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THE INTERACTION AMONG FOREIGN DIRECT INVESTMENT, GDP GROWTH AND UNEMPLOYMENT RATE IN EMERGING ECONOMIES BEFORE AND AFTER THE COVID-19 PANDEMIC: A CASE STUDY ON BANGLADESH

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ABSTRACT

This study examines Gross Domestic Product (GDP) growth, Net Foreign Direct Investment (FDI) and Unemployment growth and their relationships with each other; whether there's a structural break for COVID-19; and how Bangladesh can use this information to ensure a stable economic growth. Using a qualitative and quantitative approach, this paper uses time series analysis such as: Augmented Dickey–Fuller (ADF) test, Johansen co integration test and Granger Causality is used to determine the underlining interconnection and any causal relationship among variables. The Bai-Perron test was performed to identify structural breaks in the series for COVID-19. Long-run equilibrium relationships exist between FDI and GDP growth and between FDI and unemployment rate. There is a unidirectional relationship between the unemployment rate and GDP and between FDI and the unemployment rate. A structural break exists in all the variables that manifest the extent of the pandemic's effect. This study proposes several policy reforms too. Even though most recent research has focused on the impact of FDI on both developed and developing countries' economies during COVID-19; very few studies have focused specifically on Bangladesh, drawing on the impact of FDI on GDP, economic growth, and employment during then by examining the relationship and identifying a structural break among the variables.

KEYWORDS: Foreign Direct Investment, GDP Growth, Unemployment, COVID-19.

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1. INTRODUCTION

The global COVID-19 pandemic has impacted people's health in every way possible and affected the world economy as well. In 2020, when the COVID-19 outbreak occurred, it forced the world economy to adapt to a rapid mechanism to cope. Shifts in the world stock markets, job loss, recession, downfall of the tourism industry, growth of online business, disrupted supply chain management, everything can be related to the COVID-19 pandemic (Jones, Palumbo, & Brown, 2021). In developing countries, this has had a far worse effect. In 2020, Foreign Direct Investment (FDI) inflows in emerging and developing countries fell by 42 percent (U.S. Global Leadership Coalition, 2021). In fact, currencies in emerging markets depreciated by 15% (U.S. Global Leadership Coalition, 2021). This also increased the prices of imported goods in these regions, resulting in inflation.

The high and prevailing inflation in developing countries such as Bangladesh affected the dynamics of foreign direct investment (FDI) as high inflation raised the exchange rate, and investment constraints due to closed borders drastically declined FDI. Moreover, the issue has become more severe given the growing acceptance of FDI as a stable source of development finance, especially in developing countries. Given the right situation and conditions, FDI inflows complement domestic capital accumulation, promote employment, facilitate technological transfer, and thereby improve the efficiency of local firms, eventually resulting in favorable spillover effects (see e.g., UNCTAD 2017; Kottaridi and Stengos 2010; Valli and Masih 2014; Calvo and Sanchez-Robles 2002). These factors have accelerated economic growth and development. In most cases, there is a positive relationship between FDI and the economic growth and development of the host country (Hong, L. 2014; Charkaborty & Nunnenkamp, 2008; Hermes & Lensink, 2003; and Borenztein et al., 1998). In addition, economies of scale, human capital, infrastructure level, wage level, and regional differences positively interact with FDI and promote economic growth. Strict control measures led to a drastic decline in the demand for goods and services manufactured inside the country. Labor-intensive sectors such as agriculture and Ready-Made Garments (RMG) were affected, as well as the employment of workers in these sectors (Genoni et al., 2020). As a result, the current crisis has led the world to face a labor crisis, as global unemployment has increased by almost 25 million (ILO). ILO analyzed the impact of COVID in different scenarios on global GDP growth and their estimation indicates a rise in global unemployment of between 5.3 million ("low" scenario) and 24.7 million ("high" scenario) from a base level of 188 million in 2019. Reduced working hours, employment loss, and business loss have occurred in most countries, especially those with high infection rates. Both formal and informal sectors faced a significant decline in employment. In India, 90% of the 500 million strong work forces suffered from unregulated businesses and jobs, which is part of a vast informal economy. In Bangladesh, 89% of the total jobs in the labor market were from the informal sector, based on a labor force survey in 2010. Moreover, this sector adds more than 40% of the gross value added in Bangladesh.

COVID-19 policies, along with a decline in economic growth and FDI inflow, further exacerbated the unemployment rate. For economic recovery, it is necessary to determine the redefined economic relationship between macroeconomic variables, such as FDI inflow, GDP growth, and unemployment. To the best of our knowledge, such a study in Bangladesh has yet to be conducted.

A better understanding of the impact of pandemics on macroeconomic indicators will help policymakers to make better decisions. This study aimed to address the following questions.

1. Is there any short- and long-run causality among GDP growth, FDI, and unemployment rate in Bangladesh?
2. Was there any structural break during COVID-19 in the variables?
3. Which policy instruments should be focused on?

