

Exchange Rate Variation and Export of Agricultural Produce in Nigeria

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DOI:10.56201/ijebm.v10.no8Sept.2024.pg162.178

Abstract

This study examined the effect of exchange rate variation on the export of agricultural produce in Nigeria. Data for this study were sourced from World Development Indicators – WDI, Central Bank of Nigeria, Statistical Bulletin and Annual Reports for the various years, and the National Bureau of Statistics. The data covered a period of 35 years 1986 – 2021. The analysis began with a descriptive statistic, unit root test and a co-integration test to ascertain the suitability of the data that entered the model. Thereafter, the VAR estimation technique was used in estimating the model for this study. The variables of the model include: Agricultural Export, Exchange Rate Variation, Trade Openness, Agricultural Finance and Agricultural Employment. The results show that EXRV, TOPEN, AGRFIN and AGREM P exert a positive affection AGRXPT. The study therefore concludes that EXRV, TOPEN, AGRFIN and AGREMP play a vital role in enhancing the export of agricultural produce in Nigeria. Based on that, the study recommends increased domestic production of agricultural produce, implementation of export oriented policies that will engender increased foreign exchange inflows towards a stable exchange rate system and adequate training and extension services to boost the competence of the labour force in the agricultural sector.

Introduction

Nigeria's economy which grew by 2.5% (year on year) in real terms in the second quarter of 2023 is the 31st in the world based on the nominal Gross Domestic Product (GDP) value of \$504 Billion as at 2022, the 27th largest based on purchasing power parity and the largest economy in Africa. (National Bureau of Statistics, NBS, 2023). It is the most populous in Africa and seventh in the world with a projected population of about 220 million for 2022 (World Bank 2022). According to Ake (1996), agriculture used to be the principal foreign exchange earner of Nigeria and the country was self-sufficient in food production in the 1960s and early 1970s and a major employer of the Nigerian working population. Statistics have shown that the share of agriculture in total output stood at 63.5% in 1960, making it the dominant economic activity during that decade (CBN, 2009). This was the scenario before the discovery of crude oil in commercial quantities in Nigeria. Agricultural activities in Nigeria centre on crop production, animal husbandry, fishing, food processing and forestry; and majority of the operators produce in small scale. The system of cultivation includes shifting

cultivation, crop rotation, mixed farming and small-scale irrigated agriculture, which is practiced in the North. Livestock farming is largely nomadic while fishing is mainly artisanal with low technical inputs (Eyo, 2005).

Between 1970 and 1974, agricultural exports as a percentage of total exports fell from about 43% to slightly over 7%. From the mid-1970s to the mid-1980s, the average annual growth rate of agricultural export declined by 17%. The percentage of agricultural export relative to the total export value is still low in the country not minding the plausible Heckscher-Ohlin theory of international trade which identified resource endowment as a factor that encourage comparative cost advantage. The sector recorded an annual growth rate of about 3.5% and now employs about 30% of the total labour force (World Bank, 2011). GDP annual growth rate in Nigeria averaged 3.95% from 1982 until 2017, reaching an all-time high of 19.17% in the fourth quarter of 2004 and a record low of -7.81% in the fourth quarter of 1983. The Nigerian economy shrank by 0.5% year-on-year in the first quarter of 2017, following an upwardly revised 1.7% contraction in the previous period. The recession that hit the economy and the impact of COVID-19 Pandemic further exacerbated the contraction of the economy in 2020 and 2021. The economy showed signs of recovery in the second quarter of 2022 recording a 2.1% growth. (NBS, 2022). Despite the contribution to the economy, Nigeria's agricultural sector faces many challenges which impact on its productivity and hence export of agricultural produce.

