RPSU RESEARCH JOURNAL
ISSN (Print) : 2790-4903
ISSN (Online) : 2959-2305
VOLUME - II ISSUE - I DECEMBER - 2023

Influential Economic Factors on the GDP of Bangladesh

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Abstract

Bangladesh is an emerging economy in South Asia, and it is becoming more appealing and favourably situated in global trade because of its expanding economy. The rising trend of the Gross Domestic Product (GDP) makes the growing tendency of the economy extensively evident to everyone. This article tries to find a sound outcome for determining the factor that mostly influences the GDP. For that reason, GDP is taken as a dependent variable, and the inflation rate, unemployment rate, balance of payment (current account balance), and consumer price index are considered independent variables influencing the GDP. Multiple linear regression analysis is performed to find the trend and relationship between the dependent and independent variables. Multicollinearity among the independent variables is tested first for fitting the multiple linear regression. This is done with the help of a correlation coefficients matrix, Variance inflation factor, and tolerance. Then, multiple regression analyses are performed based on data collected for the last fifteen years, from 2008-2022, on the variables concerned. Research reveals that inflation, the unemployment rate, and the balance of payments do not significantly impact the GDP. On the other hand, the consumer price index significantly affects the GDP. The whole multiple linear regression analysis (including fitting and tests) has been performed with the help of the statistical package SPSS. It is found that the final regression equation is explained 96.3% by the independent variable, the consumer price index. Through this regression equation, we can estimate or forecast Bangladesh's future GDP trend for the known values of the consumer price indexes. This study illustrates how policymakers may use the regression model to estimate GDP at any moment if the independent variables are known. As economic sustainability is the top priority, policymakers should prioritize local production and natural resource extraction and use to reduce dependency on the product, whose market volatility harms domestic output, notably GDP.

Keywords: Gross Domestic Product, Consumer Price Index, Balance of payment, Inflation Rate, Unemployment Rate

1. Introduction

Gross Domestic Product (GDP) is the amount of goods and services produced inside a nation's borders in a given year. GDP is one of the significant indicators of a nation's economic development. The GDP may be utilized to evaluate a nation's financial health or capacity for future expansion. The country's policymakers and international investors use GDP as their primary source of information. Occasionally, lawmakers only focused on this economic aspect while making decisions. They might offer incentives for the industry to enhance its production or allocate subsidies to strategic sectors. They could take loans to stimulate the productive sector and provide the economy with a boost or momentum. GDP fluctuations give a solid message to the interested parties.

In contrast to Bangladesh, the world economy significantly shrunk during the disastrous effects of Covid-19. The Bangladeshi economy continued to expand greatly while the global economy tumbled by 3.4%. To explore further the ongoing positive rise in GDP is one of the critical drivers of this achievement. A country's GDP depends on the balance of payments, inflation, unemployment, and the consumer price index. A multivariate analysis is required to establish a mathematical relationship between GDP and the related factors. This article's multiple regression analysis establishes a relation between dependent and independent variables.

2. Literature Review

Many studies have been done to identify the variables that impact GDP. In 2022, Chenxiao Luo and Yuting Xue researched the same issue, and using several regression models, they discovered that energy use affects GDP. They mainly concentrated on fossil fuels and renewable energy.

In 2023, a study on the effects of CO_2 emissions and the Green Finance Index (GFI) on GDP by Cagri Hamurcu revealed that CO_2 negatively impacts, but GFI has a positive link with GDP.

In 2022 Xiangyong Li discovered a distinct relationship between a country's geographical area, population size, and GDP. Greater exposure to land and other essential commodities generally increases GDP, even though San Marino, Singapore, and Norway are exceptions.

Md. Sariful Islam and Muhammed Sahajalal studied in 2019 and found a negative correlation between unemployment and GDP growth. A negative GDP growth rate causes production to decline as more people lose jobs.

