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BANGLADESH'S UNEMPLOYMENT CHALLENGES: ANALYZING THE INFLUENCE OF KEY ECONOMIC INDICATORS

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ABSTRACT

Unemployment remains a persistent challenge in Bangladesh and other South Asian economies. This study examines the macroeconomic determinants of unemployment in Bangladesh, focusing on GDP growth, inflation, population dynamics, foreign direct investment (FDI), female labor force participation, and rural–urban migration. Using annual time-series data from 1995 to 2019, the study applies the Augmented Dickey–Fuller (ADF) test, least squares estimation, co-integration analysis, multicollinearity diagnostics, and Granger causality tests to assess long-run and causal relationships. Results indicate that unemployment is stationary at first difference, while GDP, inflation, and FDI are stationary at level. Cointegration tests confirm a long-run relationship, with GDP growth and FDI exerting a significant negative impact on unemployment. Granger causality further shows unidirectional effects from GDP and FDI to unemployment. These findings underscore the importance of sustained economic growth and foreign investment for reducing unemployment and informing policy.

Keywords: Bangladesh, Unemployment.

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INTRODUCTION:

Unemployment is a major socioeconomic challenge, arising when labor supply exceeds demand and individuals actively seeking work remain jobless. It reflects structural weaknesses and pressures from factors like overproduction, weak market demand, population growth, and limited workforce skills. In Bangladesh, unemployment—particularly among educated youth—remains high, with 3.6 million people affected. Macroeconomic factors, including globalization and exchange rate movements, influence employment outcomes. These conditions underscore the urgent need for effective, macro-economically informed policies to address unemployment and promote sustainable job creation.

Literature Review: Unemployment occurs when labor supply exceeds labor demand, a concept emphasized in classical economic theory. According to the International Labour Organization (ILO), unemployed individuals are those without work, available for employment, and actively seeking jobs, expressed as a proportion of the total labor force. In Bangladesh, unemployment is largely structural. Rahman and Islam (2013) highlight skill mismatches between educational output and labor market needs, along with widespread rural underemployment. Mahmood and Absar (2015) emphasize youth unemployment, linking it to rapid population growth, limited job creation, and inadequate vocational training. Studies also reveal "jobless growth," where rising GDP does not translate into proportional employment due to limited industrial diversification (Hossain & Bayes, 2014). The informal sector absorbs a large share of labor but often provides unstable, low-quality jobs (Islam & Ahamad, 2017). While FDI can boost employment, its effects remain sector-specific (Chowdhury, 2020). Overall, unemployment in Bangladesh is shaped by structural, skill-related, and macroeconomic factors, motivating this study's empirical analysis of its determinants using time-series data.

METHODOLOGY:

An investigation into the factors influencing unemployment in the Bangladeshi economy is carried out using a straightforward linear regression model (SELRM). The proposed SELRM framework described:

Model specification:

The presented model is described as:

$$U_t=\alpha+\beta_1 GDP_t+\beta_2 INF_t+\beta_3 PG_t+\beta_4 FDI_t+\varepsilon_t$$

Where:

where U_t denotes the unemployment rate, α is the intercept, β_1–β_4 are the estimated coefficients, and ε_t is the error term. GDP_t represents gross domestic product, INF_t denotes inflation, PG_t refers to population growth, and FDI_t indicates foreign direct investment.

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Unemployment serves as a key indicator of labor market performance and overall economic conditions. Economic theory suggests an inverse relationship between GDP growth and unemployment, as higher output leads to increased labor demand. Inflation affects employment through production costs and market uncertainty, while population growth expands the labor supply, potentially increasing unemployment if job creation is insufficient. FDI contributes to employment generation by enhancing capital formation, technology transfer, and industrial expansion.The model is estimated using the Single Equation Linear Regression Model (SELRM) framework, allowing for an empirical assessment of both short- and long-run relationships between unemployment and its macroeconomic determinants. This specification provides a basis for evaluating policy-relevant factors influencing unemployment in Bangladesh.

Expected Relationships:

Gross Domestic Product (GDP): A **negative relationship** with unemployment is expected, as higher GDP growth typically increases economic activity and labor demand, reducing unemployment.

Inflation (INF): A **mixed relationship** is anticipated. In the short run, inflation may lower unemployment following the Phillips Curve, but sustained high inflation can create uncertainty, reduce investment, and increase unemployment in the long term.

Population Growth (PG): The relationship is **ambiguous**. Rapid population growth can raise unemployment if job creation lags, but may reduce unemployment if economic growth absorbs the expanding labor force.

Foreign Direct Investment (FDI): A **negative relationship** is expected, as FDI enhances capital formation, technology transfer, and industrial expansion, creating additional employment opportunities.