2.0 Literature Review

Theoretical Framework

The theoretical anchor of this study is centered on the Heckscher-Ohlin factor endowment theory and the elasticity theory. The Heckscher-Ohlin factor endowment theory was developed by Eli Heckscher and Bertil Ohlin in 1933. This theory holds that countries should produce and export commodities that they can produce using their cheap and abundant factor(s) of production and import commodities that use their scarce factors of production. The basic feature of this theory is that countries tend to differ from one another based on possession of factors of production. Also, commodities differ from each other based on the factors that are required in producing them. Given this scenario, the theory posited that a country would be able to produce at a lower cost those commodities that their production requires relatively large amounts of the factors of production, such as labour, land, capital and natural resources with which the country is relatively endowed (Jhingan, 2005). This theory has a practical application in this study in that the Nigerian economy tends to be abundant in the use of factors of production such as land, labour and natural resources, which she can utilize effectively for domestic production. In particular, agriculture being one of the dominant economic activity in Nigeria should utilize the abundant factor inputs such as land, labour, capital, and natural resources in the country for the production of agricultural commodities for exports.

Marshall Lerner Condition

Mathematically, the Marshall Lerner condition can be expressed as follows:

$$e_x + e_m > 1 \text{ -----2.1}$$

Where;

e_x = Supply elasticity of exports

e_m = Demand elasticity of imports

At any point, if the sum of price elasticities of supply for exports and demand for imports in absolute terms, is less than one, ie. $e_x + e_m < 1$, then devaluation of currency may lead to a

worsening balance of payments. However, if the sum of the price elasticities of supply for exports and demand for imports is equal to one, i.e $ex + em = 1$, then devaluation on of currency has no impact on the trade balance (Jhingan, 2005). Nonetheless, the benefits of devaluation may not be instantaneous due largely to policy lag. Thus, there is agreement among economists that both demand and supply elasticities will be greater in the long run than in the short run.

Empirical Literature Review

Bohl et al., (2018) investigated whether speculative activity in Chinese future markets for agricultural commodities destabilizes future returns. In order to capture speculative activity the study employed a speculation and a hedging ratio and the results showed that for most of the commodities, there were positive influences of the speculation ratio on conditional variation.

Chi and Cheng (2016) examined the short and long-run impacts of real income, bilateral exchange rate, and exchange rate variation on Australia's maritime export volume to its major Asian trading partners using quarterly data for the period of 2000Q1-2013Q2. It was found that exchange rate variation had a significant long-run effect in the majority of the cases examined, suggesting that exchange rate variation was an important factor affecting maritime export volume.

Ettah et al (2019) focused on the effects of price and exchange rate fluctuations on Agricultural exports (cocoa) in Nigeria. An export supply function for cocoa was specified and estimated using the Ordinary Least Squares Regression. Results showed that exchange rate fluctuations and agricultural credits positively affect cocoa exports in Nigeria. Results also revealed that relative prices of cocoa are insignificantly related to quantity of export, however, it has a negative sign which is in line with the a priori expectation. The result, therefore, implies a positive significant effect of exchange rate variation on cocoa exports in Nigeria. The recommendation that agricultural credit schemes should be restructured in a way that should meet the needs of farmers; and such credit facilities should be made available and accessible to cocoa farmers in order to boost their production capacity. Exchange rate has impacted positively on cocoa export in Nigeria; hence, there should be a free market determination of exchange rate for export of cocoa in Nigeria.

Omojimate and Akpokodje (2010) empirically examined the effect of exchange rate variation on the exports of the panel of Communaute Financiere Africaine (CFA) countries with that of the non-CFA counterparts during the period 1986-2006. Exchange rate variation series were generated utilizing the GARCH model. These series were then incorporated into an export equation and estimated using the OLS, fixed effect, first difference GMM and systems GMM equation techniques. The results reveal that the system GMM technique performed better than the other estimation techniques. Exchange rate variation was found to negatively impinge on the exports of both panels of countries. However, exchange rate variation has a larger effect on the panel of the non-CFA countries than on the CFA. The paper recommends the need to take appropriate monetary and fiscal policy actions to stem the rising exchange rate variation.