In 2022, Aina Faieqah Zabri and Abu Sufian Abu Bakar described in their paper the relationship among GDP, unemployment rate, exchange rate, inflation rate, consumer price index, and unemployment that had a negative association with GDP. In contrast, the exchange rate holds a positive relation.

In 2018, Mohamed Ismail and Mohamed Riyath studied the factors mentioned above by the vector error correction model (VECM) model to estimate the effects of inflation on economic growth and vice versa. Johansen's co-integration test finds that Inflation and economic growth are co-integrated. VECM results demonstrate that there is a long-run equilibrium relationship among the variables. A country's GDP depends on the balance of payments, inflation, unemployment, and the consumer price index. There needs to be a direct study from Bangladesh's perspective to determine the factors influencing GDP.

In her study, Kaur investigated the correlation between the unemployment rate, inflation rate, exchange rate, and GDP growth rate in India from 1990 to 2013, conducted in 2014. This study demonstrates a substantial relationship between the Unemployment rate in India, the Exchange rate, and the Inflation rate.

In 2023, Azima, Nagima, and Isaeva conducted a study that unveiled a notable decrease in Kyrgyzstan's Gross Domestic Product (GDP) during the ongoing epidemic. The adverse effects of the COVID-19 pandemic on the Gross Domestic Product (GDP) of Kyrgyzstan and other nations have been unveiled. The global impact of the epidemic has resulted in severe repercussions for nearly all nations.

In 2023, Angelito B. Cabanilla Jr. conducted a study to determine the GDP per capita throughout Asian nations. The results of their study emphasized the importance of financial literacy and happiness as robust markers of a nation's GDP per capita. A strong and significant positive association was found between these characteristics and economic well-being, underscoring the crucial significance of financial knowledge and well-being in the overall success of a society.

Research was undertaken by Masyhuri in 2023 to examine the simultaneous relationship between GDP and poverty in the Indonesian economy. The author said that for the purpose of attaining a higher gross domestic product (GDP) in the future, it is advisable for the Indonesian government to prioritize efforts aimed at reducing poverty rates, diminishing unemployment rates, decreasing merchandise imports, and enhancing economic growth as a means of addressing macroeconomic challenges inside the nation.

3. Variables

This article considers two dependent and independent variables for developing the multiple linear regression model. Here, the GDP is a dependent variable that changes as the separate independent variable moves. The independent variables used in this model are given below:

i. Balance of Payment (Current account balance) (BOP)
ii. Inflation Rate
iii. Unemployment Rate
iv. Consumer Price Index (CPI)

3.1 Variable selection and justification:

The variables are selected based on the literature review. Initially, a broad category variable was considered to examine the causal relationships with the Gross Domestic Product (GDP). A Step-by-Step study was conducted to determine the importance of each variable in relation to the independent variable. The criteria for determining the inclusion or exclusion of a variable include assessing its ability to provide an explanatory contribution to the independent variable. The exclusion procedure did not include these four variables because of their significant explanatory power in relation to the independent variable, particularly the consumer price index.

Consumption is widely recognized as a crucial determinant of Gross Domestic Product (GDP), with the change in the Consumer Price Index (CPI) being a factor that can be attributed to this particular category. The Consumer Price Index (CPI) provides insights into the purchasing behavior of consumers and, to a certain degree, their saving patterns. Conversely, the variables of inflation and unemployment rate have the potential to impact another significant element of Gross Domestic Product (GDP), namely investment. The balance of payments is prominent in determining the net export, a substantial factor contributing to the overall gross domestic product (GDP).

3.2 Explanation of the independent Variables:

Balance of Payment (BOP): It refers to all the monetary inflows and outflows from a country's border in a specific period. The three major components of the BOP are the current, capital, and financial accounts. The current account shows the flow of goods and services in and out of a nation. All overseas capital transfers are tracked in the capital account. The financial account records foreign money transfers associated with company investments, properties, bonds, and stocks. When a nation receives more money from its exports and foreign direct investments than it spends on imports and debt, it appears to be in a balance of payments surplus. As a result, the nation's economy may benefit from a more solid currency and lower Inflation. If everything else remains the same, an increase in the BOP will also raise GDP.

