



IMPACT OF FOREIGN DIRECT INVESTMENT ON GROSS DOMESTIC PRODUCT, INFLATION RATE AND EXCHANGE RATE OF BANGLADESH

S.K. Dey¹, R.K. Datta^{2*}, M.B. Amin³, K.K. Roy² and M.Y. Ali²

¹Department of Accounting and Information Systems, Jagannath University, Dhaka, Bangladesh; ²Department of Finance and Banking, Hajee Mohammad Danesh Science and Technology University, Dinajpur, Bangladesh; ³Department of Business Administration, Bangladesh Army University of Science and Technology, Saidpur Cantonment, Nilphamari, Bangladesh

ABSTRACT

The objective of this study is to analyze the response of gross domestic product (GDP), inflation rate and exchange rate to foreign direct investment (FDI) inflow in Bangladesh. The study considered 20 years' time period from 2000 to 2019 and applied simple linear regression by considering FDI as independent variable and GDP, inflation rate and exchange rate as dependent variables. The results show that FDI has a positive and statistically significant relationship with GDP and exchange rate. However, the association between FDI and inflation rate is negative and statistically insignificant. The findings of this study may be beneficial to the government, regulators, investors and other stakeholders involved in international business.

Key words: Bangladesh, economic growth, foreign direct investment, macroeconomic variables

INTRODUCTION

Chen (2021) in the investopedia defined FDI as an investment made by a firm or individual in one country into business interests located in another country. The common modes of entry for foreign direct investment are mergers, acquisitions, establishing a new foreign subsidiary and investing in the capital market. FDI is classified in two ways namely inward or outward. In inward FDI, foreign capital is invested in local resources and outward FDI, the domestic fund is invested in a foreign country that is supported by the government to all related risks. Every country across the world accepts without any doubt that FDI plays an unmentionable role in the modernization of the economy of any country. For the integration of domestic as well as the global economy, FDI assists in building up the infrastructure, creating more employment increasing the skills and developing the overall capacity of the labor force of the host country through transferring technological knowledge and managerial capability.

In 2019, the world population prospectus shows that Bangladesh has a massive population of 163.65 million coupled with poor economic strength (the world bank). FDI can play a vital role to build up physical capital, create employment opportunities, enhance labor skills and increase

*Corresponding author: Email: rony.datta@hstu.ac.bd, Cell phone: 8801717088488

the relationship with the global economy. In 2024, Bangladesh will forward-looking to a developing country from a least developed country (LDC). In addition, Bangladesh is the first country that has met all three criteria for getting out from LDC. For these, FDI is necessary for the enhancement of a country's economic growth. Bangladesh is drawing devotion all over the world since it has a favorable artistic geographical position between South and Southeast Asia and it is easy to get skilled labor at a relatively lower wage rate. Conversely, moderate inflation rate, mostly stable exchange rate, relatively lower tax rate, investment-friendly custom regulations and attractive incentive packages make Bangladesh more attractive for FDI. Furthermore, Bangladesh open PayPal (zoom) operation in October 2017 which facilitates money transfer, increase access of foreign consumers. The world investment report 2020, mentioned that globally at the regional and country levels, FDI is considered as the emerging measure to improve its contribution to the development of a country. According to the report of United Nations Conference on Trade and Development (UNCTAD), it was forecasted that the global FDI flows to decrease by up to 40% in 2020 and also anticipated that it may decrease in 2021 by a further 5% to 10%.

LITERATURE REVIEW

A large number of prior studies have examined the link between FDI and inflation rate coupled with the exchange rate. Faroh and Shen (2015) examined the impact of interest rate on FDI in Sierra Leone by using multiple regression analysis based on time series data for the period of 1985 to 2012. They found trade openness and exchange rates as the key determinants of FDI flow in Sierra Leone having significant positive signs.

