



REASONS FOR GRADUATE UNEMPLOYMENT AND ITS IMPACT ON ECONOMIC GROWTH IN BANGLADESH

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Abstract

This study is being conducted to analyse the unemployment determinants and measure their impact on economic growth. There are two segments, such as analysing the unemployment determinants, and measure the impact of unemployment determinants on economic growth with respect to statistical and econometric models. Empirical findings show that, the unemployment determinants as the key macroeconomic variables like as LNCAFP LNINDD LNREME LNTOP and LNFDI have positive impact on economic growth. Moreover, the ARDL bound test shows the long run association among the variable. The error correction term (ECT) shows the velocity of error correction. In addition, LNCAFP LNINDD LNREME LNTOP and LNFDI play important role to explain economic growth both in short run and long run. Causality analysis explains that, unidirectional causality between industrialization and economic growth, bidirectional causality between employment opportunity and FDI, and others variables are also measured by causal link. This study contribute in sense of economic situation analysis, measurement of macroeconomic variables which are largely influence unemployment in Bangladesh and measure the importance of those factors on economic growth in Bangladesh. Moreover, the current literature would be enriched through this study, policy and recommendation may helps to understanding the importance of economic determinants for Bangladesh's economy.

Keywords: Unemployment, Economic growth, Inflation, Export & Import, Savings & Capital, Foreign Direct Investment



INTRODUCTION

Bangladesh's area is small but its population is very large. Now it is recognized as a developing country. The macroeconomic variables are GDP, per capita income, export-import, inflation, unemployment, savings, and capital for Bangladesh. To improve sustainable economic growth, any government of any nation will always try to control their nation's price stability and reduce unemployment by applying macroeconomic policy. Unemployment is the biggest problem in any country. In Bangladesh, this problem is now acute. The number of jobless workers is huge in our country. According to the Bangladesh Bureau of Statistics (BBS), the unemployment rate in Bangladesh in 2020 was approximately 5.3 percent. In Bangladesh in 2016, the unemployment rate was 4.10 percent, down from 4.10 percent in 2015. The economic growth of Bangladesh has touched 6.4 percent in the 2021-22 fiscal years, which is a record breaking previous record. Per capita income can be defined by GNI, which is divided by the total population of a country. In FY2020-21, per capita income increased by \$2,227 or 188,873Tk, which was down from FY 2019–20's \$2,064 in the last fiscal year. Economic growth was 7.02 percent in FY2015-16, while the target for this fiscal was 7.2 percent. According to the World Bank, in FY 2021-22, GDP is expected to increase by 6.4 percent, which is 1.3 percent more than its previous forecast. Policymakers tried to find out how macroeconomic variables such as unemployment, economic growth (GDP), per capita income, export-import, inflation, savings, and capital influence our economy and recommend which policies and steps should be taken by our government to solve the unemployment problem. In Bangladesh, the factors influencing unemployment on economic growth (GDP) is a burning issue. For underdeveloped, developing, and developed countries, reducing unemployment and increasing the economic growth of a nation is one of the most important macroeconomic factors. Economic growth is the major indicator of any country's development.

Rationality of the Study

Actually, the study contributes for developing policy decision to make of government and other stakeholder on standard of living of Bangladesh. Again, this will help to find out the factors affecting unemployment and its impact on economic growth in the short term and long-term effects on Bangladesh's economy. Bangladesh as well as the government and policy maker should take necessary steps for reducing the unemployment and increase the economic growth in Bangladesh.

Objectives of this Study

- i. To analyze the influencing factors of unemployment in Bangladesh
- ii. To find out the short run co-integration among unemployment determinants and economic growth in Bangladesh
- iii. To find out the long run co-integration among the unemployment determinants and economic growth in Bangladesh
- iv. To show the causal linkages among the unemployment and economic growth determinants in Bangladesh.

