Impact of FDI on Exports and Employment in Bangladesh

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Abstract

FDI is an essential determinant to any country as it boosts economic growth through increasing technological knowledge, managerial skills, and efficiency of resources. The primary purpose of this study is to seek out FDI's impact on exports and employment in Bangladesh. This study conducts with two models. The first one is FDI and its impact on Export in Bangladesh with the time range of 1972 to 2017. The industry value added is the control variable, the dependent variable is exported, and FDI is considered the independent variable. The impact of FDI on employment in Bangladesh with the time range of 1991 to 2017 is the second model where GDP growth and exports are the control variables. ARDL BT approach and Error Correction Model (ECM) are applied to determine the long-run and short-run association among the variables. The ARDL result of the 1st model shows that it has a long-run relationship among the variables. The Bound testing approach indicates a long-run association among variables. The coefficient of the ECM-ARDL Model is negative and significant. The ECT (error correction term) is -0.430 reveals that adjustment is corrected from the short run to the long run by 43% towards the equilibrium of exports. The Granger causality test result shows the bidirectional causality between industry value-added and exports. The ARDL approach reveals the long-run association between dependent and independent variables at a 1% significance level in the second model. FDI's coefficient indicates a 1% increase in FDI will increase employment by 0.01% on average, which is statistically significant. From the pair-wise Granger causality test result, the study has found bidirectional causality between GDP growth and employment. Unidirectional causality is detected between FDI and employment, exports and jobs, and FDI and exports.

Keywords *Bangladesh · Employment · ECM-ARDL · FDI*

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1.   Introduction

Foreign Direct Investment (FDI) is a critical determinant to any country as it boosts the economy's growth through increasing technological knowledge, managerial expertise, and efficiency of resources. FDI is regarded as an effective means of increasing exports of host countries. FDI is also crucial for growing countries like Bangladesh. During the last decade, Bangladesh attracted an excellent figure of FDI with 8.1% GDP growth. FDI helps the host country's investors know about international market linkage; as a result, they can learn a more potent way to increase market share and earnings. FDI significantly contributes to the host country's employment. It is augmenting local human capital.

FDI comes with high technological knowledge, executive power, and international market knowledge. It is also essential for both growth and development in any country. Bangladesh needs foreign investment as it alone cannot cope with its vast population. To increase its domestic savings, exports, and employment, it must increase its FDI. Due to FDI, multinational companies open their outlet in our country and higher our labour forces, thus creating jobs and growing our exports of goods and services.

Bangladesh alone can't accrue sufficient domestic savings isn't possible for Bangladesh after transacting all the basic needs, so it is argent to inflow FDI from other countries to our country (Ahmed 2014). We are endowed with less FDI as we are in a developing country. So, to increase our job sector, wage, supply chain, and advance innovation, we have to attract FDI. It is empirically proved that FDI increases and increases economic growth and GDP as they appear with better marketing techniques, new products, new production techniques and generating revenue (Haq 2012). FDI has increased worldwide since the late 1980s and the 1990s (Mahmoodi and Mahmoodi 2016). Nowadays, Bangladesh can attract a colossal FDI from developed countries like America, Australia, Canada, Japan, China, etc.

To seek out FDI's impact on exports and employment in Bangladesh is the primary purpose of this study. Besides, it tries to show the relationship between export and industry value-added. Also, try to establish an employment relationship with GDP growth and export.

The UNCATD'S 2019 World investment report shows that FDI inflows to Bangladesh closed at 3.61 billion USD in 2018, equivalent to 5.9% of the country's GDP. FDI inflows in Bangladesh in the last few years are mentioned below.

Table 1 below shows the inflows of FDI in Bangladesh from 2005 to 2018. In 2005 it was $803.78 million, and gradually it increases. In 2009 it was $960.59 million. But in 2014, it decreased compared to 2013. In 2015, 2016, 2017 and 2018 FDI inflows were respectively $1833.87, $2003.53, $2454.81 and $2580.44 million.

Table 1: FDI Inflows (In million USD) from 2005 to 2018

Year	FDI	Year	FDI
2005	803.78	2012	1194.88
2006	744.61	2013	1730.63
2007	792.74	2014	1438.49
2008	768.69	2015	1833.87
2009	960.59	2016	2003.53
2010	913.09	2017	2454.81
2011	779.04	2018	2580.44

Source: *Bangladesh Bank*

We can look at the line diagram below for the FDI inflows trend in Bangladesh, showing FDI inflows were comparatively slow from 2005 to 2011. Then it increases significantly except in 2014, and it is upward trending.

