export-led growth in Bangladesh (Al Mamun and Nath, 2005) claims to have evidence of having relationship between the economic growth and export through regression model. This study finds that, export has long run relationship with the economic growth and doesn't have short run relationship. Also, mentions that, exporting industries are the key factors of having economic growth

and address export driven nation.

Although in this paper export goods and services (%GDP) is dependent variable, as it is theoretically and previously proven that ready-made garment export holds the 80% earning of export it is to be identified that, in what measure does this exporting industry influence the dependent variable to come to and conclusion.

Source: (*World Bank 2021*,)

Figure 1 Export Goods and services (%GDP) FY 1991-2020

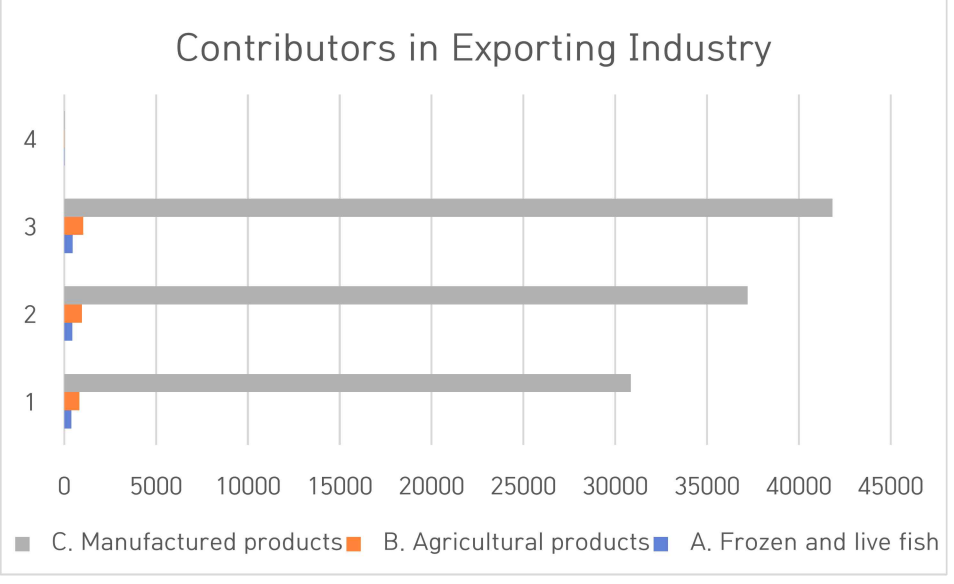
(The World Bank, 2021) contributed their shared meta data by elaborating the trend of Bangladesh's export goods and services regarding its performance. Hence, this figure indicates that, during first decade of exporting evaluation trend performance started to grow gradually. However, starting from 2010 till 2020 the negative growth has been highlighted.

The research objective followed by question and sub questions clearly

states that, the variables that are to be investigated are dedicated to identifying the relationship between Y and X this analysis can provide this paper a clear statement about the clinical reasoning for the performance of export goods and services (%GDP).

Therefore this, study is highly concentrated on defining the performance by running investigating relationship between data that has been acquired as independent variables, this empirical investigation will lead us to a narrowed conclusion for export goods and services performances.

As mentioned earlier that, Bangladesh used to know for its agricultural advantages hence its production though the production pattern changed a lot in recent years.



Source: (Bangladesh Bank, 2021)

Figure 2 Contributors in Exporting Industry

(Bangladesh Bank, 2021) shows that in 2020 July till April 2022 the contribution from manufacturing industry in the field of export is clearly significant and this has been the picture of Bangladesh's economy for

quite a while. If we break down the manufacturing industry according to the central bank of Bangladesh,

Source: (Bangladesh Bank, 2021)

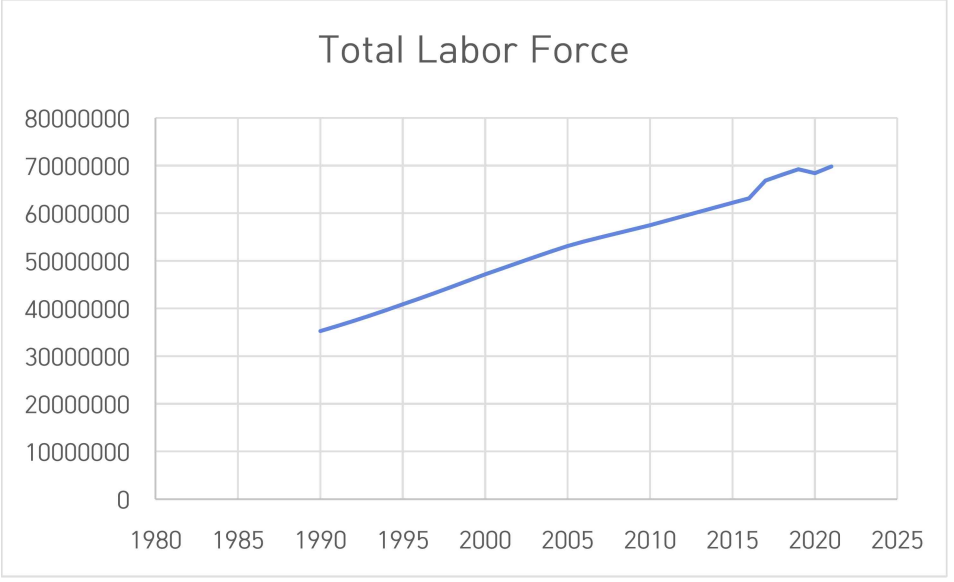
Figure 3 Manufactured Export Contribution 2020 July-2022 April

Within the many areas of exporting this is significantly easy to identify that even in the recent past ready-made garments are the most contributors for Bangladesh export growth.

2.2.2 Female Labor Force (%total labor force) and its contribution

To understand significance of female labor force in the context of Bangladesh it is equally important to evaluate the situation of total labor force that exists.

Table 2 Total Labor Force (1990-2021)



Source: (World Bank, 2022b)

Total labor force of Bangladesh has grown gradually over the years in a positive manner and has significant contribution in Bangladesh's economy to support this a table has shown below

Table 3 impact of Total labor force in Bangladesh's GDP

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-2.9E+11	3.69E+10	-7.85935	1.15E-08
Total Labor Force	7618.86215	692.87113	10.99607	7.34E-12

Author's Calculation (The World Bank, 2021). This table shows that, when GDP is calculated as dependent variable and total labor force as independent variable total labor force has a valuable impact in Bangladesh's economy, therefore in this paper it is to be assumed that female labor force also contributes to a Bangladesh's economy significantly. In this paper female labor force (% total labor force) is taken as one of the independent variables for export goods and services because this study narrows the factors which are influencing Bangladesh's economy, additionally female labor force is very huge in number as Bangladesh is known to one of the densely populated country.

Bangladesh is one of the most densely populated countries in the world and the capital the hub of ready-made garment industry holds the record of 2nd most densely populated countries in the world. this clarifies that Bangladesh's administration believes on centralization rather than decentralized economic system. However, above fact clearly states that more people tends to come to Dhaka only because of employment and most of the contribution for this employment is ready made garment sectors(Uddin, 2008; K. M. Ayatullah Hosne Asif, 2017).

In 1978 Desh Garments started to train employees to became skilled in their workplaces as result Desh Garments sent 130 trainees to Korean manufacturing company Daewoo.

Secondly,(Hoque, 2001) stated in his study that, the female workforce has the most contribution in ready-made garment industry also this was influenced by the rate of wage that has been offered but also availability

of labor force is very significant. whish resulted in positive trend in term of ready-made garment export growth. but also most of the foreign buyers are interested in outsourcing from Bangladesh for the stated fact (Abdul *et al.*, 2010).

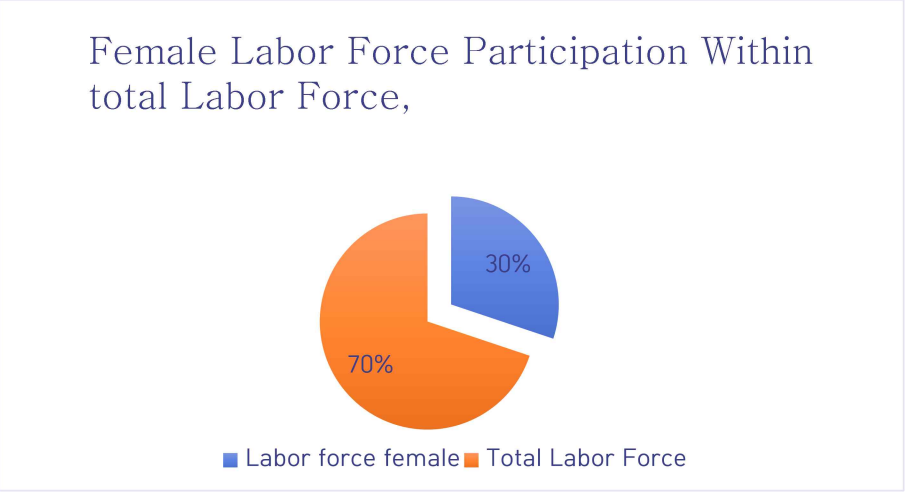


Figure 4 Female Labor Force Participation Within total Labor Force

(World Bank, 2022b) elaborates that, one third of the contribution of labor force participation is contributed by female labor force, which is large in numbers. However, can be said that female labor force contributes to decent numbers in Bangladesh's economy. Now to be find how this decent amount of participation from female labor force influences the relationship of export goods and services (%GDP). Also, as the export performance trend had negative growth this is also to be identify that, in what measure does female labor force participation influences the dependent variable.

2.2.3 Trade openness (%GDP) towards economic growth

Trade openness often indicates the ratio between import plus export and GDP. It is very simple that, when trade openness increases it has a huge impact on Bangladesh's GDP if considered as econometrical indicator. To elaborate the relationship author's calculation is given below where data was collected from (*Trade (% of GDP) - Bangladesh | Data*),

Table 4 Impact of Trade openness on GDP (USD) (1960-2020)

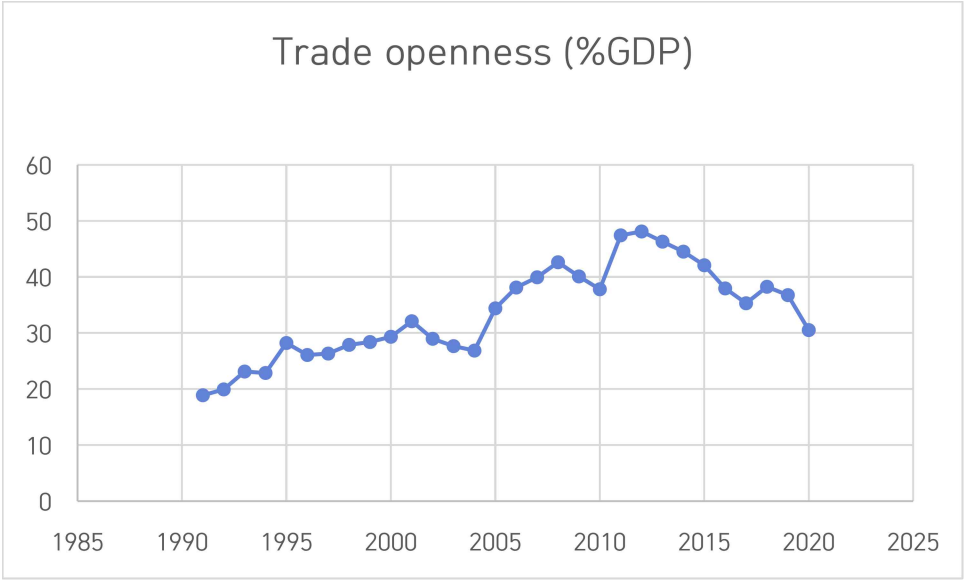
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-9.628E+10	2.165E+10	-4.44667	3.91E-05
Trade (%GDP)	5956209170	772013414	7.715163	1.66E-10

