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**The Impact of Foreign Direct Investment on Economic Growth in African Countries:**

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**Abstract**

*This study examines the impact of foreign direct investment on economic growth, measured as a percentage of Growth Domestic Product, across 46 African countries over the period 2000–2023. Using a quantitative research design, the analysis is based on an unbalanced panel dataset obtained from the World Bank’s World Development Indicators. To address potential Endogeneity arising from reverse causality and omitted variable bias between foreign direct investment and economic growth, the study employs the Two-Stage Least Squares estimation technique. This instrumental variable approach ensures the robustness and consistency of the estimated coefficients, thereby strengthening the reliability of the empirical findings. The Hausman specification test ( $\chi^2=15.04$ ,  $p=0.0199$ ) indicates that the fixed effects model is preferred over the random effects model, suggesting the presence of unobserved country-specific heterogeneity correlated with the explanatory variables. Controlling for key macroeconomic determinants including domestic investment (proxied by gross fixed capital formation), financial development, inflation, government expenditure, and population growth, the results reveal that foreign direct investment exerts a positive and statistically significant effect on economic growth at the 1 percent level. The findings further suggest that foreign direct investment contributes to employment generation and unemployment reduction, reinforcing its role as a catalyst for economic expansion in the region. These results carry important policy implications. Strengthening investor-friendly regulatory frameworks, and improving the overall business climate and they are essential to attract sustained foreign direct investment inflows and foster inclusive, long-term development. While the study advances empirical understanding of the foreign direct investment growth nexus in Africa, heterogeneity across countries and data limitations restrict full regional generalization, highlighting the need for broader future research.*

**Keywords:** Foreign direct investment; Economic growth; Africa; Endogeneity; Two-Stage Least Squares; Panel data.

**1. Introduction**

Economic growth is influenced by several factors, including capital accumulation, infrastructure development, and technological advancement. Among these, foreign direct investment plays a key role by facilitating capital inflows, technology transfer, and managerial knowledge diffusion. The FDI growth relationship is particularly important in developing countries, where domestic industries often face financial and technological constraints. FDI can enhance productivity, promote innovation, and create employment opportunities. However, the effectiveness of FDI in promoting economic growth depends on the institutional quality and policy environment of the host country, as it may generate

both positive and negative economic effects ( Muhammad & Syed, 2014; Badmus & Oyekanmi, 2020).

Foreign direct investment (FDI) is one of the main channels through which multinational firms establish business operations in other countries. Through long-term investment, FDI facilitates the transfer of technology, managerial expertise, and best business practices, which are essential for economic growth in host countries. FDI can help fill financing gaps and strengthen domestic production capacity, particularly in developing economies. It also promotes trade openness and global economic integration. Empirical studies show that FDI is closely linked to economic performance in many developing countries, including Nigeria, although its impact may vary depending on macroeconomic conditions



and policy environments (Acemoglu et al., 2009; Omankhanlen, 2011).

Many researchers argue that foreign direct investment (FDI) positively influences host countries' economic growth. FDI facilitates technology and knowledge transfer, strengthens linkages between local and foreign firms, and promotes economic development. It also provides new capital, advanced technology, managerial skills, and access to international markets, while stimulating domestic investment, creating jobs, and improving productivity and competitiveness (Kashif & Muhammad, 2013). Recent studies show that FDI positively affects employment, exports, knowledge diffusion, and economic growth, particularly in countries with strong technological, educational, and infrastructure development. Institutional quality, including rule of law, good governance, and anti-corruption measures, further enhances the positive impact of FDI on economic growth (Ozturk, 2007).

Many researchers debate the relationship between economic growth and economic performance, with foreign direct investment (FDI) often considered an important determinant. FDI is generally believed to have a positive impact on economic growth and performance by promoting technology transfer, increasing productivity, and improving economic output. Studies also examine the relationship between FDI, imports, and economic performance. FDI research often considers factors such as debt, domestic investment, trade, and inflation. However, there is no universal agreement on the positive relationship between FDI inflows and economic growth (Maryam & Mittal, 2020).

The impact of FDI inflows on economic growth has produced mixed results in previous studies. Most research uses the standard growth accounting framework to examine FDI alongside other production factors such as land, labor, and capital. In neoclassical models, FDI is believed to have limited long-term growth effects due to diminishing returns to physical capital. Therefore, FDI is considered to have only a level effect on output per capita rather than a long-term impact on growth rates, which explains why it was not traditionally viewed as a major driver of economic growth in mainstream economics.

The new growth theory suggests that FDI can influence not only the level of output per capita but also long-term economic growth rates. FDI can promote growth through capital accumulation, technology transfer, improved efficiency of local firms, increased competition, human capital development, and export expansion. However, the extent to which FDI contributes to growth depends on the host country's economic and social environment. Macroeconomic factors such as savings rates, trade openness, and technological development play an important role in determining the benefits of FDI inflows. Countries with stronger economic structures and open trade policies are more likely to gain positive growth effects from FDI (Buckley et al., 2002).