2. LITERATURE REVIEW

The impact of FDI on developing countries has long been debatable. It has been an age-old belief held by numerous academics that FDI brings no benefit to host countries, and the benefits are enjoyed only by the home countries only (Griffin, 1970; Griffin, 1966). Few studies also suggest that FDI does not impact the developing host country much, and in fact, it is negatively correlated with developing countries' economic growth in economy (Saltz, 1992). The absence of any FDI effect has also been reported by a few researchers (Haddad & Harrison, 1993).

In contrast, many researchers later concluded that FDIs have a positive effect on economic growth by FDIs (Blomstrom & Kokko, 1998; Boreinsztein et al., 1998). This finding is supported by a wide number of recent studies, and Liang et al. (2021) showed with a regression analysis that FDI and GDP growth in developing countries have a positive and significant relationship (Abbes et al., 2015; Nayyar and Mukherjee, 2020; Bruhn et al., 2020).

With the COVID-19 pandemic as an important factor for trade and business worldwide, scenarios involving FDI, unemployment effects, and economic growth are witnessing a paradigm shift. As 2020 ended, the total global GDP was 7.5% lower than it would have been without the pandemic (Vennila, 2021). In 2020, the impact of COVID-19 accelerated the decline in global FDI projects, which was already tardy in 2019 and reduced by almost 25% (Porwal et al., 2020)

Foreign Direct Investment has proven to be a catalyst for economic growth in developing countries. According to Liang et al. (2021), as developing countries lack technological advancement, managerial practices, and underdeveloped financial systems, FDI continues to contribute to the economic growth of developing countries by increasing capital flow, creating employment opportunities, and increasing exports and transferring technology. However, the present pandemic scenario has disrupted global growth, resulting in declining world output, creating a void in employment ratio, and thus impacting the overall economic circle across all countries. In the first quarter of FY-20, India witnessed a reduction of 59% in FDI inflow (Vennila, 2021) and thus, it had to change its FDI norms to control opportunistic mergers and acquisitions of domestic companies. Moreover, the consumer and retail sectors also have the lowest inflow as well (Kumar Das and Patnaik, 2020). In 2019, Nepal witnessed an upward trajectory in FDI, but the pandemic has also reduced FDI commitment funds there as well (Chaudhary et al., 2020). The COVID-19 pandemic not only affected FDI but also caused exchange rate volatility and a significant effect on stock market returns in emerging economies such as Mexico, Brazil, Chile, India, and Russia (Rakshit and Neog, 2021). Xia and Liu (2021) found a negative impact of the pandemic on Germany's FDI attractiveness for Chinese investments. Africa also experienced a reduction in FDI by one-fifth (18%) in 2020, and the downturn was consistent throughout 2021 (UNCTAD, 2021). Egypt has

been receiving the highest FDI inflow in Africa for a long time but still faced a reduction of 39%. South Africa, which accounts for approximately 40% of the total African cases and deaths due to COVID-19, has experienced a GDP decline of 8% (Chaudhary et al.; UNCTAD, 2021). In Bangladesh, multiple studies have been conducted on the impact of COVID-19 on the apparel industry, exchange rates, graduate employability, consumer buying behavior, and remittance inflow. However, few studies have focused on the current situation of FDI inflow. This study intends to determine whether there is a downward change in FDI inflow and equity investment in Bangladesh caused by COVID-19 and its impact on GDP growth.

Countless academics have sought to reveal the negative correlation between FDI and unemployment from many perspectives, such as the sector-basis and country-basis. This relationship has been termed as one of the most controversial in the economic literature because there is no consensus on this relationship and differs from one country to another (Said et al, 2022). The persistence of unemployment in labor is yet to be a major issue in developing countries (Chaudhuri & Banerjee, 2010). Around 270 thousand people in Ecuador lost employment during the four months of lockdown in 2020, while FDI inflow was reduced by 42% (Camino-Mogro et al.; 2020). Chaudhuri and Banerjee (2010) suggest that the inflow of foreign capital improves the urban employment problem by increasing the aggregate employment of unskilled labor in the economies of developing countries. Additionally, a large body of literature demonstrates a negative relationship between FDI and unemployment (Holte, 1998; Ezzat, 2019). Moreover, FDI inflows contribute to a reduction in unemployment (Dritsakis & Stamatiou, 2018).

Bailey and Driffield (2007) revealed that FDI has a positive impact on skilled workers and, in contrast, has a negative impact on unskilled workers. A study conducted in Taiwan found that increasing FDI inflow leads to increasing demand for a skilled labor force to produce more output (Chang, 2007). A panel data analysis of Turkey from the period to 2000-2008 proved FDI created new employment opportunities by investment (Hisarciklilar et al., 2009). According to Said et al. (2022), a positive significant relationship was revealed between FDI and unemployment in Egypt, in support of the jobless growth theory. In a study in Poland, even though evidence of a negative relationship was found between FDI and unemployment, the correlation between FDI and unemployment tended to be in the short term (Balcerzak & Żurek, 2011). Schmerer (2012) concluded from 19 OECD countries from to 1980-2003 that FDI reduces unemployment exponentially, as implied by the negative significance of FDI to unemployment. Stamatiou and Dritsakis (2014) show that increasing FDI in Greece increases economic growth, while reducing unemployment. Hasli et al.'s (2015) analysis supports the proposition that FDI is negatively associated with unemployment. In addition, another study in Malaysia revealed that among all the potential factors contributing to unemployment, FDI has been able to reduce unemployment significantly (MuhdIrpan et al., 2016). FDI has played a significant role in reducing unemployment in Pakistan owing to the heavy inflow of foreign capital, thus creating many employment opportunities (Zeb et al., 2014). In a study in Saudi Arabia, FDI has been able to reduce unemployment in the economy, or at least to some extent (Albassam, 2015). With the increasing inflow of foreign currencies, economic growth is ensured, resulting in a declining unemployment rate (Chowdhury & Hossain, 2014). A study on fifteen old EU members from the period of 1970-2015 illustrates that FDI inflows can be a solution to unemployment (Dritsakis & Stamatiou, 2018).