Source: (*World Bank 2021*)

This study demands to test the relationship between trade openness and export goods and services as mentioned in the above table that trade openness has positive relationship with GDP now in the context of Bangladesh it is necessary to test further where this same with Export goods and services while considered as dependent variable. However, it is also to find the proportion of explanation of trade openness in this study to understand the influence as econometrical indicator

Imposed policies towards international trade used to be restrictive since the time of independence till next two decade to be specific from 1971 to 1982 and continued till 1990 because of military administration (Sultan, 2008). However, from 1991 the industrialization started to bloom as Korean multi-national corporation Daewoo invested in Bangladesh in garment sector. this resulted thousands local enterprises formulate towards industrialization (Taslim and Haque, 2011). previous researchers found that, from 1990 readymade garment industry started to boom and started to make difference in Bangladesh's economies. meanwhile Administration

of govt has ease the regulation for trade and started to influence female workforce to join and make contribution towards this new industry. thus the result became very positive in terms of the economic growth as the more and more labor force made their entry and the enterprises produced in chunks of quantity and distributed towards international borders. (Hoque, 2001)



Source: (*World Bank 2022*)

Figure 5 Trade openness (%GDP)

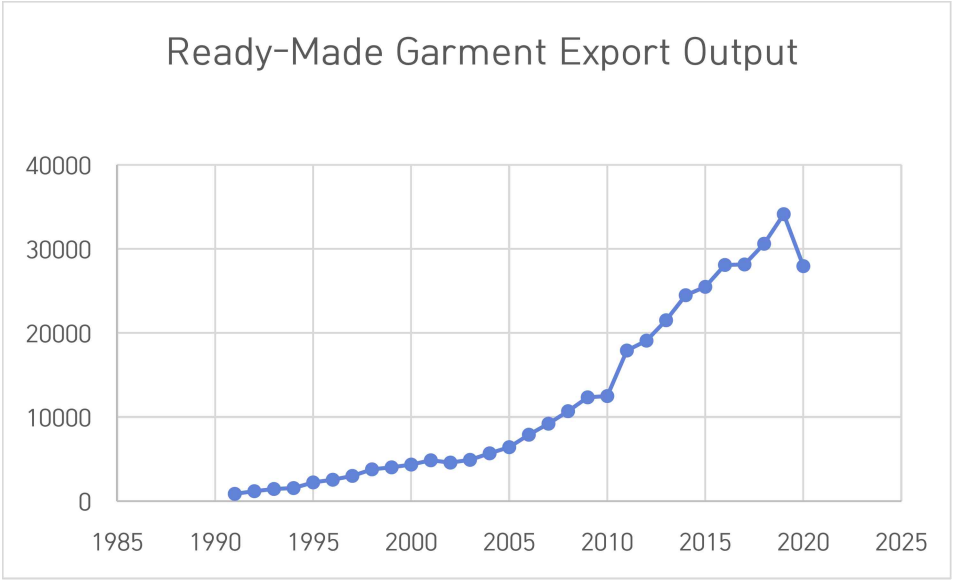
According to the (World Bank, 2021) data, scattered plot suggest similar type of trend as export goods and services. Hence, by having visual analysis this paper provisionally is able to conclude that the growth rate of both variables are related or shows similar comparing to each other. If the figure is observed carefully the trend growth was steady but for some reason the trend started to show negative growth likewise exporting growth and services.

2.2.4 Ready-Made Garment Export Output

READY-MADE GARMENTS sector is one of the most renowned powerhouses of Bangladesh's economy. This is a matter to be stated that, 80% of the export earning contributor of Bangladesh comes from this garment industry. During the FY 2020-21 READY-MADE GARMENTS sector has earned 31.45 billion USD for Bangladesh(BGMEA, 2020). This sector not only a source of foreign earning but also created thousands of employment opportunities. In 2015 in Ready-Made Garments sector there were about 40,00,000 workers which increased to 42,00,000 by 2020, among the 17,00,000 are men and 25,00,000 are women(K. M. Ayatullah Hosne Asif, 2017). After the independence in 1978 the first textile enterprise was Reaz Garments LTD. Within that year 10,000 of shirts were exported by this enterprise for 13 million Francs. In 1979 Bangladesh establishes their first exporting enterprise named desh (Abdul *et al.*, 2010; Ahmed, Greenleaf and Sacks, 2014). Ready-Made Garments was not the most contributor when it came to export but after 80's Ready-Made Garments gradually taken down jute export earnings and became the powerhouse of new Bangladesh's economy, since than Ready-Made Garments sector is dominating Bangladesh's Export Goods and Services (%GDP) earnings. During early 80's Bangladesh's govt allows new entrepreneurs to import duty free textile machineries, in result the number of garment factory increased dramatically from FY 1984-85 632 factories to 1999 2900 factories. By then Bangladesh took place in the top 15 list of Ready-Made Garments exporter and became the 6th topmost suppliers of USA and 5th in Europe.

From 2005 to 2010 average foreign direct investment was $871 million. However, due to political instability, fire events, and disasters Ready-Made Garments sectors faced downfall in production and still

faces fluctuating curves due to unwanted events such as strike, labor protests and etc. these events somehow holds the smooth increase in export earnings (Elahi *et al.*, 1987; Yunus and Yamagata, 2012).



Source: (BGMEA, 2020)

Figure 6 Ready-Made Garment Export Output

As earlier dependent variable export goods and services and one of the independent variable trade openness showed growth during first half and negative growth in the last half of time frame, contrasting that, read-garment export output is constantly and gradually grown over the year unless 2019 to 2020. To decode research questions, it is very important to analysis the relationship between Y and X_3 and elaborate reasoning for negative growth of export goods and services.

2.2.5 Real Interest Rate

From 1976 to 2020 the relationship between real interest rate and GDP is not significant as the table below shows.

Table 5 Relationship between GDP and Interest Rate

	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	8.46E+10	1.63E+10	5.1977	5.29E-06
Real Interest Rate	-7.2E+08	1.9E+09	-0.37652	0.708384

Source: (*World Bank, 2021*)

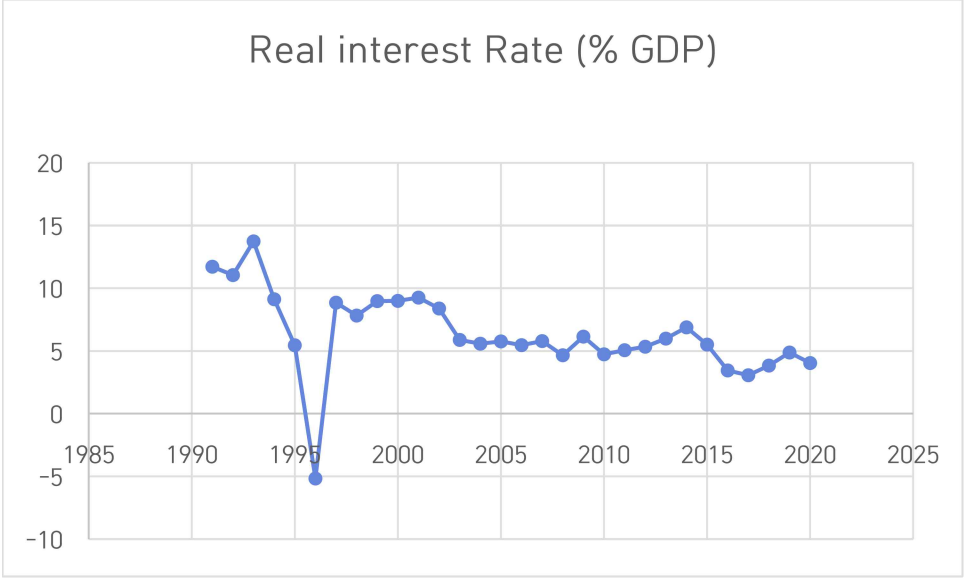
Author's calculation (*Real interest rate (%) - Bangladesh |World Bank 2021*). However, the relationship between these two variables is not significant as the p -value is greater than 0.05. This study emphasizes on real interest rate because this paper aims to investigate if there are significance available between real interest rate and export goods and services if exist than to evaluate the tested result.

One of the main and major components of macroeconomics is real interest and can have a positive or negative influence on the economic growth says, (Chowdhury, Hamid and Akhi, 2019). In that authors study they empirical studied on several key components of macroeconomics and Real Interest Rate is one of them. In their regression model they found that Real Interest Rates have negative impact on GDP which was their calculator economic growth. Relating to the literature. However, this paper wants to find out whether Real Interest Rates are significant or not in context of export goods and services and if have what does it indicates and in what measure?

In the study of (Kabir and Hoque, 2007) "Financial liberalization, financial development and economic growth: Evidence from Bangladesh" explains administration provided subsidies on exporting goods and services but also excluded textile related machineries from TAX, yet, with holding GDP as dependent variable Real Interest Rate had negative relationship with the dependent variable. Author also, mention this might happen because of loan defaults and credit extensions.

It is universally proven by peered journals that; inflation rate and real interest rates decreases the value of money. And increases the production cost and in contrast decreases productivity. If the real interest rate increases most of the possible outcomes are to be affected by devaluating money.

Matter to be concern in our paper is to relate the relationship between dependent variable existed in our paper and Real Interest Rate.

