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Research Article

# Assessing the Impact of Foreign Loans, Inflation, and Foreign Direct Investment on Economic Growth: Evidence from 51 Years of Data in Bangladesh

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**Abstract**: This research studied 51 years of historical secondary data ranging from 1972 to 2023 to ascertain how foreign loans (FL), inflation rate (INF), and foreign direct investment (FDI) impact the gross domestic product (GDP) and gross national income (GNI) of Bangladesh, an emerging market economy. The study compiled secondary data from multiple sources, such as the World Bank, Bangladesh Bank, macrotrends.net, Bangladesh Economic Review, and Bangladesh Bureau of Statistics. It used the multiple linear regression model to assess the impact of FL, INF, and FDI on economic growth. The study results revealed that FL and FDI significantly impact economic growth. It implies that growing FL and FDI can boost the economic growth of an emerging market. It also indicates that external financial flows can significantly strengthen the macroeconomic fundamentals of a country and contribute to inclusive development if appropriately used. Therefore, Bangladesh should maximize the appropriate use of FL and FDI for high-impact projects and create a more suitable setting for FDI through regulatory reform and incentives. It would safeguard macroeconomic stability through integrated fiscal and economic policies encourage public-private partnerships to get leverage from the use of technical know-how, and enhance sector-specific research to foster sustainable growth. Future studies could build on this work, examining other economic factors such as interest rates, domestic debt, remittances, public and private investment, policy reforms, and governance. In addition, further comparative studies with other emerging countries could be done to gain an inclusive insight into the influence of FL and FDI on economic growth.

**Keywords:** foreign loans; inflation rate; foreign direct investment; economic growth

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## 1. Introduction

The economic growth of a country is influenced by several factors, including government loans (GL), investment in human capital, foreign direct investment (FDI), technological advancements, infrastructure development, natural resources, efficiency of the financial system, and budgetary and fiscal policies (Boldeanu & Constantinescu, 2015). Among the many components of economic growth, government debt and fiscal policy play a substantial part in shaping the economic structure of a country. GL is used to fulfil diverse development needs such as infrastructure development, social welfare initiatives, environmental sustainability, disaster control, relief and recovery, public health and safety, economic growth and job creation, and technical advancements. However, an increased reliance on government borrowing can result in financial instability if not rightly addressed.

Public debt can be either internal (domestic) or external (foreign); the government borrows money from domestic markets to finance domestic investments (Akhanolu et al., 2018). Governments borrow money when their revenue exceeds expenses (Yusuf & Mohd, 2021). As a result of this process, most governments have large amounts of outstanding debt (Akhanolu et al., 2018). For quick growth of the economy, affordable borrowing is crucial for funding infrastructure and public projects. However, taking on too much debt without enough in-vestment planning can result in high debt and interest payments, which can have

negative economic repercussions (Yusuf & Mohd, 2021; Joy & Panda, 2020). An economy will grow when real GDP or gross national product (GNP) rises, which is obvious from an annual change in GNP or GDP. An economy can experience either positive or negative growth. While negative growth is considered a declining economy and is associated with economic depression and recession, positive growth implies a booming economy and a boom and recovery (Erick et al., 2023; Matiti, 2013).

Because of their low incomes and low savings, developing countries must rely on foreign loans (FL) to finance their projects. Due to the buildup of debt payment requirements, FL in developing nations can strain the economy, resulting in limitations and heightened financial responsibilities (Gurung et al., 2024; Ayadi & Ayadi, 2008).

The economic growth of a country is influenced by several factors, including GL, investment in human capital, FDI, technological advancements, infrastructure development, natural resources, the efficiency of the financial system, and budgetary and fiscal policies (Boldeanu & Constantinescu, 2015). Among the many components of economic growth, government debt and fiscal policy play a substantial part in shaping the economic structure of a country. GL is used to fulfil diverse development needs such as infrastructure development, social welfare initiatives, environmental sustainability, disaster control, relief and recovery, public health and safety, economic growth and job creation, and technical advances. However, an increased reliance on government borrowing can result in financial instability if not rightly addressed.