However, according to research conducted in Taiwan, no relationship has been established between FDI and unemployment (Shu-Chen Chang, 2006). Ricardo (1821) argued that FDI inflows adopting capital-intensive production techniques reduce the demand for labor and thus create unemployment. Nevertheless, FDIs in terms of mergers and acquisitions may cause an increase in unemployment because they merely transfer responsibility to existing employees (Onanuga et al, 2018). Moreover, there are studies where FDI has been proved to be not beneficial for all countries (Dritsakis & Stamatiou, 2018). In the case of the U.S in 2000, a study revealed that FDI had a negative impact on employment level and labor income in that period (Brady & Wallace, 2000). A study in Turkey for the period–2000-2007 found FDI was not responsible for reducing unemployment (Aktar and Ozturk, 2009). Yilmaz (2014) later presented a similar opinion.

Very few studies have been conducted on Bangladesh, drawing on the impact of FDI on GDP, economic growth, and employment, which is why our study holds significant importance.

3. Trend Analysis of FDI, GDP Growth and Unemployment of Bangladesh:

3.1 FDI in Bangladesh:

For a developing country like Bangladesh, FDI is a crucial accelerator of development, and the government prioritizes policy to increase FDI inflow in the economy such as: tax and duty exemption, avoiding double taxation and introducing ‘one stop service’ for the investors. However, these arrangements have only become more recent. After the Liberation War of 1971, political turmoil and a reserved outlook negatively affected FDI. In addition, nationalized movements, such as restarting abandoned enterprises to uplift the damaged economy, created a misconception that FDI means preserving foreign interests (Abdin, 2015). This eventually caused a substantial reduction in FDI inflow in Bangladesh with \$0.09 million in 1971. Fortunately, this phase was short-lived, and the government realized the importance of FDI soon after. After 1980, the government started to open the market and allowed joint venture investment which boosted FDI to some extent but still inflow was not that high: only around \$2.97 million from 1972-1980. In 1991, the government formulated an industrial policy that encouraged private sector development by liberalizing foreign trade, relaxing exchange controls, and restructuring import tariffs (Howlader, 2015). The situation changed dramatically when the government opened up the energy and telecom sectors in the mid 90’s (Abdin, 2015). The FDI inflow increased from \$139.38 million in 1997 to \$280.38 million by 2000. Despite the fact that a slight decrease in FDI inflow was caused by political unrest from 2001 to 2002, it reached \$1.23 billion which later only continued to rise over the years (Kafi, Uddin, & Islam, 2007). From 2010 to 2019 the average inflow was about \$2.05 billion. In 2018, Bangladesh witnessed its biggest ever single FDI when Japan Tobacco Inc. acquired Akij group’s tobacco company for \$1.47 billion (The Daily Star, 2018). That year the total inflow of FDI rose to \$2.42 billion.

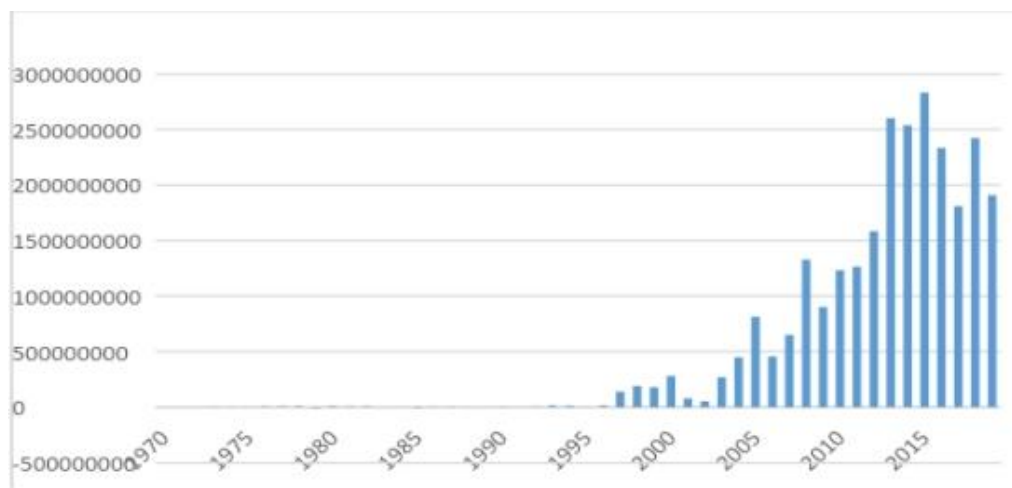


Fig I: FDI inflow in Bangladesh from 1971-2020 (World Development Indicators 2020)