Quader (2009) analyzed the determinants of FDI in Bangladesh employing extreme bounds analysis (EBA) on the annual time series data for the period 1990-1991 to 2005-2006. The results of their study revealed that trade openness and trade balance have significant positive effects, whereas GDP growth rate, wage rate, and tax rate have a significant negative effect on the foreign direct investment in Bangladesh. Paniagua and Sapena (2014) analyzed the ethical and economic perspectives on FDI often appear in opposing frameworks. Analyzing FDI data from 161 countries the results showed that FDI incentives the general welfare in the least developed countries with high degrees of volatility. Balamoune-Lutz (2004) found that by improving exports, foreign investment can accelerate economic growth. Again the same view is observed by Kabir (2007) who claimed that FDI increases the earnings of foreign currency by boosting the exports and enhance the ability to pay external debts. Zhang (2006) also found that the economic growth of China has increased by accelerating the volume of export due to foreign investment.

Encarnation and Wells (1986) observed that the positive effect of FDI on economic growth occurs when FDI comes into markets, while negative effect occurs when FDI comes into protected industries. From the studies of Ericsson and Irandoust (2000) and Trevino and Upadhyaya (2003), it is found that FDI has a positive impact on the growth of a country, whereas Moran (1999) showed that FDI has a negative effect on economic growth. It is also observed from the study of Balasubramanyam *et al.* (1996) that FDI brings capital for productive expansion to the host economy as well as exchange managerial and technical skills and knowledge to inland enterprise in that economy as a spillover effect. Hossain (2008) found a high

positive correlation between FDI inflows and exports and imports of Bangladesh. Adhikary (2011) analyzed other variables linkage between FDI and economic growth for Bangladesh for the period 1986 to 2008 and found a strong relationship between the two variables. Anna *et al.* (2012) analyzed the impact of interest rate other determinants on FDI in Zimbabwe for the year 2009 to 2011. And the authors report that the GDP, labor cost and risk factors are the main determinant of FDI in Zimbabwe. The study also showed that interest rate, inflation rate and exchange rate have no significant impact on FDI inflows. Biswas (2002) analysed FDI data from 44 countries and found that a property rights variable is significant indicating that the institutions that protect property rights are important to investors. The author concluded that infrastructure, wages rates, political regime duration, environment-friendly secured property and contractual rights are the main factors that can attract FDI from the US. Furthermore, Zhao (2003) observed that FDI is considered as an important mechanism for economic development in a developing country. When the participating country is wealthier than the host country, the direction of capital inflow will be toward the host country. Rahman (2008) found from his study that FDI can increase the imports of the host country as the high-tech capital machinery and intermediate goods are frequently not available in the host country. However, Biersteker (1978) and Helleiner (1989) are skeptics about the role of FDI on the economic growth of developing nations. They argued that FDI is a mechanism for exploiting and controlling developing countries by western industrialized nations.

Mengistu and Adams (2007) expressed from their study that modernization theory also suggests that FDI transfers knowledge, technologies, managerial skills, and ideas that can contribute to the economic development of the recipient country. Endorsing this idea, Borensztein *et al.* (1998) argued that foreign investment enhances economic growth by transferring technology and knowledge to developing countries. Many prior studies showed that foreign investment encourages domestic investment. In a study of 66 developing countries, Makki and Somwaru (2004) found that FDI can enhance economic growth by stimulating domestic investment. Agosin and Mayer (2000) claimed that in Asian countries, foreign investment has a positive relation to domestic investment.

However, by reviewing the prior research works, it is exposed that for the attractiveness of FDI in developing country the economists and policy makers are interested to determine the impact of various determinants on FDI inflows worldwide. There are numerous studies on FDI with different results for different countries. But very few works have been carried on in the context of Bangladesh. Therefore, the objective of this study is to evaluate the impact of FDI inflow on GDP, inflation rate and exchange rate of Bangladesh.