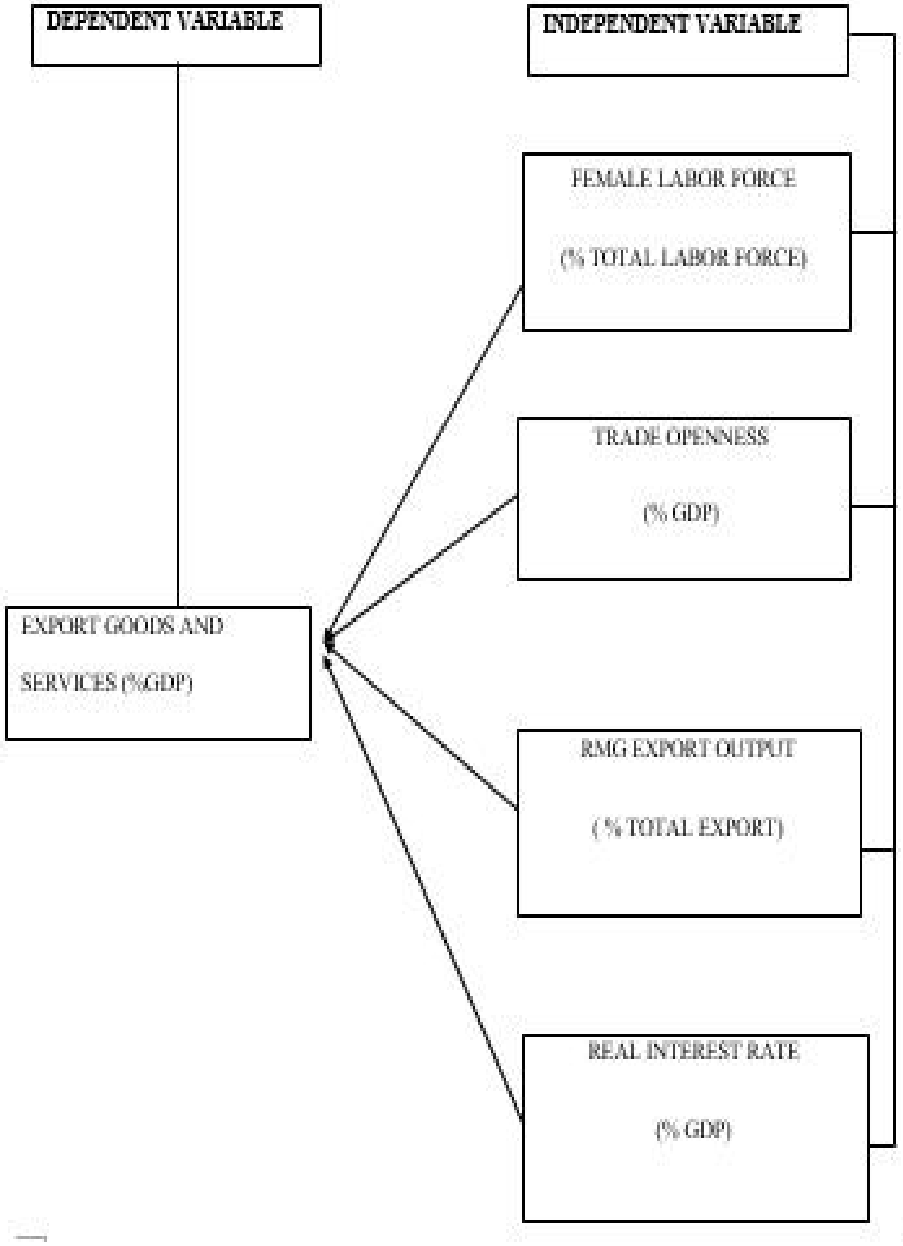


Source: (*World Bank, 2021*)

Figure 7 Real interest Rate (% GDP)

As data visualization showed previously that Y and X_3 has similar type of trend that clearly stated direct relationship between them with was provisionally stated. However, X_4 Real Interest Rate has decreasing trend though from 1993 to 1996 real interest decreased dramatically and again increased rapidly from 1996 to 1997. Since 1997 to 2020 the trend of real interest rate can be considered constant. Now to investigate the relationship between Y and X_4 that, what kind of relationship they explain in economic terms.

Chapter 3: Research Design



3.1 Research Aim:

This research aims to gain an understanding of the impact of Female Labor Force (% Total Labor Force), Trade openness (% GDP), Ready-Made Garments export output, Real Interest Rate (% GDP) Export Goods and Services (%GDP) growth in Bangladesh's context.

3.2 Research Objective:

- To identify the cause of negative growth of "Export Goods and Services (% GDP)"
- To conduct reviews on related literature on the impact of the Ready-Made Garments industry.
- To identify the contribution of READY-MADE GARMENTS export in Export Goods and Services (%GDP)

3.3 Main Research Questions:

i. In what proportion of the total variation in Export Goods and Services (%GDP) (Y) explained by the regression?
ii. Is there a relationship between Export Goods and Services (%GDP) (Y) and the four independent variables combined?

3.3.1 Sub Question:

To answer the main research question, a set of sub questions have been formulated:

i. Does Female Labor Force (X_1) contribute information in the explanation of Export Goods and Services (%GDP) (Y)?
ii. Does Trade Openness (X_2) contribute information in the explanation of Export Goods and Services (%GDP) (Y)?
iii. Does Ready-made garment export output (X_3) contribute information in the explanation of Export Goods and Services (%GDP) (Y)?
iv. Does Real Interest Rate (X_4) contribute information in the explanation of Export Goods and Services (%GDP) (Y)?

3.4 Hypotheses:

3.4.1 First set of Hypotheses

a) H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ [No relationship between Export Goods and Services (%GDP) (Y) and other four variables (X_1, X_2, X_3, X_4)
a) H_1: At least one of the β coefficient is not equal to 0

3.4.2 Second set of Hypotheses

a) H_0: $\beta_1 = 0$ [Female Labor Force, X_1, is not a useful explanation of Export Goods and Services (%GDP)]
a) H_1: $\beta_1 \neq 0$

3.4.3 Third set of Hypotheses

a) H_0: $\beta_2 = 0$ [Trade openness, X_2, is not a useful explanation of Export Goods and Services (%GDP)]

a) H_1: $\beta_2 \neq 0$

3.4.4 Forth set of Hypotheses

a) H_0: $\beta_2 = 0$ [Ready-made garment export output, X_3, is not a useful explanation of Export Goods and Services (%GDP)]

a) H_1: $\beta_3 \neq 0$

3.4.5 Fifth set of hypotheses

a) H_0: $\beta_4 = 0$ [Real Interest Rate, X_4, is not a useful explanation of Export Goods and Services (%GDP)]

a) H_1: $\beta_4 \neq 0$

Chapter 4 Research Methodology

This Quantitative analysis aims to identify the proportion to explain the relationship between Export goods and services considered as dependent variable and on the other side variables that are effecting are considered as independent variable such as Female Labor Force, Trade Openness, Ready-Made Garments Export Output and lastly Real Interest rate. Application R studio has been used to undertake the statistical test to identify the results between variables.

Table 6 Specification of Variables

Variables	Measurements	Source
Export Good & Services (Export)	(% Gross Domestic Product)	(*World Bank 2021*)
Female Labor Force (FLF)	(% Total Labor Force)	(World Bank, 2021)
Trade Openness (TO)	(% Gross Domestic Product)	(*World Bank, 2021*)
Ready-Made Garment Export Output (RMG EO)	(% Total Export)	(BGMEA, 2020)
Real Interest Rate (RIR)	(% Annual Rate)	(World Bank, 2021)

4.1 Statistical test Specification

To explain the proportion of relationship between Export Goods and Services (Y) and Female Labor Force (X_1), Trade Openness (X_2), Ready-Made Garment Export (X_3), Real Interest Rate (X_4) this study

undertakes Regression analysis which was established by Sir Francis Galton (Weisberg, 2001) int this study equation is as follows :

There are few facts of regression analysis can be found and they are

- Simple Regression- In this testing model key condition is to one dependent variable against one dependent variable to conduct the explanation
- Multiple Regression- this test has to be taken into consideration when more than one independent variable is existing to conduct explanation against dependent variable
- Cross Sectional - in this rest data that is been tested is found to be in a single period of time
- Time Series Data- and in time Series Data test is been accumulated over multiple period of time and often needs to be checked for stationarity (Weisberg, 2001)

In multiple Linear regression model interpreting coefficient is the main objective which indicates the

In regression analysis dependent Variable is Y and a inputted as constant and Xn is the independent variables that explains dependent variables, equation stands as

$$Yi = f\ (Xi, \beta) + ei$$

Y_i= Dependent Variable

F= Function

X_i= Independent Variable

β = Unknown parameters

e_i= Error Terms

In multiple Linear regression model interpreting coefficient is the main objective which indicates the

Positive or negative relationship within variables. Also in this statistical testing magnitude of regression of coefficient is very crucial because the

measurement of the elasticity considering every variables is very important. Hence, to undertake the understanding of elasticity of coefficient needs to determine Y and every variables must be given with values. The equation for elasticity is

$E = -b\ x(P/Q)$

Moreover, To understand the proportion of Multiple linear regression some other factors are also required to take into account to know where this model is providing significant result or not if so than what it the proportion of the explanation. Hence, the result of t-test is important as the evaluated results are extracted relying on the sample that the t-test provides depending on statistical significance regarding examined coefficient in which the reflection of the sample data are being indicated (Chowdhury, Hamid and Akhi, 2019).

Additionally, in regression analysis the rule of 2 is often taken into account where, the value of T 〉 2 and the value of p is smaller than 0.05 in this case the coefficient is considered significant statistically(T.D Stanley ;Hristos Doucouliagos, 2012).

R square also indicates the explanation of coefficient in percentage of the variation within the variable which is counted from the variation in all of the explanatory variables. Also, R square can rage from zero to 1 however, if the value of r square is closer to 1 means the explanation of regression holds more explanation power (Weisberg, 2001).

Also, as mentioned there is many existing factors available that are used to determine the proportion of explanation of variables. Hence, the value of F-test is calculated to determine the statistical significance of entire model which has to be smaller than 0.05 (T.D Stanley ;Hristos Doucouliagos, 2012).

In this case of empirical study demands to investigate the degree of relationship between dependent variable and independent variables.

Therefore, this study comes to a conclusion in terms of analyzing the set of data in regression as established scholars found that, to investigate relationship between variables linear regression is the best way for investigating relationship between DV and IV also to estimate future events (Rudolf J. Freund, 2006).

Firstly, this is proven vastly that, the linear regression analysis is often used to investigate relationship simultaneously between variables in which this investigating tool has shadow of machine learning not only to find relationship between variables but also, to predict future event within the context of tested variables (Engelbrecht and Möller, 2007).

Secondly, regression analysis also used for evaluating relationship between multiple variables but for most rule to accept the result the model must be under 0.05. However, author also must take this into consideration that, the p value if independent variables should be under 0.05 otherwise the significance of the variable is no longer existed. Therefore, this is suggested to remove the variable in which the p value of that particular variable is not under 0.05 (Rudolf J. Freund, 2006)

In quantitative studies regression analysis predicting future event is one of the key feature but it is very crucial for researchers to identify and justify the predictive power of the variables by evaluating the result of the regression model(Rudolf J. Freund, 2006; Engelbrecht and Möller, 2007).

In case of regression model Y is known as dependent variable where independent variables X_1, X_2, X_3…...X_p influences the prediction of Y. The formula for regression analysis is Y = a + bx (Rudolf J. Freund, 2006).

Where,

$$b = \frac{n\Sigma xy - \left(\sum x\right)\ \left(\sum y\right)}{n\ \left(\sum x^2\right) - (\Sigma x)^2}$$

$$a = \frac{\sum y - b\sum x}{n}$$

The very first term of regression analysis model encompasses undivulged parameter β, Independent variable X and dependent variable Y, in which error term is assumed as C.

This Paper aims to find the impact of ready-made garment export output on Export Goods and Services (%GDP) growth in Bangladesh from 1991 to 2020. except ready-made garment export output, there will be other control variables, but the variable of interest will be ready-made garment export and trade openness. as an Export Goods and Services (%GDP) growth. collect secondary data using Quantitative analysis. However, in this study Export Goods and Services (%GDP) of Bangladesh (export) will be considered as dependent variable.

The independent variables are as follows:

i. Female Labor Force (FLF) X_1
ii. Trade Openness (TO) X_2
iii. Ready-made garment export output (READY-MADE GARMENTS) X_3
iv. Real Interest Rate (IR) X_4

4.1.1 Unit Root Test

Unit Root test for time series data is necessary to explain the if the time series data has difference. This deference dictates the testing tool to follow the equilibrium line and for this deference that exist the future events can be predicted. However, if the time series data doesn't prove to be stationary augmented dickey fuller test can be taken into consideration (Cheung and Lai, 1995), The equation is as follows;

$$y_t = a Y_{t-1} + \beta X_e + \epsilon$$

for converting into stationary data and from there data can be tested to regression analysis.

