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Panel Estimation FDI-Growth Relations in Sub-Saharan African Countries

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Abstract

This paper examines the panel estimation of FDI-Growth relations in Sub-Sahara African (SSA) countries for the period 1995-2018. The empirical findings show that none of the three FDI model specified are statistically significant due to non-significant of the coefficient of the FDI probability value greater than 5%. NRR has substantial coefficients in the pooled OLS and random effect models while its coefficient in the fixed effect models is negative. Essentially, POP has favourable coefficients in the pooled OLS random effect model. Relying on empirical findings FDI in SSA was not NRR seeking. This implies that while FDI tends to boost growth in SSA, it is not a crucial factor in the continent's economic emancipation. Hence, to grow the share in global FDI flows, SSA must work to create a favourable condition such as energy efficient economy and programmatic policies to encourage FDI inflow into the region.

Key words: FDI, Growth, Panel estimation, POP, SSA

Introduction

Throughout the last three decades, there has been a worldwide surge in foreign direct investment (FDI). Sub-Saharan Africa (SSA) still ranks towards the bottom of recipient regions for FDI (Adediran et al., 2023; Antonietti et al., 2023; Ayenew et al., 2022; Asiedu, 2002; Kimiagari et al al., 2023). SSA accounting for just 3% of all FDI globally. The distribution of FDI in the area is likewise unequal, with only a small number of SSA nations getting a sizable portion of the total FDI inflows. For instance, during 1987-1990 and 1995-1998, four oil-producing nations; Nigeria, Angola, the Republic of the Congo, and Equatorial Guinea—received 41% of average FDI inflows and 33% of the increase in FDI. The advantages of FDI are evident, as most developing nations' efforts to enhance their business environments, liberalise regulatory frameworks, and provide incentive packages to international investors in order to draw FDI (Koku et al., 2020). Essentially, a country seeking FDI as well as multinational corporations have significant concerns about where manufacturing takes place within the global geoeconomic area (Dunning, 1998). The main reason for this is because firms are under pressure from competitors to increase earnings (Porter, 1990**)**. Also, host economies that welcome FDI reap benefits (Donou-Adensou et al., 2018; Naude & Krugell, 2007; Kudaisi, 2014).

Absolute FDI flows to Sub-Saharan Africa rise from US$14.9 billion in 2001 to US$19.67 billion in 2005 to US$36.8 billion in 2008 to US$41.87 billion in 2011. (UNCTAD, 2012). Mergers and acquisitions across countries indicate that services account for 64.51% of sales figure, while industrial and non-industrial commodities account for 3.8% and 30.6%, respectively, and in 2011, the European Union was solely responsible for 27.65% of greenfield FDI into Africa. West Africa held the top spot throughout the 2000s (UNCTAD, 2012). There are still issues with FDI inflow in SSA notwithstanding economic changes that have made FDI transactions more efficient (Asafo-Agyei et al., 2022; Dadzie, 1990; Okoroafo &

Torkornoo, 1995). They generally relate to how a location characteristic serves as merits balance out against location-specific demerits (LSDs), or in terms of benefits/costs analyses (LSDs). Hence, strategies and approaches for enhancing FDI inflows to SSA must take into account both the firmness and instability of Location characteristic merit and demerit (UNCTAD, 2006).

Theoretically, there are four major categories under which the determinants of FDI can be categorised: theories that assume ideal/perfect markets, theories that assume imperfect markets, theories based on other factors, and additional theories. The Dunning's organisation, location, and internalisation (OLI) hypothesis condenses these broad categories (Chen et al., 2023; Moosa, 2002). Only the locational feature of the OLI paradigm can be taken into consideration by FDI studies using country-level data. Studies at the country level, however, on foreign direct investment (FDI) in developing nations, particularly in Sub-Saharan Africa (SSA), have only concentrated on other geographical characteristics that affect FDI activities, such as those related to resource, market, and efficiency seeking. The effect of the Natural Resource Rent (NRA) on FDI activities in SSA has thus not fully been researched. As a result, the study makes the following contributions to the FDI literature in SSA. First of all, FDI activities into SSA were explained using population size to examine FDI locational activities. Second, it was discovered that SSA sub-regional groupings' FDI determinants varied structurally and behaviorally. SSA FDI studies combine all the nations in their sample without examining if there are behavioural and structural differences across the groups. These contributions contribute something intriguing and significant to what is already known about why Multinationals choose to invest in SSA.