MATERIALS AND METHODS

This study used secondary sources for data collection. Mainly data were collected from the annual report of the Central Bank of Bangladesh (Bangladesh Bank) and Bangladesh Bureau of Statistics. This study considered a period of 20 years of annual data of Bangladesh from the year 2000 to 2019. The estimations were done utilizing SPSS econometric software (version 17.0). A regression model was used to examine the impact and establish a significant relationship. In this study, FDI has been used separately as an independent variable with the three dependent variables namely GDP, inflation rate and exchange rate. For quantitative analysis, the following

simple linear regression models have been used in this study:

$$Y_1 = \beta_0 + \beta_1 X_1 + \varepsilon \text{ ----- (i)}$$

$$Y_2 = \beta_0 + \beta_2 X_1 + \varepsilon \text{ ----- (ii)}$$

$$Y_3 = \beta_0 + \beta_3 X_1 + \varepsilon \text{ ----- (iii)}$$

Where Y_1 , Y_2 , and Y_3 , are the dependent variables under consideration namely gross domestic product, inflation rate and exchange rate respectively. β_0 represents the intercept. β_1 , β_2 and β_3 represent the estimated coefficients for each of the predictors. X_1 represents the inward foreign direct investment selected as an independent variable to predict the dependent variable and ε is the error term.

Hypotheses of the study

The following null hypothesis have been developed based on the aim of the study:

H_{01} = There is no statistically significant association between FDI inflow and the GDP.

H_{02} = There is no statistically significant association between FDI inflow and the inflation rate.

H_{03} = There is no statistically significant association between FDI inflow and the exchange rate.

RESULTS AND DISCUSSION

Descriptive statistics

Table 1 shows the descriptive statistics of the variables under consideration. The table represents the value of minimum, maximum, mean and the standard deviation of the variables namely FDI (in millions of USD), GDP (in percentage), Inflation rate (in percentage) and exchange rate (in percentage) from the year 2000 to 2019.

Table 1. Descriptive statistics of the variables

	N	Minimum	Maximum	Mean	Std. Deviation
FDI (in millions of USD)	20	284.00	17062.00	2596.05	4869.06
GDP (in percentage)	20	4.85	8.20	6.34	0.8464
Inflation rate(in percentage)	20	1.90	11.50	6.21	2.40
Exchange rate(in percentage)	20	49.09	84.45	68.82	11.43
Valid N (list wise)	20				

Impact of FDI on GDP

Table 2 indicates that the model summary along with the value of R square is 0.548. And it represents that the 54.8% variation of the dependent variable (GDP) is explained by the independent variable (FDI) and 45.2% is explained by other factors that are not focused on this model. The p-value is 0.000 which is less than 0.05 indicating that the regression model is statistically significant and considered as a fit model.

Table 2. Model-1 summary

R	R square	Adjusted R square	Std. error of the estimate	F	Sig.
0.740 ^a	0.548	0.522	0.58492	21.790	0.000 ^b

a. Predictors: (constant), FDI; b. Dependent variable: GDP

Table 3 represents the results of simple regression analysis between GDP and FDI inflow and shows that the coefficient beta value of the variable FDI is 0.003 which indicates a positive relationship with GDP. The p-value of the variable is .000 that is less than 0.05 at a 5% level of significance. So, the null hypothesis is rejected and we may conclude that there is a statistically significant impact of FDI inflow on the GDP of Bangladesh.

The regression equation is following –

$$Y_1 = 6.008 + 0.003 \times \text{FDI}$$

It represents that if FDI changes \$1 unit, the GDP will increase 0.003% . Therefore, by increasing the volume of inward FDI, Bangladesh can accelerate the GDP and economic growth as a whole.

Table 3. Regression coefficients (Model-1)

	Unstandardized coefficients (B)	Standardized coefficients	t	Sig.	H ₀ Rejected/ accepted
(Constant)	6.008		40.300	0.000	
FDI	0.003	0.740	4.668	0.000	Rejected

a. Dependent variable: GDP

Impact of FDI on inflation rate

Table 4 demonstrates that the value of the R square of model-2 is 0.006 and the p-value of the model is 0.721 which is much greater than 0.05. This indicates that the regression model is statistically insignificant and the model is statistically unfit.

