# UNEMPLOYMENT AND FOREIGN DIRECT INVESTMENT IN SUB-SAHARAN AFRICA: A PANEL REGREESION NON-LINEAR ARDL APPROACH

**Job Fortunate OGBONNAYA and Ugochukwu EBUBECHIMA**
Department of Economics,
Ebonyi State University, Abakaliki, Ebonyi State, Nigeria

**Abstract**

Africa is blessed with both human and natural resources. These resources are the attractions of foreign investors who thrive to reap the gains of these natural endowments. Surprisingly, some of the African countries have low economic development and high unemployment due to their inability to fully harness her natural endowments. The rising rate of unemployment in midst of rising trend of inflow of foreign direct investment in African economy is disturbing especially with the surging level of poverty in the region. The study therefore explored the effect of FDI on unemployment rate in Sub Saharan Africa. This study investigated the short-run and long-run relationship between Foreign Direct investment (FDI) and unemployment in some selected African Countries. The study adopted non linear ARDL panel data analysis and made use of 25 African countries, randomly selected across four regional blocks during a period of 21 years. From the result, FDI was found to have on the average reduced the level of unemployment. One percent increase in foreign direct investment on the average exerts significant effect on unemployment rate in Africa sub region. Specifically, an increase in FDI by one per cent reduces the rate of unemployment by about 0.097 per cent in SSA countries. Education and population have positive and significant influence on the level of unemployment rate in Africa Sub region. Inflation rate which was used as control variable did not exert any significant influence on unemployment. The study therefore recommends that the government should continue to foster enabling fiscal and monetary policies that will attract more foreign direct investments for the purposes of tackling rising unemployment and ginger economic growth. It should also restructure the continent’s academic curriculum that should impart the requisite skills to meet the industry’s demands and suit the employments requirements of the foreign investors.

**Keywords:** Unemployment, foreign direct investment, ARDL, population, SSA

## Introduction

The countries of SSA have the potential to become a major player in the global economy due to their human and natural resources. However, the countries in Africa's Sub-Saharan region are facing major challenges which lead to rising unemployment or underemployment, inadequate infrastructure and poor access to markets, impact of security challenges in the country on investments, low skill level affecting productivity, low capacity utilization in the manufacturing sector due to the fall in consumer demand, which among other things has led to the closure of some companies (World Bank, 2023) It is widely acknowledged that foreign investments, which are a part of the globalization process, are crucial to the process of economic growth. As a result, attracting FDI has become an essential part of development strategies for developing countries. Foreign direct investment has been viewed as a main source of capital inflow and a driver of economic growth, and not just because policymakers think it will, for example, help close a significant resource gap (the savings-investment gap) in the economy of the region. Other advantages of foreign investment inflow in the form of FDI include the creation of jobs, an increase in people's standard of living, the fostering of competition among domestic businesses, the transfer of technology to the economy of the host nation, an improvement in balance of payments (if exporting), etc.

Sub-Saharan Africa faces volatile FDI inflows. The global financial crises which began in United States of America and United Kingdom in the early 2004 until mid-2007 affected most economies of the world especially developing countries like African countries. This brought about falling rates of investment (such as low foreign direct investment, among others) (Ojuola, 2011). Foreign direct investment total inflow to Sub-Saharan Africa was as low as 0.3 per cent in 1990 but rose to 1.6 per cent and 2.7 per cent in 2000 and 2012 respectively; declined again to 2.3 per cent in 2013; but rose again to 2.4 per cent, 2.6 per cent, 2.9 per cent in 2014, 2015 and 2016 respectively and dropped to 1.6 per cent in 2017 and rose again to 1.7 per cent from 2018 to 2020. For the past few years FDI got to its peak in 2012 after which it continues with its fluctuation in the regions of Sub-Saharan Africa

Despite the increasing influx of foreign investment across African countries over the decades, Sub-Saharan African countries have failed to attract the necessary levels of investment to boost their economies. African economies have persistently suffered from high rate of unemployment in spite of their huge natural resources. Africa is blessed is extractive minerals such as coal, tin, lead, petroleum, gypsum, gold and uranium amid fertile land, adequate rainfall needed for agricultural production. These should have significant contribution to the GDP of Sub-Saharan Africa in the value chain transcends to manufacturing and construction Sub-section. Rising unemployment. Despite possessing abundant natural and human resources, the African economy faces the challenge of unemployment, which cast a shadow over its growth trajectory. Youth employment in Africa rose by average of 25% in 2020 (NEET, 2020) with South Africa having 32.1 per cent highest in the region. The weak African economy makes it even hard to get employment. About 72 million youths in Africa are currently unemployment (NEET) notwithstanding, the inflow of foreign capital and African government policies to combat the issue, their impacts have been limited by rising population and lack of scientific knowledge for industrialization.

