An Empirical Study of Economic Indicators Impacting GDP of Bangladesh - A Panel Data Analysis

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Abstract

Bangladesh is witnessing unprecedented growth in last decade. It is considered the 7th fastest-growing economy globally in the first quarter of 2019, with a rate of 8.3% year-over-year growth.World Bank economists increased the growth projection for Bangladesh this fiscal year by two percentage points, moving the country up to second placein South Asia and the Maldives, where the country is second only to Sri Lanka.According tothe government's most recent projections, Bangladesh's GDP is expected to grow by 5.1% in the fiscal year beginning in July.
This research aims to assess the influence of economic indicators on economic growth & the relationship between various indicators impacting economic development. In addition, the study will provide the policymakers an assessment of the right set of practices for economic growth.
The analysis is conducted based on panel data for a period ranging from 1986 to 2019 extracted from the World Bank. This study includes statistical data on GDP, gross capital formation, export, foreign direct investment of Bangladesh. Regression and ANOVA techniques are applied to evaluate which indicators have a significant impact on GDP. According to the study, gross capital formation is highly impactful variable whereas export is contributing also towards the growth of GDP but foreign direct investment is considered as insignificant indicator influencing GDP.

Keywords: GDP, Gross Capital formation, Export, FDI, ANOVA

INTRODUCTION

The significant reformation occurs in the global economy due to an immersion of foreign direct investment (FDI) and free international trade. Since the early 1980s, Global FDI flows have increased from $50 billion to $1.5 trillion (unctad, 2012). It leads to an increased recognition of the demand for the transportation system, technological development, and other practices and situations that promote economic development (Mokhtarzadeh & Faghei, 2019). Wilson pointed out export competitiveness as a strength of technical & mechanical advancement (Wilson, 2019). After its independence in 1971, Bangladesh introduced economic reforms in three stages, i.e. first stage from 1972-1975, the second from1977-1985 and the third from1986 onwards for fuller utilization of resources (Kalirajan & Salim, 1997). It was argued by Bhasker that reforms related to financial sector, globalization, agricultural & structural reform is only beneficial and more appropriate with proper infrastructure & governance (Bashar & Khan, 2007). After following all parameters of proper implementation of policies, Bangladesh is considered the 7th fastest-growing economy globally in the first quarter of 2019, with a rate of 8.3% year-over-year growth. Bangladesh's GDP is expected to grow by 5.1% in the fiscal year beginning in July. The current study focuses on identifying those macroeconomic variables that have a considerable impact on the GDP of the nation. These parameters include foreign direct investment, export, trade openness, capital formation, infrastructure, which measure the impact of selected economic indicators on GDP right from the implementation of 3rd phase of reforms.

FDI influence on economic growth has been proven using the neo-classical or exogenous growth model: direct impact on capital accumulation and incorporating new inputs and foreign technology in the production function of the host nation. The new classical growth model states that FDI causes more investment in the host nation, increasing the country's economic growth Human resources, fixed capital, and the task force impact the GDP and lead to linear and non-linear causation (Ali, Chaudhry, & Farooq, 2012). When gross capital formation as a share of gross domestic product is taken for, every percentage point rise in this aggregate addition increases the GDP by 2%(Zheng, Wang, Wood, Wang, & Hertwich, 2018). Chand documented increase in public capital formation has a positive impact on private investment, thus on GDP (Ramesh Chand, n.d.; Ugochukwu & Chinyere, 2013). Foreign direct investment (FDI) and its impact on economic growth can be seen in the industrialization process as a worldwide investment can be increased through the injection of foreign investment. An additional benefit of FDI is that it contributes to the country's overall prosperity where the investment is to be made and where it originated. These economies are referred as 'developing economies due to their capacity to provide logistical necessities. Investing in a export oriented units which facilitates economic development is highly advised. The country's economy will significantly benefit from the improvement of port infrastructure to facilitate export & import(Li, Liu, & Peng, 2018).

METHOD

Research design:- The research design used for this study is empirical.
Universe:- All countries
Sample Unit:- Bangladesh
Time period of study : The period of study ranging from 1986 to 2019.
Data collection method: Secondary statistical data on GDP foreign direct investment, export & gross capital formation has been extracted from World Bank.
Tool and techniques : GDP is taken as parameter of economic growth whereas other

variable is shown as indicators of liberalization. One way ANOVA, Regression and graphical method is also used as statistical tool. The research contains the following empirical model:

$\Upsilon = \alpha + \beta 1\ X1 + \beta 2\ X2 + \beta 3\ X3 + Ut$
GDP= α+ β1 CAP FORM + β2 FORG INVEST + β3 EXPORT
Υ= GDP per capita annual growth rate as Dependent Variable
X1 = Gross Capital Formation as % of GDP as Independent Variable
X2 = Foreign Direct Investment net inflows as % of GDP as Independent Variable
X3 = Export as % of GDP Independent Variable

