Asian Journal of Economic Modelling
ISSN(e): 2312-3656
ISSN(p): 2313-2884
DOI: 10.55493/5009.v13i2.5443
Vol. 13, No. 2, 226-242.

URL: www.aessweb.com

A panel analysis of FDI inflows and poverty reduction in ECOWAS sub region: Implication for the Sustainable Development Goal 1

Timothy. A. Aderemi[1+]
Misery M. Sikwela[2]

[1,2]*Department of Public Administration and Economics, Mangosuthu University of Technology, Durban, South Africa.*
[1]*Email: aderemi.timothy@gmail.com*
[2]*Email: sikwela@mut.ac.za*

(+ Corresponding author)

Article History
Received: 15 March 2025
Revised: 26 May 2025
Accepted: 16 June 2025
Published: 1 July 2025

Keywords
ARDL
ECOWAS
FDI
HDI
Poverty cycle.

JEL Classification:
F21; F23; F36.

ABSTRACT

This study investigated the relationship between FDI and poverty reduction in the ECOWAS sub-region from 1990 to 2023. The study employed an ex-post-facto research design. Annual data were sourced from WDI and UNCTAD, respectively. Consequently, this study used the panel ARDL method to estimate the collected data. The findings revealed, among other things, that a long-run convergence existed between FDI and poverty reduction. FDI and poverty reduction had a negative relationship in the long run ($\beta 1 = -0.0040$, $t = 1.2393$), but it was not significant. Trade openness and poverty reduction had a significant negative relationship ($\alpha 2 = -0.0007$, $t = 2.5194$). Policymakers of the ECOWAS sub-region should adopt stable economic policies to avoid FDI inflow-driven setbacks in poverty reduction in this area. Policymakers in the ECOWAS sub-region must develop trade policies to create active trade pathways with the global economy because trade openness negatively affects poverty reduction. Achieving SDG 1 (zero poverty) will be challenging for ECOWAS member states to accomplish before 2030 if FDI inflow-driven setbacks in poverty reduction are not addressed.

Contribution/ Originality: Past studies analyzing effects of FDI on poverty reduction in the ECOWAS subregion suffered from disputes over poverty measurement over time. Therefore, this study fills the existing gap in the literature by using the Human Development Index from the United Nations Development Programme (UNDP), which stands as a better indicator of poverty reduction because it takes a multi-dimensional approach to measuring poverty.

1. INTRODUCTION

Developing nations face poverty elimination as their main developmental obstacle, while all countries regard this issue as the most significant obstacle in modern development. The Millennium Development Goals (MDGs) prioritized poverty elimination as the top goal because of this issue. China, India, and Singapore have successfully achieved their development objectives to reduce poverty and hunger before 2015 (United Nations, 2015). The poverty levels remain high in many ECOWAS member states and other countries worldwide, despite progress made by China, India, and Singapore (Fiszbein, Kanbur, & Yemtsov, 2014; United Nations, 2015).

The UN Sustainable Development Goals and the African Union Agenda 2063 make poverty elimination an ongoing responsibility for underdeveloped nations. The latest statistics show that nearly all West African nations endure minimal pay standards, hardship, limited job access, and substantial dependence on informal economic sectors (African Development Bank, 2018; World Bank, 2018). Recent statistics indicate that West African sub-regional

growth has outpaced everything else, yet approximately forty-three percent (43%) of the region's residents live below the worldwide poverty threshold (African Development Bank, 2018; World Bank, 2018). Persistent economic inequality affects the entire region (Aderemi, Opele, Olanipekun, & Al-Faryan, 2023; Bakhshinyan, Molinas, & Alderman, 2019; Fiszbein et al., 2014; Osabohien, Matthew, Ohalete, & Osabuohien, 2020). The economic bloc presents an unknown quantity for its poverty gap measurement, despite having a large measurement gap.

Foreign Direct Investment creates more beneficial impacts than domestic investments do when it comes to technology transfer and management expertise distribution, as well as multiple vital spillover benefits. Developing nations persistently employ this key mechanism to attract international capital investment for their economic development.

The success of the economy requires investment to increase productivity and process operations, thereby producing capital goods and building total capital, according to Esubalew (2014) and Majeed and Khan (2008). The prolonged impact of FDI entry directly modifies host markets through increased economic progress coupled with employment opportunities that help minimize poverty throughout regions receiving FDI (Aderemi, Omitogun, & Osisanwo, 2022; Hoxhaj, Marchal, & Seric, 2016; Okoh, Olanipekunm, Aderemi, & Al-Faryan, 2022; Raouf & Hafid, 2014; Saucedo, Ozuna Jr, & Zamora, 2020; Souare & Zhou, 2016).

Foreign direct investment poses significant threats to host country markets through different mechanisms, which combine withdrawal of investments and business failures triggered by market competition and increased poverty (Girma, 2005; Jenkins, 2006). The investigation of FDI's impact on poverty reduction in host countries remains contested in both academic studies and developing nations (Adelowokan, Omitogun, & Aderemi, 2023; Ahmad et al., 2019; Bharadwaj, 2014; Fowowe & Shuaibu, 2014; Omoyele, Lucas, Olanipekun, & Aderemi, 2021; Shamim, Azeem, & Naqvi, 2014; Soumare, 2015; Ucal, 2014).

A measurement and methodological dispute exist mainly because of previous studies' incorrect measurement techniques. The economic nature of well-being is exclusively measured by GDP per capita. A nation's complete well-being can only be determined by measuring poverty incidence.

Before October 2015, the World Bank determined the worldwide poverty rate through daily expenditures of 1.25 US dollars per person. The main issue with the usage of the incidence of poverty is inadequate data collection and differences in assessment methodology around the world.

The Human Development Index from the United Nations Development Programme (UNDP) stands as a better indicator of poverty reduction because it takes a multi-dimensional approach and remains available to all economies (UNDP, 2019). An official Human Development Index study has not been published recently about the ECOWAS subregion. Therefore, further research on how FDI affects poverty reduction should take priority in the ECOWAS subregion. Hence, this study formulates this research question because of these findings: How does FDI affect poverty reduction within the ECOWAS subregion?

1.1. Empirical Review

The analysis of FDI's effect on poverty reduction has generated extensive research across various countries over different periods. This section explores past studies to identify a research gap.

Table 1 presents the literature review with a view to showing the perspective of various authors regarding the subject matter of this study across the globe.

Table 1. Summary of literature review.

