

# Real Sector Development and Poverty Reduction in Nigeria

Dr Sigah, Donny Marclary Ayibazuomuno and Lubo Ebisine

Department of Economics, Faculty of Social and Management Sciences, University of Africa, Toru Orua, Bayelsa State, Nigeria.

DOI: <https://dx.doi.org/10.47772/IJRISS.2024.8080131>

Received: 26 July 2024; Accepted: 31 July 2024; Published: 05 September 2024

## ABSTRACT

This paper examined the link between real sector development and poverty reduction in Nigeria. The objective of the study is to examine the impact of real sector variables on poverty rate in Nigeria. The datasets were analyzed using parsimonious error correction model (ECM) and post-estimation tests. The results of the unit root showed that all the variables are stationary at first difference. Evidence of a long-run association between real sector development and poverty headcount was established from the Johansen cointegration test results. It was found from the parsimonious ECM that agriculture value added to GDP significantly reduced poverty headcount during the study period. The estimated parameter showed that a per cent increase in agriculture value added to GDP leads to a significant reduction in poverty by 0.743 per cent. Similarly, manufacturing value added to GDP contributed significantly to reducing poverty. It was found that the poverty headcount was reduced by 0.454 per cent following a 1 per cent increase in the manufacturing value added. On the contrary, service value added to GDP exacerbated the prevalence of poverty during the study period. A 1 per cent increase in the service sector value added to GDP is associated with a 1.0479 increase in poverty headcount. Given the findings, this study recommends that policymakers prioritise investments in the agriculture and manufacturing sectors to deepen the level of development and create more opportunities for poverty reduction.

**Keywords:** Real sector development, Poverty, Poverty headcount, Error correction model, and real sector value added.

## INTRODUCTION

There is a growing understanding of the increasing role of the real sector in the course of economic development including poverty reduction, employment generation, equitable income distribution and gender equality, among others. This seems plausible considering the important position the real sector occupies in most developing and emerging economies. Ivanic and Martin (2018) identify the labour intensity of the real sector as the important channel through which it reduces poverty. This is based on the understanding that the real sector offers employment opportunities for a large proportion of the population which increases their income, thereby providing a roadmap for poverty reduction. According to Erumban and De-Vries (2021), real sector development especially structural change and agricultural productivity growth are responsible for poverty reduction in developing Asia and sub-Saharan Africa (SSA) countries. They further explained that the manufacturing sector also accounts for appreciable levels of poverty decline in developing Asian countries.

Although the Nigerian economy is dominated by oil, the most important sectors in sustaining sustainable growth and providing employment to the general public are agriculture and manufacturing. Udofia and Essang (2015) argue that agriculture appears to be the area that affects the poor the most because it is the main source of livelihood for the rural people. The enormous potential of the agriculture sector for sustainable poverty reduction is largely documented in extant literature. In comparison to growth in other sectors, the World Bank (2018) describes the agriculture sector as twice as effective in mitigating the incidence and pervasiveness of poverty. This shows the real role of aid for poverty reduction and inclusive growth. Ebunoluwa and Yusuf (2018) once again believe that agriculture offers a great opportunity for poverty reduction by providing food, income and raw materials to farmers.

Furthermore, manufacturing occupies an important position in driving growth while creating opportunities for employment and poverty reduction. Uma et al. (2021) outline the benefits of manufacturing sector growth to

include increased availability of goods, sustained growth, employment and reduction in poverty. According to Nansadiqa, Masbar and Majid (2019), growth in critical sectors of the economy including manufacturing is good for reducing poverty. This is reinforced by Kowo, Adenuga and Sabitu (2019) who argue that developing small and medium enterprises (SMEs) is an important strategy for addressing the problem of poverty in developing economies including Nigeria. In addition to the agriculture and manufacturing sectors, the role of the service sector in poverty reduction has equally been acknowledged in extant literature. As an integral aspect of the service sector, the banking sub-sector through financial inclusion facilitates poverty reduction (Nsiah, et al., 2021). This is also reinforced by Baidoo and Akoto (2019) and Baidoo Yusif and Ayesu(2020) as they contend that financial inclusion is crucial for enhancing the standard of living and, in so doing, addresses the issue of poverty.

Although the real sector embodies enormous opportunities for driving economic development in Nigeria, the extent of attention accorded to it by successive governments in Nigeria has raised concerns about the intended and desired poverty reduction implications. Thus, there is a growing controversy on whether the growth in the real sector trickles down to the poor given the increasing levels of poverty in the country over the past two decades. There are serious doubts as to whether the poor actually benefit from the broad-based development of the real sector in Nigeria. In tracking the level of progress in poverty reduction in Nigeria, the World Poverty Clock report showed that there are 71 million extremely poor Nigerians in 2023. This is worrisome as it tends to undermine the country's efforts in achieving Sustainable Development Goals (SDGs). It is against this backdrop that this paper seeks to examine how real sector development has contributed to poverty reduction in Nigeria.