Inappropriate education and government failure transition from school to work. Information asymmetry and labour market rigidities lengthen the school to work transition. The lack of access to finance to pursue higher education to quality for job requirements.  Limited education attainment and social economic disadvantages are the primary factors driving increase in unemployment rates in Sub-Saharan Africa. Bhorat and Kimani finds that the unemployment rate of graduates unemployment rate in 2015 amounted to 11 per cent compared to 30 per cent of those without tertiary education. Education and skill constraints adversely affect changes of employment in Sub-Saharan Africa economies especially among young women. The demand side effect cannot be over looked. The foreign investors come with expatriate employees, thereby crowding out local youth employment in their host communities and Africa at large. Africa has about 420 million youths aged between 15-35 years, one third are unemployed (ADB, 2023). There exists a significant positive relationship between unemployment rate and population growth. An increase in population by one per cent will trigger a rise in unemployment by 0.15

## 2. Review of theories

The Neoliberal school of thought (Pro-Foreign Investment School)

The Neoliberal school of thought also known as the Pro-Foreign Investment School, the neoliberal school claims that foreign direct investment can have a significant impact on the economic development of host countries. They believe that foreign direct investment brings crucial Western knowledge and value in the form of managerial skills, business ethics and entrepreneurial attitudes, better labor-to-capital ratios and manufacturing techniques. As a result, foreign direct investment fuels business growth by providing access to western markets. As a result, this expansion creates new jobs and stimulates demand for inputs from domestic suppliers. As a result, FDI introduces new entrants outside of the domestic economies where TNC subsidiaries are based. According to the pro-foreign investment school, foreign direct investment can create new jobs and reduce unemployment in developing countries (Ugochukwu, Amah & Onah, 2013).

**Dependency Theory**

Dependency theory which was developed by Singer and Prebisch in their paper published in 1949 in which there observed that the terms of trade for underdeveloped countries relative to the developed countries had deteriorated over time. In contrast to the pro-foreign investment school's submission, advocates of dependency theory see FDI as the advanced guard for a new diplomacy of economic imperialism. According to them, foreign investors' penetration into a host economy would result in 'disarticulated development,'. They also believe that the integration of developing countries' economies into the world of the capitalist system results in their underdevelopment, (Ugochukwu *et al*., 2013). According to Aremu (2005), the dependency theory holds that developing countries are poor because they have been systematically exploited through: imperial neglect, overdependence on primary products as exports to developed countries, foreign investors' malpractices, particularly through price mechanics transfer; and so on. implantation of inappropriate technology in developing countries; introduction of international division of labor to the detriment of developing countries; prevention of independent development strategy based on domestic technology and indigenous investors; distortion of the domestic labor force through discriminatory remuneration and reliance on foreign capital (Ugochukwu *et al*., 2013).

## Review of Empirical Literature

A review of empirical studies on foreign direct investment within and outside Sub-Saharan Africa have yielded conflicting results. In addition, studies on this topic have been conducted at the country-specific time series and cross-country/panel study levels. However, only studies which are considered relevant to the present study have been reviewed extensively.

