FOREIGN EXCHANGE RATES ON THE PERFORMANCE OF AGRICULTURAL EXPORT IN NIGERIA

UDOH Francis Sylvanus[1], INIM E. Victor[2] & ITYAV Doofan Lynda[3]

[1]Department of Business Administration, Nile University of Nigeria Abuja
[2]Department of Accounting, Nile University of Nigeria, Abuja, Nigeria
[3]Department of Business Administration, Nasarawa State University Keffi

Abstract

For the past thirty years, the function of exchange rates as an essential aspect of agricultural economics was not paid much attention. The decline on agricultural export was caused by the overvalued dollar because of its relative expense in other economies. This led to despondency prices and fewer farm profits, causing an undervaluation of farm resources and oversupply of output. With this, the study examines the effect of foreign exchange rates on the performance of agricultural export in Nigeria. Despite the emphasis placed on foreign exchange for agricultural promotion in Nigeria, the agricultural export in Nigeria is still not performing well. The time frame was from 1986 to 2021 and the adopted research design was ex post facto, in which the tool of analysis employed was the ARDL, ECM method, co-integration and unit root test as finding revealed that foreign exchange rates on the performance of agricultural volume and value added had negative and insignificant effect in Nigeria. While foreign exchange rates on the performance of agricultural capacity utilization had a positive and significant effect. Giving this finding, the study recommends that Nigerian government should moderate and regulate the rate of exchange activities to make certain that it brings about better performance in the agricultural sector. Also, she should strongly attempt to make better the stand of the economy internationally with other nations of the world to expand the market for Nigerian agricultural exports. Finally, the government should change the focus of its policy in direction to the external agricultural sector and making sure that it adds in the most favourably way to output performance. As an intentional policy, the government should give support to rural area agriculture by which investors in distinct communities and commodities should be encouraged to set up agricultural industries, which will be solely on local raw materials comprising equipment and machines. Hence, this will increase and advance the market capacity utilization and value added locally.

Keywords: Foreign Exchange Rate, Output, Capacity Utilisation and Value Added

1. Introduction

The rapidly increasing global economy in today's world with a constantly changing technology and the laws of trade internationally, has affected the way exchange rate plays its role in valuing farm equipment and production. For many years, the role of exchange rates as an integral part of agricultural economics was overlooked (Kristinek & Anderson, 2002). It was Schuh (1974) in his work titled the role of exchange rates in

agricultural trade that brought this topic to bare. His evidence in support of the idea is that the drop in agricultural exports due to their relative expense in other nations was caused by the overvalued dollar. His view was that while many variables affect agriculture, the exchange rate plays a role in all aspects of agriculture (Kristinek & Anderson, 2002).

Nigeria got her independence in 1960 and during this period, agriculture played a dominant role in her economy, but it was soon taken for granted because the government gave it a very little support. This little support provided by government for agricultural development was concentrated on export crops like cocoa, groundnut, palm produce, rubber and cotton as self-sufficiency in food production seemed not to pose any problem worthy of public attention (FMOAWARD, 2018).

The agriculture in Nigeria started witnessing some problems and these issues were clear from rising food prices, increasing food supply short-fall and declining foreign exchange earnings from agricultural exports. However, not much rational concern was shown because the problems were thought to be the temporary effects of a series of crises which eventually culminated in the civil war (1967 – 70) (FMOAWARD, 2018).

After 1960, from 1970 to 1979, the agricultural situation worsened in Nigeria because of rising food import bills, widening food supply-demand gaps and sharp decrease in government revenue from agriculture, in foreign exchange earnings from agricultural exports. The situation was further compounded by the residual effects of the civil war, severe droughts in some parts of the country, government fiscal and monetary policies and above all, an “oil boom” which created serious distortions in the economy and accelerated the rate of migration of labour from agriculture (FMOAWARD, 2018).

As stated by Abolagba et al., (2010) between 1970 and 1974, agricultural exports as a percentage of total exports fell from about 43 percent to slightly over 7 percent. Export of agricultural produce in the mid-1970s to the mid-1980s in Nigeria witnessed a sharp decrease by 17 percent. Abolagba et al., (2010) emphasized the fact that Nigeria has lost its role as one of the world’s leading exporters of agricultural commodities.

According to FAOSTAT (2017), in 1961, Nigeria exported 197,000 tonnes of cocoa beans. In 1970, it went up to 304,000 tonnes and gradually went down to 153,000 tonnes in 1980. However, this number rose to a staggering 485,000 tonnes in 2006, and unfortunately decreased to 248,000 tonnes in 2014. Natural rubber

was exported to the tune of 58,000 tonnes in 1961 and subsequently increased to 147,000 tons in 1990 and in 2014 151,000 tonnes FAOSTAT (2017).

