

## Agricultural export and inclusive growth in Nigeria

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### Abstract

The study examined agricultural exports and inclusive growth in Nigeria from 2010 to 2024. The objectives of the study are to; examine the effect of cocoa beans export; sesame seed exports; and cashew seed export on per capita gross domestic product (GDPp). Annual data were collected from United Nations' Commercial Trade Statistics and the Central Bank of Nigeria (CBN) statistical bulletin. The technique of ordinary least square (OLS) multiple regression was used to determine the relationship between the dependent variable (GDP per capita) and the independent variables (cocoa beans export, sesame seed export and cashew seed export). Based on the OLS results; export of cocoa bean and sesame seed have positive effect on inclusive growth (per capita GDP). While export of cashew seed has negative but significant impact on inclusive growth. Based on the findings, it was recommended amongst others that, various products of agriculture required for exports should be given urgent developmental attention in terms of provision of energy and good roads because of their advantage of their immediate returns to the growth of the economy.

**Keywords:** Agricultural; Cashew seed; Exports; Inclusive growth; Sesame seed

### 1. Introduction

Agriculture has long supported Nigeria's economy, employing over 70% of the workforce and contributing significantly to the GDP. In the 1960s, Ghana's GDP was 60% agricultural, according to Unachukwu, Maduka, Oguanobi, and Akamobi (2025). Cocoa, groundnuts, and palm oil were the main exports. After the 1970s oil discoveries, the government focused on exporting petroleum, reducing agricultural production and export income. Oil prices on the world market are hard to predict, so Nigeria needs to make its economy less dependent on oil exports immediately (Juniper Publishers, 2025).

The government of Nigeria knows how important farmland is to the country's economic growth and is trying to bring the industry back to life. The government is also working to bring the business back to life. As stated by Juniper Publishers in 2025, the Agricultural Transformation Agenda supports farming and processing that leads to the creation of things with higher value. In 2025a, Reuters reported that the African Development Bank put \$2.2 billion into agro-processing zones. The goal of this investment was to boost Nigeria's exports, make sure there was enough food for everyone, and create jobs in rural areas.

Exports of farm goods are moving in the right way, according to new numbers. In terms of Dataphyte (2025), it's interesting to note that, Nigeria's farming exports hit an amazing ₦1.70 trillion in the first three months of the year, which points to a big recovery in the sector. Juniper Publishers (2025) says that, Nigeria's foreign currency gains have gone up because of the higher demand for cocoa, sesame seeds, and cashew nuts around the world. This is what happens when these goods are in high demand around the world. There is more trade within Africa now that there is the African Continental Free Trade Area (AfCFTA). This means that Nigerian farmers have more opportunities to sell their goods in regional markets and abroad (Juniper Publishers, 2021).

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Inequalities in farming are exacerbated by weak institutional support and inadequate infrastructure. According to Dataphyte (2025), small farmers lack capital, processing and storage facilities, rural infrastructure, and market links to export. Although agricultural exports have increased, many rural communities remain poor. This shows that, poverty and macroeconomic conditions are still far from improving. Also, agricultural production and the possibility for export varies from one location to another, which makes this situation even more difficult. Cashew nuts, cocoa, and sesame seeds benefit certain agriculturally promising regions, while others are left behind (Reuters, 2025b). Unequal agricultural exports hinder social justice and inclusive growth. Post-harvest profits are lower for non-processed agricultural exports. It is this situation above that provoked a study on agricultural exports and inclusive growth in Nigeria. The specific objectives are to: examine the effect of cocoa seed exports; palm oil export and cashew seed export on inclusive growth in Nigeria.

## 2. Literature review

### 2.1. Conceptual Clarification on Agricultural Export and Inclusive Growth.

Agricultural exports have been a significant contributor to Nigeria's economy for a considerable amount of time. Before the oil boom, the export of cocoa, palm oil, and groundnuts significantly increased the amount of foreign currency revenue and the amount of money in the government's coffers. Through the discovery of oil in the 1970s, farming was made useless as a method of economic production. The idea of diversifying and expanding the economy via the export of agricultural products has been the subject of a great deal of discussion. Increasing agricultural production and exports is an aim of the Nigerian Agricultural Promotion Policy (2016-2020) as well as the Nigerian National Agricultural Research and Development Council (NIRSL).