Author(s)	Year	Objective of study	Method of estimation	Results & conclusion
Hanim (2021)	(2021)	Analyzed how FDI affected Indonesia's economy between 2012 and 2016 in terms of alleviating poverty.	The triangular hypothesis	The author demonstrates that FDI created significant direct growth in the Indonesian economy, which caused a major reduction in poverty rates. The country's capability to decrease poverty experienced substantial improvement despite the interaction between economic expansion and combating income inequality.
Poumie and Claude (2021)	(2021)	Using 43 African economies between 2002 and 2018, researchers examined the effects of overseas capital such as FDI and migrant remittances on both general employment and sectoral job development.	The augmented mean group (AMG), DOLS, and the common correlated effects means Group (CCEMG) are three types of groups (CCEMG)	The research discovered that investments from abroad and money sent home by migrants directly affected overall employment levels in the region. FDI showed a direct and significant impact on all sectors' employment growth within African countries.
Tsaurai (2020)	(2020)	Examined whether interlink between financial advancement and FDI motivated reduction of poverty in BRICS economies from 1994 to 2013	Varieties of analytical apparatus like OLS and FMOLS	The research indicates that improving financial systems helps lower levels of poverty in the population. The negative aspects of financial advancement and FDI toward poverty reduction remain unclear, yet studies confirm that these factors combined have powerful effects.
Sukhadolets, Stupnikova, Fomenko, Kapustina, and Kuznetsov (2021)	(2021)	Examined how FDI and capital flow to construction enterprise, and elimination of poverty in BRICS and EU countries	ARDL technique	The report indicates that foreign direct investment reduces negative financial crisis outcomes. The long-term capitalist investments made in construction enterprises generated positive economic effects throughout the examined nations while expanding assets across the population to help decrease poverty levels.
Yunus (2020)	(2020)	Evaluated the interference between FDI determinants and the processing industry in Malaysia from 2000 to 2018.	OLS	The study indicates that direct domestic investments from native owners and employer training programs significantly affected FDI stock levels in low-technology and medium-high sectors. Degree graduates employed in the electrical and electronics (E&E), chemical, machinery, and equipment industries displayed negative relations between FDI inward and their perception of absorptive capacity.
Saucedo et al. (2020)	(2020)	Assessed the linkage between FDI, jobs, and accruals of wages for low- and high-professional workers in the real sector of the Mexican economy between 2005 and 2018.	Panel corrected standard errors (PCSE) alongside fixed effects (FE)	The researchers opined that manufacturing FDI inflows have a direct influence on low- and high-skill employment. The findings in the service sector remained unsatisfactory.

Author(s)	Year	Objective of study	Method of estimation	Results & conclusion
Tsaurai (2018)	(2018)	Assessed the effect of FDI on peoples` lack in Southern and Western African countries between 2002 and 2012.	Fixed effect, random effect, and combined dynamic OLS and GMM	The author demonstrated that nations receiving FDI tend to possess substantial natural endowments. The combination of natural resources with foreign direct investment established better conditions to fight poverty within the researched countries.
Jorge and Richard (2018)	2018	researched if FDI amplified economic expansion in Spain from 1984 to 2010.	Autoregressive distributed lag model	This research study fails to demonstrate how FDI contributed to economic growth within its examined country. Institutional reports confirmed that EU entry, together with Euro membership, did not lead to any significant direct impact on growth rates.
Habib and Sarwar (2013)	(2017)	Between 1980 and 2014, the author looked at the interaction of FDI and economic advancement in Iran and the Gulf Cooperation Council (GCC).	ARDL and granger causality techniques	The authors establish Foreign Direct Investment as a vital force that drives national economic success in Iran and the Governments Cooperating Council countries. Real GDP growth has a double causal effect with FDI in Saudi Arabia, Qatar, and the United Arab Emirates. The rate of FDI directly affects real GDP growth in Bahrain and Iran but not in the reverse direction.
Akinlo (2017)	2017	Investigated drivers of FDI in Nigeria	Markov-regime switching model (MSMs).	The study opined that the prominent factors determining FDI in Nigeria are the discount rate, growth of market size, macroeconomic instability, exchange rate, financial advancement, inflation, and .
Kariuki (2015)	2015	Interrogated factors that influenced the FDI wave in African developing economies while surveying annual data for 35 African markets between 1984 and 2010.	Panel regression	The research findings demonstrated that waves of FDI had noticeable effects on the development of African growing markets because they accelerated economic prosperity.
Soumare (2015)	2015	Investigate the linkage between welfare and FDI in Northern Africa between 1990 and 2011	PDOLS and Granger-causality approach	The research evidence demonstrated how FDI motivates a major impact on living standard improvements in Northern Africa.
Enrico, Resmini, and Signorelli (2014)	2014	Interrogated the relationship between FDI and regional employment in Europe.	Least square dummy variable (LSDV)	The research findings show that FDI net employment growth exists in all sectors except the construction industry. Positive employment effects from FDI mainly occur in the Northern and Western EU territories, while Central and Eastern European areas along with Southern EU locations demonstrate no similar employment benefits.
Gui-Diby (2014)	2014	Addressed the connection between FDI and recovery of economic status in 50 markets in Africa between the period of 1980 and 1994.	Generalized methods of moments	The economy suffered from unfavorable relations when FDI entered the market between 1980 and 1994. From 1995 to 2009, FDI showed a favorable relationship with the economic situation. During the latter period of research, the business environment, along with export-induced economic growth, brought a

Author(s)	Year	Objective of study	Method of estimation	Results & conclusion
				direct relationship with FDI in the economies.
Saibu and Akinbobola (2014)	2014	Interrogation of the nexus amid global interlinks, FDI, and economic recovery in some sampled SSA countries	Vector error correction modeling (VECM)	The researchers find that trade reforms have shown minimal disruption to economic growth in SSA, while additional capital investments in Africa failed to protect economic systems from worldwide financial disruptions.
Ucal (2014)	2014	Appraisal of the spillovers of FDI on levels of penury in 26 developing markets	Pooled regression	The selected countries showed that FDI produced negative effects on the penury level.
Fowowe and Shuaibu (2014)	2014	Estimation of the FDI's effects on poverty in Africa from 1981 to 2011	Generalized methods of moments (GMM)	FDI led to a slight decrease in poverty levels across African countries
Bharadwaj (2014)	2014	Investigating the linkage between poverty and integration in 35 developing nations between 1990 and 2004.	Pooled regression	Globalization led to poverty reduction in the examined countries.
Israel (2014)	2014	Assessed the interference of FDI with penury dwindling in Nigeria between 1980 and 2009	OLS	The analysis confirmed FDI as a direct factor that affects poverty reduction in Nigeria.
Onimisi (2014)	2014	Investigating FDI`s power on the creation of job opportunities in Nigeria from 2002-2012.	OLS	The data showed that job creation experienced negative effects from FDI, although GDP and interest rates yielded positive effects on employment status, while all explanatory variables lacked statistical significance to influence job creation in Nigeria.
Tshepo (2014)	2014	Evaluated how FDI-powered growth and job availability between 1990 and 2013 in South Africa.	The study used econometrics	The study results confirmed that employment levels, FDI and economic growth sustain a persistent relationship in the South African economy.
Ogbuabor, Malaolu, and Tuluma (2013)	2013	Estimated how FDI affected poverty in Nigeria	Ordinary least squares	Transition in foreign direct investments demonstrated minimal effectiveness toward poverty reduction in Nigeria from 1980 to 2012.
Huang and Ren (2013)	2013	Assessment of the interference of China's investment on job availability in South Africa	Descriptive analysis	Chinese firms brought about increased job vacancies for both professional and non-professional labor forces in the country according to the survey results and findings. Additionally, strong labor laws, together with active trade unions, enforced FOEs to follow local legal labor requirements.
Wei (2013)	2013	Evaluation of the influence of FDI on the availability of jobs from 1985 to 2011 in China	VECM	Research conclusions showed that FDI had a small reverse impact on employment development in China's economic market. FDI has distinctive employment impacts on different economic sectors. Employment levels increased positively in the agricultural sector of the nation.