One of the important factors of world trade is exchange rate, which has received much notice in the circumstances of world imbalances. The subject of exchange rate fluctuation came to be a topical issue in Nigeria because it is the goal of every economy to have a stable rate of exchange with its trading partners (Slowe, 2013). In Nigeria, this aim was not achieved minding the way the government went on underestimating the naira and okayed the Structural Adjustment Programme (SAP) in 1986. Not achieving this success, placed the Nigerian agricultural export under participating in a constant exchange rate fluctuation. The foreign exchange reforms that facilitated a cumulative depreciation of the effective exchange rate were expected to increase the domestic prices of agricultural exports and hence boost domestic production (Slowe, 2013). A serious impediment on economy development is fluctuation, which makes investment riskier and more problematic. Potential investors will invest in a foreign location only if the expected returns are high enough to cover for the currency risk (Gerado, 2002).

For the agricultural sector, a fall in the real exchange rate indicates a reduction in the relative prices of traditional agricultural exports and import competing products of agriculture. Thus, as the value of the Naira rises, the Naira price of any given Nigerian agricultural export becomes more expensive to foreign buyers, thereby increasing export volume (output) and adding value to the Nigerian goods. In addition, the introduction of export volume (output), capacity utilisation and value added will help cushion the dependency on oil export of the country and add to the economy's GDP.

On this note, if foreign exchange is properly curtailed or kept low to agriculture, it will help agriculture export in Nigeria perform better and contribute to her GDP. Despite the improvement of agricultural products in Nigeria, the performance of agricultural export is below expectation because of high exchange rate. The major problem, however, is that the floating exchange rate from its inception, frequency and instability of the exchange rate movements has raised concerns over the effect of such movements on the performance of trade flows of agricultural export. It is on this basis that the work examines foreign exchange fluctuation on the performance of agricultural export in Nigeria.

Previous studies such as Adekunle et.al., (2019) who investigated from 1981 to 2016 how the dynamics of real exchange rate affect performance of agriculture in Nigeria using the Nonlinear Autoregressive Distributed Lag (NARDL) method found a negative relationship between both variables. Also, Akinbode et.al., (2018) who determined the effect of exchange rate volatility on Nigeria's agricultural export performance using annual data from 1980-2015, employed Generalized Autoregressive Conditional Heteroscedasticity (GARCH-1,1) model which was used to generate the exchange rate volatility series and subsequently incorporated into the Autoregressive Distributed Lag (ARDL) Model for determining factors affecting agricultural exports (cocoa and rubber), found an insignificant effect between both variables. However, none of these studies used output, capacity utilisation and value added to measure agricultural export. Also, the study window is from 1986 to 2021. Based on these identifications, the study fills a research gap.

2. Literature Review and Hypothesis Development

2.1 Conceptual Issues

Concept of Foreign Exchange

When the currency of a country is giving out for the currency of another country at any rate is known as exchange rate. The external value of each currency is reflected in the country's economic conditions in general and the purchasing power of the currency relative to that of other currencies (Ani, Ugwunta & Okanya, 2013). In other words, for international traders with a given price, the major source of uncertainty is the exchange rate at which they can translate their sales revenue in foreign currency into local currency (Adubi & Okunmadewa, 2009).

Concept of Agricultural Export

Export of agricultural products are better motivation made available by various governments on products intended for other country's market to support increase in global or other economy trading. Accordingly, export agriculture refers to money granted by the state which are subject to chance on export performance. They may take the form of, for example, cash payments, disposal of government stocks at below-market prices, subsidies financed by producers or processors because of government actions such as assessments, marketing subsidies, transportation and freight subsidies, and subsidies for commodities contingent on their incorporation in exported products (FTIS, 2019).

Concept of Performance

Taticchi et al., (2008) stated that firm performance is the value, which is produced as a result of a certain activity. Each firm is established to fulfil specific purposes. When all performance factors are effectively utilised, turn out worth gets larger or astronomical than the expected worth, thus making the firms to survive or live longer. Competitive markets and the dynamics very likely become better of their performance to grow their profits and market value of the firm. The production process since the mid-1980s have been controlled by the firm. In this aspect, firms became aware that keeping up with continuously changing conditions is possible only by understanding firm performance, and they aimed for healthy growth (Taticchi et al., 2008).

