



Determining the Impact of Economic Factors to the Gross Domestic Product in Bangladesh

Mostofa Mahmud Hasan^{1*}, B. M. Sajjad Hossain², Md. Abu Sayem³

¹Department of Business Administration, EXIM Bank Agricultural University Bangladesh, ²Department of Business Administration, Primeasia University, Bangladesh, ³Department of Statistics, EXIM Bank Agricultural University Bangladesh.

*Email: mmhasanku@gmail.com

Received: 21 September 2021

Accepted: 25 December 2021

DOI: <https://doi.org/10.32479/ijefi.12686>

ABSTRACT

Gross Domestic Product (GDP) is believed to be an indicator of a country's economic condition. Bangladesh's GDP increased at a pace of 8.15% in fiscal 2018-2019 as per the base year 2005-2006. By the year 2019, Bangladesh has become the seventh fastest-growing economy in the world. This paper used multiple regression analysis model for the macroeconomic factors. The aim of this study is to measure the effects of macroeconomic factors considering GDP as the dependent variables and inflation rate, import, and export are considered as independent. This paper represents that import and export are positively associated factors with GDP whereas inflation rate is a negatively associated factor. This study concluded with revealing the importance of conducting further study by considering more economic variables to measure the economic growth as a whole.

Keywords: GDP, Inflation Rate, Import, Export, Bangladesh economy

JEL Classifications: A11, B27, B22

1. INTRODUCTION

There are many factors (Natural resources, human resources, capital formation, technology, efficiency and demand) which have potential effect on economic growth and country's development. A lot of factors influence and control the national and international market. Some other important issues like production, distribution, market size, government control and supports play a vital role for the economic functioning. A few tools are widely used to measure economic condition of a nation. Gross Domestic Product (GDP) is one of them. Basically, GDP is an accurate indicator of the size of an economy and the GDP growth rate is considered as one of the single best indicators of economic growth, while GDP per capita represents the living standards over time. GDP is measured by taking the quantities of all goods and services produced, multiplying them by their prices, and summing the total. GDP can be calculated either by the sum of what is purchased in the economy or by what is produced by the citizen of the country.

However, various factors may have impact on the nation's GDP and the researches have tried to find these important factors for making effective decisions for the non-expandable economic development and health of a nation. That's why; an endeavor has been taken to study these economic factors.

2. LITERATURE REVIEW

Economic growth is measured by gross domestic product and the factors of economic growth are cross-cutting factors. Stanić and Račić (2019) analyzed that FDI, export, import have positive association and growth rate, unemployment rate and inflation rate have negative association with GDP. Urrutia and Tampis (2017) explored that total trade, capital formation and exchange rate are positively associated whereas interest rate and unemployment rate are negatively associated factors with GDP. Tekin also (2012) observed that exports and GDP are positively related.

Al-Raimony (2011) studied that real capital growth; real export growth and real GDP growth are positively related among them. Etale and Etale (2016) explored the long term interrelation between foreign direct investments, export and economic growth. Etale and Etale (2016) investigated that FDI and GDP have bidirectional relation and GDP and export have unidirectional relation. Elsewhere, Haseeb et al., (2014) found that export, FDI and GDP are positively related.

Nestorović (2015) summarized that FDI and GDP are positively correlated but not significant. Akter (2015) explored that export has positive outcome on GDP and import has negative relation with GDP. Javed et al. (2012) studied that export is positively related and statistically significant with GDP. Hussain (2014) found that export has positive influence on GDP.

Rai and Jhala (2015) investigated that GDP is positively influenced by export. Zaheer et al. (2014) found that import and export have positive effect on GDP. Considering all these, in this research paper, the researchers want to investigate the effect of inflation rate, import and export on gross domestic product (GDP) in Bangladesh.

Eric et al. (2019) used multiple regression model to analyze the impact of export and trade liberalisation on GDP and realized that export and trade liberalisation have positive impact on GDP. Siregar and Alhempri (2018) employed multiple regression model to examine the effect of export and GDP on currency rate and observed that currency rate is positively influenced by export and GDP.

Hossain (2012) stated that the GDP growth of Bangladesh is increasing but it does not ensure poverty reduction unless it is equitably distributed and Population growth also contributing poverty and as such poverty equity and GDP triangle must be synergistically designed with population, education and environment.