Inflation Rate: A spike in the average level of prices for goods and services is known as inflation. As the general price level increases, each cash unit may purchase fewer goods and services. As inflation rises, purchasing power decreases; one can buy less with the same amount of money with which he used to purchase more. While encouraging investment, moderate inflation is also to blame for the deterioration in the standard of living. Inflation could be a boon to business, but the primary sufferers are middle-class people. If all other things remain constant and if the inflation rate increases, it decreases the GDP.

Unemployment Rate: The unemployment rate is the portion of the labour force who are skilled, eager, and actively looking for work but hasn't found any. The labour force excludes those unemployed, such as students and pensioners, who are not looking for work. The unemployment rate excludes people who have not sought a job for a specific period (i.e., weeks). The unemployment rate could be found: the unemployed people divided by the Labor force. Higher unemployment results in reduced demand and lower production. This suggests that the GDP will be significantly below the prediction of the economy's long-run aggregate supply curve.

Consumer Price Index (CPI): It measures the average shift in consumer pricing over time for a market basket of goods and services. This market basket includes three categories: essential goods, transportation, food and beverage, and housing. CPI can influence individual decisions about how much money to save and spend. Increases in CPI typically imply higher consumption levels, which leads to higher amounts of production and an increase in GDP.

The Consumer Price Index (CPI) is calculated as follows: $\frac{\text{Cost of the basket in the current year}}{\text{Cost of the basket in the base year}} \times 100$

4. The Objective of the Study

The study's main objective is to find the most influential factors affecting Bangladesh's GDP. The most popular statistical method is applying multiple linear regression analysis to attain the objective. A data matrix of only 15 years is collected for the four independent variables and one dependent variable to fit the regression model. Through this analysis, we can estimate or forecast the GDP of Bangladesh for known values of the independent variables. As a result, the policymakers could concentrate more on boosting their GDP and, subsequently, the general economy and well-being if they were aware of the factors that impact GDP. A GDP overview of Bangladesh's economy could be developed.

5. Methodology

In this study, we have GDP as the dependent variable, and the balance of payments, the inflation rate, the unemployment rate, and the consumer price index are independent variables. So, this is a case of multivariate regression analysis. The three most common types of multivariable regression are multiple linear regression, logistic regression, and Cox proportional hazards regression. Here, all the independent variables and dependent variables are continuous. So, the appropriate multivariate statistical analysis is the multiple linear regression

model to analyze the data. Before fitting the regression model, one has to check the multicollinearity. Multicolinearity is usually tested with the help of three essential techniques: correlation matrix, variance inflation factor, and tolerance. Then, a multiple linear regression model can be fitted with the available data.

The whole regression function and all the individual regression coefficients are tested with the help of appropriate statistical tests such as F and t-tests. The multiple coefficients of determination R^2 and adjusted R^2 are used to find the percentage of the response variable explained by the independent variables. Finally, the appropriate regression model will be found, which can be used to estimate or forecast the response variable for the known values of the independent variables. The final regression model focuses on the most influential factor for the GDP of Bangladesh. The whole data analysis is done using SPSS. The factors that have the most effects on GDP have been highlighted via statistical analysis.

5.1 Data source

The secondary data of GDP, balance of payments, consumer price index, unemployment rate, and inflation rate of Bangladesh have been collected for the last fifteen years from 2008 to 2022 from the Bangladesh Bureau of Statistics (BBS) and the World Bank to facilitate the analysis. The collected data are shown in Table 5.1.