The main purpose of this work was to examine the effect of foreign exchange rate on the performance of agricultural export in Nigeria. Other related purposes are: to evaluate the effect of foreign exchange rate on the performance of agricultural export volume; agricultural export capacity utilization and agricultural export value added in Nigeria

The hypotheses of the study are stated in null forms and tested from the purposes of the work:

***Ho_1*:** Foreign Exchange Rate has no significant effect on the Performance of agricultural export Volume in Nigeria

***Ho_1*:** Foreign Exchange Rate has no significant effect on the Performance of agricultural export Capacity Utilization in Nigeria

***Ho_1*:** Foreign Exchange Rate has no significant effect on the Performance of agricultural export Value Added in Nigeria

2.2 Empirical Review

Aliyu, Mohammed and Behiye (2021) examines the nexus between Competitively Valued Exchange Rates, Price level, and Growth Performance in the Turkish Economy. An existing understanding from the GARCH using annual data was carried out from 1980 to 2020 within the structure of the Autoregressive distributive lag test. Also employed, was the Error Correction Mechanism and the Bayer and Hanck Co-integration (BHC) test. It was shown that the way the two variables used induced economic performance and external trade competitiveness both in the short and long run.

Adekunle, Tiamiyu, Odugbemi and Ndukwe (2019) investigates the possible asymmetric effect of real exchange rate dynamics on agricultural performance in Nigeria over the period of 1981 to 2016, due to limited data constraints. The Nonlinear Autoregressive Distributed Lag (NARDL) method was adopted. A combination of nonstationary and stationary variables was used and was established through the ARDL unit root test. Based on the bounds test for co-integration, long-run relationship does not exist amongst the variable, having controlled for some other variables. Findings showed that the significant fundamentals were that the study was both positive and negative between both variables.

Akinbode and Ojo (2018) determines the effect of exchange rate volatility on Nigeria's agricultural export performance using annual data from 1980-2015. The Generalized Autoregressive Conditional Heteroscedasticity (GARCH-1,1) model was used to generate the exchange rate volatility series which was subsequently incorporated into the Autoregressive Distributed Lag (ARDL) Model for determining factors affecting agricultural exports (cocoa and rubber). Among the variables was revealed a long-run relationship giving the Bounds test. With that, the result signifies that in the long and short-run volatility of exchange rate has no positive effect on export.

Vellianitis-Fidas (1976) examines effect of exchange rate changes and demand for U.S. agricultural exports. Two steps were taken to test this hypothesis: first, a cross-sectional study using stepwise ordinary least squares (OLS) of demand for U.S. agricultural exports (namely, wheat, corn, and soybeans) by major U.S. trading partners in 1971-1973 and second, past exchange rate changes in other countries were examined to determine if changes in these rates explained variations in imports over time, both from the U.S. and the world in the period 1954-1969. Both steps supported the hypothesis that special characteristics of the agricultural sector negate the effect of exchange rate changes in the demand for U.S. agricultural exports. For the OLS step, exchange rate changes, per capita income growth, population growth, CPI, foreign supplies, expected export quantities for the U.S. and the rest of world (ROW), and the actual export quantities of both the U.S. and the ROW. In this step, exchange rate was not significant in the wheat equation and not important in the corn and soybean equations. Almost none of the variation in changes in quantities exported for 1971 to 1972 and 1972 to 1973 is explained by the variation in the exchange rates.

2.3 Theoretical Framework

Clarks' Neoclassical Theory

The theoretical framework that best suits this study is the Clarks (1973) model, which evaluates the relationship between the exchange rate volatility and trade flows. It assumes a competitive firm with no market power producing only one commodity which is sold entirely to one foreign market and does not import any intermediate inputs. The firm is paid in foreign currency and converts the proceeds of its exports at the current exchange rate, which varies in an unpredictable fashion, as there are assumed to be no hedging possibilities, such as through forward sales of the foreign currency export sales. Moreover, because of costs in adjusting the scale of production, the firm makes its production decision in advance of the realization of the exchange rate and therefore cannot alter its output in response to favourable or unfavourable shifts in the profitability of its exports arising from movements in the exchange rate. In this situation, the variability in the firm's profits arises solely from the exchange rate, and where the managers of the firm are adversely affected by risk. Greater volatility in the exchange rate with no change in its average level leads to a reduction in output, and hence in exports, to reduce the exposure to risk. Similarly, Koren and Szeidl (2003) suggest that exchange rate volatility should affect trade volumes through the covariance of the exchange rate with other macroeconomic variables.