Studies on the Relationship between Unemployment Rates and Foreign Investments

A lot of studies have also been carried out on the relationship between foreign direct investments and unemployment rate. Mehman, Anett and Pavlin (2020) investigated the impact of FDI inflows in Turkey on unemployment. The time series datasets (FDI, UEMP) were obtained from the World Bank database. Study employed econometric techniques of ADF Unit Root, Philips-Perron Unit Root, Johansen co-integration, and the Granger causality tests to analyze the data. Results indicate that: (1) there was only one instance of co-integration among the analyzed series. (2) There was unidirectional causality from FDI to UEMP. The study’s weakness lies in the fact that the study has no sample size, did not take other growth indicators into consideration and no policy implication of the findings was established for Turkisk country. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Alam, Alam, and Hoque, (2020) studied the impact of some crucial macroeconomic factors on the increasing growth rate of unemployment in Bangladesh. The study covered the period, 1995-2019. Study includes the following variables in the model: GDPs, inflation, population growth, FDI during the period of 1995-2019. Data were analyzed using econometric technique of co integration. Findings indicate that: (1) there was long run relationship among GDI, FDI and unemployment. (2) GDP and, FDI had significant effect on unemployment. There was a positive significant relationship between unemployment and economic growth. There was unidirectional causal relationship between unemployment and growth factors. The study derived its strength from the large sample used for the study. Its weakness lies in the fact that the study did not take other growth indicators into consideration and no policy implication of the findings was established for Bangladesh country. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Mustafa and Azizun (2020) carried out a study to determine the impact of foreign direct investment on unemployment in six Middle Eastern and North African countries including Egypt, Jordan, Lebanon, Morocco, Tunisia, and Turkey. The study covered the period, 1990 – 2018. Study employed the Fixed Effect Model (FEM) and Random Effect Model (REM) for the analysis of data. Results indicate that: (1) FDI reduces unemployment, male unemployment, and female unemployment in the long run. (2) There is no short-term causal relationship between FDI and unemployment in its various forms. (3) There is a bidirectional causal relationship between FDI and exports. The study derived its strength from the large sample used for the study. Its weakness lies in the fact that the study did not take other growth indicators into consideration and no policy implication of the findings was established for Middle Eastern and North African countries. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Johnny, Timipere, Krokeme, and Markjackson, (2018) studied the impact of foreign direct investment on unemployment rate in Nigeria from 1980 to 2015. The study used two explanatory variables (foreign direct investment and capital formation) and dependent variable (unemployment rate). Test carried out include unit root test, co-integration test, and ordinary least square. The result of the study indicates that: (1) there is negative and nonsignificant relationship between foreign direct investment and unemployment rate in Nigeria. (2) There is positive and significant relationship between capital formation and unemployment rate in Nigeria. The study derived its strength from the large sample used for the study. Its weakness lies in the fact that the study did not take other growth indicators into consideration. Policy implication of the findings is the need for Nigerian country to implement policies that will attract foreign investors to Nigeria in order invest more and should also ensure that all resources for productive activities are fully employed before going into any form of savings. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Dritsakis and Stamatiou (2018) examined the causal relationships among foreign direct investments (FDI), exports, unemployment and economic growth in the fifteen old EU members countries. Study covered the period, 1970-2015. The Hausman test was applied to choosing between Fixed Effect and Random Effect approach in order to estimate the panel VAR equations for Granger causality tests. The study revealed three bidirectional causalities between economic growth and exports, exports and FDI, and exports and unemployment; and three unidirectional causalities running from FDI to economic growth, FDI to unemployment and from economic growth to unemployment. The study derived its strength from the large sample used for the study. Its weakness lies in the fact that the study did not take other growth indicators into consideration. Policy implication of the findings is the need for EU members' countries to train exporters (including global standards and technology) and give them the necessary market and industry information so to design policies that cover specific needs of buyers and not generally improve the supply side. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Grahovac and Softić (2017) examined the impact of FDI on unemployment rate in Western Balkan countries. The Study covered the period, 2000-2014, focusing on the influence of foreign direct investment on labour market. Findings indicate that: (1) there was a significant reduction of net investments since 2009, which was more obvious in the case of FDI due to a lower domestic and external demand. (2) There was no positive impact of FDI on employment, contrary to the results reported in most CEE countries during the transition period. The study derived its strength from the large sample used for the study. Its weakness lies in the fact that the study did not take other growth indicators into consideration and no policy implication of the study was established. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Keita and Baorong (2022) investigated the extent to which FDI contributed to economic growth in Guinea. The study covered the period, 1990 – 2017. The study employed the Granger causality Wald test, Bounds test for co-integration, Error correction model (ECM) and the Auto regressive distributed lag (ARDL) framework. The GDP per capita, FDI net inflows and GDP growth rate were used as FDI estimates and economic advancement indicators respectively. The study revealed that FDI had positive significant impact on economic advancement in the long-run. The result of the study also revealed that there's a positive significant relationship between FDI and economic advancement in the short-run. The study derived its strength from the large sample used for the study. However, its weakness lies in the fact that it did not take some macroeconomic indicators into consideration. Policy implication of findings is the need for Guinea country to discourage resource seeking type without transformation for the benefit of market or efficiency seeking investment. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Belesity (2022) investigated the effect of foreign direct investment on the economic growth of Sub-Saharan African countries in the short and long run. The study used panel data (the PMG/ARDL model) from 22 Sub-Saharan African countries from 1988 to 2019. The study revealed that foreign direct investment has a positive and significant effect in the long run, but it is statistically non-significant in the short run. The study revealed that foreign direct investment boosts long-term economic growth. The study derived its strength from the large sample used for the study. However, its weakness lies in the fact that it did not take growth indicators into consideration. Policy implication of findings is the need for SSA countries to prioritize attracting foreign direct investment. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Nicholas (2021) studied the causal relationship between foreign direct investment (FDI) and economic growth in Kenya. The study covered the period 1980 – 2018. The study employed ARDL Bounds testing approach for the analysis of the data. The results revealed that there is a unidirectional causal flow from economic growth to FDI in Kenya. These findings hold true whether the causality is investigated in the short or long run. Based on these findings, it was concluded that Kenya's current burgeoning FDI inflows are largely driven by the country's strong economic growth and prudent macroeconomic policies implemented in recent decades. The study revealed that foreign direct investment boosts long-term economic growth. The study derived its strength from the large sample used for the study. However, its weakness lies in the fact that it is country specific analysis and did not take growth indicators into consideration. Policy implication of findings is the need for Kenya country should continue to pursue prudent macroeconomic policies and a balanced growth path in order to attract more FDI inflows. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Abdillahi and Mohd (2021) examined the impact of foreign direct investment (FDI) on Ethiopia's economic growth. The study spanned across 1981 to 2017. The study employed Vector Autoregression for the analysis of the data. The study revealed that FDI had a significant positive impact on economic growth in Ethiopia in both the short and long run. It was also reported that adequate human capital and a stable macroeconomic environment have catalyzed foreign direct investments contribution to economic growth. The study derived its strength from the large sample used for the study. However, its weakness lies in the fact that it is country specific analysis and did not take growth indicators into consideration. Policy implication of findings is the need for Ethiopian country to open up the economy and restructure the financial sector to attract foreign multinational companies (MNC). The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Yao-Yu, Ruby and Andrew (2021) examined the roles of trade, institutional quality, and natural resource endowment in determining the direct and indirect (spillover) effects of inbound FDI on economic growth in Sub-Saharan Africa (SSA). Study adopted a spatial dependency framework for assessing how these intermediary factors limit and/or enhance the effect of FDI on economic growth. Results indicate that: (1) inbound FDI had a positive and significant effect on economic growth. (2) The negative intermediary role of civil conflict, on the other hand, significantly dampens the positive FDI effect on growth. (3) The greater the openness of Sub-Saharan African economies to international trade, the greater the impact of FDI on growth. However, as a share of their economies, trade among African countries plays a minor intermediation role in the direct and indirect effects of FDI on growth. (4) Increasing resource rents as a share of GDP significantly reduces the direct and spillover effects of inbound FDI on economic growth. (5) Both low democratic (high autocratic) and high democratic (low autocratic) regimes accelerate the growth-improving effects of FDI. (6) FDI had a slowing effect on growth in moderate democratic-autocratic regimes. The weakness of this study lies in the fact that it has no time frame and did not take growth indicators into consideration. Policy implication of findings is the need for SSA countries to make trade policies favourable as it is likely to play major intermediation role in accelerating the positive-effect of foreign direct investment on growth. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Hammed and Okunoye (2020) studied the impact of foreign direct investment on economic growth in Nigeria over time. The study covered the period, 1981 – 2018. The study applied the ordinary least square method to analyze annual time series data. Findings indicate that: (1) foreign direct investment has been very instrumental and significant in the economy's growth process over time. When foreign direct investment interacts with the level of human capital in the country, its contribution to growth improves even more. (2) The contribution of foreign direct investment to growth has resulted in an increasing return to growth for the Nigerian economy. The study derived its strength from the large sample used for the study. However, its weakness lies in the fact that it did not take growth indicators into consideration. Policy implication of findings is the need for Nigerian country to improve the level of human capital while necessary steps should be taken to entice foreign investors into the country. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.
Edward and Bernard (2019) embarked on a study to determine the impact of infrastructure and foreign direct investment (FDI) on economic growth in Sub-Saharan Africa (SSA). Study covered the period, 2003 – 2017. The study used panel data from 46 countries. Data were analyzed using fixed effects, random effects, and system generalized method of moments (GMM) estimation techniques. Results indicate that:

(1) a 1per cent improvement in electricity and transportation infrastructure induces 0.09 percent and 0.06 percent growth, respectively. (2) FDI only boosted growth when it interacted with infrastructure. (3) The combination of FDI and infrastructure boosts economic growth by 0.016 percent. The study derived its strength from the large sample used for the study. Its weakness lies in the fact that the study did not take other growth indicators into consideration. Policy implication of the findings is the need for developing countries to investment in infrastructure to provide a less costly business environment for both local and multinational enterprises to improve economic growth. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Trang, Anh and Thang (2019) also provided additional and quantitative evidence on the impact of FDI on economic growth in the short and long run. Their study focused on 30 developing countries in the lower middle-income group. The study covered the period, 2000 – 2014. Data were analyzed using vector error correction model with fully modified OLS. The findings indicate that: (1) FDI stimulated economic growth in the long run while having a negative impact on economic growth in the short run. (2) Money supply, human capital, total domestic investment, and domestic credit for the private sector are growth drivers in the long-run. The study derived its strength from the large sample used for the study. Its weakness lies in the fact that the study did not take other growth indicators into consideration. Policy implication of the findings is the need for developing countries to look into policies on human capital, money supply, total domestic investment, and total credit for the private sector in order to enhance economic growth and absorb the maximum FDI benefits. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Alabi (2019) carried out a study to determine the impact of foreign direct investment on economic growth in Nigerian. Study covered the period, 1986 – 2017. Study employed descriptive statistics and regression techniques for the analysis of data. Findings indicate that: (1) FDI had positive and significant effect on economic growth. (2) Real interest rate had positive and nonsignificant effect on economic growth. (3) Domestic investment had positive and nonsignificant effect on economic growth. (4) Exchange rate had positive and significant effect on economic growth. The study derived its strength from the large sample used for the study. Its weakness lies in the fact that the study did not take other growth indicators into consideration. Policy implication of the findings is the need for Nigerian country to create more avenues to attract foreign investors which will enhance technology transfer, and more job opportunities, and increase productivity into the economy. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