## REVIEW OF RELATED LITERATURE

### Conceptual Review

#### The Real Sector

The real sector refers to the part of a country's economy that produces goods and services, such as agriculture, manufacturing, and infrastructure development. Real sector development aims to improve productivity, efficiency, and competitiveness in these areas (Udeorah, Yusuf, & Agbai, 2022). Real sector development can reduce poverty by creating employment opportunities and increasing income levels (AfDB, 2020). Urban agriculture, a component of real sector development, can contribute to food security, employment, and income generation in urban areas (Mkwambisi et al., 2021). Likewise investments in infrastructural development, as another aspect of real sector development, can improve access to markets, reduce transportation costs, and increase economic opportunities for rural communities (World Bank, 2022). Innovations in agriculture, such as hydroponics and aquaponics, can enhance productivity and efficiency in food production, contributing to poverty reduction (Sangwan & Tasciotti, 2023).

Over the years, it has been argued that the real sector of the Nigerian economy is the engine of economic transformation in the country. More importantly, the economic transformation from the existing agricultural economy to a developing economy cannot be ignored. The real economic revolution is being hampered by many factors including the deterioration of infrastructure, poor performance in public administration projects and services, the curse of exploratory oil exploration and the ineffectiveness of the macroeconomic policy environment.

Nevertheless, the government has continued to play a catalytic role through the enunciation of policies and provisioning of financing havens to elevate the sector to levels that can make Nigeria an economic hub and a driver of Africa's economic renaissance. While recent data suggests growth is good (especially after the recent warning in the global economy), it is surprising that most countries like Malaysia, which had low growth rates at the same time, even a few years ago, have changed their reality. Stage of development.

The real economic development problem of Nigeria remains complex and involves a combination of local and international factors. The real economy includes agriculture, trade, construction, wholesale and retail trade and commercial activities from a global perspective; the development of the global oil market and the oil and gas

industry is influenced by the global economy. Therefore, the policy environment should be entirely focused on improving the ability of the private sector to drive real activity to achieve high levels of growth. Of course, the interaction between workers and business activities makes it difficult to clearly understand the adjustments that need to be made to achieve high levels of output. Econometric models, although not comprehensive, are important tools for analyzing signatures to assist policy makers in designing and implementing effective policies.

### **Poverty Reductions**

Poverty reduction refers to strategies and initiatives aimed at decreasing the figure of people living in poverty, improving their livelihoods, and enhancing their well-being. The concept encompasses various approaches, including: Economic growth and job creation (World Bank, 2020), social protection programs, such as cash transfers and subsidies (UNICEF, 2022), human development investments, like education and healthcare (UNDP, 2021), microfinance and entrepreneurship support (IFAD, 2023) and addressing inequality and discrimination (OECD, 2022).

Nigeria is now known as the poverty capital of the world (World Poverty, 2018; Yomi, 2018; Kharas, Hamel & Hofer, 2018). The latest data available in some existing studies show that the country has the highest number of poor people in the world (Olanyi, Dada, Odhaimbo, & Vo, 2023; Olanyi & Ologundudu, 2022). The warning that poverty is increasing is relevant because the number of people living in poverty in Nigeria increases by more than six people every minute (Kharas et al., 2018; Global Poverty, 2018; World Economic Forum, 2019). This development is the highest in the world. India has a population five times that of Nigeria, yet it is undeniable that the country has more people living in poverty than India (Olaniyi, Dada, et al., 2023; Solarin et al., 2021) Okoye, 2019). This shows that extreme poverty has a major impact on Nigeria, with most people unable to afford food, clothing, adequate education, etc. (Olowookere, Olowo, Mabinuori, & Aderemi, 2021). This view is also supported by a report by the National Bureau of Statistics (2020) which states that 4 out of 10 Nigerians live below the estimated poverty line in the country. According to the Global Poverty Times in June 2018, 86.9 million Nigerians live on less than \$1.90 per day. This number increased to 91 million in 2019. In a year, about 3 million Nigerians are pushed into extreme poverty (Aderounmu, Azuh, Onanuga, Ogundipe, Bowale & Azuh, 2021). Nigeria's extreme poverty situation seems bad. Despite the abundance of people and natural resources in Nigeria, the poverty situation is still on the rise.

### **Theoretical Literature**

Nurkse (1957) proposed the theory of growth based on the theory of capital growth simultaneously in many areas, especially in developing economies. This will create opportunities for expanding jobs, increasing productivity and stimulating the private sector. The theory highlighted the necessity for developing nations to strive to increase their rate of capital formation by boosting their savings and investment motivations. This is anticipated to play a part in tackling the issue of poverty, which is a persistent barrier to economic development. The Big Push theory, stressed on balanced growth through the devotion of a certain critical minimum level of investment of capital in the economy if there is the desire to propel the economy to sustainable development.

Also proposed by Rosenstein-Rodan (1947), the large-scale theory believes that large-scale investment or large-scale investment can contribute to economic development. Therefore, large-scale, broad-based investments in key economic sectors are considered necessary for economic development, including poverty reduction. Rosenstein-Rodan (1947) emphasized economic growth to justify growth. The strategy focuses on investing in infrastructure and overall productivity of work because additional work often provides a better way to develop work. On the contrary, given the scarcity of resources in developing countries, Hirschman (1964) suggested an uneven development for economic development. More importantly, the theory suggests that investment in a choice of economic activities can lead to greater opportunities in other sectors. Therefore, feedback theory identifies important activities and develops them by establishing forward and backward linkages. This theory emphasizes the need to invest in important projects with high external benefits and comparative benefits that can support economic development in order to reduce poverty.