This progressive scenario has changed since the outbreak of COVID-19 pandemic. According to the World Bank, in 2020, the GDP of the global economy was predicted to shrink by 5.2% (Tetteh & Gao, 2020) and the US economy actually decreased by 3.5% (Siegel, Van Dam, & Werner, 2021). The OECD reported that the growth prospects for China, the country where the Covid 19 virus originated, in 2020 was below 5% (Acikgoz & Gunay, 2020). The United Nations expects global unemployment to cross a 200 million mark by 2022 (UN News, 2021). In the United States the proportion of people out of work was 8.9%, according to IMF (Jones, Palumbo, & Brown, 2021). According to UNCTAD's World Investment Report 2021, global foreign direct investment decreased by 35% by 2020, up to \$1 trillion. However, the same report also stated an increase of 10%-15% by the end of 2021. Bangladesh is also suffering from an unemployment rate of 5.23% as the after-effect of the pandemic (World Bank), which adversely affected the investment inflow. Business activities are slowed down, causing economic contractions and, as a result, investors are not sure whether to invest. Constant lockdowns have negatively affected overall business activities around the world, forcing multinational companies to reduce or withdraw foreign investment. As a result, the net FDI inflow declined by 39% in 2020 compared to the previous year (The Financial Express, 2020).

3.2 GDP Growth:

Bangladesh has enjoyed positive economic growth for quite a time now, and is considered one of the fastest growing economies. The country is expected to leave the United Nations' least developed country's list by 2024 by achieving middle-income status (Mahmood, 2021). In 2019, the country enjoyed a whopping growth rate of 8.15%, successfully validating its fastest growing economic status. Even during the pandemic, the GDP growth was 2.38%, whereas in 2020, India's GDP growth was -8.0% (World Development Indicators, 2020). Additionally, Bangladesh's GDP growth is predicted by the World Bank to grow by 6.4% in the 2021-22 fiscal years.

Once considered as a "bottomless basket case," Bangladesh witnessed its lowest growth in 1972, which was around -14% for the liberation war. The aftermath of war and political instability caused another decline in 1975. However, the government opened the economy to allow joint venture investment to accelerate economic growth through FDI inflow (Abdin, 2015). From 1990 to 2003,

the average GDP growth rate was approximately 4.72%. From the mid 2000s an upward trend was observed. In 2003, the growth was approximately 4.74%, which rose to 7.11% by 2016. Subsequently, the growth was always above 7% till the Covid-19 pandemic. Owing to the pandemic crisis, the growth rate dropped from 8.15% to 2.38% in 2020.

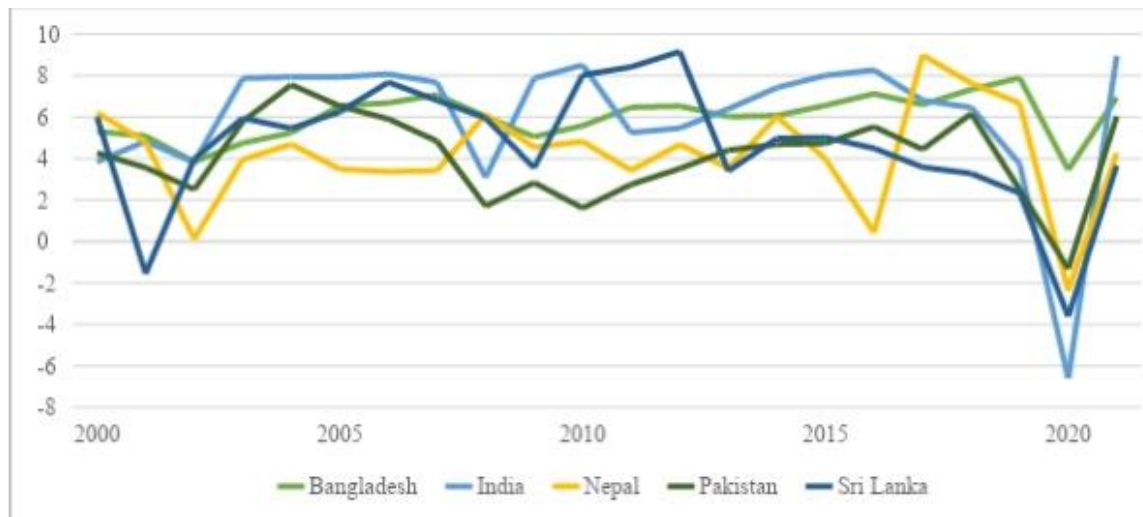


Fig II: GDP growth in South Asian Countries. (World Bank, 2022)

Compared to other South Asian countries such as India, Pakistan, Sri Lanka, and Nepal, Bangladesh has had relatively stable economic growth since 2000. Along with the challenges of a developing country and political turmoil, Bangladesh has maintained steady growth, which has influenced further advancement. In 2019-2020, South Asian countries hit hard, and all countries experienced a drastic decline in growth. However, Bangladesh maintained a positive GDP growth of 2.38% in 2020, while other countries, such as India, experienced a -8.0% GDP growth in 2020 (World Development Indicators, 2020).