Research Variables and Analysis:

Dependent Variable

Unemployment Rate (U): The percentage of the labor force that is unemployed and actively seeking work, serving as a key indicator of labor market conditions and overall economic health.

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Independent Variables

GDP Growth (GDP): The annual growth rate of total goods and services produced in the economy, reflecting overall economic performance and productive capacity.

Inflation Rate (INF): The annual percentage change in the general price level of goods and services, indicating changes in purchasing power and macroeconomic stability.

Population Growth Rate (PG): The rate at which the population increases over time, influencing labor supply dynamics and employment pressure.

Foreign Direct Investment (FDI): Net inflows of investment from foreign entities, contributing to capital formation, technological transfer, and employment generation.

Descriptive Statistics:

Table 1: Results of Descriptive Statistics

	Unemploy. Rate	Population	Infla. Rate	FDI	GDP
Mean	0.05	0.03	0.05	20.2	0.05
Median	0.04	0.01	0.06	20.1	0.06
Maximum	0.06	0.05	0.11	21.2	0.080
Minimum	0.02	-0.01	0.01	19.3	0.04
Std Dev.	0.01	0.01	0.02	1.67	0.01
Skew.	=0.08	0.64	-0.01	1.28	0.29

Descriptive Statistics

The descriptive statistics highlight the distributional properties of the study variables. The **unemployment rate** shows non-normality, indicated by non-zero skewness, though the mean and median are close, suggesting approximate symmetry. **Population growth** similarly exhibits non-normality but maintains relative symmetry, allowing reliable statistical analysis with appropriate methods. The **inflation rate** also departs from normality, yet the mean and median are nearly equal, indicating an approximately symmetric distribution. These patterns suggest that estimation techniques robust to non-normal but symmetric data are appropriate for ensuring valid and accurate inference.

Regression analysis of Raw Data:

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Table 2: Results of Multiple Regression on Raw Data, with Significance Levels

Variab.	Coeffici.	T Value	P Value
Popul. G	-0.03	-0.96	0.31**
Inflat. R	-0.01	-0.38	0.74**
GDP G	0.16	0.51	0.54**
FDI	0.02	2.34	0.01*

The results indicate that **foreign direct investment (FDI)** is the only variable that is statistically significant at the **5% level**, demonstrating a meaningful impact on Bangladesh's unemployment rate. In contrast, **GDP growth, inflation, and population growth** are not statistically significant at either the **5% or 10% levels**, suggesting that their effects on unemployment are not statistically robust within the estimated model.

Augmented Dickey-Fuller Test for Unit Roots

Table 3: Results of the Unit Root Test. A p-value below 5%, indicated by *, signifies statistical significance.

Variab.	P Value	T Value	Test of Level	Decision
Unemploy.	0.41	-1.40	level and Intercept	P> 5% Unit root of Data
Popula. G	0.01*	4.09	level and Intercept	P> 5% Unit root of Data
Infla. R	0.02**	-4.74	level and Intercept	P> 5% Unit root of Data
GDP	0.81	-0.72	level and Intercept	P> 5% Unit root of Data
Foreign Direct Investment	0.57	0.42	level and Intercept	P> 5% Unit root of Data

The table reports unit root test results, where a p-value below 5% (*) indicates statistical significance and rejection of the null hypothesis of a unit root. The results show that **population growth and inflation** are stationary at level, indicating stable trends over time with no significant structural disruptions.

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In contrast, **GDP growth, unemployment rate, and foreign direct investment (FDI)** exhibit non-stationary behavior, as their probability values exceed the 5% significance level. Accordingly, the null hypothesis of a unit root cannot be rejected for these variables, confirming the presence of non-stationarity. This implies that shocks to these variables may have persistent effects over time, necessitating appropriate econometric techniques to address unit root issues in the model.

Stationarity Test of the Variables:

We will utilize raw data once more for stationary test. The results and interpretation of test are as follows:

Table 4: Results of the Stationarity Test: * Indicates a p-value below the 5% level of significance.

Variables	T Value	P Value	test level	decision
Unemploy.	-5.43	0.01*	level and 1st difference	P> 5% Data of stationary
Popula. G	-4.01	0.001*	level and intercept	P> 5% Data of stationary
Infla. R	-3.88	0.002*	level and intercept	P> 5% Data of stationary
(GDP)	-4.23	0.0001*	level and 1st difference	P> 5% Data of stationary
(FDI)	-4.3910	0.0003*	level and 1st difference	P> 5% Data of stationary

After identifying unit root issues, stationarity tests were conducted on the model variables. The results indicate that all previously non-stationary variables become stationary at the appropriate level or first difference. The corresponding probability values are below the 5% significance level, leading to rejection of the null hypothesis of a unit root. This confirms that the variables have been successfully transformed into a stationary form, ensuring their suitability for subsequent econometric analysis.