In developing nations like Bangladesh, lowering poverty and building infrastructure while attaining sustainable economic growth is the primary goal of any economic and fiscal policy. Nonetheless, the government must accept financial assistance from external sources outside the nation, mostly in debt, when it cannot achieve its growth requirements. In order to manage the fiscal deficit and save the investment gap since gaining independence, Bangladesh has had to rely on external debt and continues to do so (Dey & Tareque, 2020). The impact is positive in various countries since external debt would boost capital, which is then used for investment to stimulate growth.

In addition to capital accumulation, economic growth also depends on managerial and technical expertise (Yeasmin et al., 2015). However, nations with strong institutional frameworks help from outside debt by having more opportunities for investment and economic expansion. Developing nations with low per capita income and limited access to necessary financing view overseas investment as a noteworthy economic growth and speeding up sources. Additionally, because of their poor domestic revenue base and high government operational expenses, developing countries heavily rely on foreign money through remittances, financial aid, and external borrowing (Mohsin et al., 2021).

An upsurge in debt hurts a nation's economic growth. The nonlinear impacts of public debt on economic development, the GDP, and the tipping point or debt ratio threshold are highly significant in recent research (Kharusi & Ada, 2018).

On the other hand, a nation's inability to maintain its external debt efficiently leads to an enormous shortfall in its current account, which creates a serious challenge to its economic growth. Over time, its financial foundation becomes fragile. Given a huge amount of external debt, there are very few forthcoming investment opportunities available. As such, an effective use of external debts to finance domestic investments is essential to promote revenue and infrastructure (Mohsin et al., 2021).

The nations with large debt loads cannot boost economic growth and fall behind on debt payments. Many researchers and policymakers have grown more concerned about how many emerging nations' high levels of foreign debt impede their ability to progress. Developing states like Bangladesh have recently seen a drop in investments and economic growth due to un-certainties surrounding their foreign debt situation. Debt management policymakers in Bangladesh must research FL and growth to determine the ideal amount of debt for capital accumulation in a developing nation.

Governments everywhere use FL as a key instrument to boost corporate innovation, boost economic growth, and upgrade public infrastructure. FL is crucial for a polity's balanced growth, especially in emerging nations like Bangladesh.

Bangladesh has been using FL for its rapid economic growth and development because of its large population and countless economic problems. Infrastructure projects, social welfare initiatives, agriculture, education, healthcare, and private sector endeavors are just a few of the uses for these loans.

Although FL has been widely used to boost economic growth, opinions on its overall effects are dissimilar. Limited studies have yet been conducted on the affinity between

external debt and economic development. Although the literature on thistopic is expanding gradually, very few empirical studies have been concentrated on Bangladesh, especially those that use econometric techniques to observe the fundamental relationship between FL and economic growth. In light of these factors, this study uses multiple linear regression analysis to investigate

In light of these factors, this study uses multiple linear regression analysis to investigate how FL, inflation rate (INF), and FDI impact economic growth.

This article's main objective is to investigate how Bangladesh's GDP and gross national income (GNI) are impacted by FL, INF, and FDI. The following are the specific research objectives:

(1) Examining how FL affect Bangladesh's GDP and GNI.
(2) Assessing how inflation affects GDP and GNI.
(3) Analyzing how FDI affects GDP and GNI.

## 2. Theoretical Framework

This section lists and analyses all pertinent studies on the influence of FL on economic growth, both domestically and internationally.

Ale, Islam, and Nessa (2023) investigated the affiliation between economic growth and exterior debts from 1980 to 2020. From a longstanding and short-range perspective, they discovered a substantial negative connection between South Asia's economic growth and external debt. Using secondary data, Erick, Rotich, Njoki, Topisia, and Bosibori (2023) surveyed the effects of public debt on Kenya's economic development between 2002 and 2020. The researchers used descriptive research and multivariate regression analysis to determine the connection between public debt and economic growth. The paper witnessed that public debt has a negligible detrimental influence on economic growth.

Using the vector error correction model, Agarwal and Ansari (2022) investigated public debt's short – and long-term effects on Uttar Pradesh's economic growth over the 30-year post-reform period. Experimental analysis showed that the rise in the public debt-to-state GDP ratio and recompense of interest burden negatively affected long-term economic growth while having no discernible influence on short-term growth.

Mohsin, Ullah, Iqbal, and Taghizadeh-Hesary (2021) used the panel ordinary least square, fixed-effect, quintile regression model to examine the link between economic growth and external debt in the South Asian region between 2000 and 2018. According to the data, foreign debt negatively impacts economic growth. However, outside debt has a favorable influence. Additionally, the study established that trade openness and gross capital establishment favorably impact economic growth.