4.1.2 Correlation test

To identify the positive relation between variables are the ,aim reason for testing correlation in a quantitative study. The equation for Pearson correlation Coefficient is;

$$r = \frac{\Sigma(x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\Sigma(x; - \bar{x})^2 \Sigma(y_i - \bar{y})^2}}$$

R= correlation coefficient

X_i= Values of the x variables from the dataset

= Mean values from the X variables

Y_i= Values of the y variables from the dataset

= Mean values from the y variables

If the relationship between independent variable is negative all the independent variables can be tested in regression for explanation of relationship however if the relationship is positive between dependent variables and independent variable than this fact can be avoided and able to move to next step .In this study Export is held as dependent variable and other four variable such as Female Labor Force (FLF), Trade Openness (TO),Ready-made Garment Export Output (RMG EO), Real Interest Rate (RIR) are considered as independent variable. Hence from the calculation above it is very clear that FLF and TO has correlation with DV. However, as the relationship is between DV, and IV's correlation has to be avoided and continue further discussion. On the other hand, correlation between IV's is not significantly positive and further calculation can e taken into consideration.

4.2 Model Summary:

This tool is proven in various research papers that this statistical tool can be used to identify the relationship between one or many variables to evaluate the measure of influence from independent variables to dependent variables. After making time series data sequences consistent this paper develops results using multiple linear regression. This tool is to understand in which measure variables are affecting other variables. Also, multiple linear regression helps to forecast future events.

However, in this study the equation for multiple linear regression is as follows:

$$\text{Export} = \beta_0 + \beta_1 \text{FLF} + \beta_2 \text{TO} + \beta_3 \text{RMG} + \beta_4 \text{IR} + \mu_t$$

This equation is to identify the relationship between independent and dependent variables. In this case Dependent variable is Export Goods and Services (%GDP) of Bangladesh yet, rest of the independent variables are the point of interest in this study.

This study uses time series data analysis which is a special method of studying data in which an order of data points archived in an interval of time. Also, in time series data analysis requires to record a set of ordered data values which is observed at successive points in time. However, it is not appropriate to analyze the data set in random manner which causes faulty output in main analysis result(Tyagi, 2020).

This paper acquired data set from 1991 to 2020 to gain specific understanding over the cause of trends that has been occurred in the data set that has been used. However, this study gathered most of the data from world bank 2022. To get the significant result paper used augmented dicky fuller test to make these data .

Therefore, data or data set which is being established in consistent intervals can be used to predict or forecast upcoming events. Time series

data analysis is one of the most valuable and first to do portion for predictive analysis.

In this paper data that has been used initially had thirty observations, but after consistent interval paper worked on twenty-seven observations as for difference three.

Chapter 5: Result Summary and Regression Explanation

In this chapter this paper emphasizes on the results that has been outlined from the multiple linear regression in which the primary goal is to identify the influence of independent variables in dependent variable.
Also, time series data (1991-2020) is being used in multiple linear regression tool additionally the data that is being used is secondary data and has been retrieved from world bank.

Table 7 Table Multi-Correlation Test

	Export	*F L F*	*T O*	*RMG EO*	*R IR*
Export DV	1				
F L F *IV1*	-0.02753	1			
T O *IV2*	0.88183	0.266959542	1		
RMG EO *IV3*	0.71957	-0.103670706	0.477428993	1	
R IR *IV4*	-0.2835	0.035005451	-0.209674106	-0.0222377	1

Source: Author's calculation

In this study Export is held as dependent variable and other four variable such as Female Labor Force (FLF), Trade Openness (TO),Ready-made Garment Export Output (RMG EO), Real Interest Rate (RIR) are considered as independent variable. Hence from the calculation above it is very clear that FLF and TO has correlation with DV. However, as the relationship is between DV, and IV's correlation has to be avoided and continue further discussion. On the other hand, correlation between IV's is not significantly positive and further calculation can e taken into consideration.

Table 8 Regression Model Summary

Multiple R	0.969	Adjusted R Square	0.929	R Square	0.940
Standard Error	0.842	Observations	27		

ANOVA

	df	*SS*	*MS*	*F*	*P-Value*
Regression	4	244.91	61.2284	86.29852	4.050E-13
Residual	22	15.608	0.7094		
Total	26	260.52			

Table 9 Regression Analysis Summary

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95%*	*Upper 95%*
Intercept	0.023	0.163	0.138	0.891	-0.315	0.361	-0.315	0.361
FLF	-0.945	0.287	-3.293	0.003	-1.540	-0.350	-1.540	-0.350
TO	0.306	0.027	11.297	0.000	0.250	0.362	0.250	0.362
RMGEO	0.000	0.000	5.501	0.000	0.000	0.000	0.000	0.000
RIR	-0.029	0.014	-2.096	0.048	-0.059	0.000	-0.059	0.000

Source: author's calculation

5.1 Regression explanation

1. In what proportion of the total variation in Export Goods and Services (%GDP) (Y) explained by the regression?

This question is answered by the coefficient of determination, r^2, which is 0.940086. this means that about 94% of the variation in Export Goods and Services (%GDP) is explained by in all four independent variables which are

i. Female Labor Force (X_1)
ii. Trade openness (X_2)
iii. Ready-made garment export output (X_3)
iv. Real Interest Rate (X_4)

The composite effect is reflected in adjusted coefficient of determination (adjusted r^2). In this regression, adjusted r^2 is 0.929193

2. Is there a relationship between Export Goods and Services (%GDP) (Y) and the four independent variables combined?

5.1.1 Explanation of First Set of Hypotheses

a) H_0: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ [No relationship between Export Goods and Services (%GDP) (Y) and other four variables (X_1, X_2, X_3, X_4)
a) H_1: At least one of the β coefficient is not equal to 0

Test statistic: F= 86.29852 and P value = 4.050E-13

At $\alpha = 0.05$, this study rejects H_0.

5.1.2 First Regression explanation

These indicators clearly suggests that the F statistics is significant and can be taken to the conclusion as the p-value <0.05). Also, results summary found solid evidence of regression relationship between Export Goods and Services (%GDP) (Y) and other four variables.

i. Does Female Labor Force (X_1) contribute information in the explanation of Export Goods and Services (%GDP) (Y)?

5.1.3 Explanation of Second Set of Hypotheses

a) H_0: $\beta_1 = 0$ [Female Labor Force, X_1, is not a useful explanation of Export Goods and Services (%GDP)]

b) H_1: $\beta_1 \neq 0$

Test statistics: t-test = -3.293 and P value = 0.003

At $\alpha = 0.05$, this study rejects H_0.

5.1.4 Second Regression Explanation

T statistics is to be taken into the consideration of this summary as the p-value <0.05. However, Female Labor Force (X_1) is significant. Also, there is evidence that X_1 contributes information in the explanation of Export Goods and Services (%GDP) (Y). the value of β_1 is -0.945, suggesting that increase in Female Labor Force of %total labor force, the Export Goods and Services (%GDP) drops by $0.945, with X_2, X_3, X_4 held constant.

ii. Does Trade Openness (X_2) contribute information in the explanation of Export Goods and Services (%GDP) (Y)?

5.1.5 Explanation of Third Set of Hypotheses

a) H_0: $\beta_2 = 0$ [Trade openness, X_2, is not a useful explanation of Export Goods and Services (%GDP)]

a) H_1: $\beta_2 \neq 0$

Test statistics: t-test = 11.297 and P value = 0.000

At $\alpha = 0.05$, this study rejects H_0.

5.1.6 Third Regression Explanation

T statistics is to be taken into the consideration of this summary as the p-value <0.05. However, Trade openness (X_2) is significant. Also, there is evidence that X_2 contributes information in the explanation of Export Goods and Services (%GDP) (Y). the value of β_2 is 0.306, suggesting that increase in trade openness of % GDP, the Export Goods and Services (%GDP) (%GDP) arises by $ 0.306, with X_1, X_3, X_4 held constant.

iii. Does Ready-made garment export output (X_3) contribute information in the explanation of Export Goods and Services (%GDP) (Y)?

5.1.7 Explanation of Fourth set of Hypotheses

a) H_0: $\beta_2 = 0$ [Ready-made garment export output, X_3, is not a useful explanation of Export Goods and Services (%GDP)]

a) H_1: $\beta_3 \neq 0$

Test statistics: t-test = 5.501 and P value = 0.000

At $\alpha = 0.05$, this study rejects H_0.

5.1.8 Fourth Regression Explanation

T statistics is to be taken into the consideration of this summary as the p-value <0.05. However, ready-made garment export output (X_3) is significant. Also, there is evidence that X_3 contributes information in the explanation of Export Goods and Services (%GDP) (Y). the value of β_3 is 0.000294259672313449, suggesting that increase ready-made garment export output, the Export Goods and Services (%GDP) arises slightly by $ 0.0003, with X_1, X_2, X_4 held constant.

iv. Does Real Interest Rate (X_4) contribute information in the explanation of Export Goods and Services (%GDP) (Y)?

5.1.9 Explanation of Fifth Set of Hypotheses

a) H_0: $\beta_4 = 0$ [Real Interest Rate, X_4, is not a useful explanation of Export Goods and Services (%GDP)]

a) H_1: $\beta_4 \neq 0$

Test statistics: t-test = -2.096and P value = 0.048

At $\alpha = 0.05$, this study rejects H_0.

5.1.10 Fifth Regression Explanation

T statistics is to be taken into the consideration of this summary as the p-value <0.05. However, Real Interest Rate (X_4) is significant. Also, there is evidence that X_4 contributes information in the explanation of Export Goods and Services (%GDP) (Y). the value of β_4 is -0.029, suggesting that increase in Real Interest Rate, the Export Goods and Services (%GDP) (%GDP) drops by $ -0.029, with X_1, X_2, X_3 held constant.

Chapter 6: Discussion

6.1 Background Information

Bangladesh is one of he fast developing nation and export goods and services has been the key mantra for this growth rate. Availability of labor force and cheap production of ready-made garments also boosted the process where, cheap labor force is considered as the competitive advantage of Bangladesh. In the recent past RMG has become the booming industry for Bangladesh which was switched from agricultural sector and now showing great prospect for Bangladesh in the development of the nation. Not only this, but this exporting industry has also opened millions of employment opportunity directly and thousands of employments indirectly. However, this is also noticeable that the ral interest rate has remain almost constant where the rate did not increased dramatically neither dropped al of a sudden so this opened stable market for enterprises and encouraged them to invest in a stable economic growing market. (Bangladesh Bank, 2021) administration of Bangladesh has transferred their focus to grow the economy as the political crisis were one of the prime reasons for foreign investors not to invest money as the market was very uncertain. But currently the political market has remained stable and very suitable for investors to invest in therefore the inflow of USD is increasing and the international money reserves are increasing day by day.