Table 5.1 shows the data on GDP, BOP, Inflation, unemployment rate, and consumer price index for the period 2008 to 2021

Year	Y	X_1	X_2	X_3	X_4
2008	91.63	926.18	12.30	4.5	122.84
2009	102.48	3556.13	7.60	5.0	132.17
2010	115.28	2108.50	6.82	3.4	141.18
2011	128.64	-161.84	10.92	3.8	156.59
2012	133.36	2575.50	8.69	4.1	170.19
2013	149.99	2058.47	6.78	4.4	181.73
2014	172.89	755.79	7.35	4.4	195.08
2015	195.08	2579.62	6.41	4.4	207.58
2016	265.24	931.39	5.92	4.3	219.86
2017	293.75	-5984.99	5.44	4.4	231.82
2018	321.38	-7095.17	5.78	4.4	245.22
2019	351.24	-2948.53	5.48	4.4	258.65
2020	373.90	1192.77	5.65	4.2	273.26
2021	416.26	-15775.41	5.56	5.1	288.44
2022	460.14	-14379.59	6.1	4.7	306.18

Y- Gross Domestic Product; X1- Balance of payment; X_2- Inflation; X_3- Unemployment Rate; X_4- Consumer Price Index

6. Analysis

Now, we are going to fit a multiple linear regression model with GDP as dependent Y and balance of payment X_1, inflation X_2, unemployment X3, and consumer price index X_4 as independent variables.

The formula for the multiple linear regression model is:

$$y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_3 X_3 + \varepsilon$$

Here β_1, β_2, β_3 and β_4 are the regression coefficients corresponding to the four independent variables.

The regression model is fitted by the ordinary least squares (OLS) method using SPSS.

6.1 Multicollinearity test

Before fitting the regression model, it is important to test the multicollinearity among the independent variables. Multicollinearity occurs when independent variables are highly correlated, in which case, it is difficult or even impossible to measure their influence on the dependent variable, So it is a severe problem. It is a common practice to test the multicollinearity before selecting the independent variables for the regression model. Fortunately, three important techniques exist to assess multicollinearity in the regression model. The methods are

i) Correlation matrix, ii) Variance inflation factor, and iii) Tolerance

Correlation matrix: A quick way to identify potential multicollinearity is to review the correlation matrix for the independent variables. A correlation coefficient with an absolute value >0.7 typically indicates a strong correlation between independent variables, but it is important to note that this is just a rule of thumb.

ii) A measure that is commonly available in the software to help diagnose multicollinearity is the variance inflation factor (VIF). Use the following guidelines to interpret the VIF.

VIF	Status of independent variable or predictor
VIF=1	Not correlated
1<VIF=5	Moderately correlated
VIF>5 to 10	Highly correlated

iii) Generally, a VIF above 5 or tolerance below 0.25 indicates that multicollinearity might exist, and further investigation is required. When VIF is greater than 10 or tolerance is lower than 0.1, there is significant multicollinearity that needs to be corrected.

6.2 Correlation matrix test

The Correlation coefficient matrix for all the variables, including the dependent variable, shows the relationships between the dependent variables and all the independent variables individually, and simple correlation coefficients among the independent variables are shown in Table 6.1

Table 6.1 Correlation matrix containing all correlation coefficients with their significance level

		GDP	Inflation Rate	Unemployment Rate	Consumer Price Index	Balance Of Payment (Current Account))
GDP	Pearson Correlation	1	-.684**	.395	.982**	-.803**
	Sig. (2-tailed)		.005	.145	.000	.000
Inflation Rate	Pearson Correlation	-.684**	1	-.219	-.726**	.383
	Sig. (2-tailed)	.005		.432	.002	.159
Unemployment Rate	Pearson Correlation	.395	-.219	1	.374	-.480
	Sig. (2-tailed)	.145	.432		.170	.070
Consumer Price Index	Pearson Correlation	.982**	-.726**	.374	1	-.752**
	Sig. (2-tailed)	.000	.002	.170		.001
Balance Of Payment (Current Account))	Pearson Correlation	-.803**	.383	-.480	-.752**	1
	Sig. (2-tailed)	.000	.159	.070	.001	

**. Correlation is significant at the 0.01 level (2-tailed).

Gross Domestic Product (GDP): The association with the consumer price index is quite strong and positive at a high significance level. The inflation rate has a slight negative association. There is a strong negative correlation with the balance of payment. All other variables statistically hold their significance except the unemployment rate.