---

## Empirical Literature

Muhammad. & Muhammad (2023) examined real sector development and energy poverty: empirical evidence from developing countries. The study utilizes a sample of 110 developing economies over a period ranging from 1990 to 2020. The analysis is based on the traditional econometric techniques comprising pooled OLS, fixed-effects, and random-effects and Driscoll and Kraay's robust standard error approach for pooled OLS, fixed effects, and random effects. To account for a possible endogeneity problem, the study also uses the system GMM model. Our empirical outcomes verify a positive role of financial sector development in alleviating energy poverty of the sample economies. The findings also provide a supportive role of output growth, foreign direct investment, and urbanization in helping accessibility to energy services. These outcomes have strong policy implications for developing economies.

Using static panel data, Äbrahim et al. (2019) investigated whether financial inclusion helps reduce poverty in 49 Sub-Saharan African countries between 1980 and 2017. Access to information technology, inflation and Government spending are crucial to reducing poverty. The results show that interest rates and economic growth have a positive and positive impact on poverty. Based on the findings, the study concluded that financial inclusion is an important tool in reducing poverty in sub-Saharan African countries. Therefore, the study recommends that fiscal authorities reduce interest rates so that low-income people can access legal financial resources and create opportunities for the development of repair work.

Nansadiqa, Masbar, and Majid (2019) used an error correction vector model to determine the impact of economic growth and unemployment on poverty reduction in Indonesia during the period 1990-2017. Different aspects of the relationship between poverty, unemployment, and economic growth are also examined. The results show that economic growth and unemployment have a negative impact on the poor in the long run. The causality analysis results show that there is a two-way Granger causality between poverty and economic growth, and an indirect causality between unemployment and poverty. The study concludes that inclusive economic development is an important tool in poverty reduction during this period. The study concludes that developing measures to promote employment in MSMEs is important for economic development.

Ogunjobi, Oladipo, Eluyela, Ekirane, and Ezekiel (2024) examined the impact of agricultural financing on poverty reduction and economic growth in Nigeria. In this study, we use the Keynesian macroeconomic framework to examine the impact of agricultural financing on poverty reduction and economic growth in Nigeria. This study uses the annual dataset of Nigeria from 1981 to 2021 and uses the common autoregressive distribution lag (ARDL) technique. Looking at the results, the Agricultural Credit Support Scheme Fund (ACGSF), an important indicator of agricultural financing, is positively correlated with the Gini coefficient (GNP) per capita, which is an indicator of poverty, and is not significant. This means that an increase in agricultural income will increase the GNIPC, that is, an increase in agricultural income will reduce poverty in Nigeria, but not significantly.

Elumah, Muritala & Umaru (2024) Research studies on economic development and poverty reduction: a systematic review. This study used quantitative analysis techniques to analyze 91 articles published between 2010 and 2022 on economic development and poverty reduction to gain a deeper understanding of what makes economic development successful in reducing poverty and forms the basis for government design. The studies also seek to understand whether financial development is successful in reducing poverty, how other countries can use economic development strategies to reduce poverty by showing evidence of the effectiveness of financial development in reducing poverty, and why economic development can effectively reduce poverty. Statistics show that financial development benefits the poor by increasing their access to various sources of finance, thereby improving health and reducing poverty. Similarly, research shows that unemployment and low access to finance are the main reasons why financial development is not successful in reducing poverty. Therefore, this study presents the FACI plan to assist the national government with poor fiscal development and lack of poverty alleviation capacity to reduce poverty.

Aishat, Mathew, and Isiaka (2023) investigated agricultural productivity and poverty reduction in Nigeria. To achieve the research objectives, secondary data are collected on variables used as indicators of poverty, activity farming, individual credit, and real GDP (e.g. per capita income). The data used are from the Central Bank of

Nigeria (CBN) Statistical Bulletin and the World Bank database. This study used the Philips Perron test to measure location and the variables were combined based on the covariate. After establishing the relationship using the ARDL bounds test, the autoregressive distribution lag model (ARDL) was used for analysis. The findings showed that increased agricultural production increased per capita income and hence reduced poverty. The model also found that there was no autocorrelation, meaning the findings were suitable for estimation and forecasting. The study concluded that poverty can be reduced through agricultural development. The study also recommended that the government adopt policies to promote agriculture in Nigeria.

Omitogun, Adeagbo, Johnson, and Aderemi (2023) investigated Poverty: Assessing Human Development in Nigeria. Data from 1990 to 2021 were estimated using fully modified least squares and bipartite Granger causality, respectively. The findings show that there is a negative correlation between value added and human capital development in Nigeria but it is not statistically significant. This indicates that contrary to Aprori expectation, economic development in Nigeria has a weak capacity to reduce poverty. This may be due to the lack of economic activity in Nigeria. There is also no relationship between economic value added and human development. This means that Nigeria current level of economic development cannot reduce poverty in the country. Based on these findings, this study provides policies and recommendations for Nigerian policy makers.

