Impact of Foreign Direct Investment on GDP Growth Rate of Bangladesh

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My work on writing a thesis paper on Impact of Foreign Direct Investment on GDP Growth Rate of Bangladesh was a great experience.

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Abstract

The paper assesses the influence of Foreign Direct Investment on the GDP growth rate of Bangladesh. Statistical analysis has been done to discover the connection concerning FDI and its impact on GDP growth rate. Some selected macroeconomics indicators which include Inflation, Gross capital formation, Labor force per hour, Trade are also considered.

Annual data from 1976 -2017 is considered as study period. Model (VECM) with Co-integration analysis is taken through the aid of generating unit-root Augmented Dickey-Fuller test, Johansen tests for co-integration, Co-integrating Equations, Johansen normalization restriction.

INTRODUCTION

Foreign Direct Investment (FDI) is considered as a crucial factor of overall capital stream .It causes world economic growth by investment opportunities. Emerging nation look for new fund sources for improving the country as the foreign investors seek for new sources of investment.

The Foreign Direct Investment brings both the sources of fund and new technology in the developing country. FDI plays important role. It can boost output growth rate through improved work efficiency and also increases the gross investment level, worked productivity and tax take and future output of your country.

In recent days, the flow of FDI in the current backdrop of overall slump in investment in the economy. Investment will reduce, if FDI falls, which in turn will shrink employment generation which would cause a decline in the consumption level and downward trend in the savings.

As a result there would be a contagious pressure on the GDP growth of Bangladesh. Falling behind FDI formulating as well as executing Nations creates new policies for drawing attention on more investment. FDI inflow to Bangladesh has traditionally been lower, even compared to other South Asian countries. The future outlook of FDI is grim. It inspires the transmission of fresh business, technology and information as well as permits the host economy for developing its products more extensively in global territory.

It opens many others spillover effects the externalities in the host countries and new avenue of information transmission of technology, manpower training, market interacting.

Increasing job opportunities by creating employment FDI flows can be deliberated as an important factor of economic growth in the expansion of the economy. The country has become an attractive destination to invest due to the presence of cheap skilled labors along with macroeconomic environment stability .The FDI inflows as percentage of the total investment may decline further.

Both the investors from the developed and developing world, attracted to invest in Bangladesh. It is believed, in developing countries that FDI positively contributes to economic growth. So FDI can enhance their economic growth and development.

The level of FDI was US$ 5420000 which was quite starting from 1976. Bangladesh became more developed in different sectors as the time passed and values of FDI also increased. The value becomes US$ 2436499.3in the next 10 years.

From the year 1987 -1996FDI inflow into Bangladesh varied from US$ 3205086.8 to US$ 13529831.5. Due to the opening up of telecommunication sector along with energy sector by the government FDI inflow increased significantly in mid90s. This was Besides other reasons like setting up the Investment Board (1989) and relaxing the control of capital lead to significant rise in inflow of FDI from 1997 (US$139376153.1)compared to 1996(US$ 13529831.5).

Within ten years from 1998 to 2007 US$ 190059373 to US$ 1328422986.5. These ups and downs continued until 2009. After 2009 the FDI rate increased every year. In 2017the value of FDI became US$ 2151370680.5.From the year 2008-2017 FDI inflow increased from US$ 1328422986.5 to US$ 2151370680.5. (The World bank:IBRD,IDA)

To identify the main factors that affect Foreign Direct Investment of Bangladesh using mathematical and theoretical investigation is the key objective of this paper. The Introduction is the first part of the paper that gives a brief idea of Bangladesh Foreign Direct Investment. The literature review which is in the second part. Data and methodology section which includes the data analysis with the help of different statistical tests and findings is in the third part of the paper. Finally the paper finishes with the conclusion made on the findings of this paper.

There are a number of limitations regarding this thesis.

- Major limitation is shortage of time.
- Another limitation of this study is the availability of the data.
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Literature review

Tsai Pan-Long (1994) studied and explored the factors of FDI as well as its influence on growth. All the data are calculated as the arithmetic average of each period. A nonlinear two stage least squares (SYSNLIN 2SLS) procedure of the statistical analysis system (SAS) is used to estimate the parameters. Per capita FDI used as dependent variable and the independent variables are per capita gross domestic product, annual percentage of growth of per capita gross domestic product, per capita trade account balance, nominal hourly rate of pay in manufacturing sector. The results with the variable NW dropped from the model .R square for the 2SLS does not have the usual interpretation of r square as the proportion of variance explained by the regression.

E. Borensztein, J. De Gregorio and J-W. Lee (1996) conducted a paper and investigated FDI's influence on growth. They took panel data and applied the seemingly unrelated regressions technique (SUR) where economic growth used as dependent variable as well as Foreign Direct Investment, human capital, GDP per capita as independent variables. Outcome displays a positive connection amid FDI and economic growth.

There is a use of graphical and regression analysis by **Adewumi. S (2006)** have been conducted in Africa .The author took GDP growth rate as the dependent variable as well as FDI inflow gross capital formation, and net export are the independent factors. Outcome demonstrated a positive insignificant influence of FDI on growth for maximum nations.