FDI promotes technical progress in host countries through a technology diffusion or "infection" effect, encouraging local firms to adopt advanced managerial and production practices (Findlay, 1978). Empirical results show that FDI has a positive and significant impact on economic growth, with higher productivity effects compared to domestic investment. Studies using data from several developing countries, including Latin America, Asia, and Africa, further confirm that FDI supports economic growth through technology transfer and productivity improvement (Findlay, 1978).

Some studies find no significant relationship between FDI and economic growth. For example, Lund, (2010) found that FDI does not significantly promote growth in developing countries and suggested that a certain level of development is needed to fully benefit from FDI. Similarly, studies in Nigeria showed that FDI does not have a significant impact on growth, while macroeconomic stability and trade openness play more important roles (Uwubanmwun & Ajao, 2012). Other studies also found no long-run relationship between FDI and GDP growth in Malaysia and Canada, although domestic investment and total factor productivity were identified as important growth determinants (Lean, 2008); Asheghian, (2011). Blomstrom & Kokko, (1994) and Blomström et al. (2003) argue that FDI benefits developing countries by generating technology spillovers, particularly in economies with an educated workforce. However, the literature shows no clear consensus on the impact of FDI on economic growth, suggesting that the composition and structure of FDI may influence its contribution to economic development.

There is no consensus on the impact of FDI on economic growth. Modernization theory suggests that FDI promotes growth by providing investment capital and facilitating knowledge transfer, while dependency theory argues that FDI may negatively affect growth by creating monopolies that limit the use of domestic resources and weaken the multiplier effect (Blomström et al., 2003).

Increasing global competition for FDI has intensified debates about its costs and benefits. While many studies show that FDI positively influences economic growth under supportive policies, others highlight potential negative effects on balance of payments and domestic competition (Agrawal & Khan, 2011; Wijeweera et al. 2010; Johnson, 2006; Ozturk, 2007). Evidence also suggests that countries with strong financial regulations benefit more from FDI inflows (Durham, 2004; Ozturk, 2007; Lee, 2005; Li & Liu, 2005).

Despite extensive research, several important research gaps remain. First, most previous studies have focused on single-country analysis or limited regional samples, making it difficult to generalize findings across African economies characterized by significant structural heterogeneity. Second, earlier studies often used traditional estimation methods that fail to fully address endogeneity problems arising from reverse causality between FDI and economic growth. Third, changes in global economic conditions, financial globalization, and policy reforms require updated empirical evidence using recent datasets.

In addition, there is limited comprehensive evidence on the long-term impact of FDI on economic growth across multiple African countries using modern panel econometric techniques. African economies exhibit diverse institutional structures, financial systems, and development levels, which may influence the effectiveness of FDI in promoting growth. Therefore, a more robust empirical investigation is necessary to capture cross-country heterogeneity and dynamic growth effects.

Therefore, this study aims to fill these gaps by examining the impact of FDI on economic growth in 46 African countries over the period 2000–2023. By applying advanced econometric techniques and controlling for key macroeconomic determinants, this study provides updated empirical evidence to support policy formulation in developing countries.

## 2 Theoretical and Empirical Literature

### 2.1 Theoretical Foundations of foreign direct investment (FDI)

The theoretical literature on foreign direct investment is grounded in both neoclassical and endogenous growth frameworks. According to neoclassical growth models (Cass, 1965; Solow, 1956), FDI is considered an alternative to domestic investment that contributes directly to economic growth through physical capital accumulation. However, these models assume that technology is exogenous and treat domestic and foreign capital as identical in terms of knowledge content. Under this assumption, the growth impact of FDI is mainly short-term because it only increases capital stock without generating long-term technological spillovers (Campos & Kinoshita, (2002).

In contrast, endogenous growth models argue that FDI can have long-term effects on economic growth through knowledge transfer, technological diffusion, and innovation spillovers. These models emphasize that technological progress is endogenous and depends on country-specific, industry-specific, and firm-specific factors. Foreign firms often possess superior technological and managerial capabilities that enhance host-country productivity and knowledge accumulation. Therefore, FDI may play a more important role than domestic investment in promoting sustainable economic growth through externalities associated with technology transfer and innovation.

The FDI-led growth hypothesis further suggests that FDI promotes economic development by providing access to international markets, capital, advanced technologies, managerial skills, and employment opportunities, which enhance domestic productivity and investment performance. According to the eclectic theory of multinational enterprises (Dunning's eclectic theory, 1977, 1993) multinational firms invest abroad to exploit ownership, location, and internalization advantages. Market size, infrastructure quality, and economic growth prospects are major determinants of FDI inflows. Conversely, economic expansion can also attract

more FDI, suggesting a bidirectional causal relationship between FDI and growth.