LITERATURE REVIEW

On the basis of information collected from the existing articles, an attempt has been made to make an overview of the existing literature. Whatever the case, Mohseni and Jouzaryan (2016) have clarified the impact of expansion and unemployment on monetary development in two current and long-term stages, which were explored and analyzed using the ARDL Model. They could endeavor to diminish and control joblessness and expansion to accomplish monetary development. In an investigation by Tanha (2018), the effects of economic growth and inflation on economic growth and unemployment in the case of Bangladesh, she used the time series data from 1991 to 2015. In her estimation by OLS, economic growth has an insignificant positive impact on unemployment. In her study, Okun's law was invalid and inflation had an insignificant negative impact on unemployment. Khrais and Al-wadi (2016) viewed the relationship between GDP growth and unemployment in MENA countries for the period 1990–2016. Unemployment can be calculated from labor numbers. Since the impact value is very small (-0.009). As a result, this value implies that factors other than GDP are influencing unemployment. According to Soylu *et al.* (2018), economic growth and unemployment are the most important variables for choosing and implementing the economic policy. They showed that 1% rise in GDP will face the unemployment rate by 0.08% because of Okun's coefficient and has a co-integration between the two variables. Kim *et al.* (2011) have examined their studies the relationship between unemployment and GDP growth in Arab Countries. For period 1994 to 2010 they considered 9 Arab countries. For the relationship, they used the pooled EGLS (Cross Section SUR). They have been found that there are negative relationship in economic growth and unemployment and have significant effect on the unemployment rate that means unemployment rate will decrease 0.16% for 1% increase in the economic growth. Ozcelebi and Ozkan (2017) have determined that macroeconomic factors and Economic policy changes may affect unemployment in the G-10 countries. They suggested that those countries should enforce on sustaining financial stability and improvement of labor market.

Makaringe *et al.* (2018) used mathematical calculations, analytical data sets, and graphical proof to examine the impact of trade on unemployment in 34 OECD nations. The findings of this study indicate that trade has a long relationship with the unemployment rate and that, in the long run, it has significant results. Increased trade openness creates more jobs for a country and reduces the unemployment problem in the country's development. Rashid *et al.* (2020) investigated the long-run relationship between 1982 and 2014 to uncover macroeconomic factors affecting China's unemployment rate.

The study by Sadiku *et al.* (2015) tries to empirically quantify the impact of macroeconomic variables and the unemployment rate in FYR Macedonia using Okun's law. The first result of the regression is significant informal employment, while the second is structural unemployment. According to the study, economic policies have not been effective in promoting development and lowering unemployment. Employment in the public sector is more common than in the private sector. Aurangzab and Asif (2013) have examined the macroeconomic determinants of joblessness for India, China, and Pakistan for the period 1980 to 2009. The co-mix, granger causality, and relapse tests were used to examine the assessment. The factors chosen for the review are unemployment, expansion, total national output, conversion scale, and the expanding pace of the populace. The consequences of the relapse examination showed the critical effects of the multitude of factors for every one of the three nations. The GDP of Pakistan showed a positive connection with the unemployment rate, and the explanation for that is the destitution level and underutilization of foreign ventures. The consequence of Granger's causality showed that bidirectional causality doesn't exist between any of the variables for every one of the three nations. The cointegration result explained that in the long haul, relationships do exist among the factors for every one of the models. It is prescribed that the conveyance of pay should be improved in Pakistan to have a positive effect on the business rate. Apau *et al.* (2019) have considered this to be probably the best mark of estimating the strength of each economy. Their findings show that there is a negative short-run and long-term relationship between joblessness and financial development. Moreover, the Granger causality test likewise uncovers that both unemployment and financial development don't affect one another. Akeju *et al.* (2014) investigated the determinants of unemployment in the case of Bangladesh, using time series data spanning the years 1991 to 2016. they shows that industry has a contrarian influence on unemployment. Additionally, the effect of an old enough reliance proportion on unemployment is viewed as measurably, and the age of closing age reliance proportion as a viable determinant of unemployment is huge. Furthermore, the metropolitan population's development negatively affects unemployment. The analytical after effect of the review shows that the model is liberated from heteroscedasticity and the first request for positive

autocorrelation and multicollinearity. The R-squared value is 43.1% for the model; thus, the model conveys a relatively solid match of the information.