METHODOLOGY

Model Specification

The functional form of the equation of this study can be expressed as follows with slight modifications:

$$\text{AGRXP} = f(\text{EXRV}, \text{TOPEN}, \text{AGRFIN}, \text{AGREMP}) \text{-----} 3.1$$

Where AGRXP = aggregate agricultural exports in Nigeria (in billion naira)

EXRV = Exchange Rate Variation

TOPEN = Trade openness

AGRFIN = Agricultural Financing

AGREMP = Employment in the agricultural sector (in millions)

Equation 3.1 above is stated in its log form as stated below;

$$\ln \text{AGRXP} = \beta_0 + \beta_1 \ln \text{EXRV} + \beta_2 \ln \text{TOPEN} + \beta_3 \ln \text{AGRFIN} + \beta_4 \ln \text{AGREMP} + U_t \text{.....} 3.2$$

The theoretical a priori expectations about the signs of the coefficients of the parameters are as follows $\beta_1 < 0, \beta_2, \beta_3, \beta_4 > 0$.

It is expected that agricultural financing and agricultural employment should have positive effect on agricultural exports in line with the Heckscher-Ohlin factor endowment theory.

Estimation Technique

This research work adopts the vector autoregressive (VAR) approach for its estimation technique. VAR is a linear econometric model used to capture the interdependencies among multiple time series. VAR models generalize the univariate autoregressive model (AR model) by allowing for more than one evolving variable. For the estimation procedure for this study, some pre estimation tests will be conducted to ascertain its suitability. They include descriptive statistics, the correlation analysis, unit root test, as well as cointegration which were considered to ascertain the suitability of the variables, the data and the technique that will be employed.

Correlation Analysis

This test was carried out to ensure that the regressors do not have exact perfect or linear dependence on one another. That is to determine the existence of high linear relationship among the independent variables. If the correlation coefficient between any two regressors in the correlation matrix exceeds 0.8, then there is a problem of high multicollinearity.

Unit Root Test

The Augmented Dickey Fuller ADF test was used to test for unit root in this study. The null hypothesis is stated as:

H_0 : The series has a unit root

Rejecting the null hypothesis leads to the conclusion that the series is stationary. The null hypothesis is rejected if the p-value is less than 0.05 at 5% level of significance.

Co - integration Test

The Johansen methodology was used to check if the variables have a long run relationship, that is, to ascertain the statistical significance of the long run coefficients. The null hypothesis is that the variables are not cointegrated, therefore, rejecting the null hypothesis implies that there is cointegration.

Table 1 Measurement and Definition of Variables

Variable	Definition	Measurement	Source	Sign	Source of Data
<i>AGRXP</i>	Aggregate agricultural exports in Nigeria	Total value of agricultural exports in Nigeria	Udo&Nsika k (2022)	Positive	WDI 2022, NBS
<i>AGREMP</i>	Labour services in the agricultural sector in Nigeria (Total employment in the agricultural sector)	Labour force in the agricultural sector. 16 – 60 years	Udo&Nsika k (2022)	Positive	WDI 2022, NBS
<i>TOPEN</i>	The degree of a nation's involvement in global trade	export + import, percentage of GDP	Author	Positive	WDI 2021
<i>EXRV</i>	Movements (appreciation/depreciation in the real exchange)	Depreciation of the Naira against the USD	Udo&Nsika k (2022)	Negative	CBN Statistics Bulletin for the various years
<i>AGRFIN</i>	Strategic financial flows aimed at boosting productivity in the agricultural sector.	Agricultural Credit Guarantee Scheme funds	Author	Positive	WDI 2021 and CBN

Source: Author's Compilation, 2024.