Figure 1: FDI Inflows (In million USD) trend from 2005 to 2018

FDI (In Million USD)

Source: *Bangladesh Bank*

Table 2 shows the data of WDI for 2010 to 2017 for Exports (% of GDP) and employment (% of total employment), and the line diagram below show these two data trend, where export is a little slower and denoted by the blue line. But employment is upward trending, as indicated by Bangladesh's red line from 2010 to 2017.

Table 2: Export (% of GDP) and Employment (% of total employment) from 2010 to 2017

Year	Export (% of GDP)	Employment (% of total employment)
2010	16.02411269	17.62700081
2011	19.92207496	17.73600006
2012	20.16158886	18.78800011
2013	19.53787411	20.78899956
2014	18.98966	20.16600037
2015	17.33667379	20.45999908
2016	16.64971496	20.83799934
2017	15.03610763	21.08499908

Source: *WDI, 2017*

Figure 2: Export and Employment trend from 2010 to 2017
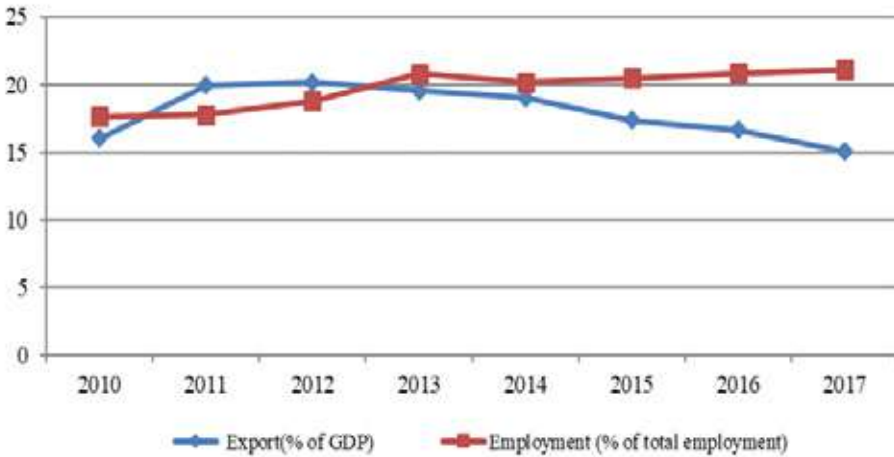
Source: *WDI, 2017*

In this paper, the section gives the study's problem statement, section 3 shows the literature review, and the paper's objectives are provided in section 4. The significance of the study, methodology, results and discussions, and conclusions and recommendations are described in sections 5, 6, 7 and 8, respectively.

2.   Problem Statement

After the liberation war, the situation of Bangladesh was a beggar description, but now it turns itself into a better position where the contribution of inward FDI can't be denied. Many policymakers and researchers now work with FDI, contributing to economic growth, GDP, gross national savings, exports, imports, and employment.

For Bangladesh, it's necessary to know the contribution to FDI exports as it increases production techniques and low production costs and employment for unemployed people. This country's people are now enjoying a better standard of living and per capita income. FDI increases the efficiency of our human capital as they provide various training which is not possible by our government. Theoretically, FDI may have increased job opportunities. But empirically need to justify the employment generation in Bangladesh.

3. Literature Review

Theoretical Framework

When investment in one country occurs from other countries is called FDI. In the case of FDI, the exposure of some developing and transition countries ascertain that the developing countries are more attractive than developed countries (UNCTAD 2011). FDI is usually different from portfolio investment (Sabra 2012). Compared to export, FDI may provide Ownership, Location, and Internalization (Dunning 1977, 1979 and 1981).

FDI is two types. Vertical FDI is FDI when the company geographically disengages the stages of production. It builds on the theory of capital flows. The second is horizontal FDI, where the company produces similar goods or services in several locations (Sabra 2012).

Exports of goods and services generally include haulage, merchandise value, policy, transport, travel, and other services like communication, financial information, and Govt services. Exports of goods and services for Bangladesh were 44,168 million (USD) in 2018. Between 1999 and 2018, exports in Bangladesh grew significantly from 6,235 million to 44,168 million US dollars 2010 to 2018. Bangladesh mainly exports to the American and EU countries, followed by Asian, Middle East and African regions (Moniruzzaman 2002).

Employment is explained as working-age persons engaged in any activity to produce goods or services. Due to establishing forward and backward linkages with the host country's firm, FDI inflows can affect employment. For example, when foreign firms purchase locally produced goods, demand addressed to upstream industries guides potential job creation in host countries (Jude & Silaghi 2016).