3.3 Unemployment Rate:

With political transition and fundamental labor market reform, Bangladesh has made steady progress in reducing unemployment rates and poverty alleviation. While employment in Bangladesh is mainly distributed in the agricultural and service sectors, labor productivity has moderately increased over the last decade. Over the years, Bangladesh has established major labor-intensive policies such as the Bangladesh Labor Law of 2006, setting the age of admission to employment at 14 years, and has taken legal steps to monitor admission to employment and an employment target in the Sixth Five-Year Plan for 2011-15-years to ensure sustained employment growth.

In 1991, the unemployment rate was approximately 2.2%, which increased to 3.09% by 1999. After that, the average rate remained at approximately 3.94% until 2009. In 2009, the unemployment rate increased to 5%, the highest after 1991. One probable reason is the global financial crisis that occurred between 2007-2008. According to a report by the Centre for Policy Dialogue (CPD), the crisis created pressure on the domestic labor market as the migration rate was lower. This could be the reason for the increase in the unemployment rate.

After the increase in 2009, the rate declined slightly to 3.38%. Then, a steady trend remained until the pandemic. In 2020, the unemployment rate increased to 5.3%, the highest in the recent past. The Covid 19 pandemic has severely affected both the world and domestic labor markets. The ILO estimated that the global unemployment rate would increase to 6.5% by 2020 (The Financial Express, 2021). In Bangladesh around 3.0% of the country's labor force became jobless which created about 16.38 million 'new poor', revealed a joint report by Centre for Policy Dialogue (CPD) and Bangladesh Institute of Labour Studies (BILS).

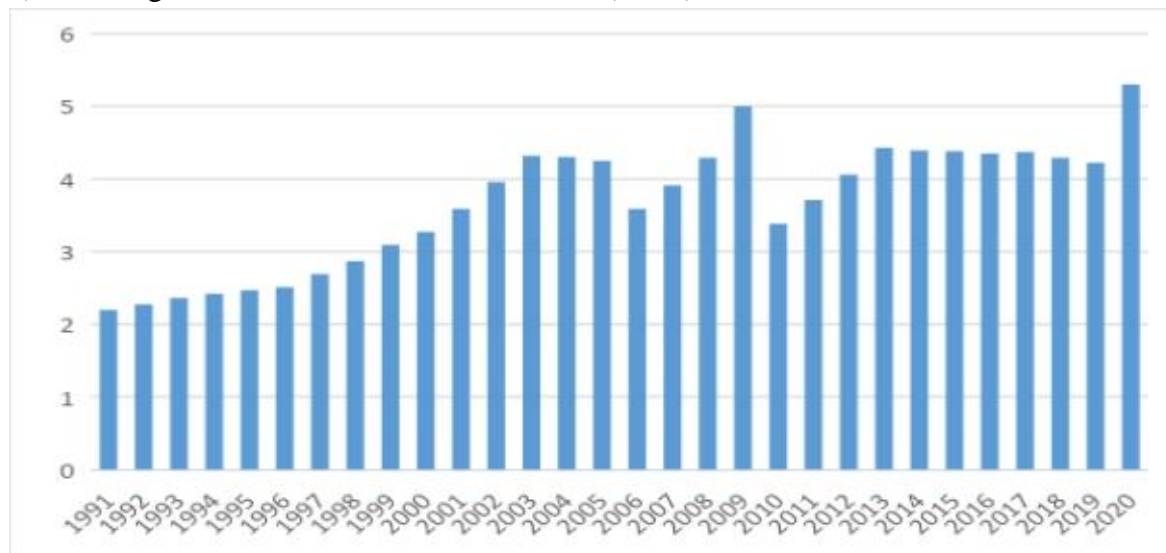


Fig III: Employment growth of Bangladesh. (World Development Indicators, 2021)

4. METHODS

This study examines the relationship between Net FDI, GDP and Unemployment in Bangladesh to understand how COVID-19 affects. Data on unemployment and GDP at current prices are collected from the World Bank database in the post-reform period from 1991 to 2020. Net FDI inflows were collected from UNCTAD.

The first step is to determine whether the series is stationary using the augmented Dickey Fuller test. If they are non-stationary, this study examines the existence of co-integration and order. If the series exhibit the same order, then a co integration test is needed to determine the long-run equilibrium relationships. This study used the vector error correction model to identify the extent of disequilibrium between the variables. Subsequently, the study conducted a Granger causality test to determine whether any causal relationship exists in a VECM framework. After establishing the relationship between the series, we conduct a test for structural breaks to understand the effect of COVID-19 in the series.