Empirical studies provide mixed evidence regarding the FDI–growth relationship. Some studies report positive growth effects of FDI through technology transfer, productivity spillovers, and capital formation (Borensztein et al., 1998; Shakar & Aslam, 2015). Others report negative or insignificant relationships depending on country characteristics, institutional quality, sectoral composition, and macroeconomic conditions (Gui-Diby, 2014; Mbu, 2014; Nkoro & Uko, 2016). Overall, the impact of FDI on economic growth is considered complex and highly context-dependent. Based on the literature review, the study proposes the hypothesis that FDI has a positive and statistically significant effect on economic growth in African countries.

### 2.2 Empirical Literature

The results of numerous studies that attempted to link FDI to macroeconomic performance, such as GDP, have been inconsistent. Numerous studies have demonstrated that FDI has varying effects on growth; some have found that FDI hurts economic growth, while others have found that the effects are minimal. Additionally, there has been a lot of empirical research done in the past on the connection between foreign direct investment and economic growth (Lim, (2001).

The literature indicates that foreign direct investment plays a significant role in economic growth through multiple channels. According to Borensztein et al., (1998), FDI promotes long-term economic growth by facilitating technological transfer from developed to developing economies under the endogenous growth framework, where multinational corporations serve as key technology transmission channels. Similarly, FDI supports trade openness, which enhances the benefits of foreign investment, and developing countries are encouraged to pursue trade liberalization policies to maximize FDI gains (Younus et al., 2014; Ndaba, (2015)).

Despite its benefits, FDI may also have negative effects. Foreign multinational corporations can crowd out domestic firms, particularly where local industries lack competitiveness (Yusuf & Hoong, 2017). High fixed costs may also discourage domestic R&D and resource utilization in less developed economies (Dogan, 2014). To attract FDI, many developing countries provide incentives such as tax breaks and subsidies (Mahembe, 2014). The OECD, (2018) further argues that FDI supports sustainable growth through human capital development, global economic integration, entrepreneurship promotion, and competitive market environments. Meanwhile, (UNCTAD, 2022) emphasizes that FDI is a stable long-term financing source because investment decisions are based on host country economic prospects and market access.

Empirical findings on the FDI–growth relationship remain mixed. Some studies show positive growth effects, particularly when FDI occurs through greenfield investments, while mergers and acquisitions (M&A) may have weak or negative effects in developing countries (Neto et al.,

2008)Other studies report insignificant or negative relationships depending on sectoral characteristics, entry modes, and country conditions (Mencinger, 2003; Akinlo, 2004).However, evidence from Sub-Saharan Africa shows that infrastructure development, trade openness, and FDI jointly promote economic growth,(Babatunde, 2011; Sala & Trivin, 2014).

Institutional quality and financial sector development also influence the effectiveness of FDI. FDI tends to have stronger growth effects in countries with democratic governance, economic freedom, and well-developed financial systems ( Malikan &Chitambara, 2017 ; Khan, (2007). However, some studies find that institutional quality may not always significantly moderate FDIgrowth relationships(Agbloyor et al., 2016).

The impact of FDI is also conditioned by the host country’s absorptive capacity. Countries with strong human capital, technological capability, and supportive economic environments benefit more from FDI spillovers (Durham, 2004); bijsterbosch & Kolasa, 2010).FDI contributes to growth through two main mechanisms: direct effects via capital accumulation and indirect effects via technology diffusion, productivity improvements, and knowledge spillovers. While the neoclassical growth model suggests short-run output expansion through capital accumulation, endogenous growth theory emphasizes long-run productivity gains through innovation and knowledge transfer. Overall, the literature concludes that FDI’s impact on economic growth is positive but highly dependent on domestic economic conditions and policy environments.

Drawing on empirical findings and theoretical linkages between FDI and economic growth the following hypotheses are proposed:

H1: Foreign direct investment has a positive and statistically significant effect on economic growth in African countries.

### Conceptual Framework

Based on the theoretical and conceptual review of the impact of foreign **direct investment** on **economic growth**, while controlling for key macroeconomic determinants and using **unemployment (UNEMP)** as an instrumental variable the conceptual framework is presented as follows.

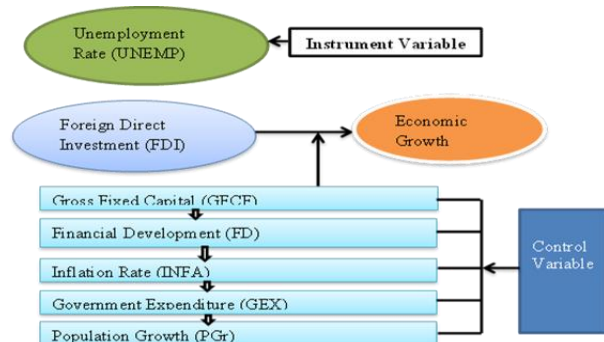


Figure 1 Conceptual Framework adapted from Review Literature

### 3 METHODS

#### Specification of the Model

This study is mainly based on the endogenous growth model, as it is more relevant and valuable for explaining the sources of growth. However, it starts with the specification of the model on the basis of the aggregate production model as follows:

$$Y = fA(K, L) = AL^\alpha K^\beta \dots\dots\dots (1.1)$$

Where Y refers to output, K and L stand for capital and labor, respectively. A refers to efficiency of production or (entire factor of productivity). Whereas  $\alpha$  and  $\beta$  represent the share of labor and capital, respectively. In addition, according to Lucas (1988) and Romer(1986), human capital should be included in the Solow model because it is essential for the absorption of technology and for the acceleration of economic growth. Furthermore, capital can include both domestic and foreign capital( Fedderke & Romm, 2006). Therefore, equation 1.1 can be expressed in the following way:

$$Y = AL^\alpha K_d^\beta K_f^\theta \dots\dots\dots (1.2)$$

Where  $K_d$  refers to domestic capital and  $K_f$  is foreign capital. For simplicity, assume  $\alpha + \beta + \theta < 1$ . In addition to human capital, the endogenous growth model also permits the incorporation of other factors (variables) such as FDI, government expenditure, education, life expectancy, institutional quality, population growth, and exchange rate( Barro, 1998b;Suleiman et al., 2013; Anaman, 2004).The model used here follows the endogenous growth models developed by Lucas (1988) and Romer(1986)in a panel setting, which describes the relationship between economic development and the various components. The model is therefore presented as follows:

$$Y_{it} = f(FDIN, GFCF, \Phi_i X_{it}) \dots\dots\dots (1.3)$$

Where, FDIN refers foreign direct investment, GFCF stands for domestic investment which is proxied by gross fixed capital formation.  $X_{it}$  includes all other determinants of economic growth which are considered in this study;  $\Phi_i$  stands for the coefficients. Therefore, by including all the variables included in this empirical chapter as affecting economic growth, equation 1.3 is re-specified as follows.

$$GDPPGr_{it} = \Phi_0 + \Phi_1 FDIN_{it} + \Phi_2 GFCF_{it} + \Phi_3 FD_{it} + \Phi_4 PGr_{it} + \Phi_5 GEX_{it} + \Phi_6 INFA_{it} + \mu_t + \alpha_i + u_{it} \dots\dots\dots (1.4)$$

Where, GFCF, FD, INFA, GEX and PGr stand for gross fixed capital formation, financial development, inflation rate, government expenditure and population growth respectively. Furthermore, in this study GFCF used as a measure of domestic investment. The rest of the notation is explained earlier in equation 1.2) and equation (1.3).

#### Estimation Techniques

This thesis uses unbalanced panel data from 46 African countries to analyze the impact of foreign direct investment on economic growth in African countries from 2000 to 2023. For this study, there are three main approaches to panel data regression analysis. Furthermore, the use of panel data,

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capturing both time series and cross-sectional variation, provides the basic framework of the model. This allows individual characteristics of firms or countries to be taken into account over time while examining how foreign direct investment affects economic growth. If the underlying assumptions about the data are consistent with these specifications, the model can include fixed effects to account for unobserved variables that may influence the outcome, as well as random effects. Accordingly, the basic framework of the model is:

$$Y_{it} = X'_{it}\Phi + Z'_{it}\Omega + \varepsilon_{it} \text{-----1.5}$$

$$Y_{it} = X'_{it}\Phi + \pi_i + \varepsilon_{it} \text{-----1.6}$$

There are  $Y_{it}$  regressors in  $X_{it}$ , not including a constant term. The heterogeneity or individual effect is. Where  $Z_i$  contains a constant term (time-invariant) and a set of individual or group-specific variables which may be the observed or unobserved character. If  $Z_i$  is detected for all individuals, then the whole model can be taken as an ordinary linear model and fit by least squares. The difficulty ascends when  $\pi_i$  is undetected, which the case in most applications (Greene, 2012; 343-398).

#### 4. Results

##### Diagnostic Tests Results

According to descriptive statistics, the average values of economic growth and foreign direct investment (FDI) in African nations are 1.334 and 0.869, respectively. Economic growth and foreign direct investment have low values of -

5.023 and -6.167, respectively, and highest values of 9.363 and 4.638. A comparatively consistent data distribution across variables is suggested by the standard deviation values, which show little dispersion around the mean.

To ensure the robustness and reliability of the empirical model, several pre-estimation diagnostic tests were conducted prior to regression analysis, including correlation analysis, multicollinearity diagnostics using the Variance Inflation Factor (VIF), and panel unit root tests. These tests were undertaken to verify model adequacy, avoid misspecification bias, and prevent spurious regression results.

There is no significant multicollinearity between the explanatory variables, according to the correlation matrix. This outcome is further supported by multicollinearity diagnostics based on the Variance Inflation Factor. According to (Belsley, 1980). criterion, all regressors' inverse VIF (1/VIF) values are larger than 0.2, suggesting that multicollinearity is not an issue in the model.