Anghelache (2011) adopted simple regression model for examining the relationship of final consumption and GDP and found that GDP is positively impacted by final consumption.

However, this paper have also studied the impact of exchange rate, inflation, import and export on GDP by using multiple regression model and found that import and export have positive relation with GDP and inflation whereas exchange rate have negative association with GDP.

3. DATA AND METHODOLOGY

3.1. Data Source

The researchers used secondary data related to the present study and collected from World Bank for the fiscal year from 2010 to 2020. The secondary data has been analyzed in SPSS 16.00 version and descriptive statistics and multiple linear regression has been used to analyze the economic factors. The researchers used gross domestic product as dependent variable of the study. Inflation rate, import and export of the macroeconomic variables were used as independent variables.

3.2. Multiple Linear Regression

The multiple linear regression is used to investigate the relationship between a dependent variable and one or more independent variables. The general form of the regression model is:

$$y = \beta_0 + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \dots + \beta_kx_k + \epsilon \tag{1}$$

Where y the dependent is variable, β_0 is the intercept, x_1 to x_k are the independent variables, β_1 to β_k is the change in y for each one increment change in the independent variables, and ϵ is the disturbances.

Therefore, the ordinary least square fitted model from (1) is given by

$$\hat{y} = \hat{\beta}_0 + \hat{\beta}_1x_1 + \hat{\beta}_2x_2 + \hat{\beta}_3x_3 + \dots + \hat{\beta}_kx_k$$

is the predicted value of the dependent variable y, $\hat{\beta}_0$ is the intercept, x_1 to x_k are the independent variables, $\hat{\beta}_1$ to $\hat{\beta}_k$ is the estimated value of β_1 to β_k .

4. RESULTS AND DISCUSSION

The People’s Republic of Bangladesh, also known as only “Bangladesh” is a South Asian small country. It is one of the most populous countries in the world with more than 163 million people in an area of either 148,460 km². Dhaka, as the capital city, is the main economic, political, and cultural hub of this nation. It has long struggle history for freedom since 1900s during British era, and finally become independent nation by 1971 from Pakistan. Few recent macroeconomic factors are presented in Table 1. Table 1 shows the GDP, inflation rate, import and export related data for the last decade.

4.1. Graphical Analysis

A few graphical analysis are drawn bellow for easy understanding of the real scenarios.

From the Figure 1, it is seen that GDP increases as the inflation rate increases. Few more graphs are given below-

Table 1: Few macroeconomic factors of Bangladesh economy

Fiscal year	GDP (USD Billion)	Inflation rate (%)	Import (USD Billion)	Export (USD Billion)
2010	115.30	8.13	18.47	25.11
2011	128.60	11.40	25.63	35.37
2012	133.40	6.22	26.89	37.27
2013	150.00	7.53	29.30	40.14
2014	172.90	6.99	32.83	44.13
2015	195.10	6.19	33.82	48.28
2016	221.40	5.51	36.86	47.17
2017	249.70	5.70	37.55	50.61
2018	274.00	5.54	40.56	64.25
2019	302.60	5.59	46.36	64.86
2020	324.20	5.69	39.50	60.25

Source: World Bank, 2021

From the Figure 2, it is seen that GDP increases as the import increases. One more graphs have given below-

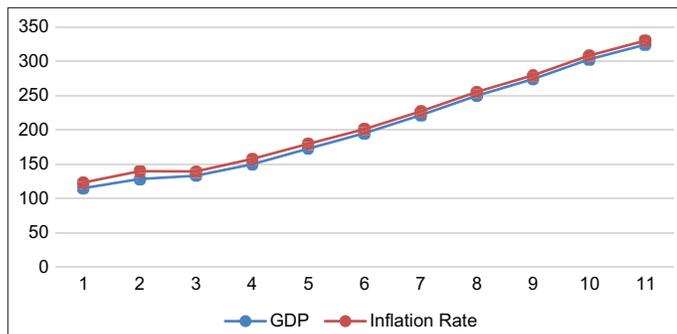
From the Figure 3, it is seen that GDP increases as the export increases. Both are found very much positive at all.

4.2. Correlation Analysis

Here, a correlation analysis has been conducted and results are found that is shown in the Table 2.