Panel data from a sample of nations from 1995 to 2018 were used in the study. The influence of the NRR and population size variables on FDI in SSA was examined using a sample of 13 countries due to data restrictions in the collection of the variables used in the study.

Literature Review

Foreign direct investment is seen as a source of economic development in many developing nations due to its direct and indirect contributions. The benefits of foreign direct investment include technical spillovers, the development of human capital, the integration of international trade, the creation of jobs, and the creation of a competitive environment for businesses. (Ayenew, 2022; Kobrin, 2005; OECD, 2002).

Along with the theoretical disagreements, earlier research actual findings were also controversial. For a panel of 32 countries between the years of 2008 and 2014, Jugurnath et al. (2016) study the effect of foreign direct investment on economic growth in SSA using GMM, the findings indicate that foreign direct investment significantly and favorably impacts economic growth. Nketiah-amponsah and Sarpong (2019) used the system GMM to analyze the effects of infrastructure and FDI on SSA's economic growth. According to their research, foreign direct investment interacts with the infrastructure of the host country to have a positive impact on economic growth. Makiela and Ouattara (2018) used the system GMM to conduct a study using a sample of industrialized and developing nations between 1970 and 2007. Their findings demonstrate that foreign direct investment helps the host countries' economies grow. Mohd and Muse (2021) used the VAR model to conduct a study in Ethiopia from 1981 to 2017. They concluded that both in the short and long terms, foreign direct investment had a favorable and significant impact on economic growth. Similar research was done by Nguyen (2020) on a particular Vietnamese nation from 1997 to 2018, and the results demonstrate that foreign direct investment has a good and considerable impact on economic growth.

Agyei and Kodongo (2022) used a multivariate regression model (a threshold technique) to assess how foreign direct investment (FDI) impacts economic growth in sub-Saharan Africa (SSA) and how FDI absorptive capacity plays a mediating role. According to the study's findings, the annual threshold for FDI inflows per person is roughly $44.67. Countries must have a minimal capacity to absorb the growth-enhancing advantages of FDI in order for it to have a substantial impact on economic growth.

Through the analysis of the transmission pathways from FDI to growth, Ouattara and Makiela (2018) analyze the effects of foreign direct investment (FDI) on economic growth. The findings are based on data collected from a sample of industrialized and developing nations between 1970 and 2007. The results demonstrate that growth via input accumulation rather than growth via total factor productivity is possible.

To complement the roles of economic freedom and financial fragility in the foreign direct investment (FDI) growth nexus for 36 SSA countries, Kwablah and Amoah (2020) used a neoclassical growth model. The study's main finding is that in order to maximize the impact of FDI on economic growth, the financial system must be strengthened and economic freedom must be promoted. The paper makes the case for the necessity of bolstering the financial system and encouraging economic freedom in order to improve the impact of FDI on economic growth using the completely modified ordinary least square technique.

Essentially, stimulants of FDI are examined through several theoretical and empirical standpoint in economics and finance literature (De Macedo, Pereira & Lopes, 2009). A "rear-view mirror" viewpoint of the origins of FDI theory through examining internalization theory is provided by Dunning's (1997). Ferreira, Pinto, Serra, and Gaspar (2011) explain the growth of the "eclectic paradigm," which has been the predominant operational framework within international business and finance for analysing the drivers of FDI, from 1958 to 2000. This paradigm articulates the dynamic interaction between a firm's ownership advantages, a country's locational advantages, and internalization. Dunning (2000) first created it and later expanded it in 1978, 1988, 2000, and 2001. Ownership advantages, or firm-specific advantages, bestow higher performance on the MNE relative to local or indigenous enterprises in any given place, according to the OLI paradigm, which is also known as the "oli" paradigm. The ability of MNEs to have ownership advantages that are tailored to local (or regional) factors of production, marketing, or services (in balance with location specific disadvantages - relative to other competing locations) results in additional competitive advantages for the MNE over local businesses. Finally, internalisation, which is the encapsulation of market procedures and transactions within the organisational limits of MNEs as a result of market failure, bestows even more benefits on the MNE by preventing "hold up" and agency issues. As a result, the driving forces behind FDI consolidate into a dynamic combination of efficiency, market, resource, and strategic asset-seeking. In this four-dimensional rationale, FDI determinants include MNEs' mobile, spatially-distributed industrial organisation and their inherent ownership advantages ('O'), as well as immobile location advantages ('L') unique to the host for FDI (Coase, 1937); MNEs' capacity to internalise markets within the confines of the firm ('I') (Buckley & Casson, 2002); transaction costs (Brouthers, 2002). According to Dunning (1998), internationalisation is the simultaneous coordinating and controlling function of MNEs' market-based transactions and innovation-driven changes across geo-economic space. These are locally, regionally and globally manifest as MNEs foreign market servicing strategies through modes of entry that co-evolve with changing conditions of competition and globalisation (Markusen & Stahler, 2009).