Stohldreier. M.T (2009) examined the panel data on the basis of a regression model in Chaina from 1985-2005. Study considered variables GDP growth rate, exports, growth of population, FDI, as well as initial size of the economy. Findings discovered a little adverse association amid these two elements**.**

Ahamad. G.M and Tanin.F (2010) worked in context of Bangladesh on the factors as well as the connection concerning FDI and Economic Growth. They used some technique such as the indirect least squares, the instrumental variable (IV) technique, the two-stage least squares(2SLS) technique, (VAR) model. The inward flows of FDI used as dependent variable as well as GDP growth rate,   trade openness, growth rate of labor force, rate of wage are used as independent variables. Results suggested that in the model identical coefficient is calculated. They revealed a positive association displayed by the overall parameters.

Multiple regressions have been tested to find that relationship by Qaiser. A, Salman.A, Shan A.N, Hafiz.A.U, Muhammad.A.N (2011). They investigated how FDI affect growth in SAARC countries. They have taken GDP is as dependent variable and FDI (change in the foreign direct investment), Inflation rate are taken as independent variables. The outcomes demonstrated that while FDI and GDP is found to be positively and significantly connected, it is insignificant in case of Inflation and GDP. Results also show that the overall model is significant.

A hypo-thesis is made by **Mohammad Faruk Omar (2013)** for disclosing FDI's influence on GDP in Bangladesh. He performed regression method as well as correlation matrix for investigating the data. From regression technique the outcome displays that 83% of GDP data can be explained by FDI. He showed a great connection amid FDI and GDP.

Sumon Kabir Khairul (2014) conducted a paper on Bangladesh to discover the association concerning FDI and economic growth. Gross domestic product (GDP), foreign direct investment

(FDI), external debt (ED) and remittances (REM) are study variables. He applied some econometric method for the analysis. Result finds a positive bond linking GDP and FDI and an adverse association concerning external debt and GDP.

Ghosh. S and Sarker. S (2015) performed study in Bangladesh to analyze the connection concerning foreign direct investment and economic growth. They have Economic growth as dependent variable and FDI as independent variable. Investigation of the presence of long-term link amid FDI and economic growth is their objectives. They applied vector error correction method and Johansen co-integration test. The results suggest that FDI leaves a positive effect on economic growth in the long-run in the Bangladesh economy. In case of Bangladesh the findings discovered a long-term positive influence of FDI on economic growth.

Sethi Narayan and Sucharita Sanhita (2016) studied on FDI's effect on economic growth in Bangladesh. Whether there exists unidirectional or bi-directional causality among the dependent and independent variables (foreign direct investment inflows, total export and import, Government development expenditure, Gross domestic investment, Gross fixed capital formation, Human Capital, Domestic credit provided by banking sector) or not Granger causality test have been applied. The result demonstrates FDI as an ambiguous factor of economic growth for Bangladesh.

Md. Noor Thuhid, Ali Shahjahan, and Alam Jahangir Khandaker, Md.Islam Shafiul (2016) studied on Bangladesh and explored the significance of FDI. They measure it through multiple regression models in the paper. In Bangladesh they explored the significance of FDI on GDP. Gross Domestic Product, FDI, inflation (CPI) are variables for this study. Findings of the study displays while FDI and economic growth is found to be statistically and positively connected, the connection concerning GDP and inflation was adverse.

Dey .S and Awal .H (2017) found the FDI's impacts on GDP growth in Bangladesh through Ordinary Least Square (OLS) technique**.** They performed Different diagnostic tests like **normality,** residual check, **heteroscedasticity,** as well as **autocorrelation** check to justify the major assumption of multiple regression analysis. Gross Domestic Product as dependent

variable and these are independent variables Foreign Direct Investment, Inflation, Remittance, Export Revenue, and Import Expenditure. He concluded an adverse connection concerning FDI and economic growth.

Methodology and Result Discussion

The investigation is executed through secondary data. These data are gathered from several sources mainly World Development Indicators, World Bank, global economy. For dependent and independent variables 41 years data have been taken from the year 1976 to 2017. STATA is used for analyzing the econometric model. The model shows the relationship in mathematical form between the dependent and independent. For observing FDI's influence on growth rate of GDP, the theory below constructed showing the possible link between FDI and GDP growth rate, inflation rate ,trade, ,labor force per hour gross capital formation in this section.

$$Y_t = \alpha + \beta_1 1_t + \beta_2 2_t + \beta_3 3_t + \beta_4 4_t + \beta_5 5_t + \varepsilon_t$$

This is the model of the analysis that has been used in this study.

Where **Y =** regressand signifying the GDP growth rate.

Hypothesis- GDP growth rate depends on these factors.

- X_1 = First regressor represents Inflation.
- X_2 = Second regressor of the model that represents the Trade.
- X_3 = Third regressor signifies Foreign Direct Investment
- X_4 = Fourth regressor denotes Labor Force Per Hour (LFPR)
- X_5 = Fifth regressor signifies Gross Capital Formation

Ordinary Least Square (OLS) regression model is considered to be a weak statistical test, and based on the variables and data it will be suitable to use Vector Error Correction Model (VECM).This model with Co-integration analysis is taken along with Augmented Dickey-Fuller test, Johansen tests for co-integration, Co-integrating Equations, Johansen normalization restriction.