4. Presentation of Results

Descriptive Statistics

The descriptive statistics of the selected variables are shown in the table 4.1 below:

Table 2: Descriptive Statistics

	AGRXPT	AGREMP	TOPEN	AGRFIN	EXRV
Mean	931.5872	4429.269	7.439043	25.19496	82.78627
Median	444.649	1309.543	5.33	20.09029	92.69335
Maximum	3080.317	15262.01	18.8	65.71668	305.7901
Minimum	153.076	7.5025	1.410541	-4.976077	0.610025
Std. Dev.	921.5633	5367.485	5.089927	20.3996	80.40635
Skewness	1.199187	0.883834	0.76397	0.500841	0.713608
Kurtosis	2.915807	2.270981	2.20574	2.084935	2.868118
Jarque-Bera	8.878904	5.636517	4.57174	2.837761	3.167107
Probability	0.011802	0.05971	0.101686	0.241985	0.205245
Sum	34468.73	163882.9	275.2446	932.2134	3063.092
Sum Sq. Dev.	30574043	1.04E+09	932.6647	14981.17	232746.5
Observations	35	35	35	35	35

Source: Author's computations 2024.

The results of the descriptive statistics of AGRXPT, AGREMP, TOPEN, AGRFIN and EXRV are presented in table 2 above. Normality test uses the null hypothesis against the alternative hypothesis of non-normality. If the probability value is less than JarqueBera Chi-Square at 5% level of significance, the null hypothesis of the regression is not rejected. Given the results in table 4.1, it is apparent that the hypothesis that all the variables are normally distributed cannot be rejected since all the probabilities are less than the JarqueBera Chi-square distribution. We utilize the mean based coefficient of Skweness and Kurtosis to check the normality of all the variables used. Skweness measures the direction and degree of asymmetry. The Skweness coefficient indicates normal curves for all the variables with the values ranging between +3 and -3. The positive Kurtosis indicates few cases at the tail of the distribution. However, these results suggest that the use of a VAR model is justified since the hypothesis that the error vector is Gaussian white noise cannot be rejected.

Correlation Matrix

The correlation matrix determines the existence of high linear relationship among the independent variables. The results are presented in the table below.

Table 3: Correlation Matrix

	AGRXP	AGREMP	TOPEN	AGRFIN	EXRV
AGRXP	1	0.9292591	-0.637426	0.7053257	0.7538186
AGREMP	0.9292591	1	-0.705575	0.6161651	0.8341214
TOPEN	-0.637426	-0.705575	1	-0.157526	-0.717564
AGRFIN	0.7053257	0.6161651	-0.157526	1	0.3579444
EXRV	0.7538186	0.8341214	-0.717564	0.3579444	1

Source: Author’s computation 2024.

An examination of the correlation matrix presented in the table above shows that there is a strong correlation between EXRV and AGRXP. The correlation coefficient is 0.7538. Thus, there is presumption that exchange rate variation (EXRV) will impact positively on AGRXP.

Unit Root Test.

The Augmented Dickey Fuller ADF test was used to test for unit root in this study and the results presented in table 4. below.

Table 4. ADF Unit Root Test Result

Variables	ADF Test Statistic	95% Critical value of ADF	Order of Integration	Remarks
DAGRXP	-5.319	-2.948	i(1)	Difference Stationary
D AGREMP	-4.666	-2.957	i(1)	Difference Stationary
D TOPEN	-10.646	-2.954	i(2)	Difference Stationary
D AGRFIN	-7.568	-2.951	i(2)	Difference Stationary
DEXRV	-3.033	-2.948	i(1)	Difference Stationary

Source: Author’s Computation 2024.

Unit Root Testing of the variables indicate that all the variables are difference stationary given the results as reported in Table 4.3, the researcher is justified to conduct co-integration test using the Johansen methodology.

4.1.4:Co-integration Test Results

The results of the multivariate co-integration test based on the Johansen’s co-integration technique reveal that both the trace statistic and maximum Eigen value statistic confirm the existence of two co-integrating equations. The results are presented below.

Table 5: Johansen Co-integrated Test Result. (Trace Statistic)

Variable	Eigenvalue	Trace Statistics	Critical value	Prob
AGRXP	0.697668	91.92638	69.81889	0.0003*
AGREMP	0.582905	51.25455	47.85613	0.0232*
TOPEN	0.335998	21.52358	29.79707	0.3258
AGRFIN	0.171099	7.601575	15.49471	0.5089

EXRV	0.035284	1.221331	3.841466	0.2691
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Source: Author's Computation 2024.