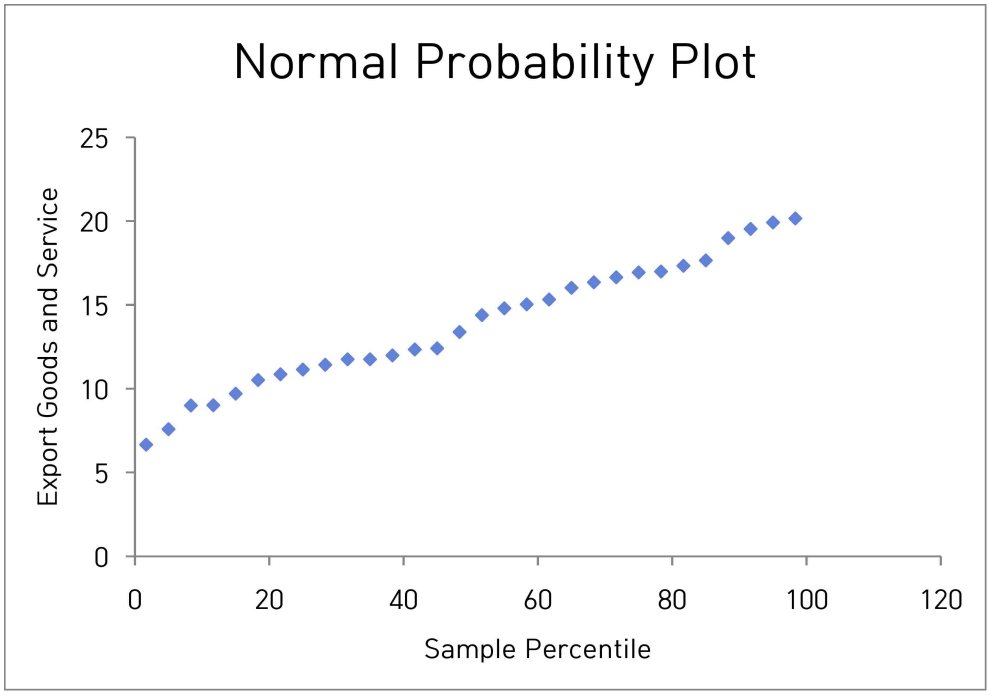
This research aims to gain an understanding of the impact of Female Labor Force (% Total Labor Force), Trade openness (% GDP), Ready-Made Garments export output, Real Interest Rate (% GDP) Export Goods and Services (%GDP) growth in Bangladesh's context.
Export Goods and Services is one of the main contributors of

Bangladesh's economic growth, yet the negative labor force growth is one of the major concerns in ready-made garment industry as ready-made garment has the largest export contributor of Bangladesh's total export. However, previous literatures investigated that, Bangladesh's govt has eased international trading policies to encounter few major concerns

6.2 Result Summary

After taking research question, aims to the consideration it is to be concluded that, the data set that has been analyzed and the results that has been outputted by the regression analysis can be accounted as valid as the result signific is clearly visible. Not only the significance, but this paper also answers the related questions which was being arose by the research problem.

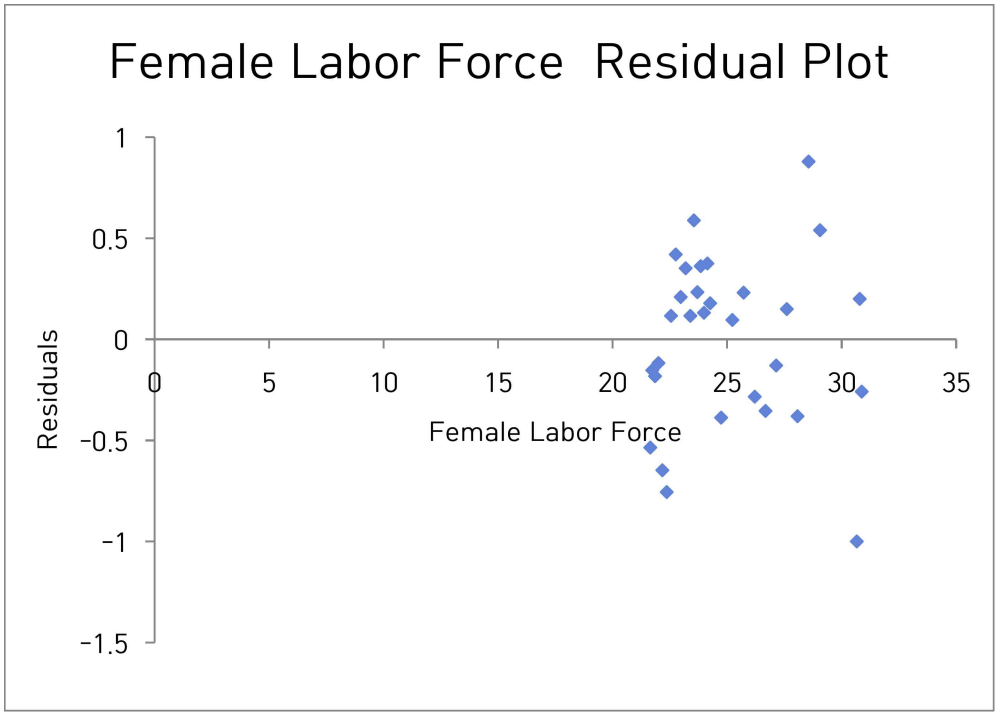
6.2.1 Overall Model summary



Source: (World Bank, 2022)

The analysis is undertaken between Export Goods and Services (% GDP) calculated as on the other hand Female Labor Force, Trade Openness, Ready-made Garments Export Output and Real Interests Rate has been calculated as independent variable that, all four independent variables have significance in term of influencing dependent variable. In which the quantitative test through regression analysis has discovered that within this time frame of 1991-2020 the model is considered as significant as the value of p is smaller than the 0.05. how ever the value of R and R^2 is also good. Therefore, the first main question of this research is answered and found to be accepted as the relationship between DV and IV is established and explained.

6.2.2 Relationship between Export and Female Labor Force



Source: (World Bank, 2022)

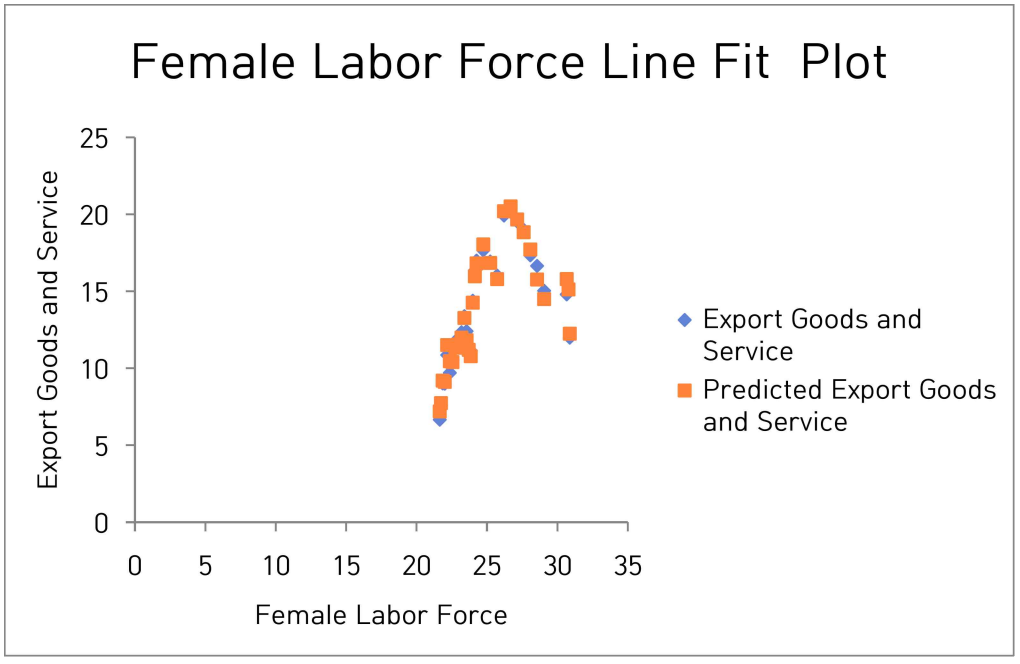
Figure 8 FLF Residual Plot

Total Labor Force has been the competitive advantage for the exporting industry of Bangladesh. Also, the availability of Labor force has helped this industry to produce huge in amount yet at a competitive price. However, this data suggests that Export Goods and services (Y) and Female labor force has negative relationship, which means if the number of export goods and services increases the number of Female Labor Force (X_1) decreases.

Now this can be reason for less skilled female labor force that are employed right now, another reason can be for increase of inflation rate

which can decrease the value of their salary.

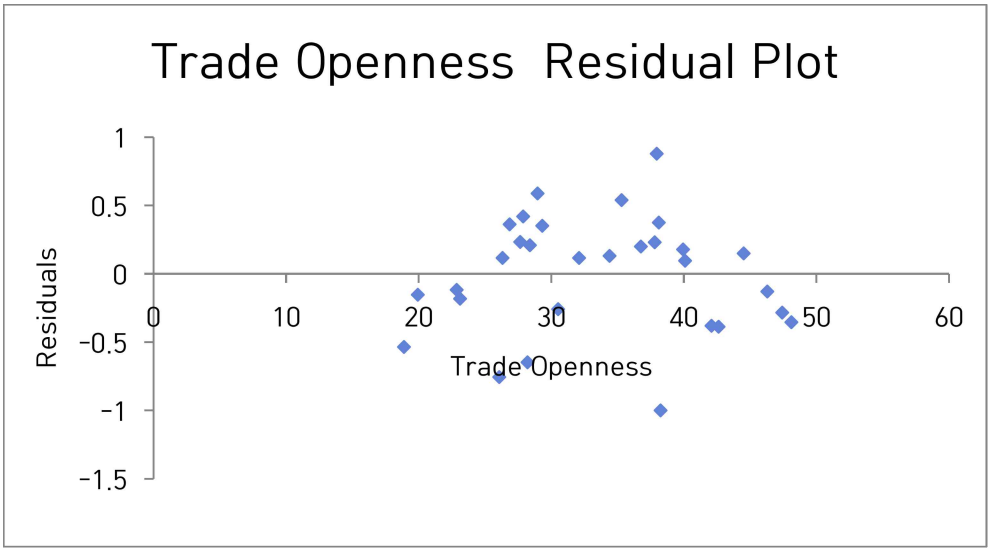
The predicted line fit plot below explains more clearly as the number of female labor force decreases the amount of export goods and services increases.