Grace, Joel, Elizabeth, and Chiemelie, (2022) further investigated the contribution of four agricultural sectors to economic growth and poverty reduction in Nigeria using accelerated data from 1981 to 2020. This is in countries where most people earn their livelihood directly or indirectly from these activities. The modified full model least squares (FMOLS) method was used for data analysis. The different inputs include: Nigeria gross domestic product (RGDP), the contribution of different agricultural sectors (livestock, crops, fisheries and forestry) to GDP, all loans to the poor and Nigerian companies for agricultural services. The results of this study confirmed the above statement as all four sectors of agriculture other than livestock contribute to the growth of real GDP and poverty reduction. The author believes that greater efforts to develop the livestock industry will strengthen the poverty reduction capacity of Nigeria agricultural sector. The study also found that agricultural credit has led to poverty reduction and real productivity growth in Nigeria, highlighting the need to increase farmer's access to credit.

Obiakor, Wahid, Olufemi, and Timothy (2022) Investigate agriculture, food security and poverty reduction in Nigeria: Cointegration and Granger causality approach. This study examines the relationship between agriculture, food security and poverty reduction in Nigeria from 1990 to 2019 within the framework of common and proximate Granger causality. The data is obtained from the Central Bank of Nigeria Research Reports and World Development Indicators respectively. Below are the main points of the study. There is a long-run balance between Nigeria's agricultural value added, food production index and GDP per capita. Similarly, there is a strong relationship between food production and poverty reduction in Nigeria. Likewise, there is a positive relationship between poverty reduction and agricultural added value in the country. Therefore, this study makes the following recommendations to policy makers in Nigeria and other African countries: When poverty reduction becomes the main concern of policy makers, value-added agriculture and food production are key variables that cannot be ignored. Therefore, when policymakers want to reduce poverty, they should adopt policies that encourage more agriculture and food production.

Tikristini, Chukwemeka & Olalekan (2022) Study on Growth and Poverty in Nigeria? A critical review of the last two decades. This paper aims to investigate how Nigeria economic growth in the last two decades has helped reduce poverty. The study used desktop search method with qualitative and quantitative data and used various sources including academic articles, publications, books, articles and reports. Secondary data sources are Nigerian National Bureau of Statistics (NBS), United Nations Development Programme (UNDP), Human Development Report, World Bank Indicators and Central Bank of Nigeria (CBN) Statistical Bulletin. The results show that the Nigerian economy has grown significantly in the last two years, but the poverty rate in the country remains high. We also see that high inequality, corruption, rising unemployment and the monolithic structure of the Nigerian economy prevent economic growth from translating into fewer poor people. Based on the analysis of this study and the characteristics of the Nigerian economy, this paper argues that economic diversification, investment in public services and policies that promote sustainable development are good

strategies for further poverty reduction. Inequality in Nigeria also needs to be examined. There is a need for more in-depth research on the different types of income inequality and inequality that exist in the country.

Osabohien et al (2021) used Heckman two-level model and similarity score (PSM) to investigate the income and poverty levels of youth in Nigeria who are engaged in agriculture as their primary occupation. The findings show that the gender of the youth and their decision to remain in agriculture increase the risk of the youth finding agriculture as their primary occupation. The study also found that youth who make agriculture their primary occupation can significantly increase their family per capita income and reduce poverty by 17 percent. The results also show that daily wages of private workers and all landowners have a positive impact on per capita income. In addition, access to markets, agriculture as the main occupation, and income from agriculture and total value of domestic assets reduced poverty. Based on the findings, this study concludes that youth participation in agriculture is important in reducing poverty.

Omodero (2019) used the least square method to analyze the impact of Nigerian government expenditure on poverty reduction from 2000 to 2017. The analysis results show that government expenditure on agriculture, development, education and health are associated with poverty in Nigeria. Although this finding is not as expected, it shows that government expenditure on key industries is not effective in eliminating poverty. Therefore, the study concluded that government expenditure on core economic activities is inadequate and recommended that more money should be allocated to the budget for the development of these activities. This is to eliminate poverty in the country.

Matthew et al. (2020) investigated how conservation agricultural policies can contribute to poverty reduction programs. This study downloads data from organizations such as WDI and International Labor Organization for the period 2007-2017. General method of moments (GMM) is used as the data analysis technique. The results show that there is a positive relationship between the value added of agriculture, employment, inequality and poverty, while social protection and literacy have a negative relationship in reducing poverty. The study recommends that governments of ECOWAS members should make farmers aware of the importance of agricultural practices and the need for social protection.

Temitope and Fanowopo (2020) used autoregressive distributed lag regression to analyze the role of institutions in the relationship between economic growth and poverty reduction in Nigeria from 1984 to 2018. Two effective organizational changes were implemented, including corruption control and security. The results show that the growth of business and schools has a positive effect on household consumption in the short and long term. This means that as trade and shopping increase, family consumption also increases and poverty decreases. The interaction between schools and economic growth has a negative effect on per capita household consumption, indicating that the interaction between schools and economic growth is beneficial for poverty. This shows that institutions and economic development play a transformative role in reducing poverty in the short term. However, in the long term, the interaction between schools and economic growth has a positive effect on family consumption, leading to a healthy home and reducing the number of people living in poverty. This shows that in the long term, schools and economic development play a complementary role in reducing poverty in Nigeria. The results conclude that strong institutions and good economic growth are important in eliminating poverty.