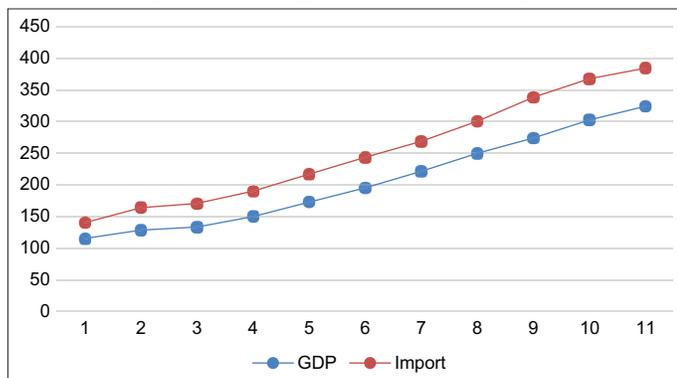
This research used the Pearson correlation coefficient in estimating whether there exist a significant relationship between the dependent (GDP) and independent variables (inflation rate, import, and export).

Figure 1: Scatter plot on GDP versus inflation rate



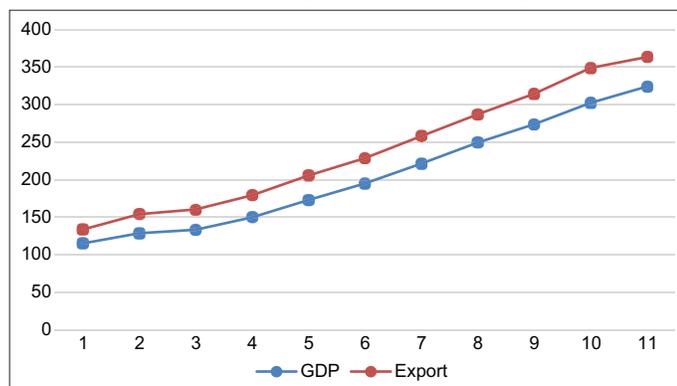
Source: Authors calculation from collected data

Figure 2: Scatter plot on GDP versus import



Source: Authors calculation from collected data

Figure 2: Scatter plot on GDP versus import



Source: Authors calculation from collected data

Table 2 discloses the correlation coefficient, as well as the p-value of the independent variables (inflation rate, import, and export) analyzed against GDP. The results indicate that all the variables have a significant relationship with GDP since their P-values is less than the level of significance of 0.05.

From the Table 2, it is observed that inflation rate has a negative linear relationship with GDP and import, export has a strong positive linear relationship with GDP.

4.3. Multiple Linear Regression Models for GDP

From the Table 3, it is observed that inflation rate, import, export are jointly significant with GDP at 1% level of significance.

From the Table 4, the estimated model for GDP is,

$$\hat{y} = -14.09 - 3.83x_1 + 4.78x_2 + 0.62x_3$$

Where, \hat{y} is the predicted value of the dependent variable GDP, x_1 =inflation rate, x_2 =import and x_3 = export

Adjusted R-square value 0.851 indicates that 85.10% of the total variation of GDP is explained by the inflation rate, import, export, i.e., this model is actually good enough in predicting the dependent variable. From the model, it is revealed that there is an inverse relation between GDP and inflation rate but there is a positive relation among GDP and import, export. That means, one unit increase in inflation rate can cause GDP to decrease by 3.83 units. Again, one unit increase in import and export can cause GDP to increase by 4.78 and 0.62 units All the independent variables (inflation rate, import, export) are individually insignificant at 5%

Table 2: Correlation among GDP and inflation rate, import, export

Variables	Pearson r	P-value
Inflation rate	-0.675	0.023
Import	0.943	0.000
Export	0.921	0.000

Source: Authors calculation from collected data

Table 3: Analysis of variance table

Sources of variation	DF	SS	MS	F-value	P-value
Regression	3	48283.23	16094.41	20.02	0.0008
Residual	7	5628.72	804.10		
Total	10	53911.95			

Source: Authors calculation from collected data

Table 4: Testing individual significance of the regression model

Sources of variation	Coefficients	Std. error	t-value	P-value	95% CI	
					Lower	Upper
Intercept	-14.09	91.79	-0.15	0.88	-231.14	202.95
Inflation rate	-3.83	6.92	-0.55	0.59	-20.19	12.54
Import	4.78	2.85	1.67	0.13	-1.97	11.54
Export	0.62	4.66	0.13	0.89	-10.40	11.65

Source: Authors calculation from collected data

level of significance. That means, inflation rate, import, export does not individually influence on GDP.