Consumer Price Index (CPI): It positively relates to GDP. The consumer price index and the balance of payments have a substantial negative connection. A very slight positive association with the unemployment rate was also present. The balance of payments, inflation rate, and GDP are statistically significant at a level of 0.01%. It appears multicollinearity exists between the consumer price index and the balance of payment and inflation rate. Moreover, a strong positive relationship exists between GDP and the consumer price index, which suggests that the consumer price index is the only influential factor for the GDP of Bangladesh.

Unemployment Rate: It has a mildly positive correlation with GDP and CPI. Modest negative correlations with the BOP and very low negative correlations with the inflation rate can be observed. A 0.01% confidence interval reveals no variable to be significant in terms of the unemployment rate.

Inflation Rate: The inflation rate holds moderate and vigorous negative relations with the GDP and CPI, respectively. It reveals fragile negative correlations with the unemployment rate and positive correlations with the balance of payment. Regarding the inflation rate at 0.01% confidence intervals, only the consumer price index and GDP statistically exhibit their significance.

Balance of payment (BOP): At a significance level of 0.01%, it displays notable negative correlations with the GDP and the consumer price index. It has a limited negative correlation with the unemployment rate. No other indicator has a statistically significant relationship with BOP besides the GDP and consumer price index.

6.3 Variance Inflation Factor and Tolerance Tests

As mentioned above, tolerance and the variance inflation factor (VIF) are two statistics used to identify collinearity in multiple regression. They are based on the R-squared result of regressing each predictor against each other in the analysis. The opposite of tolerance is VIF. The tendency of multicollinearity rises with increasing VIF. Significant multicollinearity is indicated by VIF values greater than 10. VIF lies between 1 and 5 and shows a moderate correlation of independent variables in the model.

$$\text{Tolerance} = \frac{1}{VIF}$$

Table 6.2 contains the variance inflation factor and tolerance for the independent variables.

Table 6.2 Variance inflation factor and tolerance of the independent variables

Collinearity Statistics		
Components	**Tolerance**	**VIF**
Balance Of Payment (Current Account balance)	.340	2.939
Inflation Rate	.412	2.428
Unemployment Rate	.768	1.302
Consumer Price Index	.210	4.760

Decision on independent variables: In this paper, no independent variable, the balance of payment (current account balance), inflation rate, unemployment rate, or consumer price index has a VIF of greater than 5, and all the tolerance is greater than 0.25, dictating they have significantly less relation with each other and affecting the dependent variable, GDP, from different directions in a different way.

6.4 Fitting of Multiple Linear Regression

The data matrix is analyzed by taking GDP as the dependent variable and balance of payment, inflation rate, unemployment rate, and consumer price index as independent variables by the statistical package SPSS. The results are presented in Table 6.3 below.

Tables 6.3 Variables concerned.

Model	Variables Entered	Variables Removed	Method
1	Consumer Price Index, Unemployment Rate, Inflation Rate, Balance of Payment(Current Account)[b]	.	Enter

a. Dependent Variable: GDP
b. All requested variables were entered. a. Dependent Variable: GDP
b. Predictors: (Constant), Consumer Price Index, Unemployment Rate, Inflation Rate, Balance of Payment

Table 6.4 Showing all regression coefficients and their test statistics t values with their significance levels

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-164.795	106.703		-1.544	.154
	Balance Of Payment (Current Account))	-.003	.002	-.144	-1.679	.124
	Inflation Rate	.654	4.747	.011	.138	.893
	Unemployment Rate	-.438	17.134	-.001	-.026	.980
	Consumer Price Index	1.892	.235	.882	8.060	.000