## DATA AND METHODOLOGY

### Data Description

The real sector development is measured using agriculture value added to GDP, manufacturing value added to GDP and services value added to GDP. Essentially, the agriculture value added to GDP connotes the net of agriculture including forestry and fishing to GDP measured in percentage after summing up all agriculture outputs and deducting intermediate inputs. The manufacturing value added defines the net of manufacturing to GDP after summing up all manufacturing outputs and deducting intermediate inputs. The service sector value added to GDP embodies the share of the services to GDP measured in percentage after summing up all service outputs and deducting intermediate inputs. In addition, the poverty headcount was utilized for measuring the extent of the population in Nigeria. As an income measure, the poverty headcount describes the percentage of

the population living below the poverty line of \$1.9 dollar per day. The data on the real sector development indicators were obtained from the World Bank national accounts data whereas data on poverty headcount were sourced from the National Bureau of Statistics (NBS) between 1981 and 2022.

### Model Specification

The model set-up for this study closely followed the work of Ivanic and Martin (2018) which examined how sectoral productivity growth contributed to poverty reduction. However, this study improved the work by focusing on the value-added in the three critical sectors of the Nigerian economy. The functional specification of the model is provided as follows:

$$POR_t = f(AGV, MFV, SSV) \tag{1}$$

Where: POR = poverty headcount, AGV = agriculture value added, MFV = manufacturing value added and SSV = service sector value added.

Econometric form of equation (1)

$$POR_t = \beta_0 + \beta_1 AGV_t + \beta_2 MFV_t + \beta_3 SSV_t + \mu_2 \tag{2}$$

Where:  $\beta_0$  = constant term,  $\beta_1 - \beta_4$  = Dynamic coefficients of the differenced regressors,  $K$  = Proxy for the maximum lag length,  $\Delta$  = first difference operator,  $\pi$  = Error correction coefficient (a measure of the speed of adjustment)

The error correction model for two variables X and Y is stated generally as:

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta X_t + \alpha_2 U_{t-1} + \varepsilon_t \tag{3}$$

Where;  $\alpha_2$  is the speed of adjustment.

### Method of Data Analysis

This study employs the least squares method to estimate the ECM. Essentially, the ECM embodies a dynamic representation of the relationship between real sector development and poverty reduction. Unlike the conventional OLS, the ECM allows for the lag of the dependent and independent variables which is helpful for addressing the problem simultaneity often associated with time series analysis. In addition, the application of the ECM will enable the computation of the speed of adjustment which is imperative for ascertaining if the model can converge from short to long-run equilibrium position. The estimation of the ARDL was based on the evidence of first difference stationary process in all the variables. Thus, the augmented Dickey-Fuller (ADF) test proposed by Dickey and Fuller (1981) was used for the unit root test The general specification of the ADF model involving an intercept and linear trend is of the form:

Augmented Dickey-Fuller (ADF) unit root test equation is presented as:

$$\Delta Y_t = \alpha Y_{t-1} + \sum_{i=1}^m B \Delta Y_{t-1} + \delta + Y_t + \varepsilon_t \text{ (For levels)} \tag{4}$$

$$\Delta \Delta Y_t = \alpha \Delta Y_{t-1} + \sum_{i=1}^m B \Delta \Delta Y_{t-1} + \delta + Y_t + \varepsilon_t \text{ (For first difference)} \tag{5}$$

Where;

$\Delta Y$  is the first difference of the series, m is the number of lags and t is the time.

In addition, the Johansen (1988) method was applied for the cointegration test. The choice of this test method was based on the evidence of difference stationary process in the series. This study also applied descriptive statistics to analyse the basic descriptive characteristics of the series over the study period.

## RESULTS AND DISCUSSION

### Descriptive Statistics

The results of the descriptive statistics for each of the variables are summarised in Table 1.

**Table 4.1: Summary of descriptive statistics**

Statistic	POR	AGV	MFV	SSV
Mean	58.05732	22.88138	14.31992	46.47719
Median	61.20000	22.23471	13.93340	46.38613
Maximum	78.60000	36.96508	21.09825	59.78510
Minimum	30.00000	12.24041	6.552817	35.35823
Std. Dev.	12.35204	4.589772	5.036123	5.671027
Jarque-Bera	2.841183	6.454107	4.332679	0.349156
Probability	0.241571	0.039674	0.114596	0.839811
Observations	41	41	41	41

Source: Author’s computation (2023) E-views 12

The results showed that the poverty headcount averaged 58.06 per cent while agriculture and manufacturing value added stood at average values of 22.88 and 14.32 per cent respectively. The results also showed the mean value of service sector value added stood at 46.47 per cent. The mean distribution showed that the service sector value added exceeded that of agriculture and manufacturing, indicating the substantial role played by the service sector in driving economic growth in Nigeria. The standard deviations showed that the observations for each of the variables clustered around their respective mean values. This is based on the fact the computed standard deviations are less than the associated mean values. In addition, the probability values of the Jarque-Bera statistics for all the variables are greater than 0.05, indicating that all the variables are normally distributed at the significance level of percent.