Table 4. Model-2 summary

R	R square	Adjusted R square	Std. error of the estimate	F	Sig.
0.081 ^a	0.006	-0.043	2.46453	0.131	0.721 ^b

a. Predictors: (constant), FDI; b. Dependent variable: Inflation rate

From Table 5, it is shown that there is a negative relationship between the FDI inflow and the inflation rate. Also, the p-value (0.721) is much greater than the 0.05 and thus the null hypothesis is accepted. So, it can be concluded that there is no statistically significant impact of FDI inflow on the inflation rate.

Table 5. Regression coefficients (Model-2)

	Unstandardized coefficients (B)	Standardized coefficients	t	Sig.	H ₀ Rejected/ accepted
(Constant)	6.457		11.179	0.000	
FDI	-4.048799	-0.056	-0.362	0.721	Accepted

a. Dependent variable: Inflation rate

Impact of FDI on exchange rate

From the model summary of Table 6, it is clear that the R square value is 0.292 indicating that the independent variable FDI can explain the dependent variable exchange rate up to 29.2%. Also,

the p-value is 0.009 which is less than 0.05 representing that the model is statistically significant and considered as a fit model.

Table 6. Model-3 summary

R	R Square	Adjusted R square	Std. error of the estimate	F	Sig.
0.540 ^a	0.292	0.256	10.33456	8.240	0.009 ^b

a. Predictors: (constant), FDI; b. Dependent variable: Exchange rate

Table 7 shows that the value of the coefficient beta of the variable FDI is 0.001. This implies a positive relationship between FDI and exchange rate. Again, the p-value of the independent variable FDI is 0.009 that is less than 0.05 at a 5% level of significance. Hence, the null hypothesis is rejected and it is concluded that there is a statistically significant impact of FDI inflow on the exchange rate of Bangladesh.

Table 7. Regression coefficients (Model-3)

	Unstandardized coefficients (B)	Standardized coefficients	t	Sig.	H ₀ Rejected/ accepted
(Constant)	63.949		25.681	0.000	
FDI	0.001	0.540	2.871	0.009	Rejected

a. Dependent variable: Exchange rate

The regression equation is following:

$$Y_3 = 63.949 + 0.001 \times \text{FDI}$$

This indicates that a change in FDI of \$1 will change the exchange rate 0.001 unit. That is, if FDI inflow is increases \$1 then the currency of Bangladesh will appreciates \$0.001.

The findings of this study regarding the positive relationship between GDP and FDI is consistent to the study of Rahaman and Chakraborty (2015), Faruk (2013) and Ahamad and Tanin (2010) where they found positive relationship between FDI and economic growth of Bangladesh and concluded that economic growth attracts FDI. Again the finding of this study is contrary to the study of Duasa (2007) and Carkovic and Levine (2002) where they examined the effect of FDI on economic growth and concluded that FDI had no impact on long-term economic growth and found no strong evidence of causal relationship. Again the findings regarding the positive association between exchange rate and FDI is consistent to the study of Qamruzzaman *et al.* (2021) where they established asymmetric effects and concluded that FDI inflows and exchange rate volatility move together and has a causal relationship. By examining the VEC model Adhikary (2012) concluded from their analysis that without having any bi-directional causal relationship, there is a long-run equilibrium relationship exists between FDI, trade openness, domestic demand, exchange rate, and export performance of Bangladesh. Whereas based on the OBOR related countries, the study of Latief and Lefen (2018) concluded that the FDI inflows and international trade can adversely affected by the volatility of exchange rate which is antagonistic to the findings of this study.

CONCLUSION

The results of the analysis shows that FDI inflow has significant positive relationship with GDP and exchange rate of Bangladesh. This study also indicates that inflation rate of Bangladesh has no relation with FDI. This may be because of inflation rate of Bangladesh is fluctuated frequently and not stable. This study concludes that FDI inflow can speed up the GDP and appreciates the Bangladeshi currency Taka (BDT) in comparison to US dollar. Macroeconomic variables are the main indicators of industrial development, economic growth and overall development of a country. It is observed from the study that the three important macroeconomic variables such as GDP, inflation rate and exchange rate of Bangladesh are affected by the FDI. So this study is very much significant in the context of the economic development of Bangladesh as well as for the south asian countries.