After reviewing the influences of Nigeria's external debt on economic growth, Edwin Ben and Calista (2021) concluded that debt has an unfavorable effect on Nigeria's economic growth and that its payment further harms the country. Yusuf and Mohd (2021) investigated the impact of government debt on Nigeria's economic development using annual data from 1980 to 2018. The empirical results showed that even if exterior debt contributed to growth in the short term, it hindered growth in the long run. However, long-term growth has been remarkably due to domestic debt, but short-term growth had to suffer.

However, Chimezie, Omankhanlen, and Eriabie's (2020) found that government revenue significantly impacts the economic growth of Nigeria. Gross domestic savings have not impacted the economic growth of Nigeria. In contrast, government spending has had a significant but not substantial impact through the results of capital expenditure and recurring expenditure.

Using time-series statistics from 1972 to 2022, Saboor, Yousaf, Narmeen, and Fatima (2023) discovered the impression of FL on the economic growth of Pakistan. The findings of this study confirmed that while FL affects the economic growth of Pakistan negatively, FDI impacts its economy positively and inflation affects negatively.

Ambya (2020) found that economic growth is considerably impacted by local government spending on real per capita infrastructure, real per capita education, real per capita health (lag-1) per capita, and the number of workers. According to Ali, Ahmad, and Rehman (2016), government borrowing is called public domestic debt, whereas private borrowing, or lending to the private sector, is utilized for financial development.

Dey and Tareque (2020) explored the autoregressive distributed lag bounds testing approach to show the effect of external debt on economic development in Bangladesh during the 1980–2017 periods within a larger macroeconomic context. The results of the study reveal

that foreign debt has an adverse effect on GDP growth, but the MEP index has a more significant positive impact suggests that good MEP and sensible HR practices might lessen or even eliminate this adverse effect.

Sultana, Uddin, Rahman, and Faruk (2020) investigated how the economic growth of Bangladesh was impacted by external debt. GDP growth was the dependent variable in the model, whereas explanatory variables were the exchange rate, trade terms, gross capital generation, external debt stock, and total debt service. Phillips-Parron Unit Root Tests and Augmented Dick Fuller were used for diagnostic testing. The empirical evidence indicated that a one-unit rise in external debt would result in a 0.14-unit long-term drop in GDP.

Yeasmin, Chowdhury, and Hossain (2015) attempted to use time series econometrics to observe the effect of foreign debt on Bangladesh's growth from 1972 to 2012. The findings demonstrated that debt has a significant negative effect on the economic growth of Bangladesh. The GDP of Bangldesh slowed down ward trend due to the pressure of servicing its external debt. The main drivers of Bangladesh's economic growth are exports, FDI and remittances. The study results suggest that equitable and efficient debt management is necessary.

According to Hassan and Akhter (2012), Bangladesh has mainly relied on public debt to cover its budget deficit since gaining independence. Their goal is to determine whether the Bangladeshi government's excessive borrowing from public sources is hurting the nation's economy.

Bangladesh has been experiencing a persistent budget deficit since the early 2000s, according to Rana and Wahid (2017), who also discovered that the government budget deficit averages close to 5% of the nation's GDP. Governments have primarily borrowed from local and foreign sources to fund this deficit, which has crowded out private investments and increased inflation. According to the results, the government budget shortfall negatively impacts Bangladesh's economic growth statistically significantly.

Hossain and Shirin (2016) investigated the effects of different forms of debt on the economic growth of Bangladesh using time series data from 2000 to 2015. Their findings demonstrated a long-term correlation between debt factors and economic growth.

Alam, Sadekin, Islam, and Moudud-Ul-Huq (2022) examined the influences of budget deficit financing on the economic growth of Bangladesh during 1981 to 2018. The study uses the Granger causality test, co-integration test, and vector error correction mechanism. According to the survey, money supply, government external debt, and government domestic debt all have a long-term positive impact on GDP.