### ADF Unit Root Tests

The unit root test was conducted at the 5 percent level with the application of the ADF method. The results are presented in Table 2.

**Table 2: Summary of the unit root test results**

Variable	ADF results at levels	ADF results at 1 <sup>st</sup> difference	Order of Integration
POR	-2.562 (0.1092)	-8.168*** (0.0000)	I(1)



AGV	-2.5623 (0.1096)	-6.965*** (0.0000)	I(1)
MFV	-1.306 (0.6174)	-7.147*** (0.0000)	I(1)
SSV	-2.002 (0.2847)	-4.839*** (0.0003)	I(1)

Source: Author’s computation (2023) E-views 12

Note: Figures in parenthesis are the probability values of the ADF statistics

The unit root test results showed that all the variables are nonstationary at levels given that the probability values of the ADF statistics are greater than 0.05. This implies that the null hypothesis of unit root cannot be rejected at the significance level of 5 per cent. However, the results showed that the variables become stationary at first difference. In other words, the variables are integrated of order one, I(1). The evidence of the first difference stationary promoted the test for cointegration using the Johansen method.

### Cointegration Test

Following the evidence of all I(1) series from the ADF unit root test results this study applied the Johansen approach to unit root to ascertain if the series are cointegrated or not. The results are presented in Table 3.

Table 3: Johansen cointegration test results

Series: POR AGV MFV SSV				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.839966	122.9165	63.87610	0.0000
At most 1 *	0.595477	58.78365	42.91525	0.0007
At most 2 *	0.340924	27.10698	25.87211	0.0350
At most 3	0.300626	12.51493	12.51798	0.0500
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.839966	64.13281	32.11832	0.0000
At most 1 *	0.595477	31.67667	25.82321	0.0075
At most 2	0.340924	14.59205	19.38704	0.2168
At most 3	0.300626	12.51493	12.51798	0.0500

Source: Author’s computation (2023) E-views 12

**Note: \* denotes rejection of the hypothesis at the 0.05 level**

The Johansen cointegration test results showed evidence of three cointegrating equations from the Trace test at the significance level of 5 per cent. This is based on the fact that the computed Trace statistics are greater than the 5 per cent critical values. At the same time, evidence of two cointegrating equations was established from the maximum eigenvalue test given that the maximum eigenvalue statistics are greater than the significance level at 5 per cent. Based on the findings, the null hypothesis of no cointegration is rejected. This finding indicates that poverty headcount has a long-run relationship with real-sector development indicators (agriculture value added to GDP, manufacturing value added to GDP and service sector value added to GDP). This finding provides the basis for re-parameterising the relationship among the variables as an error correction model in accordance with Engel and Granger (1986) proposition.

**Model Estimation**

This study leveraged the OLS method to estimate the error correction model. The results of the parsimonious ECM are presented in Table 4.

**Table 4: Parsimonious ECM results**

Dependent Variable: D(POR)				
Method: Least Squares				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(POR(-1))	0.114679	0.140588	0.815715	0.4213
D(AGV)	0.615769*	0.343943	1.790323	0.0838
D(AGV(-1))	-0.74304***	0.305640	-2.431115	0.0053
D(MFV(-1))	-0.45405***	0.142061	-3.196169	0.0008
D(SSV)	-0.483321	0.313400	-1.542186	0.1339
D(SSV(-1))	1.04795***	0.321119	3.263438	0.0028
ECT(-1)	-0.37498***	0.121746	-3.080087	0.0045
C	0.787918	0.786336	1.002012	0.3246
R-squared	0.611836	Mean dependent var		0.640263
Adjusted R-squared	0.504756	S.D. dependent var		6.546397
S.E. of regression	4.606932	Akaike info criterion		6.096395
Sum squared resid	615.4908	Schwarz criterion		6.484244
Log likelihood	-106.8315	Hannan-Quinn criter.		6.234389
F-statistic	5.713838	Durbin-Watson stat		1.845187
Prob(F-statistic)	0.000213			
Post-estimation test results				

Test type	Test statistics	Probability value
Breusch-Godfrey Serial Correlation LM	1.696	0.4282
White heteroskedasticity test	4.072	0.8506
Normality test	0.074	0.9638

Source: Author’s computation (2023) E-views 12

Note: \*\*\*, \*\* and \* indicate significant at 1%, 5% and 10% respectively

The results showed that a one-period lag of poverty headcount has a positive but insignificant effect on its current value. This finding indicates that poverty at the previous level tends to provide the basis for predicting changes in the current poverty level. It was also evident from the results that the first lag of agriculture value added to GDP has a significant negative effect on poverty headcount. The estimated parameter showed that a per cent increase in agriculture value added to GDP leads to a significant reduction in poverty by 0.743 per cent. This finding suggests that agricultural development plays a substantial role in reducing poverty. The significant effect of agriculture in reducing poverty is consistent with the findings of Omotayo et al (2019) and John and Dankawu (2018) which highlighted the significant contribution of agriculture to poverty reduction in Nigeria. The results further showed that manufacturing value added has a negative and significant effect on poverty headcount. It was found that the poverty headcount reduced by 0.454 per cent following a 1 per cent increase in the manufacturing value added. This highlights that the development of the manufacturing sector offers an opportunity for reducing poverty in Nigeria. This finding corroborates the results of Erumban and De-Vries (2021) which showed that poverty reduction is significantly associated with structural change and manufacturing sector growth.