Sabir, Rafique and Abbas (2019) studied the impact of institutional quality on Foreign Direct Investment (FDI) inflows using panel data for low, lower-middle, upper-middle and high-income countries. Study covered the period, 1996–2016. Study used the system Generalized Method of Moments (GMM) for the analysis of data. The empirical results confirm that institutional quality has a positive impact on FDI in all groups of countries. The magnitude of the coefficients of control of corruption, government effectiveness, political stability, and regulatory quality, rule of law, and voice and accountability for FDI inflows are greater in developed countries than in developing countries. However, GDP per capita, agriculture value-added as a percentage of GDP, and inflation influence FDI inflows negatively in developed countries, while GDP per capita, trade openness, agriculture value-added as a percentage of GDP, and infrastructure have positive and statistically significant impacts on FDI inflows in developing countries. Trade openness as a percentage of GDP and infrastructure positively affect FDI in developed countries. From the analysis, the study infers that institutional quality is a more important determinant of FDI in developed countries than in developing countries. The study derived its strength from the large sample used for the study. Its weakness lies in the fact that the study did not take other growth indicators into consideration. Policy implication of the findings is the need for low, lower-middle, upper-middle and high-income countries to promote FDI by introducing appropriate institutional reforms and macroeconomic policies. The study has relevance for the present study as the findings would be useful for reliability of the results of this study.

In a study by Ali, Oman and Yusuf (2021) on the effect of population growth on unemployment status in Zanzibar fom 1990-2020. The study employed vector error correction mechanism estimation technique and the result obtained showed that there is lonf run relationship between unemployment and population growth. The result further revealed that population growth exerted positive effect on unemployment rate by about 5.2 per cent. In s similar study, Gideon (2017) found a positive and long run relationship between unemployment and population growth in Nigeria using standard econometrics method of analysis.

Empirical findings of Wolbers (2022) showed that less educated people have higher risk of being unemployed. The study was sampled from the Netherlands for the period 1980-94 using descriptive statistical method and the result indicated that people that are well educated had greater chances to be employed whereas people that are less educated had low probability of getting employment. In a similar study conducted for OECD countries, it was also discovered that people with higher education were employed up to 83 per cent and the proportion of unemployed group were mostly from less educated group.

Ahiadorme (2020) in a study of the behaviour of inflation, output and unemployment in SSA countries used a heterogenous panel data analysis. The result obtained is consistent with Okun,s law and Phillip,s curve. It shows that there exist a long relationship among the variables of unemployment, inflation and output. It further revealed that there is a negative relationship between output, unemployment and positive relationship between inflation and unemployment.

In a similar vein in a study of real wages, inflation and unemployment in Sub-Saharan African countries from 2001 to 2020 used panel GMM approach. The result obtained showed that wage rate, population and exchange rate have positive and significant relationship with household consumption but inflation and unemployment and government spending had negative but significant relationship.