According to the "OLI" framework, the factors that influence MNE FDI decisions include: "push" (from the source government); "pull" (from the host government); competitive productivity-adjusted labour costs; rapidly expanding markets (as a function of demographic profiles); availability of natural resources; and investment climate (the comparatively easy business environment) (Dutta & Roy, 2011; Jayasuriya, 2011). Experience shows that MNEs choose locations for investment based on variations in a "wish list" that create an overall attractive investment climate, namely: I Political stability (because capital investments are time framed longer than the incumbency of elected Governments); (ii) Economic stability; and (iii) International outlook (with respect to best practise).

For the years 1965 to 2001, Vijayakumar and Sridharan (2010) investigated the impact of FDI on the theory of trade-led growth in BRICS using tests of causality and panel cointegration which served as the study's foundation. The findings, which take into account the heterogeneous country impact, demonstrate a long-run cointegration link between FDI and growth. The causality test finds that openness and economic growth are causally related in both the long run and the short run. Additionally, it supports the existence of a one-way causal relationship between economic growth and FDI but not vice versa. Individually, it was discovered that FDI only led to economic growth in the Australian economy. The investigation's findings suggested that economic growth in the three countries could be detrimental to openness and international direct investment.

Kawaii (2005) uses threshold regression analysis to examine if FDI promotes economic growth. Based on a sample of 62 nations during the time examined from 1975 to 2000, their analysis demonstrates that FDI alone plays an ambiguous role in contributing to economic growth. They conclude that initially GDP and human capital are essential factors in explaining FDI. Furthermore, when host countries have higher levels of baseline GDP and human capital, FDI is demonstrated to have a favourable and significant impact on growth.

Hansen and Rand (2006) identified a bi-directional causal relationship between FDI/GDP and GDP level using a sample of 31 developing countries and estimators for heterogeneous panel data. They saw this finding as supporting evidence for the idea that FDI affects GDP through knowledge transfers and the adoption of new technology. Using heterogeneous panel analytic techniques, Adams (2009) found a bi-directional causal relationship between FDI and growth in Africa countries. For this particular collection of nations, their findings are consistent with the endogenous growth theory.

Herzer, Klasen, and Lehmann (2008) use in-depth sectoral data for FDI inflows to Indonesia for the period of 1997–2006 to examine the effect of FDI on economic growth. They came to the conclusion that FDI has a favourable impact on economic growth at the aggregate level using the methodologies of augmented production function specification and regression methodology with time fixed effects. The positive influence of FDI was thought to be lost, though, when average growth performance across sectors was taken into account. Estimation results revealed that the mix of FDI matters for its impact on economic growth when looking at various implications across industries. Few industries exhibited a favourable effect of FDI, and one industry even shown a significant negative effect of FDI on economic growth.

Model Specification and Estimation Method

Model Specification

The model to be estimated is:

$$\mathrm{PCY}_{it} = \beta_1 + \beta_2\ \mathrm{FDI}_{it} + \beta_3 \mathrm{NRR}_{it} + \beta_4\ \mathrm{POP}_{it} + \beta_5\ \mathrm{INF}_{it} + \beta_6\ \mathrm{INT}_{it} + \mathrm{U}_{it} \qquad (3.1)$$

Where PCY, FDI, POP, INF, NRR and INT are per capita income, Foreign Direct Investment, Population, Inflation rate, Natural Resource Rent and Interest rate, respectively. U_{it} is the Error term for country i at time t. The β_1- β_6 are country specific parameters

Estimation Method

The fixed and random effects that are used to present the panel data dynamics are heavily predicated on the assumption that the error term exists. When performing a pooled regression, the OLS is applied to stacked data, disregarding the independence of the data by cross-section and time series. The common intercept and slope vector are efficiently and consistently estimated by the model.