In order for economic progress to be considered inclusive, it is necessary that all residents be provided with new opportunities and advantages. People who are employed in agriculture and who are living in poverty in rural parts of Nigeria are the focus of inclusive development projects. These programs have the broad objective of expanding economic possibilities for all individuals. Achieving a fair distribution of income, reducing the prevalence of poverty, and making basic services accessible are the goals and objectives. The academic community is in agreement that in order for development to be inclusive, it is vital to take steps to eliminate structural inequality and to provide persons with low incomes with the opportunity to participate in and benefit from economic activity.

Agricultural exports from Nigeria and inclusive development have been the subject of a significant amount of research. Data about the link between agricultural exports and the increase of the country's gross domestic product in Nigeria are contradictory. Using the Johansen maximum likelihood test of cointegration, Gbaiye, Adegbeye and Olamide (2013) were able to establish a connection between agricultural exports and economic development over an extended period of time. Exports of agricultural products thus contribute to the real GDP at a rate that is higher than proportional. On the other hand, the Sapientia Foundation Journal of Education, Sciences, and Gender Studies (2025) reports that exports of agricultural goods provide a temporary boost to economic development. In order for the researchers to arrive at this result, they used the Augmented Dickey-Fuller unit root test as well as the ARDL framework.

Additionally, there has been a focus placed on increasing the contribution of agricultural exports to the GDP via the process of value addition. Agricultural value added was shown to have a considerable influence on GDP growth rates in developing nations, according to research that was published in the Sapientia Foundation Journal of Education, Sciences, and Gender Studies in the year 2025.

#### 2.1.1. Contribution of Agricultural Exports to Economic Growth in Nigeria

Agricultural products were Nigeria's primary export for many decades. Prior to the oil boom, the exportation of other commodities like as cocoa, palm oil, and groundnuts was a substantial source of income for the government as well as foreign cash! During the 1970s, oil served to diminish the economic dominance of agriculture. Through agricultural exports, an increasing number of nations are diversifying their economies and expanding their economies. There has been an increase in agricultural production and exports via Nigeria as a result of the National Agricultural Research and Development League (NIRLL) and the Agricultural Promotion Policy (2016-2020).

Both the expansion of the Nigerian gross domestic product and agricultural exports are being looked at. Agriculture exports were shown to have contributed to a rise in Nigeria's gross domestic product, according to the findings of a time series analysis that was carried out by Unachukwu et al. (2025). Through the use of econometric research that was carried out between the years 1986 and 2022, it was determined that there is a significant connection between real GDP and agricultural exports. According to the findings of this study, exports are a significant contributor to economic

development since they both increase revenues in foreign currency and make it simpler for sectors to expand as a consequence.

In order to achieve the goal of increasing agricultural exports, it is necessary to overcome certain obstacles. When it comes to exports, smallholder farmers have challenges due to inadequate storage, processing, financial resources, and infrastructure. The industrial GDP and egalitarian development are both impaired as a result of these constraints.

#### *2.1.2. Agricultural Export and Inclusive Development Across Different Socio-Economic Groups*

Development that is inclusive involves the creation and distribution of opportunities for everyone. To achieve inclusive development in Nigeria, economic prosperity must be shared with all people, especially those who are economically disadvantaged and live in rural areas and work in agriculture. Providing access to essential services, reducing poverty, and ensuring equal distribution of income are the primary focusses of this strategy. Those who are knowledgeable in the field believe that growth can only be inclusive if policies are implemented that address structural inequality and provide those who are economically disadvantaged the chance to participate in and profit from economic activity.