Every investor wants to secure their investment without facing any problems. So in order to draw attention of the investor of FDI, the government of Bangladesh can set up new EPZs to attract export oriented firms and should ensure political stability of the country. Most of the developing countries like Bangladesh face a shortage of national savings to finance their economic development projects. To continue these projects need to collect fund from domestic and other sources. Since Bangladesh have not much scope to collect sufficient funds from domestic sources, they can collect funds through foreign direct investment. So, Government should focus on this sector to continue the improvement and keep up the economic growth for attracting more FDI in Bangladesh. The control of bureaucracy should be minimized through reformed and rearranged rules. Different organizations which are directly or indirectly control and affect the FDI of Bangladesh should reorganize and modernize. Government should take effective step to ensure the rule of law and reform the laws relating to business and investment. Again Government should take initiatives to improve the image of the country in abroad and strengthen the economic and commercial diplomacy. Moreover, Government has to simplify custom clearance procedures, reduce corruptions, remove barriers relating to FDI, and ensure nuisance free environment for the foreign investors.

The findings of this study can assist the government of Bangladesh in formulating policy regarding inward and outward FDI. The findings may also be helpful for the privatization commission of Bangladesh in shaping their terms, conditions and packages for the foreign and domestic investors. In addition, Bangladesh Bank can use the findings of this study for formulating the monetary policy and controlling the exchange rate and inflation rate.

REFERENCES

- Adhikary BK. 2011. FDI, Trade Openness, Capital Formation, and Economic Growth in Bangladesh: A Linkage Analysis. *International Journal of Business and Management*. 6(1): 16-28.
- Adhikary BK. 2012. Impact of Foreign Direct Investment, Trade Openness, Domestic Demand, and Exchange Rate on the Export Performance of Bangladesh: A VEC Approach. *Economics Research International*. 2012: 1-10.

- Agosin M and Mayer R. 2000. Foreign direct investment: Does it crowd in domestic investment? United Nations Conference on Trade and Development Working Paper No. 146, Geneva, Switzerland.
- Ahamad MG and Tanin F. 2010. Determinants of and the Relationship between FDI and Economic Growth in Bangladesh. Munich Personal RePEc Archive (MPRA) Paper No. 20236. Online at <https://mpra.ub.uni-muenchen.de/20236/>
- Anna C, Machiva B, Karambakuwa RT, Webster D, Felex T, Zivanai O, Lovemor M and Mudavanhu V. 2012. The impact of interest rates on foreign direct investment: A case study of the Zimbabwean economy. *International Journal of Management Sciences and Business Research*. 1(5): 1-24.
- Baliamoune-Lutz MN. 2004. Does FDI contribute to economic growth? *Business Economics*. 39(2): 49-56.
- Balasubramanyam VN, Salisu M and Sapsford D. 1996. Foreign direct investments and growth in EP and IS countries. *The Economic Journal*. 106: 92-105.
- Biersteker T. 1978. *Distortion or Development: Contending perspective on the multinational corporation*. Cambridge, MA, MIT Press.
- Biswas R. 2002. Determinants of foreign direct investment. *Review of Development Economics*. 6 (3): 492-504.
- Borensztein E, De Gregorio J and Lee JW. 1998. How does foreign direct investment affect economic growth? *Journal of International Economics*. 45(1): 115-135.
- Chen J. 2021. Foreign Direct Investment (FDI). <https://www.investopedia.com/terms/f/fdi.asp>
- Carkovic M and Levine R. 2002. Does Foreign Direct Investment Accelerate Economic Growth? Working Paper, University of Minnesota, Department of Finance. Available at: www.ssrn.com/abstract=314924
- Duasa J. 2007. Malaysian Foreign Direct Investment and Growth: Does Stability Matter? *The Journal of Economic Cooperation*. 28(2): 83-98.
- Encarnation DJ and Wells LT. 1986. *Evaluating foreign investment investing in development: new roles for foreign capital?* Washington, DC: Overseas Development Council.
- Ericsson J and Irandoust M. 2000. On the causality between foreign direct investment and output: A comparative study. *International Trade Journal*. 15: 1-26.
- Faroh A and Shen H. 2015. Impact of Interest Rates on Foreign Direct Investment: Case Study Sierra Leone Economy. *International Journal of Business Management and Economic Research (IJBMER)*. 6(1): 124-132.
- Faruk MO. 2013. The Effect of FDI to Accelerate the Economic Growth of Bangladesh and Some Problems & Prospects of FDI. *Asian Business Review*. 2(4): 38-47.
- Helleiner G. 1989. Transnational corporations and direct foreign investment. In H. Chenery & T. N. Srinivasan (Eds.), *Handbook of Development Economics*. pp. 1441-1480.
- Hossain MA. 2008. *Impact of Foreign Direct Investment on Bangladesh's Balance of Payments: Some Policy Implications*. PN 0805, Bangladesh Bank Publications.
- Kabir R. 2007. *Foreign direct investment and sustainable growth: A case study on Bangladesh*. A thesis submitted to the faculty of Emory College of Emory University.