1.2. Gaps in the Literature

The analyzed papers suggest FDI remains powerful in current times, yet researchers have studied minimal such effects regarding poverty reduction specifically within the West African sub-region. Studies showing FDI's impact on the reduction of poverty in emerging economies have created extensive controversy across both national and regional spheres of influence, as shown by the research discussed empirically. The unclear research results could lead stakeholders, policymakers, government bodies, and societal groups to make misleading decisions. The main reasons behind the controversy in this literature stem from the measurement difficulties associated with the poverty variable. HDI served as the study's poverty measurement approach because other research about the ECOWAS sub-region failed to investigate this variable entirely in recent times. Emerging nations persistently deal with FDI and poverty alleviation issues. There are no previous studies that evaluated FDI contributions to poverty reduction in the ECOWAS sub-region using ARDL modeling. This methodology enables the present research to differ from other FDI and poverty reduction studies that examined the ECOWAS sub-region. This study aims to fill gaps identified in the existing knowledge about FDI and poverty elimination throughout the ECOWAS sub-region.

2. METHODOLOGY

The chapter examines the research techniques along with analysis methods of gathered data. Before analyzing the methods for data collection and the methodical assessment, the study examines the conceptual framework along with related literature. This chapter provides an overview of the study's theoretical foundation, as well as its model formulation and a-priori expectations, data sources, and estimating methods.

2.1. Research Design

The study relies on an ex-post facto research plan. Under this design, researchers examine the relationship of an existing independent variable on the dependent variable through quasi-experimental methods without random participant assignment. Quasi-experimental approaches do not implement a random distribution of their participants. This study explores the relationship while explaining how the explanatory variable determines variations in the dependent variable, so an ex-post facto research approach proves suitable.

2.2. Theoretical Framework

The research bases its findings on Nurkse (1953)'s Vicious Circle of Poverty theory to investigate FDI's ability to raise economic growth performance and job creation, which results in decreased poverty rates. The theory depicts a cyclic relationship between four economic elements, including productivity, and their relations to the investment gap, unemployment, and poverty across the economy. The theory shows that developing countries, including ECOWAS countries, face perpetual poverty status because of their lack of revenue, according to Ogbuabor et al. (2013). Only one researcher uses the term "poverty cage" to describe the stubborn demand-to-supply relationship of developing nations as it evolved from the initial concept. The restricted financial capacity of customers indicates they lack spare funds they can allocate; furthermore, their ability to save is also limited. The people have limited purchasing power, leading to long-term inventory excesses because demand remains extremely unfavorable from a supply perspective. Earnings of producers remain inadequate because they face constraints in their savings capabilities and capital development, which hinders productivity. The situation of business poverty becomes a cycle because of these factors.

Foreign Direct Investment creates an efficient approach to poverty reduction through its link between insufficient savings and expanded capital bases, which enhances productive capacity according to Moran (1998). The increase in production output encourages employers to expand team hiring, which results in salary increases. The incomes of families, together with business earnings, experience upward movement. Local enterprises benefit from FDI through foreign exchange functions because they obtain international capital investments, resulting in increased

investments in subsequent times. Foreign enterprises use new platforms to promote their products and distribute goods, expanding customers' access to export markets. Community-based economic progress, combined with job creation and poverty reduction, occurs when Hacke, Wood, and Urquilla (2015) explain that the absorption of capital in local communities stands as a development initiative. The vital aspects of aggregate output receive their primary power from FDI activities in developing economies. Depending on the research goals, the following mathematical concept describes the study:

$$lnY_t = \emptyset + \alpha\ FDI_t + \mu_t \quad (1)$$

Y = Aggregate output.

μ_t = White noise error term, i.e. $\mu_t \approx (0, \sigma_t)$.

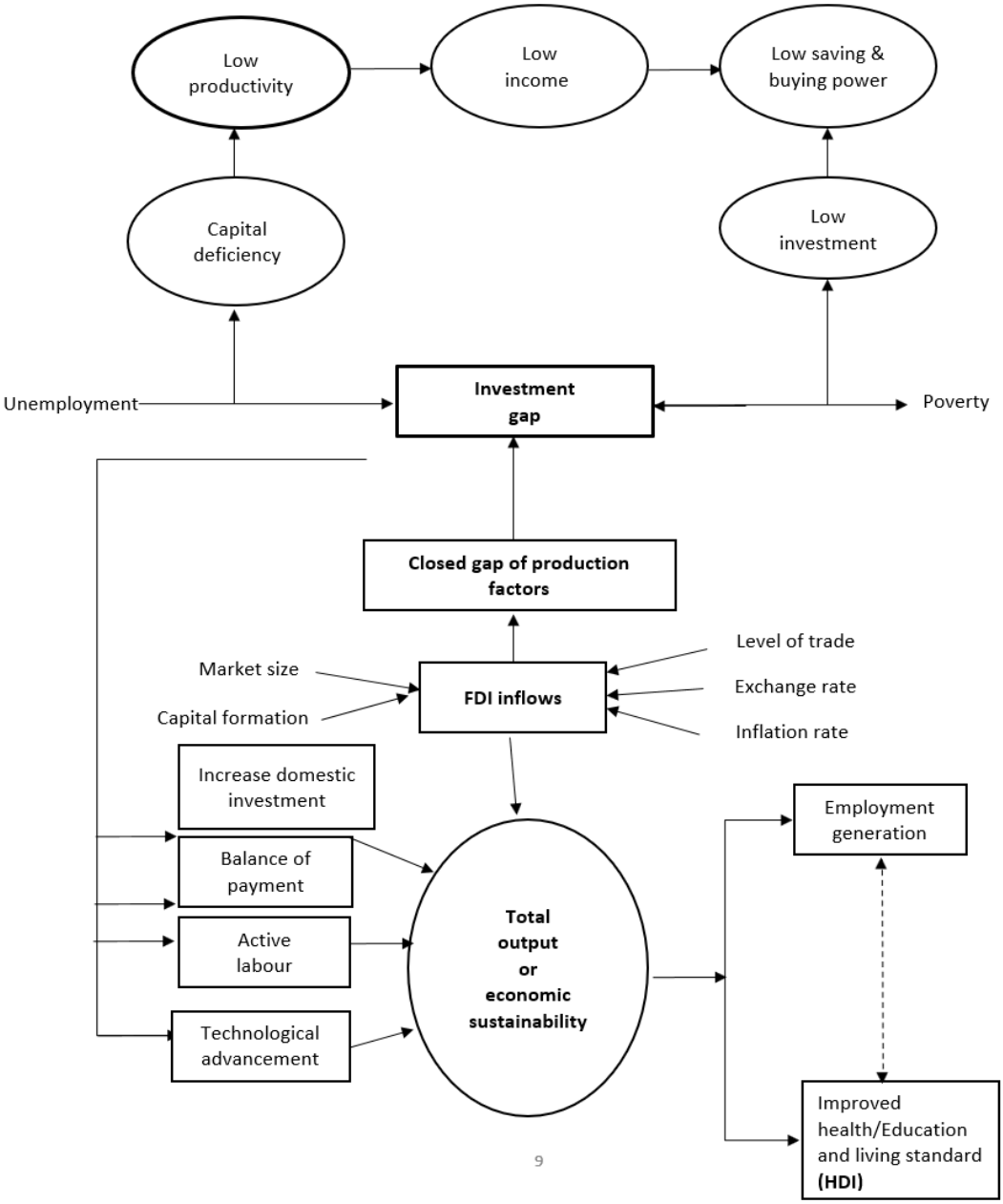

Figure 1. Modified vicious circle of poverty.