Nath, Karim, Hossain, and Uddin (2023) investigated the connection between Bangladesh's foreign state debt and economic progress using time series data from 1961 to 2021. GDP growth, a stand-in for economic growth, is this study's response (dependent) variable. In contrast, the independent factors are FDI inflow, export, import, and external debt. The findings of the study demonstrated that foreign (external) debt has a detrimental effect on economic growth; in the near run, a 1% rise in foreign public debt lowers economic growth by 8.81%.

Kamal and Islam (2018) used a time series analysis of FL and donations for Bangladesh from 1980 to 2016 to examine a highly debated issue of whether FL or grants significantly influence the economic development of developing nations that receive enormous amounts of foreign aid. They discovered that FL had a more significant long-term effect on Bangladesh's economic growth (as indicated by per capita GDP) than foreign donations.

## 3. Materials and Methods

This research is supported by secondary data sources using an explanatory and empirical research approach covering 1973-2023. The main sources of data are the World Bank, Bangladesh Bank, macrotrends.net, Bangladesh Economic Review, and Bangladesh Bureau of Statistics. The study used GDP and GNI as response (dependent) variables and FL, INF, and FDI as explanatory (independent) variables. It adopted different types of descriptive and inferential statistical techniques. The study encountered multiple regression analysis to ascertain the effect of FL, FDI and INF on economic growth in Bangladesh.

Table 1 provides a comprehensive overview of the variables utilized in this investigation, including proxies, definitions, and measurement methods. The primary macroeconomic metrics analyzed include GDP, GNI, FL, INF, and FDI.

**Table 1.** Variables explanation.

| Variables | Proxies and symbols | Definitions | Measurement |
|---|---|---|---|
| Gross Domestic Product | GDP | GDP computes the monetary value of ended products and services – those procured by consumers – engendered in a nation during an exact period (Callen, 2008). | Natural logarithm GDP in billions of US dollars. |
| Gross National Income | GNI | The GNI, previously known as the GNP, is the total amount of factor income earned by the residents of a country both domestically and internationally according to Tuhin (2021). | Natural logarithm of GNI in billions of US dollars |
| Foreign Loan | FL | A FL is a sum of money borrowed from a foreign government or individuals and companies operating in a foreign country (Akhanolu et al., 2018; Osinubi et al., 2010) | Natural logarithm of FL in billions of US dollars |
| Inflation Rate | INF | Inflation is a steady rise in the general price level that signifies a reduction in the purchasing power of a single unit of money (Mostafa, 2020). | Natural logarithm of INF |
| Foreign Direct Investment | FDI | FDI is an investment made to get a longstanding stake in businesses that is not part of the investor's economy. But, when it comes to FDI, the investor wants to have a significant voice in how the business is run (International Monetary Fund, 1993; Bayraktara, 2013). | Natural logarithm of Net FDI inflows in billions of US dollars |

GDP, expressed in billions of US dollars, is the natural logarithm of the total monetary value of finished goods and services produced within a nation over a specific time period (Callen, 2008). GNI is computed as the natural logarithm of all domestic and foreign income earned by a nation's citizens, expressed in billions of US dollars. FL is the natural logarithm of FL in billions of US dollars and denotes external borrowing from foreign governments, people, or organizations.

The term "inflation" (INF) describes a general increase in prices that lowers purchasing power. The natural logarithm of the INF is used to calculate it (Mostafa 2020). Net inflows of capital aimed at acquiring a long-term stake in companies operating outside the investor's home economy are referred to as FDI. In billions of US dollars, the natural logarithm of net FDI inflows is used to compute it (International Monetary Fund, 1993; Bayraktara, 2013). In order to normalize the data and remove any heteroskedasticity and enable more reliable econometric analyses, the logarithmic adjustment was applied to all variables

### *3.1 Econometric Model*

The study used GDP, GNI, and FL as the main variables to evaluate the impact of FL on economic growth. However, two more variables are also taken in the model- those are INF and FDI. Thus, there are in total five variables. The subsequent econometric model is well-thought-out for empirical investigation:

**Model 1: $GDP_t = \beta 0 + \beta 1FL_t + \beta 2INF_t + \beta 3FDI_t + \varepsilon t$**

**Model 2: $GNI_t = \beta 0 + \beta 1FL_t + \beta 2INF_t + \beta 3FDI_t + \varepsilon t$**

Where GDP stands for gross domestic product, GNI stands for gross national income. The parameter $\beta 0$ is a constant term, $\beta 1$, $\beta 2$, and $\beta 3$ are the elasticity coefficients of GDP and GNI. FL stand for foreign loans, INF stand for the inflation rate, and FDI stances for foreign direct investment, t stands for time, and an idiosyncratic error term is offered by $\varepsilon t$.