Literature Review Related to FDI and Exports

Across the world, there are massive studies on this topic. Some of them are included here. We have here some of them in this section.

Conducting the relevance between FDI, imports demand and export supply for Pakistan by using ECM and co-integration tests revealed that FDI has a positive association in the long run with real exports (Tabassum *et al*., 2012). Research on

exports and FDI in India, where the time range was 1980 to 2010, found a stable long-run relationship between FDI and export growth. Unidirectional causality ensures through VECM for exports and FDI inflow. In the short run, there is no Granger cause between FDI inflow and export (Sultan 2013). Applying the OLS method to find the influence of FDI on exports, the results revealed a positive impact of FDI on export growth (Muzurura et al., 2012). A long-run association among variables was found using the ARDL approach from 1980-to 2018 (Mukhtarov et al., 2019). A significantly positive impact of FDI on export is also noticed.

Mahmoodi and Mahmoodi (2016) examined the causal relationship between FDI, exports and economic growth. Panel-VECM causality is employed in the paper. The result of the article indicates a bidirectional causal relationship between exports and economic growth in the short run. They also detect long-run causality from export and FDI to economic growth and export to FDI for both panels. Haq (2012) showed the statistically significant positive impact of FDI on exports in Pakistan. Dritsakia and Stiakaki (2014) explored the relationship between FDI, exports, and economic growth in Croatia. They used the ARDL BT approach and also the ECM-ARDL model. Bidirectional causality between exports and growth was found for both the long and short run. Bouras and Raggad (2015) also showed positive relationships between FDI and exports.

Zhang's (2002) estimation indicates that FDI positively influenced export performance in China; its export-promoting effect is much more significant than domestic capital. Selimi et al. (2016) examined the FDI and export in Western Balkan countries. They also investigate the fixed effects and individual heterogeneity across countries and years. The econometric analysis found that FDI's impact positively impacts export in the sample countries. Barua (2013) shows a positive relation between FDI, GDP, and Exports through simple regression and multiple regressions.

Literature Review Related to FDI and Employment

FDI inflows are expanding employment in all economic sectors where FDI positively affects employment in two EU areas (Marelli et al. 2014). Ayumu (2012) has examined the influence of FDI on the domestic employment of Japanese three sectors like manufacturing, wholesale, and service sector firms. The empirical results imply the positive effects of FDI on employment. Malik (2018) has examined the employment effects of FDI in the manufacturing industries of India. They have employed 54 three-digit industries. In the paper estimating an extended dynamic labour demand model through the GMM Method, he had not observed any considerable impact on the employment of FDI. Craigwell (2006) showed the result by employing panel data methods. Recommending that increase in FDI increases employment. Employment is most significant in the first year due to foreign direct investment and broadens when trade policies, absorption, and financial development are considered. Efficiency-seeking FDI may be caused by

more unemployment due to export substitution and reimports. The employment effect of FDI on home countries is positive (Agarwal 1996). Çolak and Alakbarov (2017) analysed FDI's impact on employment. The paper's findings reveal a long-run positive association between FDI and employment but the limited employment-generating effect of FDI. Chen (2012) explored the relationship between employment and FDI in China. The paper showed a positive relationship between current and past data on employment and FDI in China. Abbas and Xifeng (2016) work with tourist investors and conduct research questionnaires and interview methods. A positive influence of FDI on employment in Zanzibar was found.

4.   Objectives of the Study

The paper's main objective is to determine the impacts of FDI on exports and employment in Bangladesh.

The specific objectives are the following:
1.   To investigate the impact of industry value-added on exports in Bangladesh
2.   To examine the relationship between exports and employment in Bangladesh
3.   To show the impact of GDP growth on employment and develop an ARDL MODEL with the relevant variables

5.   Significance of the Study

This article shows the impact of FDI on export and employment in Bangladesh. Due to various reasons, Bangladesh cannot incur a lucrative FDI. As FDI is a potential origin for influencing the economy's growth, the government should try to increase various steps to convince developed countries. Otherwise, Bangladesh cannot cope with the modern world. Through this paper, we can learn the importance of FDI to increase exports in our country as FDI changes production techniques and the efficiency of raw materials. We can also understand the importance of FDI on employment generation in our country. Research on this topic and ARDL and ECM-ARDL models in Bangladesh are scarce. This paper may help for further research. It may be helpful for the existing literature gap. It may help policymakers decide about FDI, export, and import.