4.1. Stationary unit root test:

A persistent trend is common in time-series modeling. Persistent trends can be generated from stochastic or deterministic trends. We must identify if the model exhibits non-stationary behavior and transform the variables to ensure stationary in the series. The presence of a non-stationary time series would affect the regression and spurious results. To identify if the series are stationary, we implemented an Augmented Dickey Fuller (ADF) test, which tests the null hypothesis of a unit root

against the alternative that there is no unit root in the series. The following equation was used to test ADF with no drift:

$$\Delta y_t = \rho y_{(t-1)} + \sum \beta_j \Delta y_{(t-j)} + \gamma t + \epsilon_t$$

The optimum number of lags depends on the Akaike Information Criteria (A.I.C). If the series are non-stationary, the variables must be transformed to stationary to perform further tests.

4.2. Co integration Test

If the variables are no stationary, we conduct a Co integration analysis to investigate the co-movement of two or more no stationary variables. This test helps determine if the variables are integrated in such a way that they cannot deviate from equilibrium in the long term. We used Johansen's maximum likelihood-based method to determine co-integration, which is based on the number of co integrated vectors in the Vector Autoregressive (VAR) model. To test the co integration of order p, we use the following equation:

$$\Delta X_t = \alpha + \theta_1 \Delta X_{(t-1)} + \theta_2 \Delta X_{(t-2)} + \theta_3 \Delta X_{(t-3)} \dots + \theta_{k-1} \Delta X_{(t-k+1)} + \theta_k \Delta X_{t-k} + u_t$$

Where X_t is a $(n \times 1)$ vector of level no stationary variables, and is the vector of random errors. θ_k Represents any long-run relationship between variables. If the rank of $\theta_k = 0$, the variables are not co integrated. If the rank is equal to one, a co integrated vector exists. Johansen and Juselius (1990) created two tests for co integration: the trace test and maximum eigen value test. The trace tests the null hypothesis that there are at most co integrating vectors, whereas the maximal Eigen value test estimates the null hypothesis that there is r exactly co integrating vectors. If the two variables are co integrated, then there is at least one direction of causality.

4.3 Granger Causality:

To understand if there was any causal relationship among the variables, a Granger Causality test was conducted. The test uses a VAR model to test the causal relationships between two variables. The following estimated form of VAR is used to test the Granger Causality:

$$X_{1t} = \alpha_1 + \alpha_{11}X_{1t-1} + \alpha_{12}X_{2t-1} + e_t$$

$$\text{And } X_{2t} = \alpha_2 + \alpha_{21}X_{1t-1} + \alpha_{22}X_{2t-1} + e_t$$

The equation is used to test the null hypothesis, which represents bidirectional non-causality between variables, and the alternative shows the presence of either bidirectional or unidirectional causality between X_{1t} and X_{2t} .

4.4 Bai-Perron Test:

After establishing the possible relationship between FDI, GDP growth, and employment rate, we investigate whether there was a structural break in the series. To detect multiple unknown structural breaks, Bai and Perron (1998) derived a sequential test that starts by testing for a single structural break point. If the null hypothesis of no structural break is rejected, it further tests for more breakpoints. They also developed the asymptotic distribution of the break date estimator and constructed a formula for the confidence interval, given a set of constraints (Bai & Perron, 2003). Empirically, this test is widely used to identify structural breaks in the macroeconomic variables.

Considering a standard multiple linear regression model form and m breakpoints with $(m+1)$ break regimes for the observations $T, Tj + 1, \dots, Tj+1 - 1$ in the regime j :

$$Y_t = X'_t \beta + Z'_t \delta_j + u_t$$

Where Y_t is the dependent variable at time t ; the independent variable X_t ($p \times 1$) vectors of covariates are not allowed to vary across regimes. On the other hand, Z_t ($q \times 1$) vectors of covariates, which can vary across regimes. β And j ($j = 1, \dots, m + 1$) are vector coefficients and it is the error term. They aimed to estimate the unknown regression coefficients together with the breakpoints when T ($T1, \dots, Tm$) on (y_t, x_t, z_t) are available. As the parameter vector β doesn't vary across regimes, this is a partial structural change model using the entire sample. We find a pure structural change model when all the coefficients are allowed to vary across regimes. Finally, Impulse Response Functions (IRF) is conducted on the unrestricted VAR model to examine how the individual variables respond to the shock from another variable via a visual representation.

5. RESULTS

5.1 Stationary Test:

As the variables FDI, GDP growth, and unemployment rate are time-series data, there is a possibility of "spurious" regression for the non-stationary of the series. The Augmented Dickey-Fuller test (ADF) is used to determine stationary, and the optimal lag is selected using the Akaike Information Criteria (AIC). Table 1a shows the ADF statistics and corresponding critical values of all the variables in level and first difference form:

Table I: Augmented Dickey Fuller Unit Root Test

Panel 1: ADF test on Level			
Variables	ADF statistics (Only Constant)	ADF statistics (Constant & Trend)	Decision
LN(GDP Growth)	-3.18	-3.54	Non-stationary
LN(FDI)	-1.06	-7.27	Non-stationary at constant but stationary at constant and trend
LN (Employment Rate)	-1.44	-2.46	Non-stationary
Panel 2: ADF test on First Difference			
Variables	ADF statistics (Only Constant)	ADF statistics (Constant & Trend)	Decision

LN(GDP Growth)	-4.67	-4.66	Stationary
LN(FDI)	-4.91	-5.62	Stationary
LN(Employment Rate)	-5.79	-5.68	Stationary

Source: Constructed by the Authors

Unit root series have a nonstandard asymptotic distribution, which is severely affected by any deterministic trend in constant or time trends. In the level form, all variables are non-stationary, so the first difference of each variable is also tested. FDI, GDP growth, and the employment rate are stationary in the first difference form. From the table, it is clear that the variables would yield spurious results unless they are co integrated. However, the results allow us to proceed to the next stage of testing for co integration.