Based on the available data, the fitted multiple linear regression is:

$$\mathbf{Y= -164.795 -.003\,X_1+0.654\,X_2-0.438\,X_3+1.892X_4}$$

There, X_1- Balance of payment; X_2- Inflation; X_3- Unemployment Rate; X_4- Consumer Price Index

Table 6.5 Showing multiple coefficients of determination R^2 and adjusted R^2

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.987[a]	.975	.965	23.42458

a. Predictors: (Constant), Consumer Price Index, Unemployment Rate, Inflation Rate, Balance of Payment (Current Account)

Interpretation of R^2

A more considerable R^2 value indicates that the predictive model explains more variation, up to a maximum of 100%. In this model, the dependent factor could explain up to 97.5% of the impacting factors.

Relation between R^2 and adjusted R^2

The smaller gap between R^2 and adjusted R^2 suggests that all significant independent variables are present. A considerable gap between the two indicates that some essential independent variables influence the dependent variable is missing.

6.5 Test of the overall regression function, which is equivalent to testing the Hypothesis Testing

H_0= β_1=β_2=β_3=β_4=0
H_1= Not all the β are zero
α= .01
F-test statistics will be used.

Decision rule: Reject H_0 if F is greater than 5.99 (F>5.99). Here, the value of F with n_1= 4 and n_2 =10 degrees of freedom at a 1% significance level is 5.99. F could be found from the given equation:

$$F = \frac{Regresssion\ Value}{Residual\ Value}$$

Explanation: As the F value is greater than the standard one (96.805>5.99), we can reject the null hypothesis (H0), implying that no β is 0. All four independent variables impact the dependent variable (GDP) since the significance level is less than 0.01.

6.6 Logical Argument about the regression equation

Balance of payment (BOP): From the above equation, it can be shown that a 1% increase in the BOP causes a 0.003% fall in GDP, suggesting a negative relationship. On the other hand, exports don't grow substantially while many capital goods are imported. The production capacity is not fully optimized.

When the economy has more inflows than outflows, the BOP is positive. Despite the increased influx, the GDP decline shows that inflows are no longer in the productive sector. Policymakers could focus on exports to create positive relations with the GDP and make an independent exchange rate system for exports and imports.

Inflation: According to the regression equation, GDP and inflation have a positive relationship. A 1% increase in inflation generates a 0.65% increase in GDP. Business people frequently raise prices more than usual and encounter more lucrative investments when the economy is experiencing inflation. As a result, the GDP's most important subcomponent, investment, begins to move upward. Hence the GDP. The observed rise in GDP resulting from inflation does not accurately reflect the real GDP growth but rather signifies the escalation in production prices. While inflation may favour the total GDP, it also has detrimental consequences for the economy. Policymakers should prioritize the mitigation of the adverse effects of inflation and formulate policies that are informed by the assessment of real GDP.

Unemployment Rate: A noticeable inverse relationship between the unemployment rate and GDP could be observed from the equation. A 1% increase in the unemployment rate decreases the GDP to 0.44%. Unemployed people tend to deficit an individual current consumption to the bare minimum, reducing consumption, hence, the GDP. The unemployment rate indicates unproductive labour with the will and skill to produce goods and services. Due to their inability to contribute their work and skills to the productive sector, they are preventing GDP growth. If the objective of the economy is to enhance the individuals' income and foster the expansion of the Gross Domestic Product (GDP). The potential area of concentration may be the unemployment rate since a decrease in this rate has the potential to positively affect both the GDP and individuals' ability to spend on consumption and investment.