## 3. Methodology

3.1 The study adopted panel regression method because of the heterogenous nature of the data involved. A cross sectional data and time series data were drawn from the selected countries in sub-saharan African countries.

Model Specification

The model of the work was formulated from the functional and mathematical equation stemming from the hypothesis for which the paper is anchored. The hypothesis for this model is on the effect of FDI on UNR in the selected Sub-Saharan African countries. The functional relationship between FDI and UNR is:

UNR = $f$ (FDI, EDU, POP, INFR),

The general panel linear form of the model will be given as:-

$$UNR = \beta o + \beta_1 LFDI_{it-1} + \beta_2 EDU_{it} + \beta_3 LPOP_{it} + \beta_4 INFR_{it} + u_{it} \qquad 6$$

Where,

UNR = Unemployment rate

FDI = Foreign Direct Investment (current US$ in billions)

LEDU = Log of School enrollment, primary and secondary (gross)

POP = Population,
INFR = Inflation rate.
$\beta_o$ = The intercept of the equation
$\mu$ = The stochastic term or error term assumed to be normally and independently distributed with zero mean and constant variance, which captures ail other explanatory variables which influence balance of payments but are not captured in the model.
I = Cross sectional identities,
T = Time
$a_1 - a_2 > 0,\ a_3 < 0$

Discussion of variables

Foreign Direct Investment Inflows:

These are the major components of foreign investment required to improve any country's economy. Their contributions usually have a positive impact on the economies of the majority of countries. Foreign direct investment is one of the major foreign investments used in this study.
Other explanatory variables that influence or determine macroeconomic variables and have been used in previous studies include trade openness and exchange rate.

Unemployment Rates:

This is the proportion of the labor force that is unemployed, expressed as a percentage. It is a macroeconomic indicator that poses a serious problem for any economy with a high unemployment rate. It has the potential to stifle economic growth and development, which is one of the challenges that Sub-Saharan Africa and most developing countries face today. Every country is attempting to combat high unemployment rates, and trade liberalization that encourages foreign investment will be permitted in order to help reduce unemployment. It will also be used as a dependent variable. Here, it will be used as a dependent variable.

Inflation Rate:

Inflation is defined as the continuous rise in the general price level of goods and services in an economy, which is reflected in a fall in the value of money. The effects of high inflation are generally considered to be detrimental to the economy. For this reason, achieving price stability has always been one of the basic objectives of macroeconomic policies in both developed and less developed countries (Orubu, 1996). Inflation is a disease that must be eradicated if a country is to grow. It leads to an indiscriminate redistribution of income, wipes out savings, undermines the incomes of fixed earners, leads to price distortions and leads to a misallocation of society's economic resources.

## 4. Presentation Of Result

This study investigated the effect of foreign direct investment inflows on unemployment rate of selected Sub Saharan African countries from 2000-2021. The variables considered in this research work are as follows: unemployment rate (dependent variable) and the independent variables include foreign direct investment, education, inflation rate and population. Thus, the empirical results are presented below:

Cross-sectional dependence and unit root test

As seen in Table 2, all the LM tests including Pesaran CD reveal the existence of cross-sectional dependence at a 1% significance level for all the variables, hence we conduct a unit root test which allows for cross-sectional dependence.

Table 2. Cross-Sectional Dependence Test

| Variables | Breusch-Pagan LM | Pesaran scaled LM | Bias-corrected scaled LM | Pesaran CD |
|---|---|---|---|---|
| LUNR | 1708.1***(0.0000) | 56.46484***(0.0000) | 55.8696***(0.0000) | 4.514454***(0.0000) |
| InFDI | 780.0379***(0.0000) | 18.57684***(0.0000) | 17.9816***(0.0000) | 2.680772***(0.0073) |
| InEDU | 2638.416***(0.0000) | 94.44481***(0.0000) | 93.84957***(0.0000) | 20.05892***(0.0000) |
| InPOP | 3676.456***(0.0000) | 136.8226***(0.0000) | 136.2274***(0.0000) | 39.41774***(0.0000) |
| INFR | 610.1212***(0.0000) | 11.64002***(0.0000) | 11.04479***(0.0000) | 12.35436***(0.0000) |

Values in brackets indicate probability values: *, **, and *** indicate significance at 10% level, 5% level, and 1% level, respectively. Ho: no cross-sectional dependence; Hi: there is cross-sectional dependence among groups or firms