Numerous studies have shown a connection between the expansion of agricultural exports and the equitable development in Nigeria. Between the years 1981 and 2014, Ibrahim (2020) used Dynamic Ordinary Least Squares (DOLS) to investigate the relationship between agricultural export and inclusive development, which was specifically defined as per capita income. The research indicated that agricultural exports do not significantly enhance per capita income, despite the fact that they are beneficial to the economy. This means that they do not contribute to inclusive development unless other policies are put into place.

Agriculture exports and GDP growth in Nigeria contradict each other. Using the Johansen maximum likelihood test of cointegration, Gbaiye et al. (2013) discovered that there is a link between agricultural exports and economic growth that has existed over a long period of time. The growth of agricultural exports leads to an increase in real GDP that is more than proportionate. However, the Sapientia Foundation Journal of Education, Sciences, and Gender Studies (2025) found that agricultural exports temporarily boost economic development. The researchers used the Augmented Dickey-Fuller unit root test and the ARDL framework to achieve this outcome.

GDP growth from agricultural exports depends on value addition. A 2025 Sapientia Foundation Journal of Education, Sciences, and Gender Studies research found agriculture enhances GDP.

## **2.2. Export-Led Growth Theory**

Export-Led Development (ELG) theory holds that exports increase output, investment, and foreign currency revenues, boosting economic development. In exporting nations, economies of scale and global market access may improve GDP (Balassa, 1978). The ELG hypothesis indicates that Nigeria's agricultural exports might improve economic development by providing foreign currency, employment, and assistance for processing and logistics (Gbaiye, Adegbeye, & Olamide, 2013).

## **2.3. Empirical Review**

Unachukwu, Maduka, Oguanobi, and Akamobi (2025) examined Nigeria's agricultural exports from 1986 to 2022. Research shows that agricultural exports boost foreign currency revenues, agro-processing jobs, and GDP. However, weak infrastructure, credit accessibility, and market connections hinder smallholder farmers' involvement and fair benefit sharing, according to the research.

Chukwuemeka (2023) examined institutional challenges in Nigeria's agricultural export sector. The ARDL paradigm showed that, value-added agricultural exports boost GDP and employment. Also, it was found that, agricultural exports do not benefit local populations equally and recommended investing in processing facilities and supply chain infrastructure to promote inclusive growth.

Zekarias (2023) examined export performance of agricultural, food commodities and economic growth in Ethiopia: Using Co-Integration Approach. The analytical procedure applied were Engle-Granger for causality, Johansen Approach for co-integration and error-correction model. The results indicated that in the long run Ethiopian economic growth defined as positive function of agricultural exports, imports and capital, while population negatively affect the growth. In the short run, lagged gross domestic product explained positively the economic growth, while the agricultural imports, capital and population size influenced negatively. The result implied that the correction in one period draws

back to the other period at speed of 41%. Therefore, diversifications, adopting labour intensive industries and improvement in fixed capital formation were policy directions that can stimulate growth of Ethiopia Economy.

Abdullahi (2022) examined the correlation between productivity and smallholder farmers' access to agricultural loans in Nigeria. A cross-sectional survey of 450 farmers found that inadequate credit availability impacted export participation and productivity. The results emphasize the need of financial inclusion and credit supply for fair economic development and smallholder agricultural exports.

Ezeh and Nwajiuba (2021) analyzed Nigerian income disparity according to agricultural producing regions. Agriculture is largely exported from the southern and middle-belt areas due to their better infrastructure and climate. Northern areas are marginalized, which increases economic inequality and export advantages. Furthermore, Okonkwo and Nwafor (2021) studied how farmer cooperatives might boost exports. Their findings suggest that forming a cooperative may help smallholders access inputs, funding,

Ibrahim (2020) used Dynamic Ordinary Least Squares (DOLS) to examine agricultural export and inclusive development based on per capita income between 1981 and 2014. The study showed that, agricultural exports only slightly boost per capita income, which means that, they do not contribute to the promotion of fair development in the absence of other measures. This is despite the fact that agricultural exports result in a rise in GDP.