Source: (World Bank, 2022)

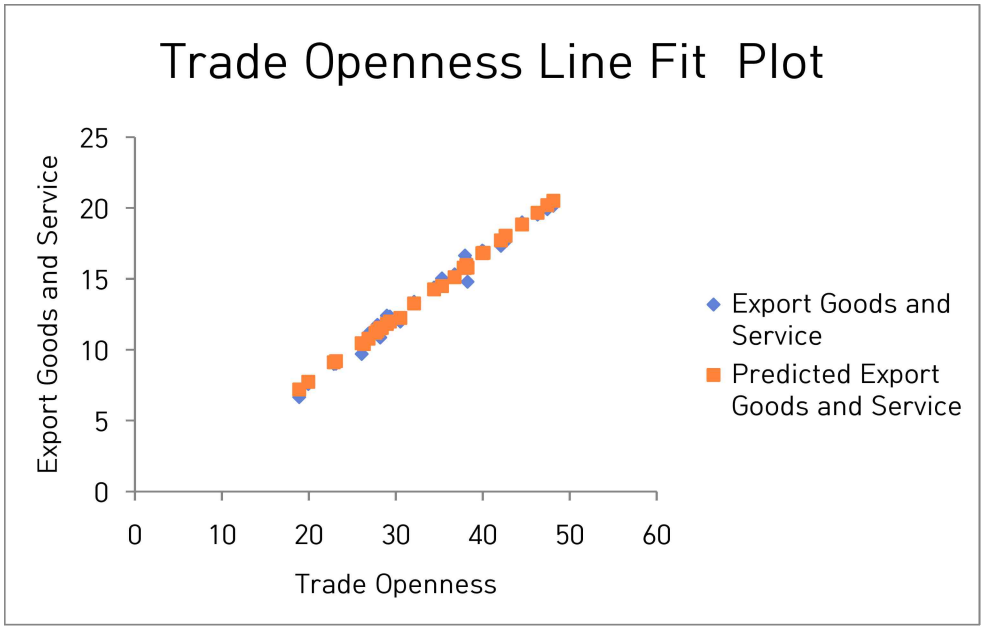
Figure 9 FLF Line Fit Plot

6.2.3 Relationship between Export and Trade Openness



Source: (World Bank, 2022)

Figure 10 TO Residual Plot

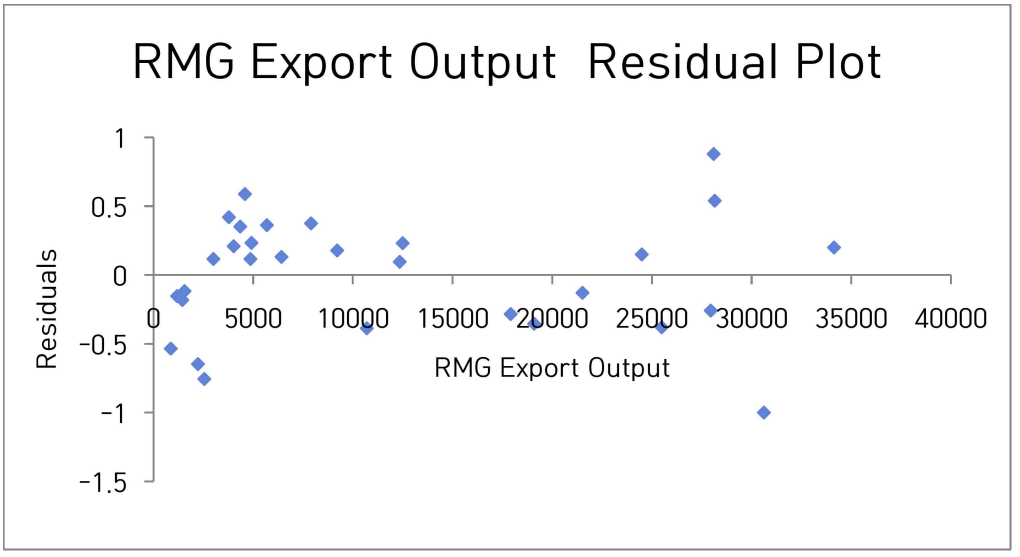


Source: (World Bank, 2022)

Figure 11 TO Line Fit Plot

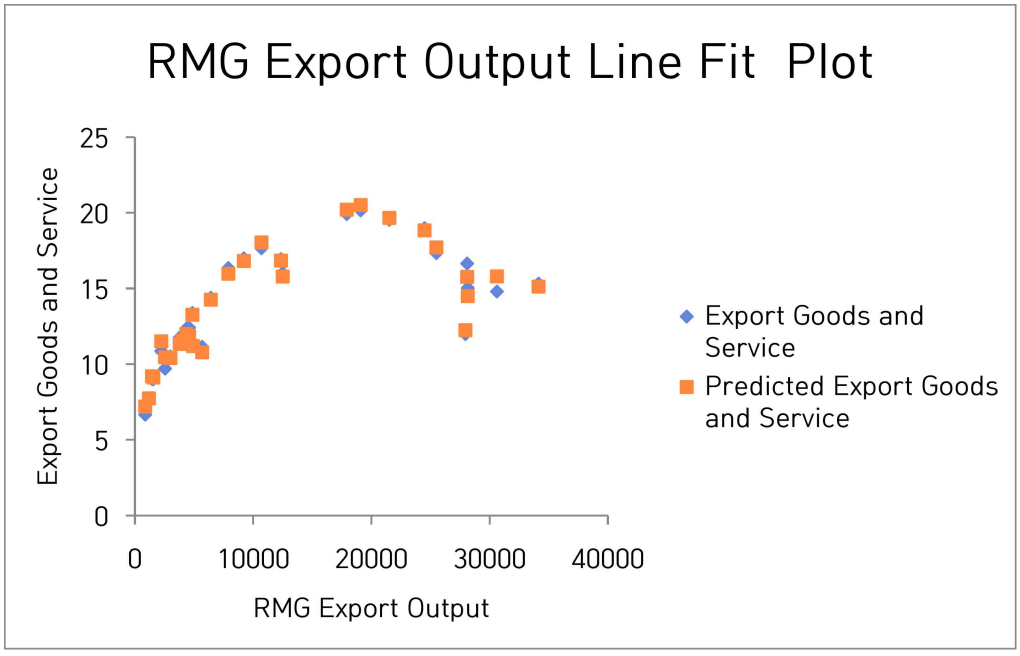
As recorded before foreign direct investors were not interested to do business in Bangladesh because of the unstable political situation and seek diplomatic relationship. However, from last decade the administration as eased the barriers for regional and international trade for sake of economic development and as the data oppose theory that, Export Goods and Services (Y) and Trade Openness (X_2) has significant relationship in between. The results between these two variables are positive. This shows if Export of Goods and Services increases the trade openness also increases.

6.2.4 Relationship between Export and Ready-made Garment Export Output



Source: (World Bank, 2022)

Figure 12 RMG EO Residual Plot



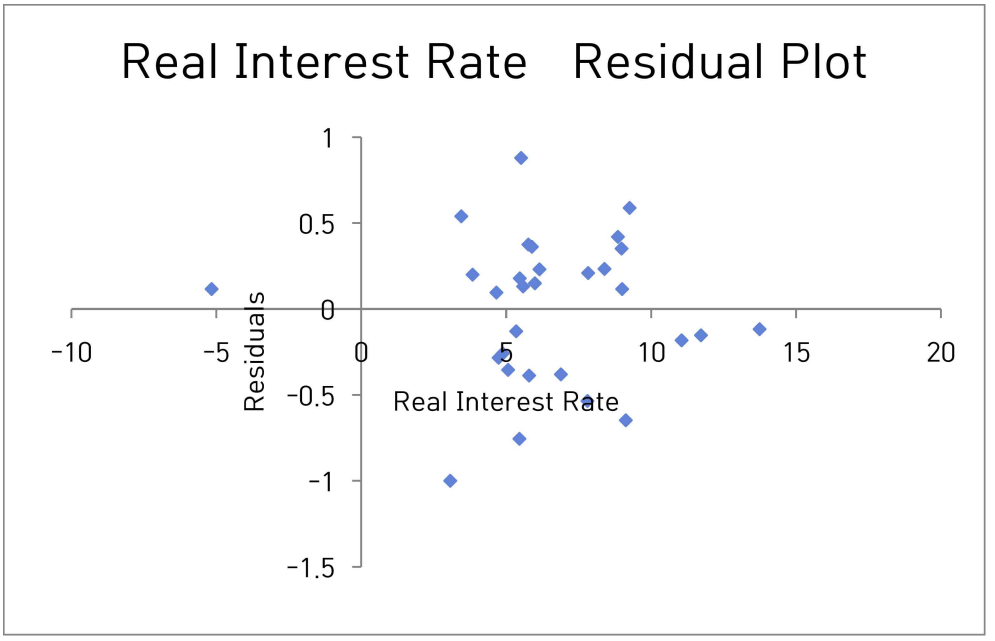
Source: (World Bank, 2022)

Figure 13 RMG EO Line Fit Plot

Bangladesh after the liberation from the beginning face lot of poverty and mainstream of income was based on agriculture. Majority of the people of Bangladesh was directly involved with agricultural work. For geographical purpose Nation also faced lot of natural catastrophic events along with unstable economic and political situation also literacy rate played a huge role to work in agricultural industry. But in recent past the literacy rate and the mind set and the problem that Bangladesh has to face has change the mindset of the new generation and leaned more into industrialization specially in textile industry hence, the data also suggests that, increasing number of Export Goods and services (Y) also has a positive relationship with Ready-Made Garments Export Output (X_3). In addition, increase number of export goods and services influences

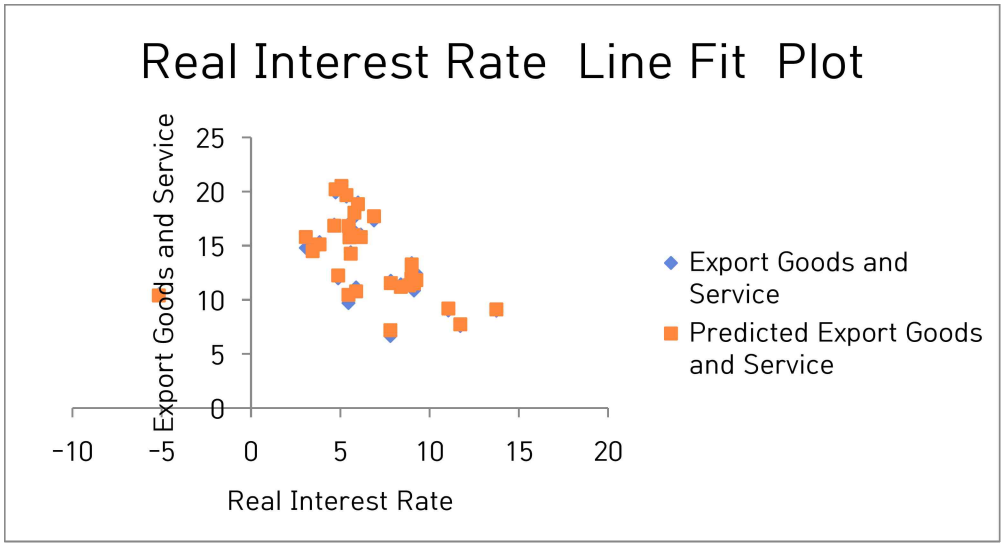
this variable to contribute more to national export

6.2.5 Relationship Between Export and Real Interest Rate



Source: (World Bank, 2022)

Figure 14 RIR Residual Plot



Source: (World Bank, 2022)

Figure 15 RIR Line Fit Plot

In the first decade after the independence because of the natural disaster and poverty the real interested rate fluctuated a lot. But since the late 90's the real interest rate has remained pretty much .constant hence, the data test oppose that, Export Goods and Services (Y) and the Real Interest Rate (X_4) has negative relationship in between them. However, if Export Goods and Services increases, we can expect the decrease value of Real Interest Rate

6.3 Comparing Results with literature

Many literatures have shown that, labor force has wide influence on a nation's economy, it is also discussed above in chapter 2 that in the context of Bangladesh Labor Force inputs the major influence on export-oriented industry. In contrast, this study only focuses on the Female Labor force and finds that not only male but also female has large contribution to export of goods and services in Bangladesh's context

However, for Export gods and Services negative participation of Female Labor Force influence Bangladesh's overall export growth. This might be caused for various reasons which are addressed in research contribution section.