Literature Gap

Many studies have been conducted to investigate the relationship between unemployment, inflation, and economic growth. Most of the studies focus on the relationship between unemployment and economic growth, but no study has been conducted on unemployment, trade openness, capital formation, industrialization, inflation, remittance, FDI, and GDP growth rate in Bangladesh. This study investigated unemployment determinants and implies those factors on economic growth. At that time, the determinants of unemployment and growth have been analyzed, which may help to build interaction among the determinants.

METHODOLOGY

The aim of this paper is to use to find out factors influence to the unemployment in Bangladesh and to investigate the impact of unemployment determinants like as labor force, capital formation, per capital income, industrialization, inflation, foreign direct investment, remittance, trade openness and other relevant macroeconomics variables on economic growth. The secondary data were used to analyze the factors affecting unemployment and its impact on economic growth. Time series data from 1991 to 2020 were used. Long time series date used due to compare before 2000 and after 2000 of real economic scenario of Bangladesh. The data were derived from a database of world development indicators (WDI) published by World Bank (WB), global competitiveness report published by world economic forum and our world in data, both are the most reliable source of secondary data in economics, finance and other relevant field.

The functional form of this model is like as follows.

$$\text{GDPG} = F(\text{CAPF}, \text{INDD}, \text{INFL}, \text{PCI}, \text{LFT}, \text{REME}, \text{TOP}, \text{UNEM}, \text{FDI}) \quad (1)$$

Now the econometric form of this model is present in the following equation.

$$\text{GDPG}_t = \beta_0 + \beta_1 \text{GDPG}_t + \beta_2 \text{CAPF}_t + \beta_3 \text{INDD}_t + \beta_4 \text{INFL}_t + \beta_5 \text{PCI}_t + \beta_6 \text{LFT}_t + \beta_7 \text{REME}_t + \beta_8 \text{TOP}_t + \beta_9 \text{UNMP}_t + \varepsilon_t \quad (2)$$

Now, the log formation in both side makes the estimation more suitable and appropriate, the model is present in equation 3.

$$\text{LNGDPG}_t = \beta_0 + \beta_1 \text{LNGDPG}_t + \beta_2 \text{LNCAPF}_t + \beta_3 \text{LNINDD}_t + \beta_4 \text{LNINFL}_t + \beta_5 \text{LNPCI}_t + \beta_6 \text{LNLFT}_t + \beta_7 \text{LNREME}_t + \beta_8 \text{LNTOP}_t + \beta_9 \text{LNUNMP}_t + \varepsilon_t \quad (3)$$

Where, β_0 is intercept term, ε_t is the error tem, t means time and $\beta_1, \beta_2, \beta_3, \beta_4 \dots \beta_9$ are coefficients.

ANALYSIS AND FINDINGS

Result of Autoregressive Distributed Lag (ARDL)

The following Table 1 represent the base model of ARDL estimation, The next two step is going to estimate the short run and long run dynamics with considering ARDL bound testing approach and WALD test.

Table 1. Result of ARDL Model (Base Model)

Variable	Coefficient	t-Statistic	Prob.*
Dependent Variable (LNGDPG)			
LNGDPG(-1)	0.14	-0.70	0.50
LNCAPF	2.91	1.13	0.29
LNCAPF(-1)	3.59	1.50	0.17
LNINDD	6.92***	3.07	0.01
LNINDD(-1)	-8.26*	-2.07	0.07
LNINFL	0.03	0.49	0.64
LNINFL(-1)	0.09*	1.98	0.08
LNPCI	-0.30	-0.19	0.85
LNPCI(-1)	-1.30	-1.22	0.25
LNLFT	-3.83	-0.89	0.39
LNLFT(-1)	-7.47*	-1.82	0.10
LNREME	0.41	1.05	0.32
LNREME(-1)	-1.00*	-1.85	0.10
LNTOP	0.19	0.36	0.73
LNTOP(-1)	-1.08**	-2.29	0.05
LNUNMP	-0.20	-0.74	0.48
LNUNMP(-1)	0.32	0.79	0.45
LNFDI	1.92**	2.73	0.02
LNFDI(-1)	0.50	0.74	0.48
C	77.01*	1.84	0.10
R ²	0.94	Durbin-Watson stat	2.24
Adjusted R ²	0.83	F-statistic	8.11***