Gbaiye, Adegbeye, and Olamide (2013) conducted research using Johansen cointegration tests to investigate the long-term relationship between agricultural exports and Nigeria's GDP. This analysis shows that agricultural exports substantially affect GDP growth, supporting the export-led growth theory. However, export increase did not benefit all areas or socioeconomic categories, the study concluded. Alo, using Dynamic Ordinary Least Squares (DOLS), Ibrahim (2020) examined how agricultural exports affected inclusive development in Nigeria from 1981 to 2014. The study found that agricultural exports boost economic performance but have little influence on per capita income. This shows that without smallholder farmer efforts; socio-economic progress is restricted. To help poor rural communities grow economically, research shows the necessity for inclusive policies.

### 3. Methodology

The type of data used in the study is secondary data. The data ranges from the period of 2010 to 2024. The data used for the study include; cocoa beans export, sesame seed exports and cashew seed export are the set of independent variables and per capita gross domestic product (GDPp) is the dependent variable. These data were sourced from National Bureau of Statistics, United Nation Trade Statistics (UN Comtrade) data base and World Bank data base and was analyzed with econometric technique of Ordinary Least Square (OLS) to ascertain the relationship between the dependent and independent variables.

#### 3.1. Model Specification

The functional relationship between the dependent variable and the independent variables can be expressed as follow;

$$GDPp = f(CBE, SSE, CSE) \quad (1)$$

The model to be estimated is further restated in the non-linear form. This is aimed at reducing the problem of multicollinearity among the variables in the estimated models. In this respect the multiplication version or the Cobb Douglas variety was adopted. In multiplication form we have:

$$GDPp_t = X.CBE_t^{a1}SSE_t^{a2} CSE_t^{a3} e^u \quad (2)$$

Taking natural log of both sides of (2) to have a log-linear form for the equation as follow;  $\ln(GDPp_t) = b_0 + b_1 \ln(CBE_t) + b_2 \ln(SSE_t) + b_3 \ln(CSE_t) + \epsilon_t \quad (3)$

Where;  $GDPp_t$  = Per Capita Gross Domestic Product,  $CBE_t$  = Cocoa Beans Export,  $SSE_t$  = Sesame Seed Export,  $CSE_t$  = Cashew Seed Export,  $b_0$  = Constant Parameter,  $b_1 - b_3$  = Slope Parameters,  $\epsilon_t$  = Error Term

#### 4. Results and discussion

**Table 1** Descriptive Statistic Result of the Variables

Variables	GDPP	CBE	SSE	CSE
Mean	950441.1	3.25E+08	1755687.	1.44E+08
Median	978535.9	2.92E+08	239993.0	1.12E+08
Maximum	990690.7	6.70E+08	15226814	3.52E+08
Minimum	776332.2	210097.0	9467.000	299414.0
Std. Dev.	63320.25	2.37E+08	4026321.	1.20E+08
Skewness	-1.936334	0.022010	2.804220	0.280954
Kurtosis	5.316448	1.663186	9.700559	1.670456
Jarque-Bera	12.72718	1.118131	47.72006	1.302142
Probability	0.001723	0.571743	0.000000	0.521487
Sum	14256617	4.88E+09	26335309	2.16E+09
Sum Sq. Dev.	5.61E+10	7.86E+17	2.27E+14	2.00E+17
Observations	15	15	15	15

Source: Authors' Computation (2025)

The table above showed the result of the descriptive analysis of the variables of study. From the result, it was discovered that, the Nigerian economy per capita average ₦950441 with the corresponding standard deviation of ₦63320. This means that, the variable is normally distributed since the standard deviation value of each of the variable is less than the mean value. The above table reveals that, the approximate mean of cocoa beans export (CBE), cashew seed export (CSE) and Sesame Seed Export (SSE) are ₦325000000, ₦175687 and ₦144000000 respectively. Also, the corresponding standard deviation values of cocoa beans export (CBE), cashew seed export (CSE) and Sesame Seed Export (SSE) are ₦237000000, ₦4036321 and ₦120000000 respectively. This means that, the variable is normally distributed. This study shows that, the independent variable employed in this study had a positive return on inclusive growth. However, despite the average returns of the various agricultural export (Cocoa Beans Export, Sesame Seed Export and Cashew Seed Export) within the period of study, the result revealed that, the performance of the variables to a little extent was not all together consistent as a result of slight variability of the results of skewness, kurtosis and probability of Jarque Bera.