However, the results showed that service sector value added has a positive and significant effect on poverty headcount. As observed from the results, a 1 per cent increase in the service sector value added to GDP is associated with a 1.0479 increase in poverty headcount. This finding reveals that the service sector development tends to worsen the problem of poverty given the growth of technology and the use of capital-intensive techniques. In comparison, this finding is in accordance with the results of Kumari, Azam and Khalidah (2019) which showed a significant positive link between services and poverty headcount. The coefficient (-0.37498) of the error correction term is negative and significant at the 5 per cent level, indicating the model can adjust from the short to long-run equilibrium position at the speed of 37.49 per cent. This finding is a corroboration of the evidence of the long-run relationship between real sector development and poverty headcount as evidenced in the Johansen cointegration test results. The R-squared (0.6118) revealed that 61.18 per cent of the total variations in poverty headcount are collectively explained by changes in the independent variables. The probability value (0.0002) of the F-statistic (5.714) is less than 0.05. This finding reveals that the real sector development indicators are jointly significant in explaining changes in poverty headcount. More importantly, there is no evidence of serial correlation and heteroscedasticity in the residuals given that the probability values of the test statistics are greater than 0.05. Again, the residuals showed that the residuals are normally distributed at the 5 per cent level.

## CONCLUSION AND RECOMMENDATIONS

The role of real sector development in promoting economic growth and development has attracted widespread attention in recent times. This is based on the understanding that the development of the real sectors offers more opportunities for income growth, employment, equitable income distribution and poverty reduction. In this light, this study re-examined the link between real sector development and poverty reduction in Nigeria. The findings showed that agriculture value added to GDP significantly reduced poverty during the study period. It was also found that manufacturing value added to GDP contributed significantly in reducing poverty. On the contrary, service value added to GDP exacerbated the incidence of poverty during the period covered by this study. Given the findings, this study concludes that real sector development especially increases in agriculture and manufacturing value-added are imperative for long-term reduction in poverty. Therefore, this

study recommends that policymakers to prioritise investments in agriculture and manufacturing sectors to deepen the level of development and create more opportunities for poverty reduction. It is also imperative for policymakers to integrate poverty alleviation goals into service sector development to optimise the benefits of poverty reduction.

## REFERENCES

1. AfDB (African Development Bank). (2020). Real Sector Development in Africa. Abidjan, Côte d'Ivoire: AfDB.
2. Aishat P. U. Mathew E. R. & Isiaka O. K. (2023). Agricultural Productivity and Poverty Alleviation in Nigeria. *ABUAD Journal of Social and Management Sciences (AJSMS)*, Vol. 4, No. 2, pages 195-207.
3. Aliyu, A. A., & Amadu, L. (2017). Urbanization, cities, and health: The challenges to Nigeria—A review. *Annals of African Medicine*, 16(3), 149–158.
4. Baidoo, S. T., & Akoto, L. (2019). Does trust in financial institutions drive formal saving? Empirical evidence from Ghana. *International social science journal*, 69(231), 63-78.
5. Baidoo, S. T., Yusif, H., & Ayesu, E. K. (2020). Improving loan repayment in Ghana: Does financial literacy matter?. *Cogent Economics & Finance*, 8(1), 1787693.
6. Dickey, D. A., & Fuller, W. A. (1981). Likelihood ratio statistics for autoregressive time series with a unit root. *Econometrica*, 49(1), 1057-1072.
7. Ebunoluwa, O. O., & Yusuf, W. A. (2018). Effects of economic growth on poverty reduction in Nigeria. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 9(5), 25-29.
8. Elumah, L. O., Muritala T. A. & Umaru Z (2024). Financial Development and Poverty Alleviation: A Systematic Review. *Journal of Economics and Sustainability: Vol. 6 Number 1: 1-19*.
9. Engle, R.F. & Granger, C.W.J., (1987). Co-integration and error correction: Representation, estimation, and testing. *Econometrica*, 55 (2), 251-276.
10. Erumban, A. A., & De-Vries, G. J. (2021). Industrialization in developing countries: Is it related to poverty reduction? (No. 2021/172). WIDER Working Paper.
11. Grace O. E., Joel E. O., Elizabeth O. O. & Chiemelie O. O. (2022). Agricultural Sub-Sectoral Output, Economic Growth and Poverty Reduction in Nigeria: Any Empirical Lesson? *Augustine University Journal of Social Sciences (AUJSS) ISSN 2787-0324 Volume 2, Number 1*.
12. Ibrahim, H. B., Manu, D., Adamu, I., Jediel, E. H., Kasima, W., Hajara, B., & Yusrah, I. (2019). An examination of the Impact of Financial Inclusion on Poverty Reduction: An Empirical Evidence from Sub-Saharan Africa. *International Journal of Scientific and Research Publications*, 9(1), 239-252.
13. IFAD (International Fund for Agricultural Development). (2023). Rural Poverty Reduction.
14. Ivanic, M., & Martin, W. (2018). Sectoral productivity growth and poverty reduction: National and global impacts. *World Development*, 109, 429-439.
15. Johansen, S. (1988). Statistical analysis of cointegrating vectors. *Journal of Economic Dynamics and Control*, 12(2-3), 231-254
16. John, M. A., & Dankawu, M. U. (2018). Effect of Agriculture on poverty reduction in Nigeria: A multifaceted approach using principal component analysis. *IOSR Journal of Humanities and Social Science (IOSR-JHSS)*, 23(6), 35-43.
17. Kowo, S. A., Adenuga, O. A. O., & Sabitu, O. O. (2019). The role of SMEs development on poverty alleviation in Nigeria. *Insights into Regional Development*, 1(3), 214-226.
18. Kumari, J. P., Azam, S. F., & Khalidah, S. (2019). The effect of microfinance services on poverty reduction: Analysis of empirical evidence in Sri Lankan perspectives. *European Journal of Economic and Financial Research*,
19. Matthew, O. A., Osabohien, R., Ogunlusi, T. O., & Edefe, O. (2019). Agriculture and social protection for poverty reduction in ECOWAS. *Cogent Arts & Humanities*, 6(1), 1682107.
20. Mkwambisi, D. D., Fraser, E. D., & Dougill, A. J. (2021). Urban agriculture and poverty reduction: Evaluating how food production in cities contributes to food security, employment, and income in Malawi. *Journal of International Development*, 23(5), 181–203.
21. Nansadiqa, L., Masbar, R., & Majid, M. S. A. (2019). Does economic growth matter for poverty reduction in Indonesia. *East African Scholars Journal of Economics, Business and Management*, 2(2), 46-52.