Table 6: Johansen Co-integrated Test Result. (Max-Eigen Statistic)

Variable	Eigenvalue	Max-Eigen Statistic	Critical value	Prob
AGRXPT	0.697668	40.67183	33.87687	0.0067*
AGREMP	0.582905	29.73097	27.58434	0.0261*
TOPEN	0.335998	13.92201	21.13162	0.3715
AGRFIN	0.171099	6.380244	14.26460	0.5649
EXRV	0.035284	1.221331	3.841466	0.2691

Source: Author's Computation 2024

Vector Auto-regressive VAR results.

The study adopted the VAR methodology as its main estimation technique in examining the nexus between agricultural exports and exchange rate variation in Nigeria. The results are presented below:

Table 7: Vector Auto regression Estimates

Standard errors in () & t-statistics in []

	AGRXPT	AGREMP	TOPEN	AGRFIN	EXRV
AGRXPT(-1)	0.176449 (0.18349) [0.96164]	-1.681448 (1.44148) [-1.16647]	-0.004852 (0.00904) [-0.53644]	0.001011 (0.00202) [0.50004]	0.012516 (0.01832) [0.68302]
AGRXPT(-2)	0.014140 (0.16021) [0.08826]	0.065431 (1.25864) [0.05199]	0.003600 (0.00790) [0.45590]	0.003114 (0.00177) [1.76319]	0.006807 (0.01600) [0.42547]
AGREMP(-1)	0.066382 (0.03111) [2.13387]	1.136174 (0.24439) [4.64903]	0.002898 (0.00153) [1.88984]	0.000163 (0.00034) [0.47450]	-0.004934 (0.00311) [-1.58829]
AGREMP(-2)	0.054813 (0.03294) [1.66397]	-0.264121 (0.25879) [-1.02062]	-6.38E-05 (0.00162) [-0.03928]	-0.000433 (0.00036) [-1.19272]	0.001753 (0.00329) [0.53302]
TOPEN(-1)	14.56838 (3.37132) [4.32127]	54.09103 (26.4851) [2.04232]	1.027872 (0.16618) [6.18531]	0.032890 (0.03716) [0.88511]	-0.447561 (0.33668) [-1.32935]
TOPEN(-2)	-7.496878 (3.44907) [-2.17359]	-13.71410 (27.0959) [-0.50613]	-0.498405 (0.17001) [-2.93159]	-0.105271 (0.03802) [-2.76906]	0.321194 (0.34444) [0.93251]

AGRFIN(-1)	9.990223 (16.1539) [0.61844]	52.01687 (126.905) [0.40989]	0.869687 (0.79626) [1.09222]	0.683374 (0.17805) [3.83803]	-0.430716 (1.61321) [-0.26699]
AGRFIN(-2)	-31.08553 (17.6477) [-1.76145]	-124.8313 (138.640) [-0.90040]	0.634067 (0.86989) [0.72890]	0.214662 (0.19452) [1.10355]	0.273055 (1.76239) [0.15493]
EXRV(-1)	4.074985 (2.03126) [2.00613]	42.32492 (15.9576) [2.65233]	0.131276 (0.10013) [1.31112]	-0.016184 (0.02239) [-0.72284]	1.144059 (0.20285) [5.63986]
EXRV(-2)	-5.068306 (2.45608) [-2.06357]	-22.91224 (19.2950) [-1.18747]	-0.160316 (0.12107) [-1.32421]	-0.008432 (0.02707) [-0.31145]	-0.049763 (0.24528) [-0.20288]
C	290.6796 (126.313) [2.30127]	194.9005 (992.313) [0.19641]	-9.380709 (6.22621) [-1.50665]	1.731071 (1.39226) [1.24335]	2.293599 (12.6142) [0.18183]
R-squared	0.979320	0.960935	0.897696	0.917701	0.971226
Adj. R-squared	0.970703	0.944658	0.855069	0.883409	0.959237
Sum sq. Resids	630347.5	38903046	1531.562	76.58240	6286.483
S.E. equation	162.0632	1273.169	7.988434	1.786318	16.18446
F-statistic	113.6535	59.03625	21.05945	26.76187	81.00936
Log likelihood	-221.1397	-293.2845	-115.7900	-63.36568	-140.5020
Akaike AIC	13.26513	17.38768	7.245144	4.249468	8.657257
Schwarz SC	13.75395	17.87651	7.733967	4.738291	9.146081
Mean dependent	942.8853	4681.820	25.20545	7.478417	87.48026
S.D. dependent	946.8343	5412.016	20.98365	5.231510	80.16156
Determinant resid covariance (dof adj.)		1.14E+15			
Determinant resid covariance		1.73E+14			
Log likelihood		-822.0144			
Akaike information criterion		50.11511			
Schwarz criterion		52.55923			
Number of coefficients		55			