Consumer Price Index (CPI): The regression equation indicates a positive relationship between the consumer price index and GDP. A 1% increase in the CPI results in a 1.89% rise in GDP. CPI shows the economy's demand for goods and services. As the demand increases, the production (Supply) of goods and services and the GDP likewise increase. A leveraged situation can define the relationship between the CPI and GDP. If the CPI experiences a $100 increase, it will result in a corresponding increase of $189 in the GDP. The correlation between an increase in the CPI and inflation is well-established. However, the government should exercise caution in relying only on CPI as a determinant for adjusting the growth of Gross Domestic Product (GDP). This caution is warranted due to the adverse impact of inflation on individuals with lower incomes. The Consumer Price Index (CPI) has the potential to rise despite low inflation if there is an increase in real income or the accessibility of goods and services. Regrettably, this assertion does not hold in the context of Bangladesh.

Individual test:

Even though the global test generates an overall statistical result, extra information about which components affect the dependent variables is needed. Individual tests have been performed in this regard.

6.7 The test statistic t conducts the individual regression coefficient test for four independent variables. The Conducted individual tests are

For "Balance of Payment"
H_0: $\beta_1=0$
H_1: $\beta_1\neq0$
For "Inflation rate."
H_0: $\beta_2=0$
H_1: $\beta_2\neq0$
For "Unemployment rate."
H_0: $\beta_3=0$
H_1: $\beta_3\neq0$
For the "Consumer Price Index"
H_0: $\beta_4=0$
H_1: $\beta_4\neq0$
α= .01
t-test statistics will be used

Decision rule: Reject H_0 if $t_{comp} > 3.169$ or < -3.169

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-164.795	106.703		-1.544	.154
	Balance Of Payment (Current Account))	-.003	.002	-.144	-1.679	.124
	Inflation Rate	.654	4.747	.011	.138	.893
	Unemployment Rate	-.438	17.134	-.001	-.026	.980
	Consumer Price Index	1.892	.235	.882	8.060	.000

Decision on Balance of Payment (BOP): As t_{comp} -1.679 >-3.169, H_0 is accepted, and H_1 is rejected, indicating that the balance of payment does not significantly affect the dependent variable (GDP).

Decision on Inflation Rate: As t_{comp} .138 <3.169, H_0 is accepted, and H_1 is rejected, indicating that inflation has not significantly affected the dependent variable (GDP).

Decision on Unemployment Rate: As t_{comp} -0.026 > -3.169, H_0 is accepted and H_1 is rejected, indicating that the unemployment rate does not have that much significant effect on the dependent variable (GDP)

Decision on Consumer Price Index (CPI): As t_{comp} 8.060 >3.169, H_0 is rejected, and H_1 is accepted, indicating that the consumer price index has a significant effect on the dependent variable (GDP)

From the above individual test, only the consumer price index can be considered for determining the influential factor for GDP.

Hence, the Modified Regression model is:

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-201.102	23.949		-8.397	.000
	Consumer Price Index	2.106	.111	.982	19.012	.000

a. Dependent Variable: GDP

$Y = -201.102 + 2.106X_4$

Here, X_4- Consumer Price Index

The consumer price index has a significant impact on the GDP.

Model	Variables Entered	Variables Removed	Method
1	Consumer Price Index	-	Enter

a. Dependent Variable: GDP
b. All requested variables were entered.

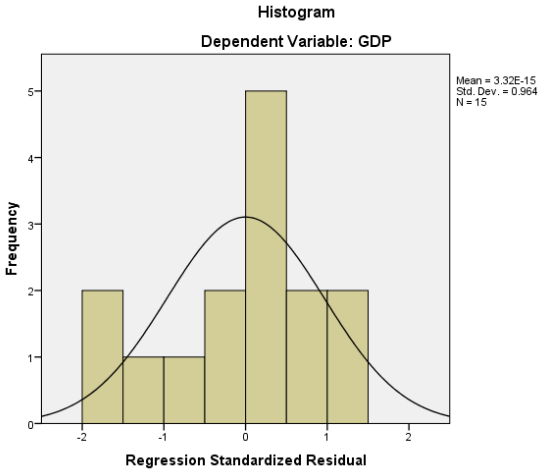
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.982[a]	.965	.963	24.12547