Dependent variable is GDP growth and the independent variables are taken in sense of unemployment determinants. The unemployment level or employment opportunity depends on macroeconomic determinants which factors are the key independent variables. Whatever, the one period lag of dependent variable LNGDPG (-1) has positive impact to determinate LNGDPG but this result is not significant. Industrialization has positive and significant impact on GDP growth with coefficient 6.92% which is significant at 1% level. GDP growth and industrialization relation is examined by Ferdaous and Acma (2014), Uddin (2015) and Rahman *et al.* (2021). The variables like LNCAPF, LNCAPF(-1), LNINFL, LNINFL(-1), LNREME, LNTOP, LNUNMP(-1) and LNFDI have positive coefficient to determinate the economic growth in Bangladesh. An important issue is that, lag of almost every variable have negative coefficient to determined economic growth. Moreover, model fit evidence show that, R-squared is 0.94; Adjusted R-

squared is 0.83; Durbin-Watson stat is 2.24 and F-statistic is 8.11 which is significance at 1% level.

ARDL Bound Testing Approach

The null hypothesis H_0 for bound testing approach is there is no long run relations exist.

H_0 : There is no long run relationship among the series

Table 2. Result of Bound Test

Test Statistic	Value	k
F-statistic	5.71	9.00
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
0.10	1.88	2.99
0.05	2.14	3.30
0.03	2.37	3.60
0.01	2.65	3.97

Above Table 2 interpret that the rejection of null hypothesis and we may conclude that there is a long run associationship among the variable through the ARDL estimation.

Short Run Estimation

In following Table 3 it is noticed a industrialization increments at 1% level then the genuine LNGDPG will increments at 6.92% which is emphatically measurably huge at 1% level.

Table 3. Short Run Dynamics

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Dependent Variable (LNGDPG)				
D(LNCAPF)	2.91	2.57	1.13	0.29
D(LNINDD)	6.92***	2.26	3.07	0.01
D(LNINFL)	0.03	0.05	0.49	0.64
D(LNPCI)	-0.30	1.56	-0.19	0.85
D(LNLFT)	-3.83	4.28	-0.89	0.39
D(LNREME)	0.41	0.39	1.05	0.32
D(LNTOPI)	0.19	0.53	0.36	0.73
D(LNUNMP)	-0.20	0.27	-0.74	0.48
D(LNFDI)	1.92***	0.70	2.73	0.02
CointEq(-1)	-0.11***	0.20	-5.78	0.00

A 1% increase in capital formation has also been observed to boost economic growth to 2.91 percent, but the difference is not substantial. The LNPCI, LNUNMP, and LNLFT coefficients are all negative, similar link of finding was found by Banda *et al.* (2016). The

coefficient of LNFDI has a considerable impact on economic growth; the coefficient is 1.92 percent, implying a 1% increase in FDI. The ECT is a valid model since the diagnostic tests verify that the residual series is normally distributed, with no heteroscedasticity or autocorrelation.

Stability Diagnostic

There are two specific criteria have been used to estimate Stability diagnostic knows as CUSUM and CUSUM square test. CUSUM and square of CUSUM show the stability of estimated model, the following Figures 1 and 2 show the CUSUM test and it is stable, and the CUSUM square test evidence also shows the stability of estimated model. Whatever, the residual test shows that there is no inconsistency among the estimation, so we can make our reliable discussion by utilizing the estimated output.