## 4. Results and Discussion

A series of analyses using SPSS are performed to explore the correlations between GDP, GNI, FL, FDI, and INF based on data from 51 observations.

The sample size and range are 51 cases, with all variables evaluated. The table 2 shows each variable's minimum and maximum values, allowing for an understanding of the spread or range. For example, GDP fluctuated from 8.09 to 460.13 billion dollars, while GNI ranged

from 8.40 to 493.93 billion. The extensive ranges indicate significant variation in economic indicators across the sample.

**Table 2.** Descriptive statistics.

| | N | Minimum | Maximum | Mean | Std. deviation |
|---|---|---|---|---|---|
| | Statistic | Statistic | Statistic | Statistic | Statistic |
| GDP (Billion dollar) | 51 | 8.090000 | 460.130000 | 102.31078431 | 124.726540509 |
| GNI (Billion dollar) | 51 | 8.400000 | 493.930000 | 105.50117647 | 129.623687182 |
| FL (Billion dollar) | 51 | .497826 | 99.477590 | 23.24092617 | 24.371011390 |
| INF (Ratio) | 51 | -.176300 | .671700 | .07823333 | .095542377 |
| FDI (Billion dollar) | 51 | -.010000 | 2.830000 | .64000000 | .875746539 |
| Valid N (listwise) | 51 | | | | |

Central Tendency (Mean) is a summary measure of central position. For example, the average GDP was about 102.31 billion dollars, whereas the average GNI was around 105.50 billion. These fundamental values provide a point of comparison for individual data points and assess the dataset's overall economic performance.

Standard deviations (124.73 for GDP and 129.62 for GNI) show substantial variability. This result signifies that the data facts are distributed over a wide range around the mean, as is frequent in economic data, including various dimensions and intensities of economic activity. Similarly, FL and other variables such as INF and FDI vary considerably, reflecting different financial situations or policies in the observed cases.

Skewness and Kurtosis check the normality of data (table 3). Skewness is a measure of the asymmetry of the distribution of a variable, and Kurtosis is a measure of the peakedness of a distribution (Kim, 2013). Although skewness and Kurtosis are extensively used in exercise, there is no common rule for defining the values that specify normality. Some papers reported that up to an absolute value of ±2 for skewness and Kurtosis might be translated to normality (Islam, 2023; Islam et al., 2023; Islam et al., 2024). The above descriptive statistics show that the statistic values of skewness and Kurtosis are within ±2, so we can say that the data used in this study is normally dispersed.

**Table 3.** Tests of normality.

| | N | Skewness | | Kurtosis | |
|---|---|---|---|---|---|
| | Statistic | Statistic | Std. error | Statistic | Std. error |
| GDP | 51 | .388 | .333 | -.805 | .656 |
| GNI | 51 | .392 | .333 | -.791 | .656 |
| FL | 51 | -.592 | .333 | .381 | .656 |
| INF | 51 | 1.037 | .333 | 1.603 | .656 |
| FDI | 51 | -1.150 | .333 | -.183 | .656 |
| Valid N (listwise) | 51 | | | | |

Pearson correlation coefficients (table 4) evaluate the linear correlations between variables. There are significant positive associations between GDP and FL ($r = .940$, $p < .01$), GDP and FDI ($r = .516$, $p < .01$), GNI and FL ($r = .947$, $p < .01$), GNI and FDI ($r = .494$, $p < .01$), and FL and FDI ($r = .426$, $p < .01$). Insignificant negative associations are identified between GDP and INF ($r = -.333$, $p < .05$), GNI and INF ($r = -.327$, $p < .05$), and FL and INF ($r = -.439$, $p < .01$).

Multicollinearity diagnostics are performed on the predictor variables (FL, INF, FDI) intended for regression models. FL (.645), INF (.786), and FDI (.796) tolerance values are all significantly higher than the commonly used threshold of 0.1. Similarly, the variance inflation factor (VIF) readings for FL (1.551), INF (1.273), and FDI (1.256) are significantly lower than the commonly used threshold of 10. These findings specify that multicollinearity is not a significant concern among the predictor factors.