6.   Methodology

Data and Sample

We conduct here with two models. The first one is the impacts of FDI on exports; the second model is on employment in Bangladesh. These two models are conducted with secondary data collected from WDI (World Development Indication, 2017).

Model Specification

Model 1:

$$Exports = f\,(FDI, Industry\ value\ added)$$

By taking the natural logarithm, the final econometric model is

$$lnEx_t = \alpha + \beta_1 lnEx_{t-1} + \beta_2 lnFDI_t + \beta_3 lnIVA_t + \beta_4 lnIVA_{t-1} + \mu_1$$

Here, Ex_t= Exports (% of GDP), Ex_{t-1} = Export of one year lag, $IVA_t =$ Industry value added (% of GDP), $IVA_{t-1} =$ Industry value added of one year lag. It is necessary to mention that there are various studies on this topic with these variables. There are notable studies on the data of exports and FDI (Barua 2013; Bouras and Ragged 2015; Dike 2018; Sultan 2013 and Dritasaki and Stiakakis 2014). Industry value added is also used in the same topic by Selimi *et al.* 2016.

Model 2:

$$Employment = f\,(FDI, GDP\ growth\ , exports)$$

The final econometric model is,

$$lnEm_t = \alpha + \beta_1 lnEm_{t-1} + \beta_2 lnFDI_t + \beta_3 lnEx_t + \beta_4 lnGDPG_t + \mu_2$$

Here, $Em_t =$ Employment (% of total employment), $Em_{t-1} =$ Employment of one year lag, $FDI_t =$ FDI (Current US$), $Ex_t =$ Exports of goods and services (% of GDP), $GDPG_t =$ GDP growth (% annual). Various authors also conduct with the following data (Maitah et al. 2014; Nguyen 2015; Chen 2012).

7.   Empirical Results and Discussion

Result Discussion for Model 1

Unit Root Test
The Augmented Dickey-Fuller test is used to test the stationarity of variables. According to Hill, Griffiths, and Judge (2001), data must be stationary for time series analysis. Results of the unit root test show exports are stationary at I (1), FDI is stationary at I (0), and industry value added is stationary at I (0).

Table 3: Unit Root Test (ADF) Results

Variable	Level	1st difference	Decision
	t-statistics	t-statistics	
LnEx	-0.884	-7.498***	I (1)
LnFDI	-6.170 ***	-5.163 ***	I (0)
LnIVA	-6.537 ***	-11.235 ***	I (0)

N. B: *, **, ***. indicate 10%, 5%, 1% significance level.

As all variables are stationary in mixed order, the ARDL approach tests the long-run relationship among variables. So, the next step is to find out the appropriate lag.

Lag-Length Criteria

Lag order is an essential criterion for the ARDL method. We apply LR, FPE, AIC, SC and HQ information criteria to select the appeasement lag. From table 4, we ensure that the applicable lag is 3 for showing the co-integration relation among variables.

Table 4: Lag Length Criterion

Lag	LogL	LR	FPE	AIC	SC	HQ
0	43.58	NA	1.84e-05	-2.387034	-2.252355	-2.341104
1	129.80	152.1454	1.97e-07	-6.929134	-6.390419*	-6.745417
2	143.36	21.53648	1.53e-07	-7.197370	-6.254618	-6.875865
3	156.35	18.34218*	1.25e-07*	-7.432216*	-6.085427	-6.972923*

* indicates lag order selected by the criterion

Based on the previous study, we select appropriate lag with the help of AIC (Akaike information criterion), as AIC provides cogent and trusty information compared to other criteria.

ARDL Bound Testing

The ARDL BT procedure in Table 5 shows variables' long-run association.

Table 5: ARDL BT Estimation Result

K	F-stat	Significant	Lower bound, I (0)	Upper bound, I (1)
		10%	3.17	4.14
		5%	3.79	4.85
		2.5%	4.41	5.52
2	5.77	1%	5.15	6.36

In this paper appropriate lag order is 3 for the ARDL model. Model is running with constant and no trend, where the result of this estimation shows F- statistics is 5.77, exceeds lower bound I (0) and upper bound I (1) in 5% and 10% significance level. Our expected model is (1, 0, 1). So, there exists a long-run relationship in the model.

ARDL Model

Table 6 shows the coefficient of the ARDL model. The coefficient of one-year lags exports is positive and significant at a 1% level. FDI also has a positive and

significant coefficient at the 5% level, implying that if FDI increases by 1%, then 0.041% increases exports in Bangladesh.