Source: Adapted from Nurkse (1953) and Rohima, Kamaruddin, and Habibullah (2013).

Figure 1 illustrates the conceptual framework of this study. This shows how the variables of interest in the study are connected.

2.3. Model Specification

2.3.1. Model of the Impact of FDI on Poverty Reduction in ECOWAS Sub-Region

This study extended the existing theoretical foundation related to FDI inflows and poverty reduction in the ECOWAS sub-region through modifications of model design from Aderemi, Oladele, Omogboye, and Fagbola (2019); Fowowe and Shuaibu (2014); Liu, Adejumo, Adejumo, and Aderemi (2022), and Ucal (2014). The model adopted from Fowowe and Shuaibu (2014) and Ucal (2014)is adjusted in this study and uses HDI and FDI inflows as a percentage of GDP as its key variables. The current study incorporates gross fixed capital formation (GCF) together with inflation rate (INFL), trade openness (TOP) and exchange rate (EXCH), and population growth rate (PGR) as control variables. Emerging economies rely on these variables because they represent crucial strategic components that lead to FDI inflows, according to Jadhav (2012) and Ogun, Egwaikhide, and Ogunleye (2012). These empirical variables regulate the welfare status of people through direct and indirect pathways (Aderemi et al., 2019; Fowowe & Shuaibu, 2014; Gohou & Soumaré, 2012; Okoh et al., 2022; Quinonez, Saenz, & Solorzano, 2018; Tsaurai, 2018).

The functional form of the model is given as:

$$HDI = f(FDI) \quad (2)$$

In an explicit form, the model is given as:

$$HDI_t = f(FDI_t, GCF_t, INFL_t, TOP_t, PGR_t, EXCH_t) \quad (3)$$

Therefore, if the model (3.3) is linearized, it to the following models as follows

$$HDI_t = \alpha_0 + \beta_1 FDI_t + \beta_2 GCF_t + \beta_3 INFL_t + \beta_4 TOP_t + \beta_5 PGR_t + \beta_6 EXCH_t + u_t \quad (4)$$

Stating Equations 4 in a panel form, therefore, we have.

$$HDI_{it} = +\alpha_0 + \beta_1 FDI_{it} + \beta_2 GCF_{it} + \beta_3 INF_{it} + \beta_4 TOP_{it} + \beta_5 PGR_{it} + \beta_6 EXCH_{it} + u_{it} \quad (5)$$

If Equation 5 is modified into a dynamic panel model that comprises short-run and long-run estimates, Equation 6 emerges as follows.

$$HDI_{it} = \sum_{i=1}^{p} \Omega 1\, HDI_{it-1} + \sum_{i=0}^{p} \Omega 2\ FDI_{it} + \sum_{i=1}^{p} \Omega 3 \Delta GCF_{it} + \sum_{i=1}^{p} \Omega 4\ TOP_{it} + \sum_{i=1}^{p} \Omega 5 \Omega 1\ \Omega INF_{it} + \sum_{i=1}^{p} \Omega 6\, PGR_{it} + \sum_{i=1}^{p} \Omega 7\ LEXCH_{it} + \theta ECM_{it} + \Omega 11 \Delta\, HDI_{it-1} + \sum_{i=0}^{p} \Omega 21\ \Delta FDI_{it} + \sum_{i=1}^{p} \Omega 3\, 1\, \Delta\, GCF_{it} + \sum_{i=1}^{p} \Omega 41\ \Delta\, TOP_{it} + + \sum_{i=1}^{p} \Omega 51\ \Delta\, INF_{it} + \sum_{i=1}^{p} \Omega 61\ \Delta\, PGR_{it} + \sum_{i=1}^{p} \Omega 71\ \Delta\, LEXCH_{it} + \mu it \quad (6)$$

Meanwhile, the A-priori expectation behaves; thus, $\beta_3 < 0$, *but* $\beta_1, \beta_2, \beta_4 \beta_5 \beta_6 > 0$. *It* should be noted that Ω_1 to Ω_7 stand for long-run estimates and Ω_{11} *to* Ω_{71} stand for long-run estimates concurrently. And θ is the speed of adjustment between short-run and long-run estimates.

2.4. Nature and Sources of Data

The research relies on secondary data covering the period from 1990 through 2023. The original dataset contained missing points, but researchers should note this pattern. The study adopted the Banchani and Swiss (2019) method to address missing data points by substituting missing values with the average obtained from the four newest data points in the dataset. This approach strengthened the overall balance of the panel dataset. The study benefits from an enhanced balanced panel examination because of this method. This research conducted its investigation across the period from 1990 to 2023. FDI inflows into most ECOWAS member states increased at a higher rate during the late 1980s than in previous years. The analysis focused on four ECOWAS member states: Nigeria, Ghana, Côte d'Ivoire, and Senegal. These four nations were selected due to two reasons: first, the availability of data, and second, their leading position in ECOWAS sub-regional GDP (African Development Bank, 2018). The four ECOWAS nations consistently attracted over 70 percent of all FDI inflows arriving in the sub-region throughout the past decades according to UNCTAD (2020).

2.5. Measurement of Variables

In providing an operational definition for the relevant variables in this study, Table 2 shows the full descriptions of the relevant variables, units of measurement, sources of data, and the a priori expectations.

Table 2. Variable description.