- Latief R and Lefen L. 2018. The Effect of Exchange Rate Volatility on International Trade and Foreign Direct Investment (FDI) in Developing Countries along “One Belt and One Road”. *International Journal of Financial Studies*. 6(4): 86.
- Makki S and Somwaru A. 2004. Impact of foreign direct investment and trade on economic growth: Evidence from developing countries. *American Journal of Agricultural Economics*. 86(3): 795-801.
- Mengistu B and Adams S. 2007. Foreign direct investment, governance and economic development in developing countries. *The Journal of Social, Political, and Economic Studies*. 32(2): 223-235.
- Moran TH. 1999. Foreign Direct Investment and Development: A Reassessment of the Evidence and Policy Implications. OECD Conference on the Role of International Investment in Development, Corporate Responsibilities and the OECD Guidelines for Multinational Enterprises Paris, 20-21 September 1999.
- Paniagua J and Sapena J. 2014. Is FDI doing good? A golden rule for FDI ethics. *Journal of Business Research*. 67 (5): 807-812.
- Qamruzzaman A, Mehta AM, Khalid R and Serfraz A. 2021. Symmetric and Asymmetric Effects of Financial Innovation and FDI on Exchange Rate Volatility: Evidence from South Asian Countries. *The Journal of Asian Finance, Economics and Business*. 8(1): 23-36.
- Quader SM. 2009. Foreign Direct Investment in Bangladesh: An Empirical Analysis on its Determinants and Impacts. MPRA Paper 26134, University Library of Munich, Germany. <https://ideas.repec.org/p/pramprapa/26134.html>
- Rahman KMA. 2008. Globalization and the climate of Foreign Direct Investment: A case study for Bangladesh. *Journal of Money, Investment and Banking*.
- Rahaman A and Chakraborty S. 2015. Effects of Foreign Direct Investment on GDP: Empirical Evidence from Developing Country. *Advances in Economics and Business*. 3(12): 587-592.
- Trevino LJ and Upadhyaya KP. 2003. Foreign aid, FDI and economic growth: Evidence from Asian countries. *Transnational Corporations*. 12(2): 119-135.
- World Population Prospects (revision): 2019. United Nations Population Division. Retrieved from <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=BD>
- World Investment Report (WIR). 2020. International production beyond the pandemic. United Nations publication issued by the United Nations Conference on Trade and Development. Retrieved from https://unctad.org/system/files/official-document/wir2020_en.pdf.
- Zhang KH. 2006. Foreign direct investment and economic growth in China: A panel data study for 1992–2004. Retrieved from <http://faculty.washington.edu/karyiu/confer/beijing06/papers/zhang.pdf>.
- Zhao L. 2003. The impact of Foreign Direct Investment on wages and employment. *Oxford Economic Papers*. 50: 284-301.