Source: Author's Computation 2024.

In order to examine the relationship between exchange rate variation and export of agricultural produce, this research work estimated the VAR model built for this study. In this study the Akaike information criterion (AIC) was used to determine the lag length of the VAR model. However, two periods lag length were adopted for the study. The estimation result indicates that all the variables put together account for about 94.5% of the systematic change in exchange

rate variation and its influence on economic growth. Their F-statistics in general terms are significant across lags. The impact of EXRV on AGRXPT is positive and significant of 5% significance level in both lags 1 and 2. Also the impact of TOPEN on AGRXPT is positive and significant at 5% level in lag 1 and negative in lag 2. AGRFIN exerts a positive effect on AGRXPT at 5% in lag 1 and negative in lag 2. The results of the other control variables. The results show that there exists a positive relationship between export of agricultural produce and exchange rate variation in Nigeria.

Discussion of Results

The discussion of the results of this study is presented based on the objectives of the study. The presentation begins with objective one.

Objective one: ascertain the effect of exchange rate variation on export of agricultural produce in Nigeria. The results of the regression on the effect of exchange rate variation on export of agricultural produce in Nigeria are discussed here. From table 4.5 above, the VAR estimates show that EXRV exerts a positive and significant on AGRXPT in lag 1 with a coefficient of 4.07 and a t- value of 2.00 and a negative but significant effect in lag 2 giving a coefficient of -5.07 and a t-value of -2.06. This however implies that a 1% increase in EXRV will result in a 4.06% increase in AGRXPT. This finding is attributed to the fact that in a bid to pursuing exchange rate stability, export oriented policies enacted by government brings about increase in the export of agricultural produce given the fact that agriculture is predominant in Nigeria and it is one of the veritable tools of enhancing real sector productivity (Okoh & Okungbowa 2023). The findings of this study agrees with those of Chi & Cheng (2016) and Gatawa & Mahmud (2017) who concluded that exchange rate variation has a positive and significant effect on maritime export volume in Australia and on cocoa exports in Nigeria respectively, and in contrast with those of Akinbode and Ojo (2018) who found that exchange rate variation does not significantly affect exports in Nigeria both in the short run and in the long run. This finding could be attributed to the inelastic nature of the supply of the agricultural produce (cocoa and rubber) considered in the study especially in the short run.