5. CONCLUSION

Economic growth of a country like Bangladesh is frequently evaluated by using the factor gross domestic product (GDP) which is very much needed to supervise the nation progress. Based on the analysis, it is been seen that inflation, import and export have direct impact on GDP in Bangladesh. It found that a very favorable export environment should be chased and encouraged by country's policy and decision makers as Bangladesh exports various garments product each year and this also proves that the quality of products is outstanding. Investment of the export sector should also be enhanced to overcome the present obstacles of the economy and therefore foreign direct investment (FDI) should also try to be enhanced by attracting the contemplation of foreign stakeholders from both developing and developed countries.

REFERENCES

- Akter, M. (2015), The impact of export and import on economic growth in Bangladesh. *World Vision*, 9(1), 66-81.
- Al-Raimony, A. (2011), The determinants of economic growth in Jordan. *Abhath Al-Yarmouk Humanities and Social Sciences Series*, 27(3), 2297-2305.
- Anghelache, C. (2011), Analysis of the correlation between GDP and the final consumption. *Theoretical and Applied Economics*, 9(562), 129-138.
- Eric, O., Popovic, G., Popović, S. (2019), Foreign trade liberalisation and economic growth: The case of the Republic of Srpska. *Economics*, 7(2), 99-108.
- Etale, E.L., Etale, L.M. (2016), The relationship between exports, foreign direct investment and economic growth in Malaysia. *International Journal of Business Management and Economic Research*, 7(2), 572-578.
- Haseeb, M., Hartani, N.H., Bakar, N.A., Azam, M., Hassan, S. (2014), Exports, foreign direct investment and economic growth: Empirical evidence from Malaysia (1971-2013). *American Journal of Applied Sciences*, 11(6), 1010-1015.
- Hossain, B.M.S. (2012), Dimensions of poverty among the lower income people in Dhaka City. *Journal of Science Foundation*, 10(1), 29-37.
- Hussain, M.A. (2014), Economic growth, exports and imports in Pakistan: Granger causality analysis. *The Journal of Business in Developing Nations*, 13, 31-62.
- Javed, H.Z., Qaiser, I., Mushtaq, A., Saif-Ullah, Iqbal, A. (2012), Effects of international trade on economic growth: The case study of Pakistan. *International Journal of Academic Research in Progressive Education and Development*, 1 (2), 103-113.
- Nestorović, O. (2015), Da li strane direktne investicije doprinose privrednom rastu zemalja u tranziciji? *Ekonomске Teme*, 53(2), 273-282.
- Rai, S.K., Jhala, P. (2015), Impact of exports and imports on growth rate of India: An empirical enquiry. *Pacific Business Review International*, 8(6), 53-58.
- Siregar, D.I., Alhemp, R.R. (2018), Analysis of the regression and correlation of gross domestic product (GDP) exports and revenue (GDP) of Indonesia against rupiah exchange rate (IDR - USD). *Journal of Global Economics*, 6(4), 1-5.
- Stanić, S., Račić, Ž. (2019), Analysis of macroeconomic factors effect to gross domestic product of Bosnia and Herzegovina using the multiple linear regression model. *Economics*, 7(2), 91-97.
- Tekin, R.B. (2012), Economic growth, exports and foreign direct investment in least developed countries: A panel granger causality analysis. *Economic Modelling*, 29(3), 868-878.
- Urrutia, J.D., Tampis, R.L. (2017), Regression analysis of the economic factors of the gross domestic product in the Philippines. *Journal of Fundamental and Applied Sciences*, 9(7S), 190-201.
- World Bank, (2021), World Development Indicators (WDI). Available from: <https://www.data.worldbank.org/country/BD>
- Zaheer, R., Khattak, S.W., Ashar, H., Khazaib. (2014), Impact of exports import GDP growth rate, in Pakistan time series data from 2000-2010. *International Journal of Research in Applied, Natural and Social Sciences*, 2(7), 29-34.