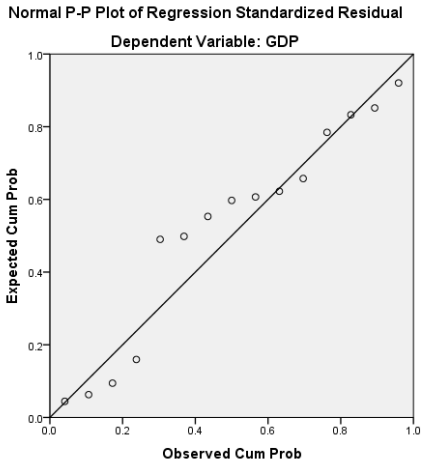
a. Predictors: (Constant), Consumer Price Index

When CPI is the only independent variable, R^2 can be used to assess how well the independent variables can explain the dependent variable. In that situation, the consumer price index has a 96.3% accuracy in predicting the dependent variable (GDP).

6.8 Assumption check:

Normality: Here is the plot of the residuals:





From the above plots, we can see that the errors are approximately normal.

Homoscedasticity:

The study uses a regression where the square of residual is used as the dependent variable and X_4 as an independent variable to check the homoscedasticity. The results are given below:

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1280.018	533.383		2.300	.052
	Consumer Price Index	-3.716	2.468	-.385	-1.506	.156

a. Dependent Variable: res

So here, the model is insignificant. So, it can be said that the errors are constant with the change of the independent variable.

7. Policy Implication

A nation's economic performance is determined by its gross domestic production. The more a country produces, the more it can have an advantage in domestic and international markets. For that policymaker, they have to know which component has a crucial impact on their country's GDP.

The present research aims to construct a regression model that may be utilized for forecasting future GDP. This tool facilitates policymakers' assessment of fiscal policy, enabling them to make informed decisions on borrowing limits and expenditure allocations for a given fiscal year. In addition, they possess the ability to ascertain the most effective allocation of resources toward infrastructure development to enhance business activities. The Bangladesh Bank can utilize monetary policy to influence the inflation rate, stimulating higher consumer demand and encouraging firms to engage in borrowing and investment activities. The impact of exports and imports on the GDP and how to facilitate this process to create a space for contributing more from that category could be evaluated.

Furthermore, by carefully examining the global crisis, policymakers can proactively implement targeted measures to minimize the impact on GDP growth. This may be achieved by identifying and understanding the components that exert the most significant influence on GDP. Policymakers may receive assistance in defining the social package, poverty alleviation measures, and green policies within the economy.

8. Conclusion

A special attachment to the GDP will be detrimental in the future. Although the GDP is a crucial measure of the economy's health, other indicators, such as real income, GDP per capita, the Business Environment Index (BEI), and corporate governance, are equally important in creating a positive perception of the country overseas. Bangladesh, a developing country in Southeast Asia, has experienced significant GDP growth over time. In addition, Bangladesh ranks among the top South Asian countries on several crucial measures. While not achieving the objective of increasing the world GDP during the COVID-19 outbreak, Bangladesh fought against the unfavourable situation with discernible economic growth. Recent efforts by Bangladesh to focus on economic sustainability will undoubtedly help the country in the long run.

9. Recommendations

The GDP of Bangladesh is expanding quickly. The purchasing power of this nation's population, production industry, and entrepreneurial activities all make significant contributions. Both inflation and actual personal incomes are rising rapidly. Fuel costs are exorbitantly high, especially in light of the prevailing conflict between Russia and Ukraine, which adds pressure to the economy. The balance of payments and the level of foreign reserves both show this. Subsidies should be given to the domestic production sector and encouraged entrepreneurship before it's too late to impact the GDP positively. A critical step in creating a sustainable economy is to rely on internal production and the extraction and utilization of natural resources. In the twenty-first century, no nation can escape the erratic impact of the global economy. Therefore, measures should be taken to reduce the volatile effects on the domestic economy.

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