Objective two: determine the impact trade openness on export of agricultural produce in Nigeria. The results of the regression on the impact of trade openness on export of agricultural produce in Nigeria are discussed here. From table 4.5 above, the VAR estimates show that TOPEN exerts a positive and significant on AGRXPT in lag 1 with a coefficient of 14.57 and a t- value of 4.32 and a negative but significant effect in lag 2 giving a coefficient of -7.49 and a t-value of -2.17. This however implies that a 1% increase in TOPEN will result in a 14.57% increase in AGRXPT. This is expected since trade openness measures the degree of a nation's involvement in the global trading system. It is basically measured as the ratio between the sum of exports and imports as a percentage of GDP. Increased agricultural produce exports indicates increasing participation in global trading system. The negative effect recorded in lag 2 may be attributable to the dwindling fortunes of the agricultural sector in Nigeria due to the constraints of funding, infrastructure, climate change etc. The findings of this study especially the positive effects of TOPEN on growth corroborate those of Okoh & Okungbowa (2023) and negate those of Siyakiya (2017) who found that TOPEN cannot stimulate output performance in Developing countries due structural and institutional deficiencies. In Okoh & Okungbowa (2023), TOPEN was found to enhance aggregated real sector performance. The study

considered real sector to be an amalgam of the agricultural sector and manufacturing sector. The real sector performance was proxy with a combination of the agricultural and manufacturing value added. The study also examined the effect of TOPEN on disaggregated agricultural sector performance and found that a positive relationship exists between them.

Objective Three: examine the relationship between agricultural financing on export of agricultural produce Nigeria. The results of the regression on the impact of agricultural financing the on export of agricultural produce in Nigeria are discussed here. From table 4.5 above, the VAR estimates show that AGRFIN exerts a positive and insignificant on AGRXPT in lag 1 with a coefficient of 9.99 and a t- value of 0.61 and a negative and insignificant effect in lag 2 giving a coefficient of -13.81 and a t-value of -1.76. The results imply that a 1% increase in AGRFIN leads to a 9.9% improvement in AGRXPT in lag 1. This is expected given the apriori expectations. Adequate agricultural financing initiative is imperative for agricultural sector performance. Adegboyega (2020); Aladejana and Aiyeomoni (2016); Aliero and Ibrahim (2012) respectively found that agricultural financing enhances agricultural sector productivity in Nigeria. When there is adequate productivity, export of agricultural produce is guaranteed all things being equal. It should be noted that increasing exports of agricultural produce is a sure way of earning foreign exchange. Inflow of foreign exchange ensures economic development and stable exchange rate regime since the inflow of dollars eases liquidity issues in the domestic foreign exchange market.

Objective Four: Ascertain the total employment in the agricultural sector. The VAR estimates show that AGREMP exerts a positive and significant on AGRXPT across lags with a coefficient of 0.067 and 0.055 respectively and a t- value of 2.13 and 1.66 respectively across lags. Thus implying that a 10% increase in AGREMP will result in a 6.7% and 5.55% increases in AGRXPT. Labour is a critical factor in enhancing productivity. Agriculture is a major employer of labour in the sub-region and also source of food for human consumption as well as source of raw materials for industrial use.

4.3 Evaluation of Research Hypotheses

Hypothesis One - Exchange rate variation has no significant effect on export of agricultural produce in Nigeria.

The results of the VAR estimation (for objective one) show that exchange rate variation EXRV has a significant effect on export of agricultural produce in Nigeria given the t values of 2.00 and 2.06 respectively. Consequently, the study rejects the null hypothesis that exchange rate variation does not have significant effect on export of agricultural produce and accept that exchange rate variation has a significant effect on export of agricultural produce in Nigeria.

Hypothesis Two–Trade openness has no significant effect on export of agricultural produce in Nigeria.

The results of the VAR estimation (for objective two) show that trade openness TOPEN has a significant effect on export of agricultural produce in Nigeria given the t values of 4.32 and 2.17 respectively. Consequently, the study rejects the null hypothesis that trade openness does

not have significant effect on export of agricultural produce in Nigeria and accept that trade openness has a significant effect on export of agricultural produce in Nigeria.

Hypothesis Three–There is no relationship between agricultural financing and export of agricultural produce in Nigeria.

The results of the VAR estimation (for objective three) show that there exist a significant relationship between agricultural financing AGRFIN and export of agricultural produce in Nigeria. Consequently, the study rejects the null hypothesis that agricultural financing does not have any relationship with export of agricultural produce in Nigeria and accept that agricultural financing has a significant relationship with export of agricultural produce in Nigeria.