The coefficient of industry value added is 1.253, meaning if the IVA increases by 1%, then exports will increase by 1.253% on average. Then the coefficient of one-year lag IVA is positive and significant. The R-square value is 0.94%, which means this is well-fit data in the model.

Table 6: ARDL Model Estimates

Variable	Coefficients	Standard error	Probability
$LnEx_{t-1}$	0.570	0.109	0.0000***
LnFDI	0.041	0.017	0.0233**
LnIVA	1.253	0.278	0.0001***
$LnIVA_{T-1}$	-0.571	0.181	0.0032***
Constant	-0.804	0.189	0.0001***
R square		0.942	
Adjusted R square		0.936	
Durbin Watson value		1.139	

Short-run Estimation of ARDL Model

Table 7 shows a short-run analysis where FDI has a positive and significant coefficient, meaning that a 1% increase in FDI leads to increased exports by 0.041%. Again, if the value-added industry rises by 1%, exports will increase 1.253% on average. We see that IVA is an essential indicator for exports.

From the short run-ARDL model, ECM_{T-1} indicates the speed of adjustment, which is negative and significant. Error correction term (ECT) is -0.430, showing the adjustment is corrected by 43% towards the equilibrium of exports.

Table7: ECM-ARDL Model

Variable	Coefficient	Standard error	Probability value
Δ LnFDI	0.041	0.017	0.0233**
Δ LnIVA	1.253	0.278	0.0001***
ECM_{t-1}	-0.430	0.109	0.0003***

Breusch–Godfrey Serial Correlation LM Test

Table 8 shows the Breusch –Godfrey Serial Correlation LM test where F statistics is 0.164 and probability value is 85%, indicating no serial correlation.

Table 8: Breusch–Godfrey Serial Correlation LM Test

F-stat	Probability
0.164	0.8493

Heteroscedasticity Test

Table 9 shows the Breusch-Pagan-Godfrey Heteroscedasticity test. Where F stat is 1.251 and probability value is 0.3064, indicating no heteroscedasticity.

Table 9: Breusch-Pagan-Godfrey

F-stat	Probability
1.251	0.3064

Stability Test

We apply the CUSUM test to know the stability of the model. This ECM-ARDL model shows the model is stable through the CUSM test in the figure below, where the colour of the blue line doesn't exceed the red line. So we can say that model is stable in the long run. We can use this model for future policy implications in our country.

Figure 3: Stability Test of the Model by CUSUM Test
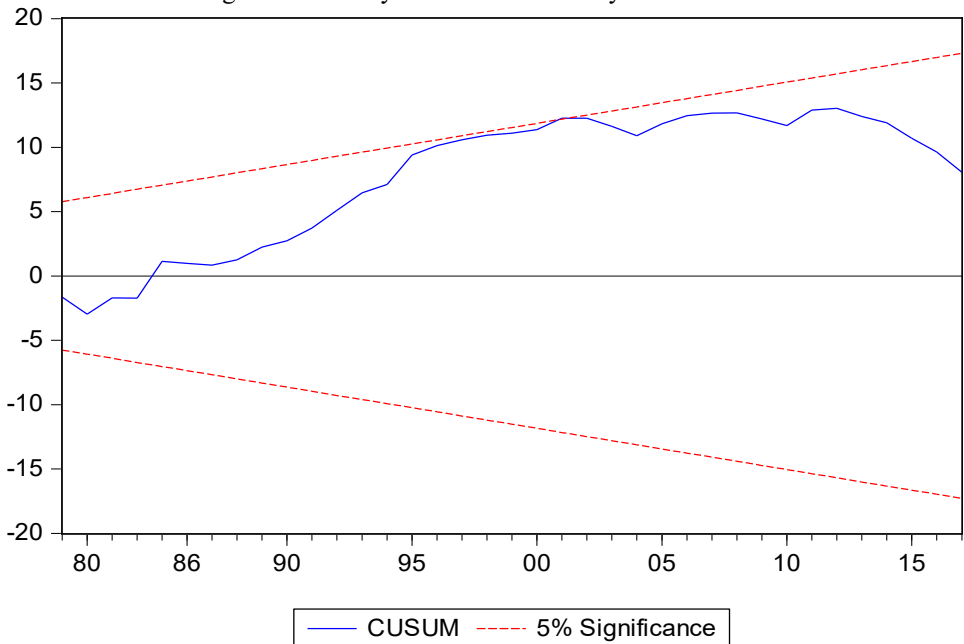
Granger Causality Test

From the test of pair-wise Granger causality, we find bidirectional causality exists between industry value-added and export. The study also found no causal relation between FDI and exports, and no causality has detected any relationship between IVA and FDI.