Additionally, as non-stationary series might produce erroneous regression findings, panel unit root tests were used to assess the stationarity characteristics of the variables. Two suitable unit root tests—the Fisher-ADF and Phillips-Perron Fisher tests—were used because the dataset is an imbalanced panel. The findings indicate that, with the exception of financial development (FD), which becomes stationary during first differencing, all variables are stable at level. Overall, the results verify that none of the variables are still non-stationary, guaranteeing the reliability of the regression analysis that follows.

Table1: Unit Root Test Result

Variables	Levels			
	Intercept		Intercept and trends	
	ADF-Fisher statistics	P-values	ADF-Fisher statistics	P-values
lnGDPPGr	30.9254***	0.0000	18.8341***	0.0000
lnFDIN	23.0458***	0.0000	5.3896***	0.0000
lnPGr	22.4237***	0.0000	13.7118***	0.0000
lnINFA	33.4756***	0.0000	15.4949***	0.0000
lnFD	11.6682***	0.0000	-0.5167	0.6973
lnGEX	13.9544***	0.0000	2.3022**	0.0107
lnGFCF	15.8952***	0.0000	2.3544***	0.000
First Difference				
Variables	Intercept		Intercept and trends	
	ADF-Fisher statistics	P-values	ADF-Fisher statistics	P-values
D. lnGDPPGr	30.9254***	0.0000	18.8341***	0.0000
D. lnFDIN	48.2941***	0.0000	33.3864***	0.0000
D. lnPGr	22.4237***	0.000	13.7118***	0.0000
D. lnINFA	33.4756***	0.0000	15.4949***	0.0000
D. lnFD	37.3898***	0.0000	22.2320***	0.0000

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D.lnGEX	44.9774***	0.0000	29.4242***	0.0000
D.lnGFCF	15.8952***	0.0000	2.3544***	0.000

Variables	Levels			
	Intercept		Intercept and trends	
	Phillips-Perron-Fisher statistics	P-values	Phillips-Perron-Fisher statistics	P-values
lnGDPPGr	49.7138***	0.0000	48.8131***	0.0000
lnFDIN	20.4466***	0.0000	19.7264***	0.0000
lnPGr	2.8281***	0.0023	1.9251**	0.0271
lnINFA	35.8836***	0.0000	26.5178***	0.0000
lnFD	3.5790***	0.0002	4.8064***	0.0000
lnGEX	2.6666***	0.0038	3.7427***	0.0001
lnGFCF	3.2975***	0.0005	1.7686**	0.0385

Variables	At Differences			
	Intercept		Intercept and trends	
	Phillips-Perron-Fisher statistics	P-values	Phillips-Perron-Fisher statistics	P-values
lnGDPPGr	154.4109***	0.0000	132.2346***	0.0000
lnFDIN	124.6548***	0.0000	105.4233***	0.0000
lnPGr	30.1925***	0.0000	23.7329***	0.0000
lnINFA	35.8836***	0.0000	93.2784***	0.0000
lnFD	60.3343***	0.0000	50.3389***	0.0000
lnGEX	75.5110***	0.0000	61.1880***	0.0000
lnGFCF	67.1381***	0.0000	56.7345***	0.0000

Source: Author's computation. \*\*\*, \*\* and \* stands for a 1%, 5% and 10% significance level

Overall, the pre-estimation diagnostics confirm that the dataset satisfies the necessary statistical conditions, supporting the validity and reliability of the subsequent empirical estimations.

**Post-Estimation Diagnostic Test**

In the post-estimation stage, several diagnostic tests were conducted to examine potential issues that could bias the pooled regression results. These tests included assessments of residual normality, multicollinearity, heteroscedasticity, the Wald test, and the Hausman specification test. The purpose of these diagnostic checks was to ensure the validity, reliability, and robustness of the empirical model.

$$\text{Var} (\Phi_{it}\Omega_{it} = \gamma^2 h(\Omega_i) - - - - - 1.7$$

Heteroscedasticity occurs when the variance of the error term is not constant across observations, which violates the assumption of homoscedasticity in regression analysis. To detect this problem, both the Breusch–Pagan test and White's test were employed. The Breusch–Pagan test results indicated the presence of heteroscedasticity, as the p-values were statistically significant. Similarly, the results of White's test confirmed that the variance of the error terms was not constant across observations. Consequently, robust standard

errors were applied in the estimation to correct for the heteroscedasticity problem.

In addition, the Modified Wald test was conducted to examine GroupWise heteroscedasticity in the fixed effects model. The results revealed a significant chi-square statistic ( $\chi^2 = 5721.33$ ,  $p = 0.000$ ), leading to the rejection of the null hypothesis of homoscedasticity. This further confirmed the presence of heteroscedasticity in the model, and therefore robust standard errors were used to ensure reliable statistical inference.

The normality of residuals was also examined to assess the distribution of the error terms. Although the normal distribution of residuals is important for validating regression results, this assumption is less restrictive in large panel datasets, where the normality requirement is often relaxed.

Furthermore, the Ramsey RESET test was used to evaluate potential model misspecification. The significant p-value suggested possible over-identification or omitted variable issues, indicating that the model specification should be interpreted with caution.