Figure 1. Stability Diagnostic: CUSUM Test

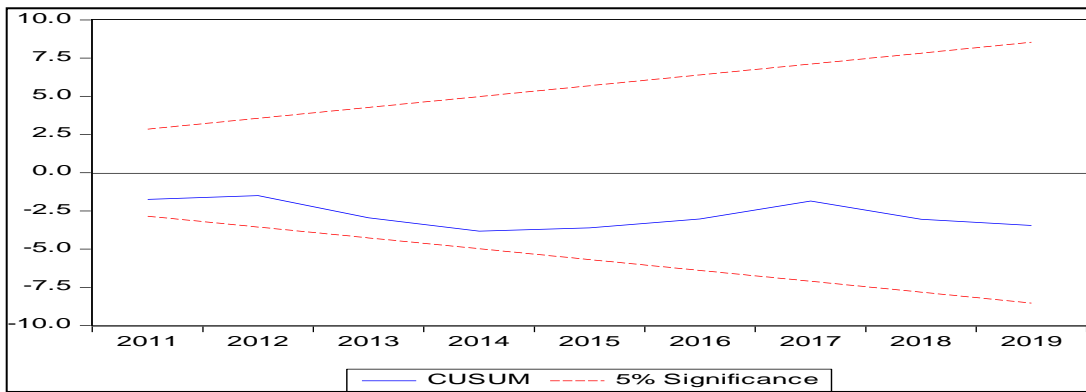
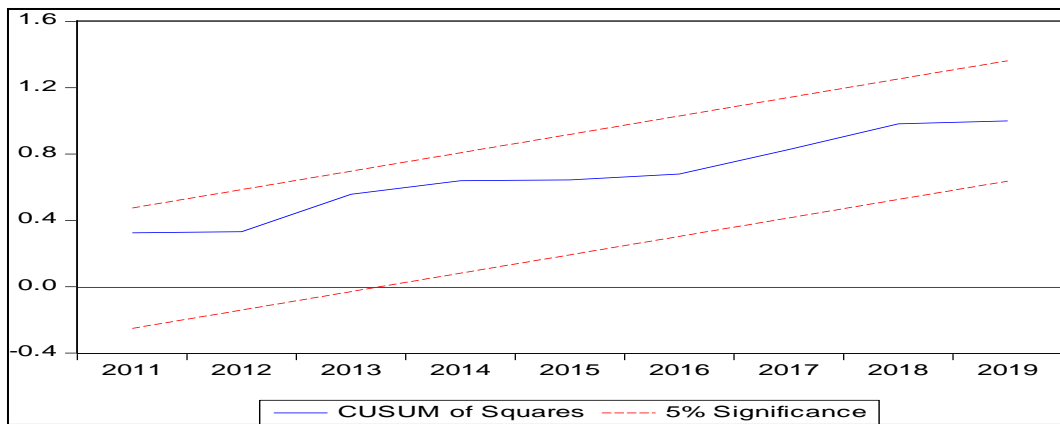


Figure 2. Stability Diagnostic: CUSUM Square Test



Pairwise Granger Causality Tests

For the time series analysis, Granger causality test is an appropriate method of causality determination between the variables (Granger, 2001). The main strength of this analysis is causal relation and relative importance of each variable. We can develop the hypothesis like as;