This has discussed and proven several times that, Ready-Made Garment has the most contribution in Bangladesh's National Export. But this study's result shows that, after 2020 the ready-made garment export output has just a bout contribution in Export Goods and Services in Bangladesh's Context. This paper's results indicate conflict with previous literatures. However, this is to be taken into account that, this paper's dependent variable is Export goods and services where in most of the cases GDP is their Dependent variable.

Established publication says trade openness influence a nations export to grow more. In this case of empirical investigation result founds that in the context of Bangladesh Trade openness also holds an important key in countries economic growth which begins with exporting industry.

Real Interest Rate is commonly talked about topic between the economic scholars, they mentioned that, increase in real interest rates increases the price of goods and services. And we assumed the increase in production cost can demotivate international traders to trade within that nation. Therefore, in the context of Bangladesh result shows that if the number of exports decreases the real interest rate increases.

6.4 Evaluating the Study

By evaluating relationship between the dependent variable and independent variables this study's results able to establish find research questions answer. Some result shows that, findings don't hold that much of difference than previous scholars however, one of the interpretations

clearly indicates the contradiction with other literatures. The possible reason might be as follows:

- Time gap between previous literature and this study
- Different variables taken into consideration in term of this empirical study.
- Difference between data samplings
- The context of this study is different from other

6.4.1 Study Limitation

This study finds result within a very specific period which, while investigating empirically, it has been found that to elaborate the explanation more accurately between the relationship the time frame should be extended, however as the variables are being calculated for thirty years it would be better if the number of observations is increased. But also, resource limitation was quietly found during the empirical study such as allocation of money. Moreover, visiting several exporting firm and sampling data through survey is found very important by this study.

6.4.2 Study Contribution

This study finds that, Export of Goods and Services is proven to be a great contributor Of Bangladesh's economy. In this case of investigation, we have found that labor force including female labor force must have large contribution to textile industry, yet female labor force has negative impact on export goods and services. This must be taken into consideration immediately.

Also, to be acknowledge that, trade openness extends the door for international trading which is encouraged by the administration of

Bangladesh and the nation itself started to see the outcomes by the policy. Results of our regression concludes that ease of trade policies extends trade openness and in result export goods and services of Bangladesh increases.

6.5 Recommendations

This paper suggests extending the time frame to analyze the data as more data brings more consistency to any study. Also, this is to be encouraged for future researcher to study what might the reasons for this negative relationship between Female Labor Force and Export Goods and services by investigating more variables but this to be in concern that variable's outcome should be identified as significant in statistical terms. Moreover, it is highly encouraged to conduct survey on numbers of exporting industry regarding future research objective if future research's context is within this study. This will help future author to collect primary data and run analysis.

It is suggested that, to find the percentage of skilled labor force that are affecting the econometrical indicators along with analyze the relationship between wage and productivity. And to find measure of social security to evaluate the security structure that female labore force are in and to find out in how proportion does the social security effecting the determination of female labor force's productivity. Additionally suggested to find does the weak building infrastructure of the exporting industry making female workers insecure to work. Moreover, in what proportion the transportation system is available for the female labor force is it a struggle for them using public transportation or not these answer will be able to find lot of interesting answer which can explain the negative relationship with export goods and services.

In readymade garment industry it is suggested to find the relationship between loss of distribution in electricity and its effect on the manufacturing process, Hence, to identify the availability of electricity to the exporting industries and in what proportion does these factors relationship are explained.

Moreover, to find out is the industrialization is centralized does the factories are implanted in a certain designated are if not is it safe to build a factory and run the manufacturing process in a livelihood area. Does government needs to impose policy to implement factories in a certain manufacturing hub.

Suggested to find the feasibility of transportation system as this effects any economy directly. It is very important for the future researchers to scale the transportation barriers and run test with the data to explain the relationship between RMG EO and the difficulties to commute or the availability to logistic support.

Additionally, this is also suggested that, to understand the process of customs process in Bangladesh specially in the ports of the nation and to find out the traffic that exists in the sea port for product discharge is it a negative or positive sign for the explanation of RMG EO.

Also, this is to be taken into account while doing further study the process of private banking system in Bangladesh as the money is to be transferred through the Banks. Is their any block exists which may overweigh the interests rates. In what measure the paper less trading is practiced in the private banking system because paperless banking system can ease the process and time both in a very efficient and effective way. Is there any law that government can impose to increase the practice of paperless trading.

To is suggest to evaluate the real interest rate with inflation rate and to predict the future events for both inflation rate and real interest rates to

take intensive action to avoid unnecessary economic collapse.

6.6 Policy Implications

This study finds that couple of new findings in the context of Bangladesh which is Female Labor Force has negative growth impact in Bangladesh's growth of economy. This might happen for several reasons, but this study believes that administration should impose rules or emphasis on industries to literate female workers more in terms of making them more efficient and effective in working place.

Secondly, If the administration adds more subsidies on exporting industry and if encourages enterprises for more international trading by reducing TAX's and tariffs upon facts consideration trade openness will extend and export of goods and services will increase which ultimately will effect directly into Bangladesh's economy growth in a positive way.

Thirdly, this study also suggests that policy makers should take real interest rate into thorough consideration because according to the relation between real interest rate and export goods and services are negative. Therefore, by imposing reduction in real interest rates by the central bank should encourage Bangladesh's exporting industry. But this should be taken into consideration that, while imposing reduction central bank should consider regarding facts of feasibility test.

6.6.1 Policy recommendation for Export Goods and Services

In 2013 according to World Bank Bangladesh' performance in export stand at 129 out of 185 nations which is very poor this is due to the lack of infrastructure such as low availability to the electricity. Electricity is the main source of energy along with fossil fuel.

Access to the electricity is gradually increasing yet have not reach the 100% mark from 1991 to 2020 (MASHAYEKHI, 2014)

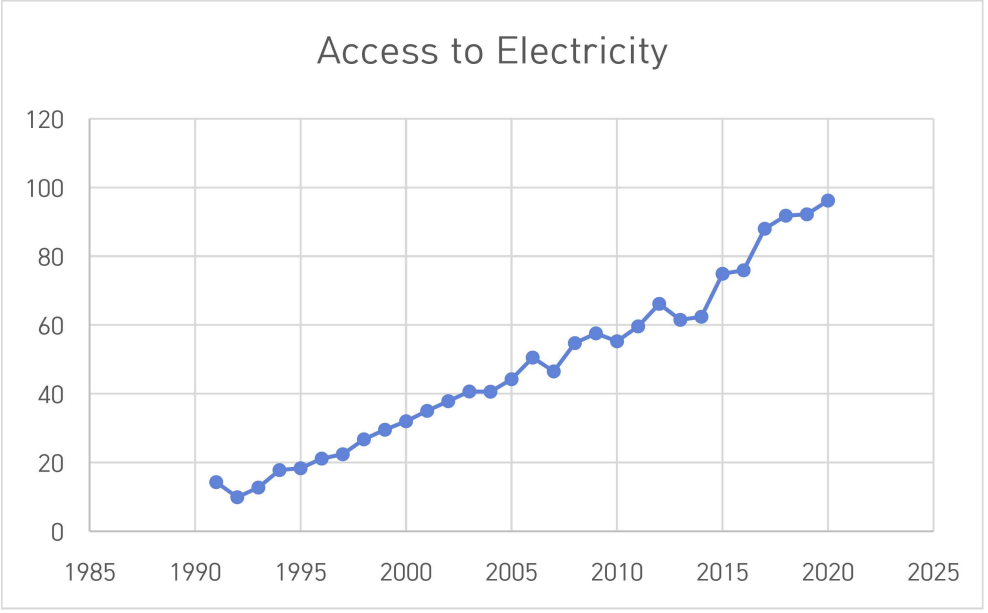


Figure 16 Access to Electricity *(Worl Bank, 2022)*

Administration needs to build more Electric Hub in order to facilitate manufacturing factories energy for un interrupted electricity. The load shedding of electricity also discouraging the the nonstop production and the enterprises has to rely on generator to produce their own electric energy.

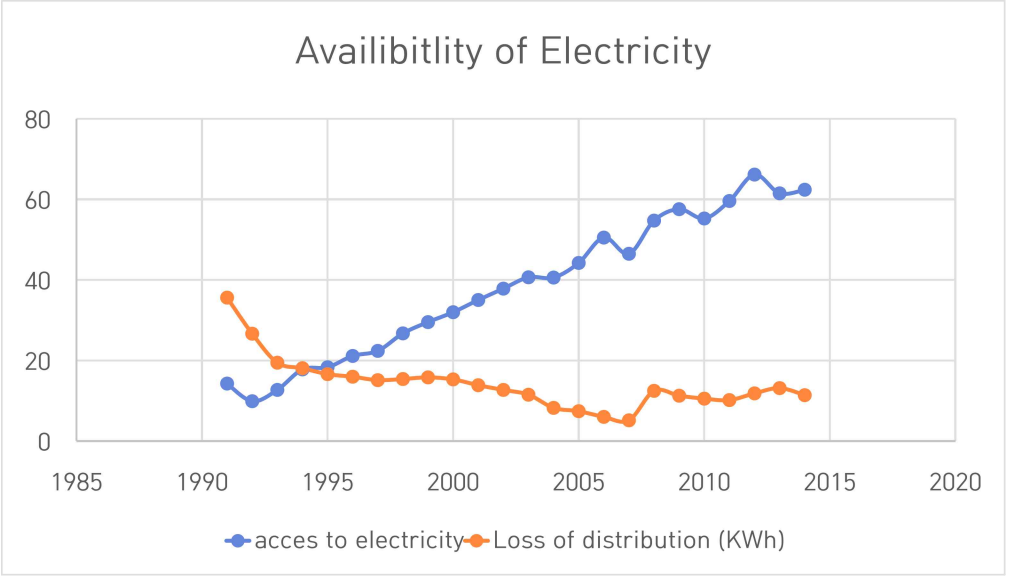


Figure 17 Availability of Electricity *(World Bank, 2020)*

6.6.2 Policy recommendation for female labor force

Labor force of Bangladesh is considered as the competitive advantage for exporting industry as the supply of labor is sufficient and cheap. According to the law that labor act 2006 the minimum wage for an individual working 8 hours per day and 48 will get about $80 a month (Uddin, 2008).

Administration needs to revise the law as it been already 18 years of unchanged labor act. if we compare this labor act with Korea, of Republic it is to be found that every year the administration of the Korea revise the law according to the value of money (Takenoshita, 2020)

Additionally, social security for female in Bangladesh is not significant, whether this can be in working place or outside this demotivates female workers to be more productive because a demotivated person can be efficient. And there is not mandatory law from administration to the

industries to facilitate workers by giving them training. If govt imposes law to train both female and male labor force the productivity can grow (Yunus and Yamagata, 2012).

6.6.3 Policy Recommendation for Ready-made garment Export

The infrastructure for road communications is very weak also the length of rail road is not sufficient which was recorded 2877 total route-km (World Bank, 2022) administration needs to increase the length of rail road for uninterrupted communication as ready-made Garment needs raw materials in time and also in return needs to deliver to produce goods in time as well.

Moreover, loss of distribution of the electricity interrupts the process of production in that case any garment industry needs to switch to generator which is ran by fossil fuels therefore the cost of production increases along with interrupted production process. This is to be stated that if administration manages to provide electricity to exporting industry the production will be uninterrupted or the government can impose law to reduce the price of fossil fuels specially for exporting industries to improve the performance of ready-made garments (Ahmed, Greenleaf and Sacks, 2014)

6.6.4 Policy recommendation of trade openness

In our study we have found that, the relationship between trade openness and export goods and services is positive and contributing enough therefore government doesn't need to impose serious laws however, government always can monitor the existing process to protect the steady contribution from trade and openness.