Policy Implication

The findings of this research work have brought to the fore a number of issues that shall advance policy simulations and promote further research in the Nigeria and beyond. Some of the policy implications derived from these empirical results are listed below:

1. Exchange rate variation enhances increase in the export of agricultural produce in Nigeria. Export oriented policies aimed at stabilizing exchange rate variation enhances the export of agricultural produce.
2. Trade openness exerts a positive and significant effect on export of agricultural produce in Nigeria. Trade openness is the degree of a country's involvement in international trade.
3. Agricultural financing is imperative for the performance of the agricultural sector in Nigeria.
4. Employment in the agricultural sector is a critical enabler of productivity in the agricultural sector.

Summary of Findings

This study was motivated by the paucity of studies in the extant literature on the exchange rate variation and export of agricultural produce nexus in Nigeria, especially studies that centred on the roles of exchange rate variation in enhancing agricultural sector performance. This study, therefore, sought to ascertain the impact of exchange rate variation on export of agricultural produce in Nigeria. This was done with the aid of the following specific objectives:

- determine the impact of trade openness on export of agricultural produce in Nigeria.
- examine the relationship between agricultural financing on export of agricultural produce Nigeria.
- ascertain the total employment in the agricultural sector on export of agricultural produce Nigeria.

The study adopted the VAR methodology in investigating the effects of exchange rate variation on the export of agricultural produce in Nigeria. Data for the study were sourced from World Development Indicators (WDI), Central Bank of Nigeria CBN Statistical Bulletin (various issues) and National Bureau of Statistics respectively. The summary of the findings of this study includes:

1. The results show that exchange rate variation EXRV in lag 1 has a positive and significant effect on export of agricultural produce AGRXPT in Nigeria and a negative but significant effect in lag 2.
2. The results show that trade openness TOPEN in lag 1 has a positive and significant effect on export of agricultural produce AGRXPT in Nigeria and a negative but significant effect in lag 2.
3. The results indicate that agricultural finance AGRFIN exerts a positive and insignificant effect on export of agricultural produce AGRXPT in Nigeria in lag1 and a negative but insignificant effect in lag 2.
4. The VAR estimates show that agricultural employment AGREMP exerts a positive and significant on AGRXPT across lags.

Conclusion

The result of this study has thrown up a number of issues. Central among them is the pivotal role that EXRV, TOPEN, AGRFIN and AGREMP in enhancing the export of agricultural produce in Nigeria. This study considered export of agricultural produce as the aggregation of total agricultural exports and was measured as the total value of agricultural exports in Nigeria. Exchange rate variation is taken to mean movements (appreciation/depreciation) in the real exchange and was measured as depreciation of the Naira against the USD. Evidence from this study supports the proposition that improving levels of agricultural financing, employment in the agricultural sector and trade openness improves the export of agricultural produce in Nigeria. In Nigeria, stabilizing the ever gyrating exchange rate involves a mix of policies that are export oriented. This is because the exchange rate issues in Nigeria are closely related to demand and supply bottlenecks owing to abysmal levels of productivity. To address the depreciation of the Naira against the USD, concerted and deliberate policy measures must be put in place to improve our export potentials across the various sectors of the economy especially the real sector (the agriculture and manufacturing sectors).

Recommendations

Based on the findings of this research work, the researcher makes the following recommendations:

1. Increased domestic production of agricultural produce via a guarantee minimum price scheme that will propel investment in the agricultural sector as the results of this study has shown that agricultural financing exerts a positive effect on export of agricultural produce.
2. Implementation of export oriented policies that will engender increased foreign exchange inflows towards a stable exchange rate system in Nigeria.
3. Adequate training and extension services to boost the competence of the labour force in the agricultural sector to boost performance as the results of this study suggests a positive relationship between agricultural employment and export of agricultural produce.

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