H_0 = the variables (between) have no causality

H_1 = the variables (between) have causality

Table 4. Result of Pairwise Granger Causality Test

<i>Null Hypothesis:</i>	<i>F-Statistic</i>	<i>Prob.</i>	<i>Decision</i>	<i>Null Hypothesis:</i>	<i>F-Statistic</i>	<i>Prob.</i>	<i>Decision</i>
LNINDD < LNGDPG	22.50***	0.00	→	LNFDI < LNINDD	1.67	0.21	≠
LNGDPG < LNINDD	0.12	0.73	→	LNINDD < LNFDI	2.54	0.12	≠
LNINFL < LNGDPG	1.12	0.30	→	LNCAPF < LNINDD	7.64***	0.01	→
LNGDPG < LNINFL	0.20	0.66	→	LNINDD < LNCAPF	1.85	0.19	→
LNREME < LNGDPG	16.08***	0.00	→	LNUNMP < LNINDD	6.10**	0.02	→
LNGDPG < LNREME	0.99	0.33	→	LNINDD < LNUNMP	1.22	0.28	→
LNTOP < LNGDPG	3.21*	0.08	→	LNREME < LNINFL	3.91*	0.06	→
LNGDPG < LNTOP	0.23	0.63	→	LNINFL < LNREME	0.09	0.77	→
LNPCI < LNGDPG	18.22***	0.00	→	LNTOP < LNINFL	8.02***	0.01	→
LNGDPG < LNPCI	0.07	0.80	→	LNINFL < LNTOP	0.34	0.57	→
LNLFT < LNGDPG	21.26**	0.00	→	LNPCI < LNINFL	1.88	0.18	→
LNGDPG < LNLFT	0.00	0.95	→	LNINFL < LNPCI	1.47	0.24	→
LNFDI < LNGDPG	9.85**	0.00	→	LNLFT < LNINFL	3.97*	0.06	→
LNGDPG < LNFDI	0.01	0.92	→	LNINFL < LNLFT	0.06	0.81	→
LNCAPF < LNGDPG	21.50***	0.00	→	LNFDI < LNINFL	2.99*	0.10	↔
LNGDPG < LNCAPF	0.35	0.56	→	LNINFL < LNFDI	3.16*	0.09	↔
LNUNMP < LNGDPG	7.63***	0.01	→	LNCAPF < LNINFL	3.59*	0.07	→
LNGDPG < LNUNMP	0.65	0.43	→	LNINFL < LNCAPF	1.12	0.30	→
LNINFL < LNINDD	4.98**	0.03	→	LNUNMP < LNINFL	3.38*	0.08	→
LNINDD < LNINFL	3.26*	0.08	→	LNINFL < LNUNMP	0.30	0.59	→
LNREME < LNINDD	2.26	0.14	→	LNTOP < LNREME	2.22	0.15	≠
LNINDD < LNREME	0.02	0.88	→	LNREME < LNTOP	0.10	0.75	≠
LNTOP < LNINDD	10.27***	0.00	→	LNPCI < LNREME	2.11	0.16	→
LNINDD < LNTOP	0.00	0.95	→	LNREME < LNPCI	5.49**	0.03	→
LNPCI < LNINDD	1.85	0.19	→	LNLFT < LNREME	4.56**	0.04	→
LNINDD < LNPCI	5.64**	0.03	→	LNREME < LNLFT	1.19	0.28	→
LNLFT < LNINDD	3.41*	0.08	→	LNFDI < LNREME	0.54	0.47	≠
LNINDD < LNLFT	4.40**	0.05	→	LNREME < LNFDI	3.10*	0.09	≠
LNCAPF < LNREME	0.29	0.59	→	LNUNMP < LNTOP	0.30	0.59	→
LNREME < LNCAPF	0.09	0.77	→	LNTOP < LNUNMP	6.99***	0.01	→
LNUNMP < LNREME	2.33	0.14	→	LNLFT < LNPCI	2.20	0.15	→
LNREME < LNUNMP	1.07	0.31	→	LNPCI < LNLFT	4.49**	0.04	→
LNPCI < LNTOP	0.14	0.71	→	LNFDI < LNPCI	0.16	0.69	≠
LNTOP < LNPCI	1.25	0.27	→	LNPCI < LNFDI	1.15	0.29	≠