6.6.5 Policy recommendation for Real Interest Rate.

Bangladesh bank is maintain real interest verry effectively and the trend has not increased dramatically in recent years however, these opportunity opened lot of doors for new entrepreneurs to for new business.

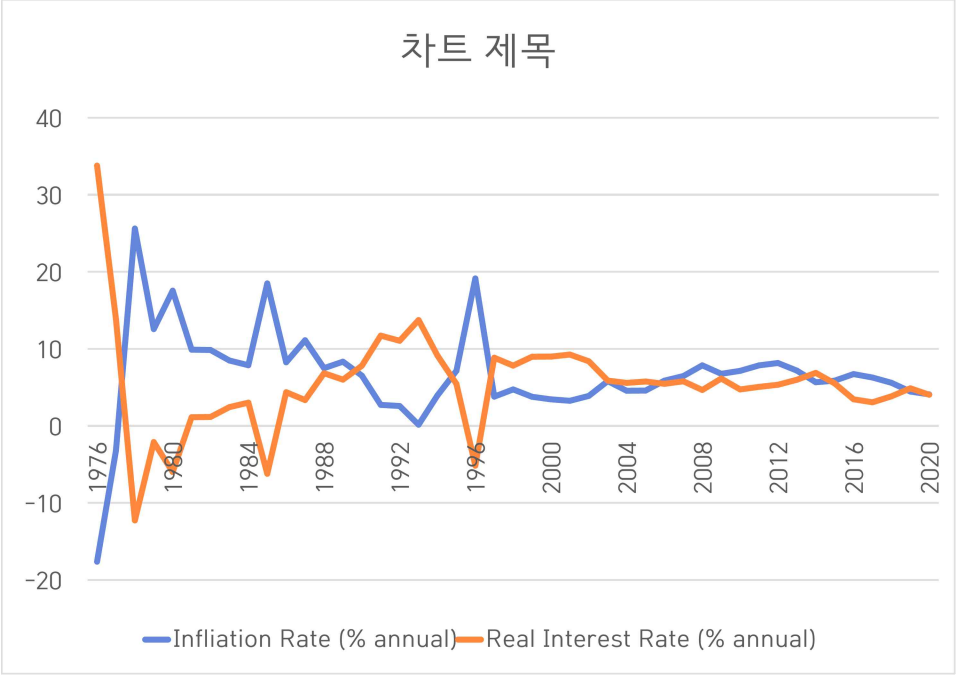


Figure 18 RIR % Inflation rate (% Annual) *(World Bank, 2021)*

The maintenance between inflation rate and real interest rates (% annual) has been monitored decent for last 2 decades and administration needs to continue monitoring the situation for better result.

Chapter 7: Conclusion

Undoubtedly export goods and services is one of the key components of a country's economic growth. But this paper arises questions regarding what the relationship between export goods and services (%GDP) and Female Labor Force (%total labor is force), Trade openness (%GDP), ready-made garment export output and Real Interest Rate (%GDP).

This study finds that, the regression, model itself is significant but also other four variables are also significant and can be calculated towards the analysis in the context of this study.

Bangladesh is vastly supported by the supply of labor force. However, our study concludes that Female Labor Force has negative relationship with export goods and services. This might be several reasons. This is to be encouraged for future researcher to study what are the reasons for this negative relationship.

Trade openness (%GDP) has positive relationship with export goods and services (%GDP) and indicates strong relationship. However, in theoretical analysis previous literatures found that trade policies cause the decreased number of trades. We can estimate that, coming into a new era there might be new policies that has been implied which might be the reason for strong relationship between these two variables. This to encourage for future to understand the reason for negative to positive relationship.

Ready-made garment export output has been the major industry to contribute to the Export Goods and Services (%GDP). However, in this study ready-made garment export output has positive relationship which indicates that ready-made garment industry has influence on export earnings.

This study finds that, Real Interest Rate has negative relationship with

the export goods and services (%GDP). As the Real Interest Rate increases export goods and services decreases as this is proven that if the cost of production increases the margin of sales decreases, similarly in the context of our study as the Real Interest Rate increases the margin of export goods and services decreases.

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Appendices

Collected Data (Non-Stationary)

Year	Export (%GDP)	RMG EO	TO (% GDP)	FLF (% total labor force)	RIR (% GDP)
1991	6.662612	866.82	18.88983	21.64306	7.803216
1992	7.586677	1182.57	19.93401	21.73109	11.71899
1993	9.017269	1445.02	23.12158	21.85095	11.05036
1994	9.001544	1555.79	22.86586	21.99961	13.74097
1995	10.86463	2228.35	28.2095	22.17032	9.125765
1996	9.706508	2547.13	26.07609	22.35965	5.455285
1997	10.52037	3001.25	26.32551	22.54814	-5.16455
1998	11.75733	3781.94	27.88006	22.755	8.853321
1999	11.75864	4019.98	28.38794	22.97148	7.825648
2000	12.3442	4349.41	29.32171	23.18693	8.978643
2001	13.38656	4859.83	32.09802	23.39224	8.998203
2002	12.40997	4583.75	28.96738	23.54838	9.256956
2003	11.43115	4912.09	27.65788	23.69918	8.389699
2004	11.14651	5686.09	26.85823	23.84436	5.884454
2005	14.39284	6417.67	34.39693	23.98724	5.582356
2006	16.35346	7900.8	38.11192	24.13621	5.764269
2007	16.99533	9211.23	39.94238	24.25668	5.466994
2008	17.65886	10699.8	42.62091	24.73532	5.789111
2009	16.94013	12347.77	40.0928	25.22569	4.661743
2010	16.02411	12496.72	37.80284	25.71727	6.146538
2011	19.92207	17914.46	47.42085	26.20407	4.736124
2012	20.16159	19089.73	48.11092	26.67375	5.064198
2013	19.53787	21515.73	46.2964	27.13853	5.343333
2014	18.98966	24491.88	44.51408	27.60343	5.988694
2015	17.33667	25491.4	42.086	28.07273	6.885866
2016	16.64971	28094.16	37.9543	28.55397	5.512644
2017	15.03611	28149.84	35.304	29.05478	3.449254
2018	14.80096	30614.76	38.24489	30.65975	3.068637
2019	15.32325	34133.27	36.7593	30.78676	3.838586
2020	11.98976	27949.19	30.51947	30.87458	4.879315

Data (Stationary Diff 3)

Export	FLF (% Total Labor Force	TO (% GDP)	RMG EO	Real Interest Rate
-1.95284	-0.00302	-5.5867	-98.38	8.516616
3.325134	-0.00676	9.042646	713.47	-6.86932
-4.90003	-0.00341	-13.0764	-915.57	9.451528
4.993207	-0.01947	9.859874	489.12	-36.1608
-1.54889	0.019217	-1.07771	191.23	43.62022
-1.65875	-0.00877	-2.3518	-869.22	-18.1701
1.819897	-0.01064	1.47257	634.04	2.511952
-0.12745	-0.00911	1.416632	89.6	-0.47192
-2.47575	-0.03903	-7.74947	-967.49	0.668327
2.016718	0.043837	7.72808	1390.92	0.474035
0.69641	-0.00029	-1.3113	-158.76	-4.46787
2.836792	0.003336	7.828506	-488.08	4.454534
-4.81668	0.008381	-12.1621	793.97	-0.01255
-0.03304	-0.0346	1.93918	-924.25	-1.9596
1.340403	0.386686	2.732605	350.84	1.488633
-1.4039	-0.34643	-6.05472	-18.74	-3.2807
1.184955	-0.01055	5.444813	-1658.42	3.963237
5.011277	-0.00597	11.6698	6767.81	-1.14244
-8.47243	-0.01235	-20.8359	-9511.26	-0.74414
2.79522	0.012223	6.423341	5493.2	-0.88508
0.938729	0.005014	2.53679	-700.58	0.778198
-1.18027	0.00428	-0.67796	-2526.78	2.226698
2.0708	0.007556	-1.05785	3579.87	-1.05907
-1.89268	0.007609	3.18502	-4150.32	-1.95532
2.305106	1.084592	4.109786	4956.32	1.072089
-0.62102	-2.5821	-10.0177	-1355.65	-0.22498
-4.61321	1.438765	-0.32776	-10756.2	1.226385

(*Exports of goods and services, volume*, 2015; *Labor force, female (% of total labor force) - Bangladesh | Data*, no date; *Trade (% of GDP) - Bangladesh | Data*, no date; *Real interest rate (%) - Bangladesh | Data*, no date; BGMEA, 2020)

Stationary description:

Data: Export Goods and Services (%GDP) of Bangladesh		
Dickey-Fuller = -4.4285	Lag order = 2	p-value = 0.01
alternative hypothesis: stationary		

Data: Labor force for female		
Dickey-Fuller = -4.6235	Lag order = 2	p-value= 0.01
alternative hypothesis: stationary		

Data: Trade openness		
Dickey-Fuller = -5.2241	Lag order = 2	p-value= 0.01
alternative hypothesis: stationary		
Data: Real Interest Rate		
Dickey-Fuller = -6.3914	Lag order = 2	p-value= 0.01042
alternative hypothesis: stationary		

Data: READY-MADE GARMENTS export output		
Dickey-Fuller = -4.359	Lag order = 2	p-value= 0.01042
alternative hypothesis: stationary		

국 문 초 록

- 방글라데시의 수출상품과 서비스 성장에 영향을 미치는 계량적 지표에 관한 연구-

한 성 대 학 교 대 학 원
국 제 무 역 경 제 학 과
국 제 무 역 시 장 전 공
우 딘 아 자 르

본 연구에서는 1991년부터 2020년까지 종속변수와 독립변수의 관계를 시험하는 정량적 분석을 강조하였습니다. 독립 후 방글라데시는 빈곤과 많은 어려움을 겪어야 했고, 그 이후 방글라데시는 농업 중심 국가라고 생각하기 시작했지만, 시간이 지남에 따라 방글라데시는 의류 산업을 중시하는 산업화로 초점을 전환했습니다. 이것은 방글라데시가 매우 인구 밀도가 높은 국가라는 것을 일반적으로 알려져 있기 때문에 노동력입니다. 힘은 그들의 경쟁적인 이점입니다, 그러나 여성 노동력은 그것의 수출 산업에 부정적인 영향을 미칩니다. 반면, 무역 개방은 방글라데시의 경제 성장에 이 변수가 영향을 미치면서 방글라데시의 문을 열었습니다. 무역 개방이 점진적인 패턴으로 성장하고 있다는 점도 언급해야 합니다. 셋째, 90년대에 방글라데시는 의류 산업을 강조하기 시작했습니다. 그 이후로 수출 산업에 가장 큰 공헌은 기성복으로 남아 있습니다. 그러나, 현재 기성복의 성장률은 이전 수준을 넘지 못하고 있기 때문에, 관계의 기여도는 일정합니다. 마지막으로, 방글라데시의 실질 금리는 수출 상품과 서비스에 부정적인 영향을 미치지만 거의 일정하게 유지되고 있습니다.

키워드: 경제, 기성복, 수출 상품 및 서비스, 실질 이자율, 여성 노동력, 정량 테스트, 회귀 분석, 방글라데시의 상황