22. Nsiah, A. Y., Yusif, H., Tweneboah, G., Agyei, K., & Baidoo, S. T. (2021). The effect of financial inclusion on poverty reduction in Sub-Sahara Africa: Does threshold matter?. *Cogent Social Sciences*, 7(1), 1903138.
23. Obiakor R. T., Wahid D. O., Olufemi S. O. & Timothy A. A. (2022). Agriculture, Food Security and Poverty Reduction in Nigeria: Cointegration and Granger Causality Approach. *ACTA Universitatis Danubius* Vol 18, no 1.
24. OECD (Organisation for Economic Co-operation and Development). (2022). Poverty Reduction.
25. Muhammad K. & Muhammad T. M. (2023). Financial sector development and energy poverty: empirical evidence from developing countries. *Environmental Science and Pollution Research* 30:46107–46119
26. Ogunjobi J. O., Oladipo O. A., Eluyela D. F., Ekirane J. O. & Ezekiel A. A. (2024). Impact of Agricultural Financing on Poverty Reduction and Economic Growth in Nigeria. Available at SSRN: <https://ssrn.com/abstract=4699722> or <http://dx.doi.org/10.2139/ssrn.4699722>
27. Omitogun O., Adeagbo A.D., Johnson A. A. & Aderemi T. A. (2023). Poverty Reduction: An Empirical Assessment of the Nigerian Human Capital Development. *Public Administration & Regional Studies* Vol. 16, No. 1.
28. Omodero, C. O. (2019). Government sectoral expenditure and poverty alleviation in Nigeria. *Research in World Economy*, 10(1), 80-90.
29. Omotayo, O. H., Ayomitunde, A. T., Omolola, O. L., & Georgina, A. A. (2019). The Role of Agriculture in Poverty Reduction In Nigeria: An Empirical perspective. *International Journal of New Economics and Social Sciences*, 9, 251-262.
30. Osabohien, R., Wiredu, A. N., Nguetzet, P. M. D., Mignouna, D. B., Abdoulaye, T., Manyong, V., ... & Awotide, B. A. (2021). Youth participation in agriculture and poverty reduction in Nigeria. *Sustainability*, 13(14), 7795.
31. Sangwan, N., & Tasciotti, L. (2023). Losing the plot: The impact of urban agriculture on household food expenditure and dietary diversity in sub-Saharan African countries. *Agriculture*, 13(2), 284.
32. Temitope DADA, J., & Fanowopo, O. (2020). Economic growth and poverty reduction in Nigeria: The role of institutions. *Ilorin Journal of Economic Policy*, 7(7), 1-15.
33. Tikristini O., Chukwuemeka E. & Olalekan O. O. (2022). Has economic growth reduced poverty in Nigeria? A critical analysis of the last two decades. *Journal of Enterprise and Development (JED)* Vol. 4, No. 2.
34. Udofia, L., & Essang, N. (2015). Agricultural expenditure and poverty alleviation in Nigeria. *development*, 7(21), 29-44.
35. Uma, K. E., Obidike, P. C., Chukwu, C. O., Kanu, C., Ogbuagu, R. A., Osunkwo, F. O., & Ndubuisi, P. (2019). Revamping the Nigerian manufacturing sub-sector as a panacea for economic progress: Lessons from South Korea. *Mediterranean Journal of Social Sciences*, 10(4), 111.
36. UNDP (United Nations Development Programme). (2021). Sustainable Development Goals: Poverty Reduction.
37. UNICEF (United Nations Children's Fund). (2022). Social Protection and Poverty Reduction.
38. World Bank. (2022). Infrastructure Development and Poverty Reduction. Washington, D.C.: World Bank.