LNPCI < LNTOP	0.14	0.71	≠	LNCAPF < LNPCI	3.45*	0.07	→
LNTOP < LNPCI	1.25	0.27		LNPCI < LNCAPF	0.29	0.60	
LNLFT < LNTOP	0.30	0.59	≠	LNUNMP < LNPCI	0.93	0.34	≠
LNTOP < LNLFT	2.75	0.11		LNPCI < LNUNMP	0.33	0.57	
LNFDI < LNTOP	0.77	0.39	→	LNFDI < LNLFT	0.30	0.59	→
LNTOP < LNFDI*	6.88***	0.01		LNLFT < LNFDI	5.36*	0.03	
LNCAPF < LNTOP	0.01	0.90	≠	LNCAPF < LNLFT	2.43	0.13	≠
LNTOP < LNCAPF	0.04	0.84		LNLFT < LNCAPF	2.57	0.12	
LNUNMP < LNFDI	2.73*	0.10	↔	LNUNMP < LNLFT	1.05	0.32	→
LNFDI < LNUNMP	3.63*	0.07		LNLFT < LNUNMP	2.96*	0.10	
LNUNMP < LNCAPF	0.00	0.98	≠	LNCAPF < LNFDI	3.07*	0.09	→
LNCAPF < LNUNMP	1.62	0.22		LNFDI < LNCAPF	0.05	0.83	

Note: The symbol "<" represent the null hypothesis assumption entitled "does not Granger Cause" between variables.

The sign, ≠, →, and ↔ represent the no causality, unidirectional causality and bidirectional causality respectively.

The above table 4 shows the result of pairwise Granger causality test. We have measure three dimensional decisions like as unidirectional causality, bidirectional causality and no causality between the variables. The unidirectional causality exist between LNINDD < LNGDPG, LNREME < LNGDPG, LNTOP < LNGDPG, LNCAPF < LNINDD, LNTOP < LNINFL, LNLFT < LNGDPG, LNFDI < LNGDPG, LNTOP < LNUNMP, LNLFT < LNUNMP, LNUNMP < LNGDPG, LNCAPF < LNGDPG, LNREME < LNPCI, LNLFT < LNREME and others. On the other hand a bidirectional causality exist between, LNFDI < LNINFL, LNINFL < LNFDI; LNFDI < LNUNMP, LNUNMP < LNFDI where FDI has impact to unemployment reduction as they have cause bidirectional.

Moreover, the key aim of this study was to analyse the determinants of unemployment, which is investigated through the literacy review, and theoretical overview. And another aim is measure the impact of those determinants on economic growth which is estimated through econometric model. The unit root test evidence move to estimate ARDL model in case the mixed order or stationary, I(0) and I(1). The short run coefficients show the variable importance with ECT which is negative and significant, the speed of adjustment indicates the economy move forward to equilibrium from a disequilibrium scenario. Whatever, the speed of adjustment rate is 11%. In the short run, capital formation, industrialization, remittance, trade openness and FDI are the most important factors to explain economic growth. In the long run, capital formation, FDI and reduction of unemployment have more importance to enhance economic growth.

CONCLUSION AND RECOMMENDATIONS

It is usually agreed in economics that an economy's GDP growth rate raises wages and decreases unemployment. The association between unemployment and economic growth has a negative where employment generation has a positive impact on economic growth as well.

This study recommended that the unemployment determinants have a significant impact on determining the economic growth in Bangladesh where some variables have negative coefficients over the time period. This factor has a positive and significant impact on the GDP growth rate due to its long-term coefficients. The government and non-government authorities should be careful about creating a business-friendly environment to attract FDI. FDI has a significant impact on raising employment and enhancing economic growth. It is common knowledge that per capita income always determines the standard of living and the strength of economic growth. Remittances have a significant impact on economic growth where a number of workers are directly or indirectly involved in the wage earning sector. Foreign policy should be effective and money transfer should be more flexible because remittance is one of the largest sectors of money inclusion in the Bangladesh economy. Whatever, the case, this research contributes to the analysis of the economic situation, the measurement of macroeconomic variables that have a significant impact on unemployment in Bangladesh and the assessment of the importance of such factors on the country's economic growth. Furthermore, this study will add to the existing literature, and the policy and recommendations will aid in understanding the relevance of economic drivers for Bangladesh's economy.

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