5.2 Co integration:

The Johansen test considers the likelihood ratio for a co integrated VAR structure using trace statistics and maximum-Eigen value statistics. Both tests use the null hypothesis that there is no co integrated relationship against the alternative that at least one co-integrated relationship exists. Tables 1b and 1c show the Johansen co integration test results at 95%.

Table II: Johansen Test for Co integration (Trace Test)

Variables	Null Hypothesis	Alternate Hypothesis	Statistics	95% Critical Value	Decision
LN (GDP) and LN(FDI)	None	At Least one	8.126	3.841	One Co integrating Relationship
LN (GDP) and LN(ER)	None	At Least one	2.961	3.841	No Co integrating Relationship
LN (FDI) and LN (ER)	None	At Least one	7.589	3.841	One Co integrating Relationship

Table III: Johansen Test for Co integration (Maximum Eigenvalue Test)

Variables	Null Hypothesis	Alternate Hypothesis	Statistics	95% Critical Value	Decision
LN(GDP) and LN(FDI)	None	At Least one	8.126	3.841	One Co integrating Relationship
LN(GDP) and LN(ER)	None	At Least one	2.961	3.841	No Co integrating Relationship
LN(FDI) and LN(ER)	None	At Least one	7.589	3.841	One Co integrating Relationship

Source: Constructed by Authors

The trace and maximum Eigen value statistics indicate that there is one co integrating relationship between in (GDP) and in (FDI), and between LN (FDI) and LN(ER). Thus, there is a long-run equilibrium relationship between net FDI inflows and economic growth in Bangladesh as well as between net FDI and the unemployment rate. These co integrated relationships can dictate the policy instrument that should be used to ensure stable economic growth.

5.3 Granger Causality

After establishing long-run co integration relationships, the next step is to identify the causal relationship through the Granger causality test. Table 1d shows the results of the Granger Causality test for the variables.

Table IV: Granger Causality Test

Panel 1: Granger Causality test between LN(GDP) and LN(FDI)				
Variable	Null Hypothesis	F-statistic	P-value	Conclusion
LN(GDP)	LN(GDP) does not cause LN(FDI)	2.492	0.082	No Causality
LN(FDI)	LN(FDI) does not cause LN(GDP)	0.640	0.673	No Causality
Panel 2: Granger Causality test between LN(GDP) and LN(ER)				
Variable	Null Hypothesis	F-statistic	P-value	Conclusion
LN(GDP)	LN(GDP) does not cause LN(ER)	1.471	0.250	No Causality
LN(ER)	LN(ER) does not cause LN(GDP)	3.595	0.043	Unidirectional Causality
Panel 3: Granger Causality test between LN(FDI) and LN(ER)				
Variable	Null Hypothesis	F-statistic	P-value	Conclusion
LN(FDI)	LN(FDI) does not cause LN(ER)	5.049	0.033	Unidirectional Causality
LN(ER)	LN(ER) does not cause LN(FDI)	0.181	0.674	No Causality

Source: Constructed by Authors

Granger Causality tests show no causality between GDP growth and FDI. On the other hand, unidirectional causality exists from the unemployment rate to GDP and from FDI to the unemployment rate. This result is consistent with the literature, where an increase in foreign investment leads to job creation in different industries. Newly created jobs reduce the unemployment rate in Bangladesh and accelerate GDP growth.

5.4 Bai-Perron test:

Variable	Break Regime
GDP Growth	1975, 2001, 2009, 2020
FDI	1983, 2014, 2020
Employment Rate	1990, 2007, 2020

6. DISCUSSION

According to the findings, a long-run equilibrium relationship exists between FDI and GDP growth and between FDI and the unemployment rate. Causality tests revealed a unidirectional relationship between unemployment rate and GDP and between FDI and unemployment rate. From the Bai-Perron test, along with other dates relevant to Bangladesh's political party movement, a structural break for COVID -19 is found in all variables that manifest the extent of the pandemic's effect.

From the above discussion, we can conclude that the inward flow of FDI plays a major role in the reduction of the unemployment rate as well as in the development of economic growth. Since its inception, Bangladesh has seen an upward FDI trend. However, because of the COVID-19 pandemic, inward FDI dropped by 39% in 2020 from the previous year (The Financial Express, 2020). Now, it is time for governments to take the necessary steps to increase FDI inflow in Bangladesh. The government focuses on the following steps.