Serial Correlation Test:

Table 5: Results of Breusch-Pagan-Godfrey Test for Serial Correlation.

Test Name	Statistic - F	Probability
Breusch-Pagan-Godfrey Serial Correlation LM Test	4.233420	0.0142
Observations × R-squared	8.318705	0.0094

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Correlation over Time:

The selected variables, including the unemployment rate, may exhibit correlations across time, with current unemployment potentially linked to future values. **Probability values** from the LM test are below 5%, leading to the rejection of the null hypothesis and indicating the presence of **serial correlation** among the model variables.

Least Squares Analysis:

Table 6 presents the results of the multiple regression using stationary data. Significance levels are indicated as follows: * at 5% and ** at 10%.

Varia.	Coeffic.	Value T	Value P
Popula. G	0.03	0.51	0.61
Inflat. Rate	0.01	0.52	0.57
(GDP)	-0.57	-2.64	0.02*
(FDI)	-0.002	-0.41	0.62
Inter.	-0.004	-0.13	0.88

Variable Significance

The regression results indicate that **GDP growth** is the only variable statistically significant at the **5% level**, with a 1% increase in unemployment associated with a 0.57% decrease in GDP growth, confirming a strong inverse relationship. **Foreign Direct Investment (FDI)** shows the expected negative sign, suggesting that higher FDI may reduce unemployment, but this effect is not statistically significant. The **inflation rate** does not exhibit the expected sign and is also insignificant, while the constant term lacks statistical significance. Overall, GDP growth, FDI, population growth, and inflation together explain approximately **24% of the variation in unemployment**, highlighting the dominant role of economic growth and suggesting that other macroeconomic factors may influence employment indirectly or over the long term.

Regression Analysis without Foreign Direct Investment:

Table 7: Multiple Regression Results Excluding FDI

Variabl.	Coeffic.	Value of T	Value of P
Cap	0.008	0.895	0.381
Inflat.	-0.002	-0.142	0.889
(GDP)	0.537	3.547	0.002
Popula. Grow.	-0.183	-1.293	0.203

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The high standard errors in the model suggest potential **multicollinearity**, which may inflate coefficient variances and affect significance. After removing the variable with the highest probability value from the stationary regression, **GDP growth** remains the only statistically significant variable at the 5% level. Notably, its coefficient indicates an unconventional relationship, with higher GDP growth associated with increased unemployment, contrary to traditional theory. **Population growth** shows a negative but insignificant effect, while **inflation** aligns with expected signs but is also insignificant. These findings highlight **complex, potentially non-linear interactions** among macroeconomic variables, reflecting structural inefficiencies, sectoral imbalances, and possible jobless growth dynamics in Bangladesh, warranting further investigatio

Cointegration Test:

Table 09: Results of the Cointegration Analysis: * Indicates a 5% Significance Level, ** Indicates a 10% Significance Level.

Hypothesis No	Max value	critical Value 0.05	probability
None	29.31	59.84	0.03
At 1	18.24	47.89	0.34
At 2	12.07	29.72	0.57
At 3	5.52	15.45	0.74
At 4	0.19	3.846	0.77

The results indicate that the unemployment rate, GDP growth, inflation, population growth, and foreign direct investment are **non-stationary at level but become stationary at first difference**, implying that the variables are integrated of order one, I(1). Cointegration tests reveal the existence of a **long-run equilibrium relationship** among these variables. Based on the Max-Eigen statistic and probability values, the model identifies **up to four cointegrating equations**. Since the probability values exceed the 5% significance level, the null hypothesis of cointegration is accepted, confirming the presence of long-run associations within the model.

The existence of cointegration suggests that unemployment and its macroeconomic determinants move together over time, indicating strong interdependence among these variables. This long-run relationship highlights the importance of unemployment as a key factor influencing macroeconomic policy

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decisions, as changes in unemployment can generate persistent effects on economic growth, investment, and price stability. Such long-term insights are essential for designing sustainable and effective employment and growth-oriented policie

CONCLUSION

This study examines the macroeconomic determinants of unemployment in Bangladesh, revealing that **population growth and inflation have limited direct impact**, while **GDP growth and foreign direct investment (FDI)** play a more significant role in shaping employment trends. FDI, in particular, demonstrates strong potential to reduce unemployment, whereas the positive association between GDP growth and unemployment indicates **jobless growth** and structural inefficiencies in labor absorption. Unit root and cointegration tests highlight the long-run interdependence of these variables, and the unexpected negative relationship between population growth and unemployment suggests gains from better workforce utilization and human capital integration. Overall, the findings underscore the need for **policy reforms** focused on inclusive growth, improved education and skill development, labor market efficiency, and maximization of FDI's employment benefits to ensure that economic expansion translates into sustainable job creation in Bangladesh.

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