The Model Representations for Polled OLS is:

$$y_{it} = \alpha + \beta_j^{/} x_{jit} + \varepsilon_{it}, \quad i = 1, 2, ..., n; \quad t = 1, 2, ..., T; \quad j = 1, 2, ..., K. \qquad (3.2)$$

where $\varepsilon_{\mathrm{it}} \sim iid(0, o^2); E[\varepsilon_{\mathrm{it}}] = 0,\ Var[\varepsilon_{\mathrm{it}}] = o^2$ and $\mathrm{Cov}[\varepsilon_{\mathrm{it}}\varepsilon_{\mathrm{js}}] = 0$ if $t \neq s$ or $i \neq j$.

The estimated coefficients are obtained using the formula $\hat{\boldsymbol{\beta}} = \left(\mathbf{X}^{/}\mathbf{X}\right)^{-1} \mathbf{X}^{/}\mathbf{y}$

The estimation of the fixed effect model (FEM) is followed by a range of linear panel data models that are developed under various suppositions. The panel regression pooled model ($y_{it} = \alpha + \beta'\mathbf{x}_{it} + \varepsilon_{it}$) to give Total-Within- and Between-Units (groups) estimations, which can then be recast into three mean deviation models. OLS can estimate the coefficients (the topic of interest) and the intercept term drop out from these models, if not exactly accurately. These models' estimations of can be used to analyze random effects in panel data models and to derive significant results.

Let $\bar{\bar{y}}\left(\equiv \bar{y}_{it}\right)$, $\bar{\bar{\mathrm{x}}}\left(\equiv \bar{x}_{jit}, j=1,\ldots,k\right)$ and $\bar{\bar{\varepsilon}}\left(\equiv \bar{\varepsilon}_{it}\right)$, then this model is expressed as:

$$\left(y_{it}-\bar{\bar{y}}\right)=\beta'\left(\mathbf{x}_{it}-\bar{\bar{\mathbf{x}}}\right)+\left(\varepsilon_{it}-\bar{\bar{\varepsilon}}\right) \tag{3.3}$$

The estimate of β is the same as that obtained by applying OLS to nT observations in 'total mean' deviation form in (3.3). With the least squares[1] estimator of β from the sample given by:

$$\mathrm{b}^{total}=\left[\mathrm{S}_{xx}^{total}\right]^{-1}\mathrm{S}_{xy}^{total}\equiv\left(\mathbf{x}^{t'}\mathbf{x}^{t}\right)^{-1}\left(\mathbf{x}^{t'}\mathbf{y}^{t}\right).$$

The REM regression is

$$y_{it}=(\alpha+u_i)+\boldsymbol{\beta}'\mathbf{x}_{it}+\varepsilon_{it} \tag{3.4}$$

The Generalized Least Squares (GLS) estimator given by

$$\hat{\boldsymbol{\beta}}=\left(\mathbf{X}'\boldsymbol{\Omega}^{-1}\mathbf{X}\right)^{-1}\mathbf{X}'\boldsymbol{\Omega}^{-1}\mathbf{y};\ \text{where}$$

$$\underset{(nT\times nT)}{\boldsymbol{\Omega}^{-1}}=\begin{pmatrix}\underset{(T\times T)}{\sum}^{-1} & \mathbf{0} & \cdots & \mathbf{0}\\ \mathbf{0} & \underset{(T\times T)}{\sum}^{-1} & & \mathbf{0}\\ & \vdots & \cdots & \vdots\\ \mathbf{0} & \mathbf{0} & & \underset{(T\times T)}{\sum}^{-1}\end{pmatrix}=\underset{(n\times n)}{\mathbf{I}}\otimes\underset{(T\times T)}{\sum}^{-1}$$

and $\underset{(T\times T)}{\sum}^{-1}=\left(\sigma_\varepsilon^2\mathbf{I}_T+\sigma_u^2\mathbf{i}_T\mathbf{i}'_T\right)^{-1}=\frac{1}{\sigma_\varepsilon^2}\left[\left(\mathbf{I}_T-\frac{1}{T}\mathbf{i}_T\mathbf{i}'_T\right)+\lambda\frac{1}{T}\mathbf{i}_T\mathbf{i}'_T\right]$ with $\lambda=\dfrac{\sigma_\varepsilon^2}{\sigma_\varepsilon^2+T\sigma_u^2}$

the Hausman test is given by the following formula:

[1] The matrices of sums of squares and cross products that would be used in this case will be

$$\mathrm{S}_{xx}^{total}=\underbrace{\sum_{i=1}^{n}\sum_{t=1}^{T}\left(\mathbf{x}_{it}-\bar{\bar{\mathbf{x}}}\right)\left(\mathbf{x}_{it}-\bar{\bar{\mathbf{x}}}\right)'}_{\left(\mathbf{x}^{t'}\mathbf{x}^{t}\right)}\quad\text{and}\quad\mathrm{S}_{xy}^{total}=\underbrace{\sum_{i=1}^{n}\sum_{t=1}^{T}\left(\mathbf{x}_{it}-\bar{\bar{\mathbf{x}}}\right)\left(y_{it}-\bar{\bar{y}}\right)'}_{\left(\mathbf{x}^{t'}\mathbf{y}^{t}\right)}$$

$$H = [\hat{\mathbf{b}}_{FE} - \hat{\boldsymbol{\beta}}_{RE}]^{/} \boldsymbol{\Psi}^{-1} [\hat{\mathbf{b}}_{FE} - \hat{\boldsymbol{\beta}}_{RE}] \xrightarrow{Asym.} \chi^2(k-1)$$

where $[\hat{\mathbf{b}}_{FE} - \hat{\boldsymbol{\beta}}_{RE}]$ is a vector of the difference in slope coefficients between the fixed effects estimator $\hat{\mathbf{b}}_{FE}$ and the random effects estimator $\hat{\boldsymbol{\beta}}_{RE}$, while $\boldsymbol{\Psi}$ is the difference in the variance matrix of slope coefficients between the fixed and random effects (i.e., $\boldsymbol{\Psi} = \text{Var}[\hat{\mathbf{b}}_{FE} - \hat{\boldsymbol{\beta}}_{RE}]$.

The alternative test which guarantees a positive definite covariance matrix is

$$H = (\hat{\mathbf{b}}_{LSDV} - \hat{\boldsymbol{\beta}}_{MEANS})^{/} \left[\text{var}[\hat{\mathbf{b}}_{LSDV}] + \text{var}[\hat{\boldsymbol{\beta}}_{MEANS}] \right]^{-1} (\hat{\mathbf{b}}_{LSDV} - \hat{\boldsymbol{\beta}}_{MEANS}) \xrightarrow{Asym.} \chi^2(k-1)$$

where $\hat{\boldsymbol{\beta}}_{MEANS}$ is the group means estimator.

In addition to this the diagnostic check we be done. That is the study will also be conducted detailing the results and analyses for the Autoregressive conditional Heteroscedasticity (ARCH) for heteroscedasticity test, the Lagrangian multiplier (LM) test for higher order autocorrelation and the Ramsey reset test for the model specification.

Data Sources

Secondary data are used in the study. The balanced panel consists of annual data for FDI inflows for selected 10 SSA countries for the period of 1995 – 2018. The data are gathered and verified from various sources including International Financial Statistics by IMF, World Development Indicators and World Debt Tables.

The Findings and Discussion

This section shows the output of panel-estimation and as well as empirical explanation of the results.

Table 4.1:
Panel regression results for PCY

Variables	Pooled OLS (Stalked OLS)	Panel Least Square (Fixed effects)	Panel Least Square (Random effects)
FDI	3.0283 (0.210)	0.1210 (0.2411)	1.1872 (0.7222)
NRR	-0.099 (0.021)*	-0.075 (0.053)	0.6811 (0.010)*
POP	0.3622 (0.000)*	-0.3121 (0.000)*	0.5621 (0.1320)
INFL	-2.1131 (0.0000)*	-0.3151 (0.0000)*	-2.1132 (0.5132)
INT	0.2438 (0.000)*	1.2516 (0.4042)	0.2436 (0.6026)

R^2	0.8021	0.8712	0.6681
$\bar{R}^2$	0.7844	0.8556	0.5481
S.E.E	0.7191	0.8242	2.4321
D.W	1.8421	2.1846	1.9612
F. Stat	7.16	3.1832	5.1214
Pr(F. Stat)	0.002	0.001	0.023
( ) represents the probability values of the estimated coefficients; * statistically significant at 1%.			

Source: Author's computation (2023) using E-view 9.0.