To determine the most appropriate estimation technique, a Wald test was first applied to assess the suitability of the pooled Ordinary Least Squares (OLS) model for the dataset consisting of 46 countries. The joint significance of country-



specific dummy variables led to the rejection of the pooled OLS model, indicating that country-specific effects are important.

Finally, the Hausman specification test was performed to choose between the fixed effects (FE) and random effects (RE) models. The test rejected the random effects model ( $p = 0.001$ ), indicating that the fixed effects specification is more appropriate. Consequently, the fixed effects model was selected as the main estimation approach for the empirical analysis.

## 5. Results

### a. Ordinary Least Squares (OLS) Regression Results

The regression model includes economic growth, proxied by GDP per capita growth (GDPPGr), as the dependent variable, while foreign direct investment (FDI), measured by net inflows (FDIN), is the key explanatory variable. Control variables include government expenditure (GEX), domestic investment proxied by gross fixed capital formation (GFCF), financial development (FD), inflation rate (INFA), and population growth (PGr).

The OLS results show that foreign direct investment has a positive impact on economic growth in African countries across both estimated models. Domestic investment and population growth are also positively associated with economic growth and statistically significant. In contrast, inflation exhibits a negative relationship with economic growth during the study period. The overall model is statistically significant at the 1% level (F-statistic  $p = 0.000$ ). The  $R^2$  value of 0.25 indicates that approximately 25% of the variation in economic growth in African countries is explained by the explanatory variables included in the model.

### b. Fixed Effects and Random Effects Regression Results

To examine the relationship between FDI and economic growth in 46 African countries from 2000–2023, both fixed effects (FE) and random effects (RE) models were estimated. The Hausman specification test was applied to determine the most appropriate model. The results favored the fixed effects model, as indicated by the significant p-value, suggesting that the FE specification provides more reliable estimates. Consequently, the empirical analysis primarily relies on Model 3 of the fixed effects model with robust standard errors to address heteroscedasticity.

The results indicate that foreign direct investment has a positive and statistically significant effect on economic growth at the 5% significance level. This finding suggests that FDI contributes to economic growth in African countries through mechanisms such as technology transfer, innovation, employment creation, and productivity improvement.

Among the control variables, domestic investment (GFCF), financial development (FD), and population growth (PGr) show positive effects on economic growth, while financial development is statistically significant at the 1% level. Government expenditure (GEX) also shows a positive relationship with economic growth, although it is statistically insignificant. Conversely, inflation negatively affects economic growth, indicating that rising price levels reduce purchasing power and may hinder economic performance.

### c. Robustness Check

Robustness testing was conducted to examine the stability of the empirical results under alternative model specifications. Robustness analysis helps ensure that the main findings remain valid despite potential uncertainties in model specification, variable selection, or measurement issues.

In this study, robustness was tested by replacing one control variable in the main model. Specifically, financial development (FD) was excluded and human capital development (HUCA) was introduced as an alternative explanatory variable. The results remained consistent with the baseline model, confirming the stability and reliability of the estimated relationship between foreign direct investment and economic growth. Most control variables retained their expected signs and continued to show meaningful relationships with economic growth across African countries during the study period.

### d. Endogeneity Test Results

Due to omitted variable bias, endogenous problems are particularly challenging to solve when panel Countries Fixed Effects are included. Time-varying Omitted variables are still difficult to work with. Instrumental variables are the most effective tactic (Hausman & Taylor, 1981). To solve the Endogeneity problem instrumental variables are the most effective approach (Hausman & Taylor, 1981). To address potential Endogeneity issues between foreign direct investment and economic growth, the study employed the Two-Stage Least Squares (2SLS) estimation technique. This method helps correct for possible simultaneity bias and provides more reliable causal estimates.

In the 2SLS framework, government expenditure (GEX) is treated as the endogenous variable influencing economic growth, while the unemployment rate (UNEMP) is used as an instrumental variable to isolate the causal effect. The remaining explanatory variables are treated as exogenous, assuming no correlation with the error term.

The 2SLS estimation results confirm the validity of the model and provide more reliable insights into the relationship between foreign direct investment and economic growth in African countries. Overall, the findings support the conclusion that foreign direct investment plays a significant role in promoting economic growth in the region.

Table2: OLS, FE, RE & Regression Result

	OLS With robust Option	FE With robust option	RE With robust option	TSLs
Variables	lnGDPPGr	lnGDPPGr	lnGDPPGr	lnGDPPGr
lnFDIN	0.220*** (0.042)	0.109** (0.041)	0.117*** (0.038)	0.0407* (0.0245)
lnGEX	0.182 (0.117)	0.215 (0.167)	0.185 (0.172)	0.8593** (0.3541)
lnGFCF	0.274** (0.123)	0.347** (0.130)	0.349*** (0.126)	0.0026 (0.0224)
lnFD	0.022 (0.036)	0.131*** (0.046)	0.121 (0.083)	0.8622** (0.34207)
lnINFA	-0.126** (0.059)	-0.110** (0.049)	-0.107** (0.049)	-0.01745 (0.01852)
lnPGr	1.331*** (0.189)	0.227*** (0.073)	0.399** (0.162)	2.3862*** (0.5176)
Constant	-0.009 (0.019)	23.630 (23.757)	-1.507 (384.425)	27.7105*** (9.6329)
Observations	717	717	717	796
R-squared	0.250			
No of countries	46			
F-test	4.04			
Prob > F	0.0000			
Robust SE		Yes	Yes	
Year fixed effect		Yes	No	
Country fixed effect		Yes		
Wald chi2(6)				29.16
Prob>chi2				0.0001

Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Source: Author's computation. \*\*\*, \*\* and \* stands for a 1%, 5% and 10% significance level

## 6. Discussions

Foreign direct investment (FDI) serves as a key channel for technology and knowledge transfer, strengthening linkages between local firms and host economies and thereby promoting economic prosperity in both developed and developing countries (Badmus & Oyekanmi, 2020). This empirical chapter examines the impact of foreign direct investment (FDI) on economic growth in 46 African countries from 2000 to 2023 using data from the World Bank's World Development Indicators. Some countries were excluded due to data limitations. Based on the Hausman test (p = 0.0199), the fixed effects (FE) model was selected as the most appropriate estimation technique, although the random effects model was also estimated for comparison. The interpretation

of the main results relies on Model 3 of the fixed effects specification.

The findings indicate that FDI has a positive and statistically significant effect on economic growth with 0.109\*\* at 5% level of significance suggesting that foreign investment contributes to economic performance in African countries.

This finding confirmed that foreign direct investment (FDI) is a critical foundation of investment in developing countries like African countries. It is crucial for the long-term growth of these economies as it supplements and complements insufficient domestic investment levels due to low savings (UNCTAD, 2018). It is further argued that foreign finance creates jobs, transfers modern technology, improves

efficiency, develops and upgrades the skills of local suppliers, and integrates Africa into the global economy.

This supports the argument that FDI supplements limited domestic investment in developing economies and promotes growth through technology transfer, job creation, innovation, and integration into the global economy. In addition, this current finding supports the findings of various previous scholars who have noted the existence of a positive relationship between economic growth and foreign direct investment (Sukar et al., 2007; Juma, 2012; Elrasheed & Muhammad Abdullahi, 2022). However, this current finding contradicts the finding of Heshmati (2007) that there is no clear consensus on the existence of a positive relationship between FDI and economic growth, but there has been a growing view in recent years that FDI is positively correlated with economic growth. In a similar manner, (Porter, 2005; Marin & Arza, 2009) blamed multinational companies for not actually transferring technology to developing countries, of failing to train employees in the host country, or of importing home country technologies that are ill-suited to the conditions in the host country and displacing indigenous technologies.

Regarding control variables, government expenditure (GEX) shows the expected positive sign but is statistically insignificant, indicating that government spending did not significantly influence economic growth during the study period. This finding is consistent with some previous studies that also report weak or insignificant relationships between government expenditure and growth in African countries Nasiru, (2012).

The inflation rate (INFA) is negatively associated with economic growth, implying that rising inflation reduces economic performance. Specifically, a 1% increase in inflation decreases economic growth by approximately 0.110%, reflecting the adverse effects of price instability on investment decisions and economic activity. While this finding contradicts some theoretical perspectives that suggest a positive relationship between inflation and growth, it aligns with empirical studies that emphasize the negative impact of inflation on economic performance. On the other hand, the current findings contradict the Keynesian theoretical framework, which suggests a positive relationship between inflation and economic growth. Likewise, they are inconsistent with the Aggregate Supply–Aggregate Demand (AS–AD) framework, which also posits that higher economic growth is associated with rising inflation. In contrast to these theories, the results indicate that inflation has a negative effect on economic growth, aligning with the findings of Frimpong & Oteng-Abayie (2010) in the case of Ghana.

Domestic investment, measured by gross fixed capital formation (GFCF), has a positive and statistically significant effect on economic growth. The estimated coefficient indicates that a 1% increase in domestic investment increases economic growth by approximately 0.347%, highlighting the important role of capital formation in expanding productive capacity, creating employment opportunities, and promoting technological advancement. This result confirms the fact that

domestic investment increases productive capacity, creates employment opportunities, promotes technological advancement, increases growth rates, increases exports and introduces innovations, and reduces poverty in the country (World Bank, 2019). Furthermore, the findings support previous studies indicating that domestic investment is essential for economic growth, as it enables entrepreneurs to mobilize resources for the production of goods and services (Bayai & Nyangara, 2013). However, the results contradict those of Ilegbinsosa et al. (2015), who reported no significant positive relationship between domestic investment and economic growth.

Similarly, financial development (FD) is positively and significantly related to economic growth, suggesting that improvements in financial sector development contribute to economic performance. This finding reflects the role of financial systems in mobilizing savings, allocating capital efficiently, and facilitating investment and technological progress. On the contrary, Okuyan, (2022) found a result that can be interpreted to mean that there is no relationship between financial development and economic growth in developing countries that holds for every country. The authors argue that the relationship between financial development and economic growth may vary according to a country's domestic and regional dynamics.