Abbreviation	Description	Unit of measurement	Source	A-priori expectation
FDI	The total equity capital, accumulated revenues, and long- and short-term capital constitute FDI inflows, i.e., the number of foreign investors' inward direct investments in the documentation country. FDI inflows as a percentage of GDP are used in this study.	Percentage (%)	United nations conference on trade and development	Positive (+)
GCF	Gross fixed capital formation world development indicators describe this as expenditures or enhancements to the economy's fixed assets plus net changes in the stock of inventory. In the current study, it was calculated as a proportion of gross capital formation to GDP.	Percentage (%)	World development indicators of world bank	Positive (+)
TOP	Trade Openness: This is the accumulation of imports and exports as a percentage of GDP	Percentage (%)	World Bank Development indicators of world	Positive (+)
HDI	The HDI is a composite index that, according to the UNDP, evaluates well-being in terms of a nation's average performance in the three fundamental pillars of human development: health, education, and standard of living. In the HDI estimation, lifespan at conception stands in for health; knowledge is represented by the ratio of primary, secondary, and tertiary gross enrollment; and standard of living is represented by GDP per capita calculated using purchasing power parity (PPP). For more information on how to calculate HDI, please see the detailed note of the human development reports, which is accessible through the official page of the United Nations Development Programme. world indicators bank percentage development global positive	Percentage (%)	World bank Development indicators of world	Positive (+)
INFL	Percentage change in the GDP deflator or consumer price index	Percentage	World Development indicators of world bank	Positive (+)
EXCH	The exchange rate is measured as the rate at which one national currency will be exchanged for another in terms of US dollars.	Dollars	World Development indicators of world bank	Positive (+)

2.6. Estimation Techniques

This study considers various estimation techniques to achieve its research objectives. It examines the relationship between FDI, poverty reduction, and employment generation in the ECOWAS sub-region. The empirical strategy involves adopting a baseline estimation procedure that is linearly related. The model was estimated using a balanced panel data set. Several pre-estimations are necessary for the above model. Firstly, compared to unit root analysis that

uses specific time series data, panel unit root tests and analyses are more precise. A time series unit root test is employed to create a panel unit root test. This approach focuses on combining the asymptotic properties of the cross-sectional dimension N and the time series dimension T. Panel unit root tests can be analyzed in various ways. We utilized the Im-Pesaran-Shin test (IPS) and the Levin-Lin-Chu test (LLC) among them.

Moreover, it was deduced from the foregoing that the model's used variables were a combination of I (0) and I (1) variables. Consequently, a Panel ARDL model was adopted. In agreement with Pesaran, Shin, and Smith (2001), Pesaran and Pesaran (1997), and Pesaran, Shin, and Smith (1999), ARDL is the optimal method if the factors investigated of interest are a combination of I(1) and I(0).

Table 3. Descriptive statistics of the various variables of interest.

Descriptive statistics	HDI	FDI	GCF	TOP	INF	LEXCH	PGR
Mean	0.47	2.91	21.3	61.7	10.9	0.54	2.60
Median	0.47	1.88	22.9	61.0	7.27	-0.69	2.55
Maximum	0.61	16.2	53.1	116	72.8	5.75	3.60
Minimum	0.37	-1.32	8.25	20.7	-2.25	-3.41	2.08
Std. deviation	0.05	3.12	8.61	20.2	13.6	2.41	0.30
Skewness	0.38	2.14	1.01	0.19	2.20	0.96	1.30
Kurtosis	2.50	7.83	4.77	2.59	8.51	2.60	5.42
Jarque-Bera	0.12	205	35.7	1.56	245	19.1	62.5
Probability	0.55	0.00	0.00	0.45	0.00	0.00	0.00
Sum	55.4	343	251	728	129	63.7	307
Sum Sq. dev.	0.40	114	869	478	217	684	10.5

Note: HDI = Human development index (0-1), GCF = Capital accumulation measured as % of GDP, FDI = FDI as % GDP. POP = Population growth rate in %, INF = Inflation rate in %, TOP = Trade openness in %. Nigerian HDI data was extrapolated backwards from 2003 to 1990 due to a paucity of data.

3. RESULTS AND DISCUSSION

The descriptive statistics of the several variables of interest in the four ECOWAS countries that were chosen over 32 years are shown in Table 3. These offer crucial information about the series' behaviors that are utilized to estimate the model. The Human Development Index (HDI) ranges from a minimum of 0.38 to a maximum of 0.61 in four designated ECOWAS nations. This sub-region has a low human development index, as indicated by its average score of 0.47. This suggests that the ECOWAS subregion of Africa has a high rate of multidimensional poverty. The HDI of 0.8 in Mauritius, 0.78 in Seychelles, 0.74 in Algeria, 0.73 in Egypt, 0.73 in Tunisia, 0.73 in Libya, 0.71 in South Africa, 0.69 in Botswana, and 0.68 in Morocco are all in contrast to the current situation reports in several African nations.

However, the ECOWAS sub-region's FDI inflows as a percentage of GDP have a mean of 2.91%, with minimum and maximum values of -1.3% and 16.25%, respectively. This indicates that FDI inflows into the ECOWAS sub-region have not increased over the last thirty years. The unfavorable investment climate in this African subregion may justify this situation. Additionally, other factors common in ECOWAS nations, such as poor infrastructure, insecurity, and an unfavorable ease of doing business, may be discouraging FDI inflows into this sub-region.

Table 4. Correlation matrix.

	FDI	GCF	INF	PGR	TOP	LEXCH
FDI	1.00	-0.17	0.00	0.01	0.29	-0.12
GCF	-0.17	1.00	0.02	-0.18	-0.38	0.31
INF	-0.02	0.37	1.00	0.05	-0.14	0.18
PGR	0.01	-0.18	0.05	1.00	-0.25	-0.15
TOP	0.29	-0.38	-014	-0.25	1.00	-0.59
LEXH	-0.12	0.31	0.18	-0.15	-0.59	1.00

Table 4 summarizes the pairwise correlations between explanatory variables, which indicate that FDI has a negative correlation of -0.178199 with GCF, while the relationships between FDI and INF, PGR, and TOP reach 0.009648, 0.011458, and 0.299533, respectively. However, FDI shows a negative correlation of -0.121752 with LEXCH. The correlations presented in the table do not reach 0.9 levels, which indicates that multicollinearity will not occur according to Goldberger (1991).

Table 5. Levin, Lin & Chu t* test and Im, Pesaran and Shin W-stat test.

Variables	Levin, Lin & Chu t* test				
	Level	Probability	1st diff	Probability	Remark
FDI	-0.56**	0.28	-4.84**	0.00	I(1)
LEXCH	-2.41**	0.00	-	-	I(0)
GCF	-1.58**	0.05	-3.44**	0.00	I(1)
TOP	-1.17**	0.12	-5.90**	0.00	I(1)
PGR	-9.90**	0.00	-	-	I(0)
INF	-2.65**	0.00	-	-	I(0)
Variables	Im, Pesaran and Shin W-stat test				
	Level	Probability	1st diff	Probability	
FDI	-1.09**	0.13	-6.21**	0.00	I(1)
HDI	5.28**	1.00	-1.87**	0.03	I(1)
LEXCH	-1.08**	0.13	-5.50 **	0.00	I(1)
GCF	-1.68**	0.04	-	-	I(0)
TOP	-1.69**	0.04	-	-	I(0)
PGR	-8.78**	0.00	-	-	I(0)
INF	-3.15**	0.00	-	-	I(0)

Note: **Significant at 5% *Significant at 10%.

3.1. Panel Unit Root Tests

A unit root problem produces spurious or nonsensical results in time series data. The research employed time series data and thus required checks for data stationarity through Levin, Lin & Chu t* Test and Im, Pesaran, and Shin W-stat Test. The data for FDI and HDI became stationary after applying an initial differencing process, although they were non-stationary at their original level according to Table 5. The variables presented unit root problems as noted by these results. The data series for PGR, together with TOP, GCF, and INF, remained at a constant level without being stationary. These variables did not show any root problems in their statistical data. Analysis of the presented information showed that the employed variables contained both I(0) and I(1) characteristics. The method selected for estimation required the use of panel ARDL modeling (Pesaran & Pesaran, 1997; Pesaran et al., 2001; Pesaran et al., 1999).