RESULTS AND DISCUSSION

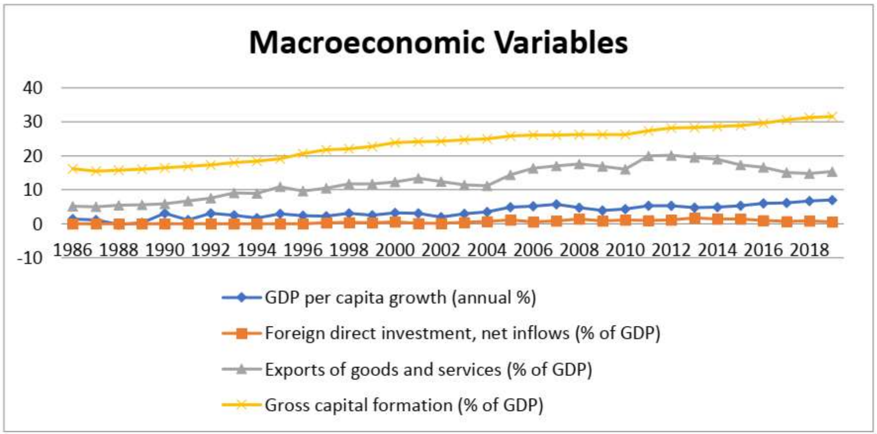

Figure 1 : Macro Economic Variables

The above chart depicts the different macroeconomic variables ,i.e. GDP, gross capital formation, export & foreign direct investment net inflows for a period ranging from 1986 to 2019 which contribute towards economic growth. It shows the rising gross capital formation, exports of the nation, and slow rate of increase in foreign direct investment, shown as a steep surge in GDP. So it is interpreted that the rise in gross capital formation is comparatively high than export & FDI.

Table 1 : Descriptive Statistics

	GDP per capita growth (annual %)	*Foreign direct investment, net inflows (% of GDP)*	*Exports of goods and services (% of GDP)*	*Gross capital formation (% of GDP)*
Mean	3.602606	0.565639	12.6696	23.53923
Standard Error	0.318111	0.091469	0.798767	0.859411
Median	3.185856	0.485661	12.37709	24.5103
Standard Deviation	1.854889	0.53335	4.657571	5.011186
Sample Variance	3.440613	0.284462	21.69297	25.11199
Kurtosis	-0.72644	-0.9006	-1.07816	-1.19161
Skewness	-0.07447	0.537818	-0.14585	-0.2339
Range	7.252579	1.734557	15.17154	16.09686
Minimum	-0.20729	0.000861	4.99005	15.47344
Maximum	7.04529	1.735419	20.16159	31.5703
Sum	122.4886	19.23174	430.7664	800.3337
Count	34	34	34	34
Largest(1)	7.04529	1.735419	20.16159	31.5703
Smallest(1)	-0.20729	0.000861	4.99005	15.47344
Confidence Level(95.0%)	0.647201	0.186095	1.625104	1.748485

Table 2 : ANOVA

	Degree of Freedom	*Sum of Square*	*Mean Square*	*F*	*Significance F*
Regression	3	92.73058	30.91019	44.56135	0.00
Residual	30	20.80965	0.693655		
Total	33	113.5402			

Table 2 shows the calculated f-ratio value is 44.56135 and the p-value is .00001. The result at a 5% level of significance with degree of freedom (v1=3 and v2=30) is significant as calculated p-value is < .05, which exhibits that selected macro economic variables significantly impacted GDP. Hence our analysis does support our hypothesis.

Table 3: Regression Cofficient

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	-3.89573	0.982667	-3.96444	0.000421	-5.9026	-1.88885
Foreign direct investment, net inflows (% of GDP)	0.136133	0.575769	0.236437	0.8147	-1.03974	1.31201
Exports of goods and services (% of GDP)	0.023675	0.089326	0.265044	0.792788	-0.15875	0.206102
Gross capital formation (% of GDP)	0.302532	0.067213	4.501068	9.49E-05	0.165264	0.4398

The above table shows that P-value of gross capital formation is < 0.05 which shows significant impact factor of GDP. Whereas the p-value of export & foreign Direct investment is > .005 which depicts that these two macro economic variables are less significantly influence GDP thus economic growth.

Table 4: Correlation Matrix

	GDP per capita growth (annual %)	Foreign direct investment, net inflows (% of GDP)	Exports of goods and services (% of GDP)	Gross capital formation (% of GDP)
GDP per capita growth (annual %)	1			
Foreign direct investment, net inflows (% of GDP)	0.754314	1		
Exports of goods and services (% of GDP)	0.831093	0.880692	1	
Gross capital formation (% of GDP)	0.902686	0.810958	0.901933	1

CONCLUSION

The macroeconomic variables such as export, GDP, gross capital formation, infrastructure, GNI, and foreign direct investment are crucial for movements in the stock market and international liquidity. The study's key findings are that gross capital formation has most significantly impacted the growth rate, whereas foreign direct investment is showing the negligible impact on GDP. But export has also impacted GDP more than foreign direct investment.

It also affects corporate liquidity and results in non-performing assets. So government should make such policies which emphases on capital formation whether human capital or fixed capital formation which proves as highly influencing variable to GDP.

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