**Table 4.** Correlation and multicollinearity.

| | | Correlations | | | | | Collinearity statistics | |
|---|---|---|---|---|---|---|---|---|
| | | GDP | GNI | FL | INF | FDI | Tolerance | VIF |
| GDP | Pearson correlation | 1 | | | | | | |
| GNI | Pearson correlation | .996** | 1 | | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| FL | Pearson correlation | .940** | .947** | 1 | | | .645 | 1.551 |
| INF | Pearson correlation | -.333* | -.327* | -.439** | 1 | | .786 | 1.273 |
| FDI | Pearson correlation | .516** | .494** | .426** | -.052 | 1 | .796 | 1.256 |

*Note:* Correlation is significant:
**at the 0.01 level (2-tailed).
*at the 0.05 level (2-tailed).

### *4.1. Regression Outcomes*

Two regression models were created, one for GDP and one for GNI, using the same set of predictors: FL, INF, and FDI. This section portrays the results of several linear regression studies that were conducted to look into how FDI, INF, and FL affected Bangladesh's economic performance as indicated by GDP and GNI. In order to evaluate the relationship between these independent macroeconomic factors and the primary income indicators of the nation, regression models were developed. The research clarifies how internal and external financial issues impact national economic growth by analyzing the strength, direction, and significance of these interactions. Model summaries, ANOVA statistics, and coefficient estimates are used to present the results; each is explained in detail below.

Table 5 shows the Model Summary of a multiple linear regression in which GDP is the dependent variable and FDI, INF, and FL are the independent variables. The model has a high correlation coefficient (R = 0.951), showing a strong positive linear relationship between the predictors and the GDP.

**Table 5.** Model 1 summary.

| Model | R | R square | Adjusted R square | Std. error of the estimate |
|---|---|---|---|---|
| 1 | .951a | .904 | .898 | .356694820 |

*Note:* Predictors: (Constant), FDI, INF, FL
Dependent Variable: GDP

The R-squared value of 0.904 indicates that FDI, INF, and FL account for approximately 90.4% of the variation in GDP. The corrected R-squared value of 0.898 takes into consideration the number of predictors and validates the model's robustness by showing just a slight reduction, demonstrating that the model is not overfitted. The standard error of the estimate is approximately 0.357, which is the mean separation between the regression line and the observed values.

Table 6 illustrates the ANOVA test results, which are used to determine the regression model's overall significance. The F-statistic is 148.244 with a p-value (Sig.) of 0.000, indicating great significance at the 1% level. This demonstrates that the regression model is statistically significant and that the combination of FDI, INF, and FL has an enormous impact on GDP.

**Table 6.** ANOVA.

| Model | | Sum of squares | Df | Mean square | F | Sig. |
|---|---|---|---|---|---|---|
| 1 | Regression | 56.584 | 3 | 18.861 | 148.244 | .000b |
| | Residual | 5.980 | 47 | .127 | | |
| | Total | 62.564 | 50 | | | |

*Note:* Dependent variable: GDP
Predictors: (Constant), FDI, INF, FL

In Table 7, Individual predictors revealed a substantial positive relationship between FL and GDP (B = 0.89, SE = 0.05, β =.919, t = 16.36, p <.001). FDI significantly predicts GDP (B = 0.08, SE = 0.03, β =.129, t = 2.55, p =.014). INF did not significantly predict GDP (B = 2.55, SE = 1.68, β =.077, t = 1.52, p =.136). The model forecasts GDP with an excellent fit, with FL, INF, and FDI accounting for 89.8% of the variation. FL and FDI are the most potent indicators because they significantly impact GDP, but the INF has no statistically noteworthy influence on GDP.

**Table 7.** Coefficients.

| Model | | Unstandardized coefficients | | Standardized coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 1 | (Constant) | 1.559 | .246 | | 6.326 | .000 |
| | FL | .889 | .054 | .919 | 16.362 | .000 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | INF | 2.549 | 1.680 | .077 | 1.517 | .136 |
| | FDI | .076 | .030 | .129 | 2.550 | .014 |

*Note:* Dependent variable: GDP

Model 2 examined the effects of FDI, INF, and FL using GNI as the dependent variable. The summary of the model presented in table 8. According to the table, the three predictors collectively account for roughly 91.5% of the variation in GNI, with a strong multiple correlation coefficient (R) of 0.956 and an R-squared value of 0.915. After accounting for the number of variables, the model's reliability is confirmed by its corrected R-squared value of 0.909, which shows no decrease in explanatory power.