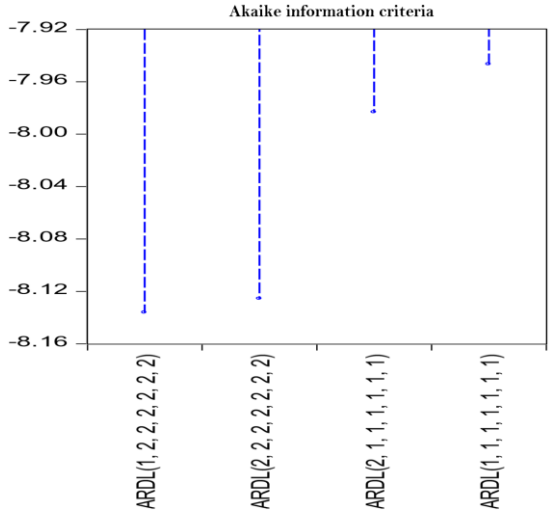

Figure 2. Confirmation of the appropriate lag length selection criteria.

Figure 2 shows the lag length criteria. The estimated panel ARDL model contains a lag of one (1), as per information criteria, thus determining one (1) as the optimal delay since this represents the best choice for analysis.

Table 6. Long run results of panel autoregressive distributed lag model of FDI and poverty reduction.

Dependent variable: HDI		
Regressors	**Long run coefficient**	**T-statistics**
FDI	-0.04 (0.00)	1.23
PGR	0.24*** (0.09)	2.50
TOP	-0.01*** (0.00)	2.51
GCF	-0.00 (0.01)	0.23
INF	0.04 (0.03)	1.51
LEXCH	0.02*** (0.09)	2.50
COINTEQ01	-0.28 (0.15)	1.84

Note: The value in parenthesis indicates the standard error ***significant at 5%.

Table 7. Short run results of panel autoregressive distributed lag model of FDI and poverty.

Regressors	**Short run coefficient**	**T-statistics**
FDI	0.01 (0.03)	0.33
PGR	-0.15 (0.18)	0.85
TOP	1.64 (6.88)	0.23
GCF	0.08 (0.05)	1.49
INF	-0.01 (0.01)	1.08
LEXCH	-0.01*** (0.03)	2.88
COINTEQ01	-0.28 (0.15)	1.84

Note: The value in parentheses indicates the standard error *Significant at 1% ***significant at 5%.

The estimated panel ARDL methodology demonstrates the long-run and short-run relationship between FDI and poverty reduction in the ECOWAS sub-region through Tables 6 and 7. The results display an insignificant exchange rate alongside all other short-run measurement points, indicating that FDI has no immediate effect on decreasing poverty in the ECOWAS region.

The analysis of long-term effects demonstrates that FDI generates virtually no influence on the connected relationship. The Human Development Index decreases by only 0.004 percentage points when FDI changes by one unit. The negative but insignificant value of FDI shows minimal hindrance to human capital development. The ECOWAS subregion demonstrates that FDI inflows usually do not reduce poverty in the long term. The insufficient ability of the economic bloc to transmit FDI effects into human well-being development in the area might explain why FDI inflows fail to alleviate poverty in the ECOWAS subregion.

A substantial positive connection exists between population growth rate and human development index with a 5% significance level. HDI increases by 0.24% when the population growth rate experiences a one-unit change. The examined regions show that population growth produces positive effects on poverty reduction. During the examined

period, trade openness and HDI had a negative correlation, which opposed each other. The Household Index Development demonstrates a reduction of 0.0007 points when trade openness has a one-unit increase. Analysis shows no significant influence between capital accumulation and the inflation rate concerning human development index measurement. Research reveals that HDI and exchange rate demonstrate both a significant and favorable connection. The exchange rate has a 2.4% positive impact on HDI when it changes by one unit.

Table 8. Results of panel dynamic least squares (DOLS).

Dependent variable: HDI			
Long short run	**Coefficient**	**T-statistics**	**Prob. Value**
FDI	0.03 (0.02)	1.49	0.16
PGR	0.09*** (0.02)	3.77	0.00
TOP	0.01 (0.06)	1.97	0.07
GCF	0.09* (0.02)	4.36	0.00
INF	0.03 (0.06)	0.57	0.57
EXCH	0.001142*** (0.000363)	3.144547	0.00
R-squared	0.996561		

Note: The value in parenthesis indicates the standard error *Significant at1% ***significant at 10%.

3.2. Robustness Check

The panel dataset that served for ARDL analysis also helped compute the outcomes of Panel DOLS as seen in Table 8. The coefficient value for FDI proved unimpressive in the analysis of the Panel DOLS outcome compared to its size in the initial panel ARDL tests. Statistics demonstrated that both trade openness, population growth, and the exchange rate registered significant results in the Panel DOLS analysis. These findings validate the results obtained in the panel ARDL analysis. The Panel DOLS calculation demonstrates that the inflation rate shares a substantial yet indirect relationship with human development, which makes up the poverty reduction metric.

4. DISCUSSION OF FINDINGS

The researchers evaluated the relationship between FDI and poverty reduction within the ECOWAS sub-region. This research evaluated the data normality through descriptive analysis techniques. Results from this work maintain their reliability because the balanced panel dataset demonstrates a normal distribution, which respects the fundamental assumptions of the classical linear regression model, specifically the requirement of linear parameters and estimates. This research designed the Autoregressive Distributed Lag (ARDL) estimation by conducting multicollinearity tests through analysis of correlation matrix results. The results from the multicollinearity test show no correlation. The research parameters from this work contain no outlier values big enough to damage the reliability of the obtained results. The research proceeded with the analysis of the panel ARDL results. All short-run coefficients prove insignificant at a 5% level, except exchange rates according to panel ARDL estimation. Research findings demonstrate that FDI and poverty reduction show no immediate relation in the ECOWAS sub-region. The research revealed that FDI and HDI demonstrated no significant time-based negative relationship. Hence, the negative, although negligible, relationship between FDI and human development shows that FDI obstructs human development. FDI inflows into the ECOWAS subregion fail to establish a long-term reduction of poverty in the area despite common perceptions. The economic bloc demonstrates insufficient capacity to capture FDI effects, leading to human well-being development in the area, thereby preventing FDI inflows from reducing poverty within the ECOWAS sub-region. The research result supports Ucal's (2014) investigation of twenty-six (26) developing

economies and Aderemi, Olowo, Osisanwo, and Omoyele's (2021) Nigerian study, which employed different research methods. Studies by Fowowe and Shuaibu (2014) concerning Africa and Israel (2014) in Nigeria, together with Soumare (2015) in Northern Africa developed opposite results. The origin of this disagreement might arise from methodological or scope limitations found in the mentioned studies.