Source: Researchers' computation using Eviews 9.0

Table 3.Pesaran Panel Unit root text with cross-sectional (CIPS & CADF)

| | CIPS | | | CADF | | |
|---|---|---|---|---|---|---|
| | Level | 1st Diff. | Decision | Level | 1st Diff. | Decision |
| LUNR | -0.575 | -3.032 | I(1) | -1.227 | -2.642 | I(1) |
| LFDI | -2.361 | -4.749 | I(1) | 0.175 | -7.324 | I(1) |
| LPOP | -3.205 | -2.252 | I(1) | -3.195 | -2.548 | I(1) |
| EDU | -5.965 | -5.965 | I(0) | -3.523 | -3.523 | I(0) |
| INFR | -3.376 | -5.111 | I(0) | -3.006 | -4.212 | I(0) |

Source: Researchers' computation using Eviews 9.0

From Table 3, Pesaran panel unit root test was estimated. Our panel unit root test results shows that the variables are integrated of order one [I(1)] except INFR which was integrated of order zero [I(0)]. This test is motivated by the outcome of the cross1sectional dependence test. This is a criterion for conducting cointegration (Hossain, 2014). This has necessitated that we verify the hypothesis using dynamic panel analysis rather than static panel analysis.

Results of Panel Cointegration Test

In order to be able to establish a long-term relationship, there must be cointegration between the variables. We run a cointegration test. One of the assumptions of PMG's autoregressive distributed lag model is that the long-run relationship between the variables is constant across countries. The result indicates that there is cointegration among the variables.

Result of Panel non-linear ARDL Test

| *Variables* | Coefficient | t-Statistic | Prob |
|---|---|---|---|
| *Longrun* | | | |
| *LFDI* | -0.0974884 | -2.5100 | 0.0120 |
| *LPOP* | -0.346 | -9.510 | 0.0000 |
| *EDU* | 2.104426 | 5.3200 | 0.0000 |
| *INFR* | -0.0208944 | -0.5000 | 0.6180 |
| *Short run* | | | |
| *ECT(-1)* | -0.8141266 | -13.800 | 0.0000 |

Source: Researcher computation using STAT 15

The non linear result presented in table 4 shows that FDI has negative and significant effect on UNR. This suggest the following: one unit increase in FDI leads to -0.0974884 decrease in UNR, one unit increase in EDU leads to 2.104426 increase in UNR, one unit increase in POP leads to -0.34571 decrease in UNR, and one unit increase in INFR leads to -0.0208944 decrease in UNR

In the short-run, FDI exert negative and non-significant effect on UNR, while EDU, POP and INFR have positive effect on UNR.

The ECT (-1) on the other hand is negative and significant, which implies that it is rightly signed. Thus, about 0.81% of the short run disequilibrium is corrected annually.

However, the panel non-linear ARDL estimates revealed that FDI has negative and significant impact on unemployment rate (UNR). The result is in tandem with the a priori expectation and theoretical proposition of that increase FDI inflow has a tendency of creating employment in the host country, thereby reducing unemployment rate.)

The findings further showed that the coefficient and p-values were (-3.624) and (0.0000) less than 0.05 respectively which implies that population growth significantly affect unemployment rate in Sub-Saharan African Countries. The result counteract with the Malthusians population theory and empirical findings of Ali et al (2021) and Gideon (2017). Furthermore, it is indicative that the rate of unemployment in SSA countries is increased with decrease in population which implies that deficiency in technology, skill development, stock of knowledge and attitude are the real causes of rising level of unemployment in SSA.

The result is not in tandem with the a priori expectation and theoretical proposition of (Solow, 1969). He argued that human capital is a stimulus for generating higher incomes especially for countries to catch up with or meet up the income levels of rich counties if the poor countries have the same saving rate for both physical capital and human caital as a share of output. Ikechukwu (2018) found that education has positive and significant impact on unemployment rate. The theoretical and empirical findings are clear evidence that a surge in population has the tendency of raising the level of unemployment.

## 5. Recommendations

Based on the results obtained in this study, we are able to provide some policy recommendations with regards to the foreign direct investment inflows in sub-Saharan African countries which are as follows:

Again, given the significant effect of foreign direct investment inflows on unemployment, African governments should take action towards safe investment environment to attract more foreign investors so as to reduce the level of unemployment in Sub Saharan Africa

The region should focus on human investment capital especially on skill development in tandem with employment needs and requirements of foreign investors to make labour employable in the industrial sectors,

Conclusion

In conclusion, the panel dynamic regression evidently reveals that increase in FDI will lead to significant reduction in unemployment rate. We therefore state that there is a significant relationship between unemployment rate and foreign investment inflows in the selected Sub-Saharan African countries. African authorities should provide a safe haven for FDI to reside because of avowed importance to the growth of her economy.