6.1 Policy reforms:

To attract FDI, Bangladesh requires a more comprehensive FDI policy. Unfortunately, there is still no complete and pertinent policy for FDI. Whereas countries like Vietnam and Indonesia offer more investment-friendly policies, Bangladesh's FDI policy lacks flexibility. For example, in Bangladesh, 15% VAT is required to establish factories in the economic zone, whereas in India and Vietnam, it is 0% (Ahmmed, 2021). However, Bangladesh has introduced different incentives to attract foreign investment. For example, five to seven years of tax exemptions are available for investors, no import duty is applicable for export-oriented products, double taxation can be avoided as bilateral investment agreements exist, and full repatriation of profits (Investment Incentives, n.d.).

Although Bangladesh offers different types of incentives, it should be mentioned that providing incentives is not enough. Other factors should be considered to increase investor confidence.

6.2 Ease of Doing Business:

One of the major drawbacks of Bangladesh is its lower position on the World Bank's Ease of Doing Business Index. The index is a series of reports that is a measure of business regulations and their enforcement across 190 economies (World Bank Doing Business Index). According to the 2020 report, Bangladesh was ranked 168 among 190 economies, whereas countries such as Vietnam were ranked 70, India 63, and India 73. Bangladesh performed significantly poorly in 'Starting a Business', 'Dealing with Construction Permits', 'Registering Property', 'Getting Electricity' and 'Enforcing Contracts'.

To attract inward FDI, Bangladesh must create a more favorable business climate for investors. It needs to increase its ranking in the ease of doing business. The government has already introduced the 'One Stop Service (OSS)'. This service serves as a single window and the contact point between the government and investors, where they can avail all investment-related services (One Stop Service for Investors and Business, n.d.)

6.3 Human Capital:

Investment in human capital is a major challenge in Bangladesh. Bangladesh is famous for its ‘cheap labor’, which boosted the country’s growth in the RMG industry. However, critics are now arguing about the future of this low-skilled labor force. With the growth of technology and automation, countries such as India and Vietnam are now focusing on a high-skilled but low-cost labor force (Nowshin, 2015). On the other hand, Bangladesh still heavily depends on a labor force that is unskilled and uneducated. In 2019, Bangladesh ranked 47th among 50 emerging countries in the ‘Worldwide Education for the Future Index 2019 (Rahman & Anwar, 2020). Companies are hiring foreigners, as the country lacks a highly and technically skilled labor force. A high-skilled workforce is an important determinant of FDI inflows. The technological revolution and adoption of automation in all industries require more investment in human capital. Bangladesh should invest more in its education system to make it more skill-based and filled with practical knowledge.

6.4 Trade and Investment Agreements:

Bilateral and multilateral trade and investment agreements can provide a huge opportunity to ensure FDI. Bangladesh has already signed a PTA (Preferential Trade Agreement) with Bhutan (Mridha, 2021) and is in talks with Sri Lanka, Singapore, Turkey, China, India, Brazil, Thailand and Malaysia regarding FTAs and PTAs. However, Bangladesh should consider FTAs and PTAs with the major trading partners such as USA, European Union and UK as after graduating from least developed country (LDC) to developing country, Bangladesh will lose various benefits such as the ‘Duty Free Quota Free Access’.

6.5 Export Diversification:

Export diversification is the process of transitioning from ‘traditional’ to ‘non-traditional’ exports (Francis, 2021). Many researchers have indicated that export diversification and inward FDI have a positive and significant relationship (Khan et al., 2021; Gamariel G. et al., 2022). 81% of Bangladesh’s export earnings come from the RMG sector (Islam, Rakib, & Adnan, 2016). Bangladesh also exports leather goods, jute, tea, frozen foods, etc. However, the contribution of these sectors to total export earnings is very low compared to that of the RMG sector, indicating a heavily concentrated export basket. The government should introduce more investment-friendly policies for the non-RMG sectors. Special incentives should be provided to attract investments in these sectors.

7. CONCLUSION

The effect of COVID-19 is substantial for every nation, and the world economy has witnessed a transition in policymaking. To combat long-lasting consequences, this study examines the following key variables: GDP growth, net FDI, and unemployment growth, and how these variables are related to each other. Furthermore, after establishing the existing relationships, this study investigates whether there is a structural break for COVID-19 and how Bangladesh can use these relationships to effectively implement policies to ensure stable and accelerating economic growth.

The study indicates a long run equilibrium relationship between FDI and GDP growth and FDI and unemployment rate. Moreover, a structural break for Covid 19 is identified among all the variables. Lastly, this paper puts forth several policy reforms to make it all work. Bangladesh needs a more comprehensive, complete and pertinent FDI policy focusing on human capital, trade agreements and diversifying exports.

This study has some limitations. More variables can be added to make a better model and understand the complexity of the economy, such as inflation and interest rates. This study can be further extended by analyzing the same relationship for South Asian countries through panel

analysis to comprehend a general policy framework. Additionally, the paper can even be extended to compare the macro economy of Bangladesh pre-COVID and post-COVID period in the future in Bangladesh to fully recognize the impact of the pandemic and how the policy paradigm adapted with the emerging direction.

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