Table 10: Granger Causality Test

Hypothesis	Obs	F-stat	Prob.
LnFDI does not granger cause LnEx.	34	0.69	0.57
LnEx does not granger cause LnFDI.		0.83	0.16
LnIVA does not granger cause LnEx.	34	2.72	0.05
LnEx does not granger cause LnIVA.		7.77	0.00
LnIVA does not granger cause LnFDI	34	0.27	0.84
LnFDI does not granger cause LnIVA.		1.95	0.15

The result from the discussion for Model 2

Unit Root Test

The Augmented Dickey fuller test is used to test the stationarity of variables. Results of the unit root test ensure that employment is stationary at I (1), FDI is stationary at I (1), exports are stationary at I (1) and GDP growth is stationary at I (0). All these variables are displayed in Table 11.

Table 11: Unit Root Test (ADF)

Variable	Level	First Difference	Decision
	t-stat	t-stat	
lnEm	0.724	-2.912**	I (1)
lnFDI	-2.089	-4.554***	I (1)
lnEx	-2.562	-4.421***	I (1)
ln GDPG	-2.786*	-6.979***	I (0)

N.B: 10%, 5%, and 1% level of significance are denoted with *, **, ***.

Our related variables are stationary in mixed order. We can apply the ARDL BT to find the long-run association within variables. So our following is to find the appropriate lag.

Lag Length Criteria

We apply LR, FPE, AIC, SC, and HQ information criteria to select the appeasement lag. Table 12 indicates appropriate lag 1 for F-statistic among variables to express co-integration. Based on the previous study, we choose appropriate lag with the help of AIC (Akaike information criterion), as AIC provides cogent and trusty information compared to other criteria.

Table 12: Lag Length Criterion

Lag	LogL	LR	FPE	AIC	SC	HQ
0	80.77631	NA	2.53e-08	-6.142105	-5.947085	-6.088015
1	159.7658	126.3833*	1.67e-10*	-11.18127*	-10.20617*	-10.91082*
2	173.8284	18.00010	2.19e-10	-11.02627	-9.271093	-10.53946

* indicates the lag order selection by the criterion

ARDL Bound Testing

Table 13 shows the ARDL bound test to show the long-run association among variables. In this model appropriate lag is 1 for the ARDL Model. Model is running with the constant and no trend, where the result of this estimation shows F- statistics is 7.04 exceeds lower bound I (0) and upper bound I (1) at 1%, 2.5%, 5% and 10% significance level. Our expected model is (1,0,0,0). So there is a long-run relationship in the model.

Table 13: ARDL Bound Test Estimates

K	F-stat	Significance	I (0) Bound	I (1) Bound
		10%	2.72	3.77
		5%	3.23	4.35
		2.5%	3.69	4.89
3	7.04	1%	4.29	5.61

ARDL Model Estimation

Table 14 shows the coefficient of the ARDL Model. Where the coefficient of one year lags employment is positive, and at a 1% level, it is significant. The coefficient of FDI is positive and significant at the 5% level, implying that if FDI increases by 1%, then 0.019% increases employment in Bangladesh.

Table 14: ARDL Model

Variable	Coefficient	Std-error	Prob.
$LnEM_{t-1}$	0.905	0.046	0.0000***
$LnFDI_t$	0.019	0.007	0.0076***
LnEx	0.081	0.053	0.1368
LnGDPG	-0.109	0.060	0.0850
Constant	-0.058344	0.032729	0.0891
R-squared	0.98		
Adjusted R-squared	0.98		
F-statistics	0.0000		
Durbin Watson value	1.65		

N. B: *, **, *** denote 10%, 5%, 1% significance level.

The coefficient of exports is 0.081, meaning that if exports increase by 1%, employment will increase by 0.081%, but it is statistically insignificant. Then GDP growth's coefficient is negative but significant at the 10% level. The R-square value is 0.98%, which means these fit the model's data well.

Short-run Estimation of ARDL Model

Table 15 shows FDI possessed a positive and significant coefficient at a 5% level. If FDI increases by 1%, employment will increase by 0.019%. Again, if exports rise 1%, employment will increase by 0.08% on average, but it is statistically insignificant. We also see that GDP growth has a negative but significant coefficient. From the short-run ARDL model, ECMt-1 is negative and significant. The ECT is -0.095, showing that the adjustment is corrected by 9.5% from the short to the long run towards the employment equilibrium.