**Table 2** Ordinary Least Square Result for the Estimated Model

Dependent Variable: LOG(GDPP)				
Method: Least Squares				
Date: 10/20/25 Time: 16:17				
Sample: 2010 2024				
Included observations: 15				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	13.40013	0.092417	144.9966	0.0000
LOG(CBE)	0.022893	0.013715	1.669177	0.1233
LOG(SSE)	0.001812	0.006276	0.288803	0.7781
LOG(CSE)	-0.001899	0.017533	-0.008315	0.0057
R-squared	0.776402	Mean dependent var		13.76241
Adjusted R-squared	0.715421	S.D. dependent var		0.071360

S.E. of regression	0.038068	Akaike info criterion	-3.475712
Sum squared resid	0.015941	Schwarz criterion	-3.286898
Log likelihood	30.06784	Hannan-Quinn criter.	-3.477723
F-statistic	12.73183	Durbin-Watson stat	1.386000
Prob(F-statistic)	0.000671		

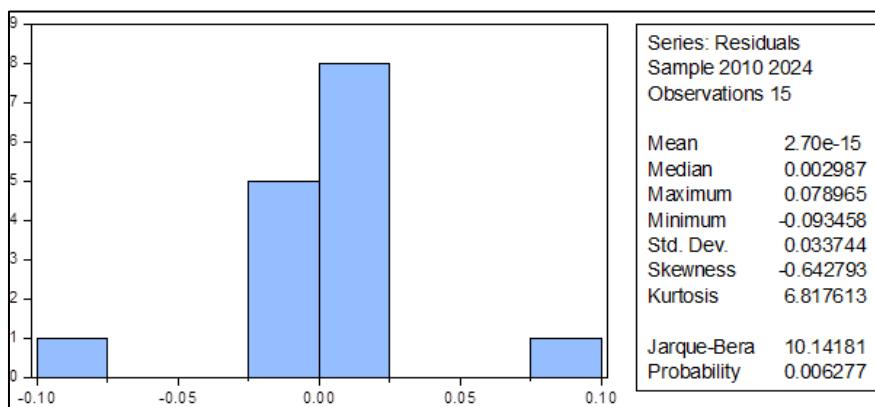
Source: Authors' Computation (2025)

The OLS short-run result showed that, cocoa bean export has positive but insignificant relationship with inclusive growth in Nigeria. This means that, a percent increase in cocoa bean export increased per capita gross domestic product by 2.289percent. The finding is in line with the empirical work of Brigg (2024) who examined export trade and economic growth in Nigeria and discovered that, products of agricultural export such as cocoa has direct relationship with growth measure by GDP.

The estimated result also showed that, sesame seed export has positive but insignificant relationship with inclusive growth in Nigeria during the period of study. This means that, a percentage increase in sesame seed exports will increase per capita gross domestic product by about 0.1821percent. The finding is validated the report of Briggs (2024) and Central Bank of Nigeria (2024) report on the fact that, Nigeria experienced a trade surplus in agricultural products as a result of a rise in agricultural exports like cocoa beans and cashew seeds.

Meanwhile, the estimated OLS result showed that, cashew seed export has negative relationship with inclusive growth in Nigeria but the positive relationship has significant impact on per capita gross domestic product. This means that, a percentage increase in cashew seed exports decreased per capita gross domestic product by about 0.1899percent.