## References

Abdillahi, M. N. & Mohd, S. (2021). Impact of Foreign Direct Investment on Economic Growth in Ethiopia: Empirical evidence. *Latin American Journal of Trade Policy*, 4(10), 56-77.

Ahiadorme Johnson Worlanyo (2020). Monetary policy transmission and income inequality in Sub-Saharan Africa.

Alabi, K., (2019) Impact of foreign direct investment on economic growth: Nigeria experience. *Open Journal of Applied Sciences*, 9, 372-385.

Alam, J., Alam, N. Q. & Hoque, M. T. (2020). Impact of GDP, inflation, population growth and FDI on unemployment: A study on Bangladesh economy. African Journal of Economics and Sustainable Development, 3(3), 67-79.

Aremu, A. O. (2005). A confluence of credentialing, career experience, self-efficacy, emotional intelligence, and motivation on the career commitment of young police in Ibadan, Nigeria. *Policing: An International Journal of Police Strategies & Management*, *28*(4), 609-618.

Belesity B. A., (2022). Effect of foreign direct investment on the economic growth of Sub-Saharan African countries: *An Empirical Approach, Cogent Economics & Finance*, 10:1, 2038862.

Dritsakis, N., & Stamatiou, P. (2018). Causal nexus between FDI, exports, unemployment and economic growth for the old European union members. evidence from panel data. *International Journal of Economic Sciences*, *7*(2), 35-56.

Edward, N., & Benard, S. (2019). Effect of infrastructure and foreign direct investment on economic growth in Sub-Saharan Africa. *Global Journal of Emerging Market Economies*, *11*(3), 183-201

Grahovac, D., & Softić, S. (2017). Impact of the FDI on Unemployment rate in countries of West Balkan. *Review of Innovation and Competitiveness: A Journal of Economic and Social Research*, *3*(2), 65-82.

Hammed, Y. S., & Okunoye, A. I., (2020). Fdi and economic growth in Nigeria. *International Journal of Management and Economics*, 2(1):30-38, 2020.

Ikechukwu D. (2018). International Journal of Social Sciences and Management Research 4(30, 56-69

Johnny, N., Timipere, E., & Krokeme, O., (2018). Impact of foreign direct investment on unemployment rate in Nigeria (1980-2015). *International Journal of Academic Research in Business and Social Sciences*. 8. 10.6007/ijarbss/v8-i3/3905.

Keita, O., & Baorong, Y. (2020). Foreign direct investment and economic growth nexus: empirical insight from Guinea. *Asian economic and financial review*, 12(1), 58–69.

Mehman, K., Anett, P., & Pavlin, R. K. (2020). An empirical analysis of the relationship between foreign direct investment and unemployment rate: evidence from Turkey, *European Research Studies Journal*, 3(1): 453-464

Mustafa, A., & Azizun, N. (2020). Impact of foreign direct investment on unemployment: panel data approach. *Emerging Science Journal*. 4:228-242.

NEET on rising youth unemployment in Africa (72 million).

Nicholas, O. M. (2021). Foreign direct investment and economic growth in Kenya: an empirical investigation, *working papers 27168*, University of South Africa, department of economics.

Ojuola, T. D. (2011). Effects of the financial crises on developing economies: A case study of Nigeria. Retrieved from https://unofficial journal.wordpress.com.

Orubu Christopher. O. (1996). Impact of Monetary Policy on Inflation Control in Nigeria.

Sabir, S., Rafique, A., & Abbas, K. (2019). Institutions and FDI: Evidence from developed and developing countries. *Financial Innovation*, *5*(1), 1-20.

Solow, R. M. (1956). A contribution to the theory of economic growth. *Quarterly Journal of Economics*, 70, 65-94

Trang, T., Duc, H., Anh, T., & Thang, C., (2019). Foreign Direct Investment and Economic Growth in the Short Run and Long Run: Empirical Evidence from Developing Countries. *Journal of Risk and Financial Management* 12(4):176.

Ugochukwu, U., Amah, O., & Onah, J. O. (2013). The impact of foreign direct investment on the Nigerian economy. *European Journal of Business and Management*, *5*(2), 2222-1905.

World Bank. (2023). World development report 2021: Jobs. The World Bank.

Yao-Yu, C., Ruby, K., & Andrew, O. (2021). Be good to thy neighbors: a spatial analysis of foreign direct investment and economic growth in Sub-Saharan Africa. The world economy. 45.