Finally, population growth (PGr) shows a positive and statistically significant relationship with economic growth. The results suggest that a 1% increase in population growth leads to a 0.227% increase in economic growth, indicating that population expansion may contribute to economic performance through increased labor supply, innovation, and productivity. This finding supports the population-driven growth perspective, particularly in the African context where a large share of the population is young and economically active.

Overall, the empirical results suggest that FDI, domestic investment, financial development, and population growth positively influence economic growth in African countries, while inflation negatively affects economic performance, and government expenditure shows no statistically significant impact during the study period.

Although this study expects the positive impact of government spending on the African economy between 2000 and 2023, the result did not indicate the existence of a positive relationship between economic growth and government spending. Although government expenditure has the expected positive sign, the coefficient is not statistically significant at any level of significance.

## 7. Conclusions and Recommendations

In order to better understand the contribution of foreign direct investment (FDI) to economic growth in developing countries, especially in African countries, this critical study has attempted to analyze the theoretical and empirical literature on FDI. The main objective of the economic development process is to create effective and improved foreign direct investment that contributes to the economy of the countries

whether the countries are developed or developing countries. To this end, the main argument of the study is the effectiveness of foreign direct investment as a priority area that is essential for the economic development of developing countries. It therefore highlights some areas where further research is urgently needed, namely how to design FDI and how to balance the need for FDI with economic growth and investment stability in order to reduce poverty across nation states. Therefore, in developing countries such as Africa, the development of FDI plays a crucial role in effective economic growth. However, in developing countries, particularly African countries, the performance of FDI is still at an early stage and its contribution to supporting economic growth is not as great as it is in other developed and developing countries. Although there are a few studies examining the impact of FDI in Africa as a region, the results are still mixed and there is no consensus.

The main objective of this study is to empirically evaluate the impact of foreign direct investment on economic growth. The panel data of 46 African countries were taken from the World Bank's World Development Indicator sources. To this end, the study used the fixed effects model over the random effects model as suggested by the Hausman test result. Consequently, as confirmed in the Hausman test result chi-squared test result 15.04 with the p-value 0.0199 suggested that the fixed effects model is the appropriate model over the random effects model. Accordingly, the interest variable of this study, foreign direct investment (FDI) has the expected positive impact on 46 African economies and is statistically significant. Accordingly, the variable of interest in this study, foreign direct investment (FDI) has the expected positive impact on the African economy and is statistically significant. This finding supports the evidence that foreign direct investment (FDI) has a significant impact on a range of economic factors, including employment, exports, knowledge diffusion, local capital and economic growth and location preferences. Furthermore, most researchers agree that as long as the host country has reached a certain level of technological, educational and infrastructural development, FDI inflows and economic growth are positively correlated (Juma, 2012; Younus et al., 2014; and MWITTA, 2022). For African countries in particular, several previous works by many scholars on the impact of foreign direct investment on economic growth have been positive (see Taylor, 2020 and Ndlovu, 2024). However, there are also findings indicating a negative relationship between economic growth and foreign direct investment, and no relationship at all between economic growth and foreign direct investment in developing general and African countries in particular (see Khaliq, 2007; Agiomirgianakis et al., 2003; and Gui-Diby, 2014).

Similar to foreign direct investment, control variables such as financial development (FD), gross fixed capital formation (GFCF), government expenditure (GEX) and population growth (PGr) are among the variables that have a positive impact on the African economy between 2000 and 2023. Specifically, financial development, population growth and domestic investment are statistically significant at the 5

percent significance level and have a positive impact on the African economy between 2000 and 2023. These results suggest that the presence of population growth, financial development, and domestic investment supports the economic growth of the country by providing opportunities for expanding innovation, expanding the existing market opportunities that contribute to the economic growth of the country. In contrast to the main target variable (independent variable) and other control variables, the inflation rate had a negative and statistically significant impact on economic growth. Additionally, the robustness of this study is also confirmed by excluding some control variables from the main finding and including other control variables that were not previously the main finding. Furthermore, this empirical method uses the two-stage least squares (2SLS) techniques to overcome the problem of Endogeneity issues.

Based on the current findings, the study makes the following recommendations: (i) the study emphasize the importance of attracting more foreign investments to boost economic growth. This can be achieved by implementing favorable policies designed to appeal to foreign investors and encouraging them to invest in the region. It is therefore suggested in this study that governments and stakeholders in African countries need to develop policies and strategies to make foreign direct investment in African countries work better and to make them stronger and more efficient. (ii) As can be seen in the result (Table 5.12), government expenditure has no positive and statistically significant impact on African countries during the study period. This suggests that governments in African countries should minimize the budget in recurrent capital and invest more in capital expenditure rather than recurrent expenditure as capital expenditure will have a positive impact on economic growth.

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