**Table 8.** Model 2 summary.

| Model | R | R square | Adjusted R square | Std. error of the estimate |
|---|---|---|---|---|
| 2 | .956* | .915 | .909 | .334173870 |

*Note:* *Predictors: (Constant), FDI, INF, FL
Dependent Variable: GNI

The ANOVA findings in table 9 demonstrate that the model is statistically significant, with an F-statistic of 168.060 and a p-value of 0.000, showing that the regression equation gives a good fit for the data and that the independent variables impact GNI together.

**Table 9.** ANOVA.

| | Model | Sum of Squares | df | Mean square | F | Sig. |
|---|---|---|---|---|---|---|
| 2 | Regression | 56.303 | 3 | 18.768 | 168.060 | .000* |
| | Residual | 5.249 | 47 | .112 | | |
| | Total | 61.551 | 50 | | | |

*Note*: *Predictors: (Constant), FDI, INF, FL
Dependent variable: GNI

The coefficients of the regression model are shown in Table 10. The strongest positive correlation between FL and GNI is indicated by the FL variable, which has the highest standardized beta value ($\beta = 0.896$) and is statistically significant at the 1% level ($p < 0.001$). This demonstrates that a sizeable portion of the nation's overall income comes from borrowing from abroad.

**Table 10.** Coefficients.

| Model | | Unstandardized coefficients | | Standardized coefficients | T | Sig. |
|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | |
| 2 | (Constant) | 1.895 | .182 | | 10.433 | .000 |
| | FL | .859 | .048 | .896 | 17.960 | .000 |
| | INF | .180 | .117 | .075 | 1.536 | .131 |
| | FDI | .069 | .030 | .118 | 2.298 | .026 |

*Note:* Dependent variable: GNI

Although the INF variable has a positive coefficient ($\beta = 0.075$), it is not statistically significant ($p = 0.131$), indicating that, at standard levels of significance, inflation has no discernible direct impact on GNI within the model. FDI has a slightly positive effect on GNI ($\beta = 0.118$) and is significant at the 5% level ($p = 0.026$). This implies that although FDI makes a positive contribution to national income, its impact is less significant than that of FL.

## 5. Conclusions

Developing countries like Bangladesh mostly manage their deficit budget and development constructions through FL. These loans significantly impact a country's overall development, especially economic growth. This research has been conducted to understand the impact of FL, FDI and INF on the economic growth of Bangladesh. The study uses multiple linear regression analysis grounded on a secondary data period covering 1972–2023. The primary data sources are the World Bank, Bangladesh Bank, Bangladesh Economic Review, and Bangladesh Bureau of Statistics.

The study has used GDP and GNI as response (dependent) variables and FL, INF, and

FDI as explanatory (independent) variables. The analysis demonstrates that Bangladesh's economy has experienced tremendous growth and fluctuation during the last 51 years. GDP fluctuated from USD 8.09 billion to USD 460.13 billion, and GNI fluctuated from USD 8.40 billion to USD 493.93 billion.

The results specify that FL and FDI significantly influence economic growth. It implies that increasing FL and FDI will propel economic growth. These findings highlight the importance of FL and FDI in GDP and GNI, consistent with theoretical predictions regarding the impact of external financial flows on economic performance. These results indicate that external financial flows can significantly strengthen Bangladesh's macroeconomic fundamentals and contribute to inclusive development if appropriately utilized.

Therefore, Bangladesh should maximize the appropriate use of foreign debt and FDI for high-impact projects and generate a more conducive environment for FDI through regulatory reform and incentives. It should safeguard macroeconomic stability through integrated fiscal and monetary policies, encourage public-private partnerships to leverage technology use and skill development, and increase sector-specific and distributive research to foster sustainable growth.

Future studies could build on this work, examining other economic factors such as interest rates, domestic debt, remittances, both public and private investment, policy reforms, and governance. Further comparative studies in other developing countries could also be conducted to gain a more inclusive understanding of the influence of public debt on economic growth.

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