Table15: ECM-ARDL Model

Variable	Coefficient	Std. Error	Prob.
Δ LnFDI	0.019403	0.006568	0.0076
Δ LnEx	0.081345	0.052576	0.1368
Δ LnGDPG	-0.109048	0.060325	0.0850
ECM_{t-1}	-0.095122	0.045705	0.0498

Breusch-Godfrey Serial Correlation LM Test

Table 16 shows the Breusch–Godfrey Serial Correlation LM test. Where F statistics is 0.397403 and probability value is 68%, indicating no serial correlation in the model.

Table16: Breusch–Godfrey Serial Correlation LM Test

F-statistic	Probability
0.397403	0.6775

Heteroscedasticity

Table 17 shows the Breusch-Pagan-Godfrey Heteroscedasticity Test. Where F stat is 1.778585 and probability value is 0.1709 indicating no heteroscedasticity in the model.

Table17: Breusch-Pagan-Godfrey

F-statistic	Probability
1.778585	0.1709

Stability Test

CUSUM and CUSUM Squares tests prove that our ECM-ARDL model is stable. The results are given in the figure below, where the colour of the blue line doesn't cross the red line. So we can conclude that in the long run, this model is stable.
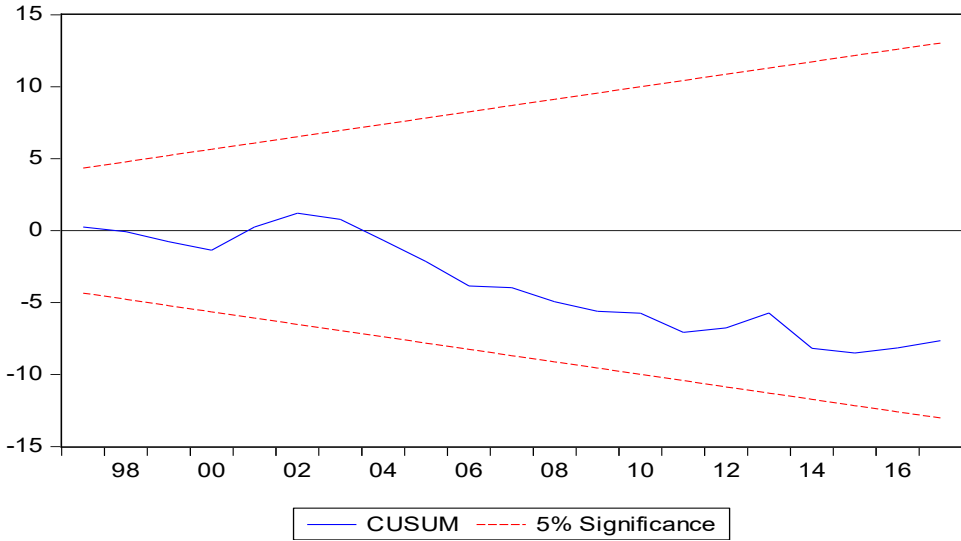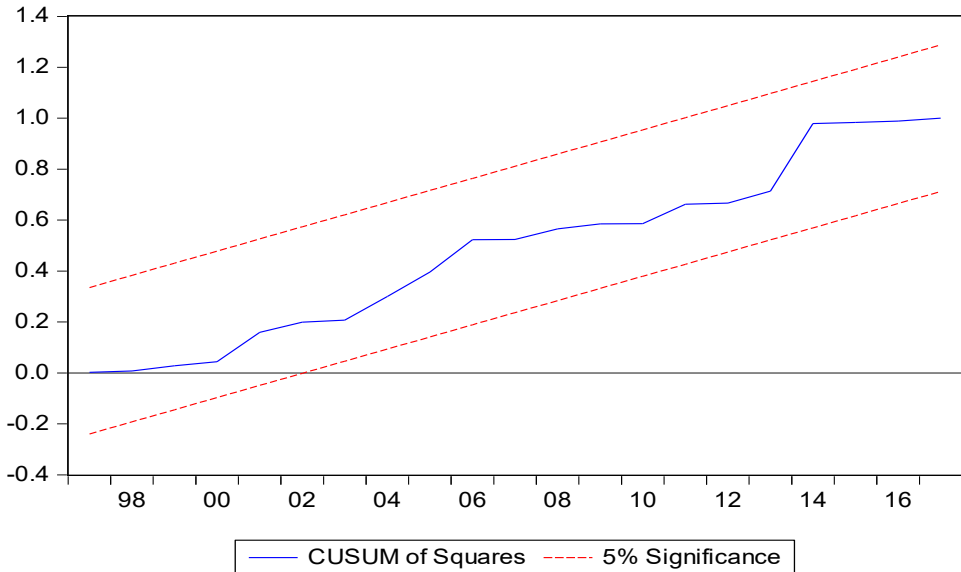
Figure 4: CUSUM Test

Figure 5: CUSUMSQ Test

Granger Causality Test

The Granger causality test finds bidirectional causal relation between GDP growth and employment and unidirectional causality between FDI and employment, exports and employment, and FDI and exports. Also, no causality is found between GDP growth and exports.