The study examines the estimated parameters to determine how the included regressors affect the endogenous variable. As can be seen, all three computed models for FDI have direct coefficients. Its coefficients for the fixed effect, random effect, and pooled OLS are 3.0283, 0.1210, and 1.2172, respectively. However, none of the FDI three models estimated are statistically significant because none of the coefficient of FDI's probability values less than 0.05. The coefficients for NRR in the pooled OLS and fixed effect models are negative. Its coefficients in both models are 0.099 and 0.075, respectively. The random effect model's NRR coefficient is positive and is calculated to be 0.6711. NRR has substantial coefficients in the pooled OLS and random effect models, while its coefficient in the fixed effect model is not significant. POP has favourable coefficients in the pooled OLS and random effect models, but the fixed effect model is not significant. In the pooled OLS and random effect models, POP shows positive coefficients with coefficients of 0.3622 and 0.5621, respectively. Under the fixed effect model, its coefficient is set at -0.3121, which is indirect. POP is statistically significant in the fixed effect model and the pooled OLS at 1%.

In the three computed models, the inflation rate has negative coefficients. Its coefficients in the fixed effect, random effect, and pooled OLS models are 2.1131, -0.3151, and -4.1132, respectively. Since both the pooled OLS and fixed effect models' P-values for inflation are 0.000, both models statistically predict inflation at 1%. The random effect model's P-value for inflation is 0.5132, indicating that it is not statistically significant. In the three computed models, INT has positive coefficients. The corresponding coefficients for the pooled OLS, fixed effect, and random effect models are 1.4838, 2.1846, and 0.1836, respectively. In the pooled OLS, the probability value for INT is 0.000, indicating that it is statistically significant at 5%. The probabilities for the fixed effect and random effect models, however, are 0.2438, 1.2516, and 0.2436, respectively. As a result, in both the fixed effect and random effect models, INT is statistically negligible. However, the fixed effects result is more reliable and actually performs better than the random effects and pooled estimations, and the results explain a significantly higher proportion of systematic variations in per capita income if we go by the identification test, which is the Hausman's chi-square statistics, (0.037). (PCY). Also, there is no proof of multicollinearity in the model according to the variance inflation factor (VIF) of the independent variables.

As a stability measure, the residuals were subjected to the ARCH test for heteroscedasticity. We exclude the existence of heteroscedasticity in the residuals because the findings revealed probabilities above 0.05. The zero autocorrelation in the residuals hypothesis was not disproved by the Lagrange Multiplier (LM) test for higher order autocorrelation. According to this analysis, this occurred as a result of the probability being higher than 0.05. Thus, the serial correlation issues for the model were not revealed by the LM test. There is no proof of mis-specification, according to the results of the Ramsey Reset test, which gave high probability values that were larger than 0.05.

The chosen structural parameters of the fixed effects estimation are utilised for the discussion and are consistent with the Hausman test. Using ten randomly chosen SSA nations, the fixed effect results demonstrated a favourable link between FDI and per capita income. The FDI coefficient, however, is not statistically significant. As a result, even though FDI tends to boost growth in SSA, it hasn't been a crucial factor in Africa's economic development. This might be because SSA has received such a little amount of FDI (Obadan, 2012; Todaro, 1997, IMF, 1977). The lacklustre level of foreign direct investment that SSA has received globally illustrates the country's financial marginalisation. Moreover, the extractive sector has benefited from a tilt in FDI flows to SSA (UNCTAD, 2005). The undiversified state of the African economy is partly caused by the biassed flow of FDI into the extractive industry, which reflects the rent-seeking behaviour of foreign investors (UNCTAD, 2005).

Conclusion

This study aimed to investigate the effect of FDI on SSA growth. The study's early analysis demonstrates that each of the regression assumptions was verified. The absence of the multicollinearity issue is demonstrated by the Variance Inflation Factor, heteroscedasticity is demonstrated by the ARCH test, higher order autocorrelation is demonstrated by the LM test, and misspecification error is demonstrated by the Ramsey Reset test. The Hausman test demonstrated that cross-section specific effects, which are realisations of independent random variables with mean zero and finite variance and uncorrelated with idiosyncratic residual, have an impact on the fixed effect model. Although FDI has a positive coefficient, it is statistically insignificant, according to the fixed effect models. This implies that while FDI tends to boost growth in Africa, it is not a crucial factor in the continent's economic development. According to the report, this may be due to the meagre FDI flow into SSA and the unbalanced FDI flow into the extractive industry, which reflects rent-seeking investors. Thus, we advise the SSA to use FDI effectively to stimulate growth. To grow their share of global FDI flows, nations must work to create a favourable climate. Programmatic policies can be used to achieve this.

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