5. SUMMARY, CONCLUSION, AND RECOMMENDATION

Research in this study analyzed the changes in poverty rates due to Foreign Direct Investment throughout the ECOWAS sub-region from 1990 to 2023. The research project aims to understand, along with other goals, the effect that FDI has on poverty reduction. The research findings related to FDI's contribution to poverty reduction in the ECOWAS sub-region comprise this section's main content. The research investigates FDI's influence on poverty reduction throughout the ECOWAS sub-region. The ECOWAS sub-region faces increasing anxiety from policymakers, investors, financial institutions, and society members about its investment gap because the gap produces higher unemployment, which creates poverty. The flow of FDI failed to promote poverty reduction across the ECOWAS sub-region. The ECOWAS sub-region failed to observe better human capital advancement due to FDI activity. The poverty reduction process from FDI has not generated benefits inside the ECOWAS sub-region. The achievement of SDG 1, poverty reduction throughout the ECOWAS sub-region before 2030, depends on immediate evidence-based decisions. The leading authorities of the ECOWAS sub-region should implement policies focused on economic stability when pursuing SDG 1 to reduce poverty because the current findings show FDI brings detrimental results to human welfare.

The policymakers need to establish efficient trade policies that enable the ECOWAS sub-region to construct a dynamic trade channel with global markets despite trade openness causing negative poverty reduction impacts. The obtained study results indicate the ECOWAS sub-region faces substantial obstacles in accomplishing the first Sustainable Development Goal (zero poverty) before 2030. The research maintains specific shortcomings that require additional investigation by other researchers according to the following steps: the study examined the ECOWAS sub-region through only four national examples. The research should expand to encompass all 54 African nations and 15 ECOWAS nations, particularly the poverty-stricken nations.

Funding: This study received no specific financial support.
Institutional Review Board Statement: Not applicable.
Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.
Data Availability Statement: Upon a reasonable request, the supporting data of this study can be provided by the corresponding author.
Competing Interests: The authors declare that they have no competing interests.
Authors' Contributions: Both authors contributed equally to the conception and design of the study. Both authors have read and agreed to the published version of the manuscript.

REFERENCES

Adelowokan, O. A., Omitogun, O., & Aderemi, T. A. (2023). FDI inflows, employment generation and poverty reduction in ECOWAS Sub Region: A panel Granger causality approach. *EuroEconomica*, *42*(1), 78-88.

Aderemi, T. A., Oladele, A. S., Omogboye, M. A., & Fagbola, L. O. (2019). Exchange rate volatility and foreign capital inflows in Nigeria: Vector error correction model approach. *Acta Universitatis Danubius. Œconomica*, *15*(5). 34-43

Aderemi, T. A., Olowo, S. O., Osisanwo, B. G., & Omoyele, O. S. (2021). Reinvestigating foreign direct investment and poverty nexus; any difference with the Nigerian human development. *Economic Insight-Trends and Challenges*, *10*(3), 13-26.

Aderemi, T. A., Omitogun, O., & Osisanwo, B. G. (2022). Effect of FDI inflows on employment generation in selected ECOWAS countries: Heterogeneous panel analysis. *CBN Journal of Applied Statistics*, *13*(1), 241-263.

Aderemi, T. A., Opele, A. M., Olanipekun, W. D., & Al-Faryan, M. A. S. (2023). A panel analysis of FDI inflows and poverty reduction in BRICS countries: An implication for the sustainable development goal one. *Transnational Corporations Review, 15*(4), 35-41. https://doi.org/10.1016/j.tncr.2023.08.003

African Development Bank. (2018). *West Africa economic outlook 2018.* Retrieved from https://www.afdb.org/en/documents/document/west-africa-economic-outlook-2018-100849

Ahmad, F., Draz, M. U., Su, L., Ozturk, I., Rauf, A., & Ali, S. (2019). Impact of FDI inflows on poverty reduction in the ASEAN and SAARC economies. *Sustainability, 11*(9), 2565.

Akinlo, A. E. (2017). Determinants of foreign direct investment in Nigeria: A Markov regime-switching approach. *Review of Innovation and Competitiveness: A Journal of Economic and Social Research, 3*(1), 21-48.

Bakhshinyan, E., Molinas, L., & Alderman, H. (2019). Assessing poverty alleviation through social protection: School meals and family benefits in a middle-income country. *Global Food Security, 23*, 205-211.

Banchani, E., & Swiss, L. (2019). The impact of foreign aid on maternal mortality. *Politics and Governance, 7*(2), 53–67.

Bharadwaj, A. (2014). Reviving the globalization and poverty debate: Effects of real and financial integration on the developing world. *Advances in Economics and Business, 2*, 42-57.

Enrico, M., Resmini, L., & Signorelli, M. (2014). The effects of inward FDI on regional employment in Europe. *Romanian Journal of Regional Science, 8*(1), 1-23.

Esubalew, T. A. (2014). *An investigation of macroeconomic determinants domestic private investment: Evidence from East Africa.* An Unpublished M. A. Dissertation Submitted to the Institute of Social Studies. The Hague, Netherlands.

Fiszbein, A., Kanbur, R., & Yemtsov, R. (2014). Social protection and poverty reduction: Global patterns and some targets. *World Development, 61*, 167-177. https://doi.org/10.1016/j.worlddev.2014.04.010

Fowowe, B., & Shuaibu, M. I. (2014). *Is foreign direct investment good for the poor? New evidence from African countries.* Eco Change No. 47, Washington DC.

Girma, S. (2005). Safeguarding jobs? Acquisition FDI and employment dynamics in UK manufacturing. *Review of World Economics, 141*, 165-178.

Gohou, G., & Soumaré, I. (2012). Does foreign direct investment reduce poverty in Africa and are there regional differences? *World Development, 40*(1), 75-95.

Goldberger, A. S. (1991). *A course in econometrics.* Cambridge, MA: Harvard University Press.

Gui-Diby, S. L. (2014). Impact of foreign direct investments on economic growth in Africa: Evidence from three decades of panel data analyses. *Research in Economics, 68*(3), 248-256.

Habib, M. D., & Sarwar, S. (2013). Impact of foreign direct investment on employment level in Pakistan: A time series analysis. *JL Pol'y & Globalization, 10*(1), 46-55.

Hacke, R., Wood, D., & Urquilla, M. (2015). Community investment: Focusing on the system. *The Troy, MI: Kresge Foundation and Initiative for Responsible Investment.*

Hanim, W. (2021). How does foreign direct investment (FDI) reduce poverty? Application of the triangular hypothesis for the Indonesian case. *Review of Integrative Business and Economics Research, 10*, 400-411.

Hoxhaj, R., Marchal, L., & Seric, A. (2016). FDI and migration of skilled workers towards developing countries: firm-level evidence from Sub-Saharan Africa. *Journal of African Economies, 25*(2), 201-232.

Huang, M., & Ren, P. (2013). A study on the employment effect of Chinese investment in South Africa.

Israel, A. O. (2014). Impact of foreign direct investment on poverty reduction in Nigeria,(1980–2009). *Journal of Economics and Sustainable Development, 5*(20), 34-45.