Table 18: Granger Causality Test

Hypothesis	Obs	F-Statistic	Prob.
LnFDI does not Granger Cause LnEm	26	21.8038	0.0001
LnEm does not Granger Cause LnFDI		0.64637	0.4296
LnEx does not Granger Cause LnEm	26	22.4277	0.00009
LnEm does not Granger Cause LnEx		0.32080	0.5766
LnGDPG does not Granger Cause LnEm	26	2.88179	0.1031
LnEm does not Granger Cause LnGDPG		11.3355	0.0027
LnEx does not Granger Cause LnFDI	26	2.21327	0.1504
LnFDI does not Granger Cause LnEx		6.27089	0.0198
LnGDPG does not Granger Cause LnFDI	26	0.64692	0.4295
LnFDI does not Granger Cause LnGDPG		5.59015	0.0269
LnGDPG does not Granger Cause LnEx	26	0.99817	0.3281
LnEx does not Granger Cause LnGDPG		1.24428	0.2762

8.   Conclusion and Policy Recommendation

FDI boosts exports of host countries. The paper explores the impact of FDI on exports and employment in Bangladesh. We use the ARDL and ECM-ARDL models. Various authors also utilise this model (Ditasaki and Stiakalis 2014; Abu and Nuruddeen 2017; Lee *et al.* 2011). We find a positive and significant long-run association between FDI and exports and between FDI and Bangladesh's employment.

From the result of the ARDL model, we find that exports depend not only on FDI and industry value added but also on one-year lagged exports. The coefficient of one-year lag export is positive and also statistically significant. Positive and significant coefficient of FDI at a 5% level, indicating that 1% increase in FDI, exports will increase by 0.04% on average. Again the coefficient of industry value added is significant and suggests that if it increases by 1%then export will increase by 1.25%, so that we can hold it as an essential determinant of increasing export from Bangladesh. The value of R square is 94%, and we can remark that there is a good fit of data. Pair-wise Granger causality testing reveals the bidirectional causality between IVA and exports. It also found no causality between FDI and exports, industry value added and FDI. The bound test result shows the long-run association of variables at 5%and 10% levels. From ECM-ARDL Model, we find that the coefficient of ECMt-1 is negative. The ECT is -0.430 showed that the adjustment is corrected by 43% towards the equilibrium of exports, and no autocorrelation and heteroscedasticity are found. Finally, the CUSUM test shows the stability of our model.

In the second model, due to the mixed order unit root test, we apply both ARDL and ECM-ARDL Models. We find that our optimal lag is 1 based on the AIC information criterion from the lag order selection. ARDL BT approach reveals that there exist long-run association among variables at 1%, 2.5% .5% and 10% level. The ARDL Model shows that the real coefficient is positive except for GDP

growth. The coefficient of one-year lag employment is positive and statistically significant. FDI coefficient indicates that if FDI increases by a 1% increase in FDI, employment will increase by 0.01% on average and is statistically significant.

The pair-wise Granger causality test result found bidirectional causality between GDP growth and employment and unidirectional causality between FDI and employment; exports and employment. There is no causality between GDP growth and exports, FDI and export and industry value added and FDI. From the ECM-ARDL model, our ECMt-1 (speed of adjustment) is -0.095122, which is statistically significant. We ensure no autocorrelation and heteroscedasticity in the model through the Breusch Godfrey LM test and Breusch-Pegan-Godfrey test. The model's CUSUM and CUSUM Squares test show that our model is stable.

We find a positive association between FDI, exports, and employment in Bangladesh. If the government looks at this area, Bangladesh will benefit greatly. To attract FDI, the Government should provide more facilities, security, and utility in the EPZ for foreign companies. If necessary, the areas of EPZ should be broad. As FDI creates employment, the Government should be trained female and illiterate people. As a result, they can engage themselves in this area, thus reducing the unemployment rate in Bangladesh.

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