Augmented Dickey-Fuller test for unit root

Table-1 : Augmented Dickey-Fuller test						
Differentials	**Level Form**		**1st Differentials**		**2nd Differentials**	**Integrated Level**
Variables	**Cal. Value**	**95% C.I. (P-value)**	**Cal. Value**	**95% C.I. (P-value)**	**Cal. Value**	**95% C.I. (P-value)**	
Gdp growth rate	-0.517	-1.696 (0.3043)	-5.106	-1.697 (0.0000)			I(1)
inflation annual	-2.657	-1.696 (0.0062)					I(0)
Tradeofgdp	-2.380	-3.552 (0.3902)	-2.493	-1.697 (0.0092)	-5.295	-1.699 (0.0000)	I(2)
Fdi net inflows	3.740	-1.696 (0.9996)	-1.348	-1.697 (0.0939)	-3.689	-1.699 (0.0005)	I(2)
lfpr	-4.121	-3.552 (0.0059)					I(0)
Gross capital formation	-3.182	-1.696 (0.0017)					I(0)

Vector Error-Correction Model:

Diagnostic tests of the estimated VECM model :

Variables	Gdp growth rate	inflation annual	Trade of gdp	Fdi net inflows	lfpr	Gross capital formation
R^2	0.8147	0.7262	0.4868	0.7549	0.9895	0.8107

Table-2: Diagnostic tests of the estimated VEC model

Johansen tests for co-integration:

Trend: trend   Number of obs =   38

Sample: 1980 - 2017   Lags =   4

Maximum Rank	Parms	Eigenvalue	Trace Statistic	5%cri. Value
0	120	-	179.9512	104.94
1	131	0.91340	86.9867	77.74
2	140	0.67025	**44.8290***	54.64
3	147	0.54125	15.2172	34.55
4	152	0.21357	6.0877	18.17
5	155	0.14803	0.0000	3.74
6	156	0.0000	-	-

Table-3: Johansen tests for co-integration

Johansen tests for co-integration shows the rank at which the model is co-integrated. Table-2 shows that the, maximum eigenvalue and the trace statistics, for all variables there exists two co-integrating equation.

Co-integrating equations:

Table-4: Co-integrating Equations			
Equation	Parms	chi2	P>chi2
_ce1	4	37.88861	0.0000
_ce2	4	45.63992	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coef.	Std. Err.	z	P>|z|
_ce1				
_cons	-5.508494	-	-	-
Gdp growth rate	1	-	-	-
Inflation annual	0	(omitted)	-	-
Tradeofgdp	-.0107787	.0720309	-0.15	.1303993
Fdi net inflows	-1.23e-09	1.04e-09	-1.19	7.97e-10
lfpr	.1134477	.4467574	0.25	.9890762
Gross capital formation	-.0775346	.0645279	-1.20	.0489378

In ce1 gross capital formation shows a significant relationship with GDP growth rate which means at 95% confidential interval, the null is rejected and it can be stated as gross domestic product growth rate doesn't has significant relationship with gross capital formation. And the other variable doesn't show any significant relationship with GDP growth rate.

	Coef.	Std. Err.	z	P>|z|
_ce2				
_cons	0	-	-	-
Gdp growth rate	-1.78e-15	-	-	-
inflation annual	1	-	-	-
Tradeofgdp	.9956185	.7130804	1.40	0.163
Fdi net inflows	-2.51e-08	1.03e-08	-2.45	0.014
lfpr	-.0638376	4.422738	-0.01	0.988
Gross capital formation	-.2561429	.6388033	-0.40	0.688

Table-5: Johansen normalization restriction imposed

In ce2 considering inflation rate as dependent variable, it shows significant relationship only with FDI. But other variables have nonzero coefficients which can be shown as zero relationship with GDP growth rate.

Co-integrated restrictions was imposed on the basis of the rank selection criteria of Johansen test of co-integration

CONCLUSIONS

Bangladesh as an emerging country growing over time through a significant rise in growth rate of GDP but real question is will it sustain in the long run?

To ensure the proper and better economic growth in the long term, Foreign Direct Investment inflow relies more on the concentration of the overseas investors. Consequently the best growth of FDI inflow should ensure by the host countries.

It would be tough to achieve and maintain a double digit GDP growth. We cannot meet vision 2021 in time without achieving double digit growth rate. Necessary measure should be taken by the government to increase the amount of FDI attraction. To get satisfactory amount of FDI in Bangladesh, Government has to be active for creating and maintaining FDI friendly business environment.

This is the pick time to concentrate for increasing FDI inflow into Bangladesh. In case of attracting FDI, our country is lagging behind in comparison with the several regional emerging countries .Proper steps like the law of time-suiting enable current condition to develop leading to a creation of good investment environment for the country.

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