Jadhav, P. (2012). Determinants of foreign direct investment in BRICS economies: Analysis of economic, institutional and political factor. *Procedia-Social and Behavioral Sciences, 37*, 5-14. https://doi.org/10.1016/j.sbspro.2012.03.270

Jenkins, C. (2006). *Foreign direct investment in South Africa: Determinants, characteristics and implications for economic growth and poverty alleviation.* Working Paper. Oxford: Centre for the Study of African Economies, Oxford University.

Jorge, B. C., & Richard, A. W. (2018). Does foreign direct investment generate economic growth? A new empirical approach applied to Spain. *Economic Geography*, *94*(4), 425-456.

Kariuki, C. (2015). The determinants of foreign direct investment in the African Union. *Journal of Economics, Business and management*, *3*(3), 346-351. https://doi.org/10.7763/joebm.2015.v3.207

Liu, Y., Adejumo, A. V., Adejumo, O. O., & Aderemi, T. A. (2022). Globalization and economic growth: A sustainability analysis for South Asian Countries. *Global Policy*, *13*(4), 507-522.

Majeed, M. T., & Khan, S. (2008). The determinants of foreign direct investment in developing countries. *The Pakistan Development Review*, *47*(4), 757–768.

Moran, T. H. (1998). *Foreign direct investment and development: The new policy agenda for developing countries and economies in transition*. Washington, D.C: Peterson Institute.

Nurkse, R. (1953). *Problems of capital formation in underdeveloped countries*. New York: Oxford University Press.

Ogbuabor, J. E., Malaolu, V., & Tuluma, I. E. (2013). Small scale enterprises, poverty alleviation and job creation in Nigeria: Lessons from burnt bricklayers in Benue State. *Journal of Economics and Sustainable Development*, *4*(8), 34-46.

Ogun, O., Egwaikhide, F. O., & Ogunleye, E. K. (2012). Real exchange rate and foreign direct investment in Sub-Saharan Africa: Some empirical results. *Economía mexicana. Nueva época*, *21*(1), 175-202.

Okoh, J. I., Olanipekunm, W. D., Aderemi, T. A., & Al-Faryan, M. A. S. (2022). Stochastic panel analysis of globalization and poverty reduction in BRICS countries: Implications for sustainable development. *International Journal of Management, Economics and Social Sciences*, *11*(2/3), 98-119.

Omoyele, O. S., Lucas, B., Olanipekun, W. D., & Aderemi, T. A. (2021). Globalization and industrial development in Nigeria: A Curse or Cure. *Journal of Business and Economics*, *6*(2), 88-97.

Onimisi, A. T. (2014). Foreign direct investments and employment generation nexus in Nigeria. *Journal of Educational and Social Research*, *4*(5), 119.

Osabohien, R., Matthew, O., Ohalete, P., & Osabuohien, E. (2020). Population–poverty–inequality nexus and social protection in Africa. *Social Indicators Research*, *151*(2), 575-598.

Pesaran, M., & Pesaran, B. (1997). *Microfit 4.0 (Windows version)*. New York: Oxford University Press Inc.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), 289-326.

Pesaran, M. H., Shin, Y., & Smith, R. P. (1999). Pooled mean group estimation of dynamic heterogeneous panels. *Journal of the American Statistical Association*, *94*(446), 621-634.

Poumie, B., & Claude, D. M. (2021). Does foreign capital really matter for employment? Evidence from agricultural dominance African countries. *Asian Journal of Economic Modelling*, *9*(2), 88-104. https://doi.org/10.18488/journal.8.2021.92.88.104

Quinonez, P., Saenz, J., & Solorzano, J. (2018). Does foreign direct investment reduce poverty? The case of Latin America in the twenty-first century. *Business and Economic Horizons*, *14*(3), 488-500.

Raouf, R., & Hafid, H. (2014). Relocation and inequalities between skilled and unskilled in Northern Countries: simulation using a CGE model. *International Journal of Economics and Financial Issues*, *4*(4), 758-772.

Rohima, F., Kamaruddin, B. H., & Habibullah, M. S. (2013). Foreign direct investment and economic growth: Empirical evidence from the East Asia and Pacific region. *Journal of Emerging Economies and Islamic Research*, *1*(3), 1–18.

Saibu, O. M., & Akinbobola, T. (2014). Globalization, foreign direct investment and economic growth in sub Saharan Africa. *Journal of Economics and International Finance*, *6*(3), 62-68.

Saucedo, E., Ozuna Jr, T., & Zamora, H. (2020). The effect of FDI on low and high-skilled employment and wages in Mexico: a study for the manufacture and service sectors. *Journal for Labour Market Research*, *54*(1), 9. https://doi.org/10.1186/s12651-020-00273-x

Shamim, A., Azeem, P., & Naqvi, S. M. M. A. (2014). Impact of foreign direct investment on poverty reduction in Pakistan. *International Journal of Academic Research in Business and Social Sciences*, *4*(10), 465. https://doi.org/10.6007/ijarbss/v4-i10/1244

Souare, M., & Zhou, B. (2016). Foreign-affiliate presence and skilled labour demand. *International Economics and Economic Policy, 13*, 233-254.

Soumare, I. (2015). Does foreign direct investment improve welfare in North Africa. *Africa Development Bank*, 1-30.

Sukhadolets, T., Stupnikova, E., Fomenko, N., Kapustina, N., & Kuznetsov, Y. (2021). Foreign direct investment (FDI), investment in construction and poverty in economic crises (Denmark, Italy, Germany, Romania, China, India and Russia). *Economies, 9*(4), 152.

Tsaurai, K. (2018). Investigating the impact of foreign direct investment on poverty reduction efforts in Africa. *Revista Galega de Economía, 27*(2), 139-154.

Tsaurai, K. (2020). Financial development-poverty reduction nexus in BRICS: A panel data analysis approach. *Applied Econometrics and International Development, 20*(2), 19-32.

Tshepo, M. (2014). The impact of foreign direct investment on economic growth and employment in South Africa: A time series analysis. *Mediterranean Journal of Social Sciences, 5*(25), 18.

Ucal, M. Ş. (2014). Panel data analysis of foreign direct investment and poverty from the perspective of developing countries. *Procedia-Social and Behavioral Sciences, 109*, 1101-1105.

UNCTAD. (2020). *World investment report 2018 published by the United Nations on Trade and Investment.* Retrieved from https://unctad.org/publication/world-investment-report-2018

UNDP. (2019). *Multi-dimensional poverty.* Retrieved from https://www.undp.org/. [Accessed 6th September 2019]

United Nations. (2015). *Millennium development goals report 2015. United Nations.* Retrieved from https://www.un.org/en/development/desa/publications/mdg-report-2015.html

Wei, Y. (2013). *The effect of FDI on employment in China.* USA: Iowa State University.

World Bank. (2018). *Africa's pulse: An analysis of issues shaping Africa's economic future (Vol. 18).* Retrieved from https://documents.worldbank.org/en/publication/documents-reports/documentdetail/657221525636902614/africas-pulse

Yunus, N. M. (2020). Determinants of foreign direct investment: An analysis on policy variables in the Malaysian manufacturing industry. *International Journal of Asian Social Science, 10*(12), 746-760.