The coefficient of determination (Adjusted R-squared) is 0.7154, means that, the dynamic model is a good fit. Thus, the variation in per capita gross domestic product brought about by the three explanatory variables is about 72percent. Also, the overall model is significant; given the probability value of f-statistic (0.000671) which is less than 5percent level of significant. Thus, the three explanatory variables are significant in explaining increase in per capita gross domestic product (proxied for inclusive growth) in Nigeria during the period of study. Moreover, the approximate coefficient of the Durbin Watson (DW) test is 1.386 which is not too far from 2.0 DW bench mark, implies that, the model is free from serial correlation problem. Therefore, the model is valid for policy making and implementation.



**Figure 1** Normality Test Results for the Estimated Model

The Jarque-Bera statistic is applied to examine whether the error term in the model is normally distributed. Thus, the probability of Jarque-Bera statistic is compared with the critical p-value at 5%level of significance. The null hypothesis is upheld if the probability of the Jarque-Bera statistic is greater than the critical p-value at 5% significance level.

The normality test result in Figure 1 showed that, the error term is normally distributed at 5% level of significance. This is because, the probability value of the Jarque-Bera statistic is 0.06277; and this value is greater than 5% critical value. Meaning that, the Jarque-Bera statistic hypothesis of normally distributed residuals in the model is accepted.

Ramsey reset test is performed by regressing the predicted value of the dependent variable on the explanatory variables and then testing the joint significance of the coefficients on the latter. Thus, the null hypothesis is that, the powers of the

fitted values have no relationship which serves to explain the dependent variable. Based on the Ramsey rest test results on Table 3, the estimated model is well specified since the null hypothesis of the estimated model is accepted at 5percent level of significance.

**Table 3** Post Estimation Test for the Estimated Model: The Ramsey Rest Stability Test Result

Equation: UNTITLED				
Specification: LOG(GDPP) C LOG(CBE) LOG(SSE) LOG(CSE)				
Omitted Variables: Squares of fitted values				
	Value	df	Probability	
t-statistic	0.956125	10	0.3616	
F-statistic	0.914175	(1, 10)	0.3616	
Likelihood ratio	1.312159	1	0.2520	

Source: Authors' Computation (2025)

## 5. Conclusion

The research used year 2010–2024 data to assess Nigeria's agricultural exports and inclusive growth and found that, in the short-run, agricultural exports in terms of both cocoa bean and sesame seed exports have positive relationship with inclusive growth in Nigeria. Nevertheless, cashew seed export has negative but significant impact on inclusive growth in Nigeria during the period of study. Given the findings above, the study concludes that, agricultural sector is well endowed with products' exports to improve the revenue base of the country, which will in turn increase inclusive economic growth.

### Recommendations

Based on the findings of this study, the following recommendations are proposed:

- Enhance Infrastructure and Market Access: To help smallholder farmers, especially in Northern Nigeria, engage in export-oriented agriculture, the government should invest in rural roads, storage, and transport networks.
- Promote Value Addition and Agro-Processing: Establishing agro-processing zones and supporting local cocoa, palm oil, sesame, and peanut processing will boost exports, employment, and value in Nigeria.
- Expand Access to Credit and Financial Services: Scaling up programs like NIRSAL will help smallholder farmers engage in export markets by providing inexpensive loans, insurance, and risk-sharing.

## Compliance with ethical standards

### Disclosure of conflict of interest

No conflict of interest to be disclosed.

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## Appendix

### Research Data

Year	Sse	Cbe	Cse	Gdpp
2010	231854	588438	924122	776332.2
2011	169732	248576	710905	834161.9
2012	241247	210097	299414	902794.0
2013	239993	154273635	285322872	964184.0
2014	87466	627032944	92412294	969969.1
2015	79569	447396276	71090569	990690.7
2016	79564	230740087	29941431	974947.9
2017	9467	191078731	80641926	978535.9
2018	378526	302055987	219437526	981391.5
2019	162620	248776615	112234480	978291.8
2020	827603	292392420	124389332	979406.4
2021	520459	560101828	256431289	979696.57
2022	2123478	555393871	246833440	979131.59
2023	15226814	669988556	351667593	982068.39
2024	5956917	595161418	284977441	985014.60