3./ Methodology

Ex-post facto was the adopted research design because the events the researcher is studying had already taken place. This design can also be applicable for studies geared toward ascertaining the cause-effect association between the independent and dependent variables (Onwumere, Onodugo, & Ibe, 2013). Evaluating the cause – effect relationships is the significant point of this study; hence, the data are time series, gotten from CBN statistical bulletins and NBS, where inflation and interest rate are introduced as control variables covering the period 1986 - 2021. The annualised secondary data was analysed with the aid of Autoregressive Distributed lag (ARDL) and Error Correction Mechanism (ECM), as well as employing the co-integration method to test for the long-run effect among the series. In other words, the underlining postulation was that the two variables are blended in order 1 or I (1).

Model Specification

Giving the theoretical review, the econometric model employed in this study to examine the effect of foreign exchange rates on the performance of agricultural export in Nigeria will be formulated following the study of Umaru et al. (2013) and Karimi (2014) with modification by including real exchange rate, agricultural export volume, agricultural export capacity utilisation and agricultural value added to the contribution to GDP. Thus, the model for this study was specified as:

$$AVC = f(RFE, INF, INT) \quad (1)$$
$$AGCU = f(RFE, INF, INT) \quad (2)$$
$$AGVA = f(RFE, INF, INT) \quad (3)$$

Where: AVC = Agricultural Volume (Output); AGCU = Agricultural Capacity Utilisation; AGVA = Agricultural Value Added; RFE = Real Foreign Exchange; INF = Inflation Rate (control variable); INT = Interest Rate (control variable)

Incorporating our effect of foreign exchange rates on agricultural export performance association into the unrestrained ARDL mechanism structure to get the qualified (closed off) auto-regressive distributive lag steady-state template (by exerting OLS mechanism to gauge the general ARDL model), in the form:

$$\Delta AVC_t = \alpha_0 + \sum_{i=1}^{m} \alpha_1^i \Delta AVC_{t-i} + \sum_{j=0}^{n} \alpha_2^i \Delta RFE_{t-j} + \sum_{k=0}^{o} \alpha_3^i \Delta INF_{t-k} + \sum_{m=0}^{P} \alpha_4^i \Delta INT_{t-k} + \lambda_1 AVC_{t-1} + \lambda_2 RFE_{t-1} + \lambda_3 INF_{t-1} + \lambda_4 INT_{t-1} + \varepsilon_t \quad (4)$$

$$\Delta AGCU_t = \alpha_0 + \sum_{i=1}^{m} \alpha_1^i \Delta AGCU_{t-i} + \sum_{j=0}^{n} \alpha_2^i \Delta RFE_{t-j} + \sum_{k=0}^{o} \alpha_3^i \Delta INF_{t-k} + \sum_{m=0}^{P} \alpha_4^i \Delta INT_{t-k} + \lambda_1 AGCU_{t-1} + \lambda_2 RFE_{t-1} + \lambda_3 INF_{t-1} + \lambda_4 INT_{t-1} + \varepsilon_t \quad (5)$$

$$\Delta AGVA_t = \alpha_0 + \sum_{i=1}^{m} \alpha_1^i \Delta AGVA_{t-i} + \sum_{j=0}^{n} \alpha_2^i \Delta RFE_{t-j} + \sum_{k=0}^{o} \alpha_3^i \Delta INF_{t-k} + \sum_{m=0}^{P} \alpha_4^i \Delta INT_{t-k} + \lambda_1 AGVA_{t-1} + \lambda_2 RFE_{t-1} + \lambda_3 INF_{t-1} + \lambda_4 INT_{t-1} + \varepsilon_t \quad (6)$$

$\lambda_1 - \lambda_4$ = Long run multipliers
k = Belonging to identified best lags orders of the variables entering ARDL-ECM
$\alpha_1 - \alpha_4$ = coefficients of short run dynamics
t = time
Δ = First difference operator

α_0 = Intercept or drift operator

ε_t = Error term

Following position of Menike (2016), the relationship between foreign exchange rates and agricultural exports is specified as:

$$\Delta AVC_t = \alpha_0 + \sum_{i=1}^{m} \alpha_1^i \Delta AVC_{t-i} + \sum_{j=0}^{n} \alpha_2^i \Delta RFE_{t-j} + \sum_{k=0}^{o} \alpha_3^i \Delta INF_{t-k} + \sum_{m=0}^{p} \alpha_4^i \Delta INT_{t-k} + \delta ect_{t-1} + \varepsilon_t ----(7)$$

$$\Delta AGCU_t = \alpha_0 + \sum_{i=1}^{m} \alpha_1^i \Delta AGCU_{t-i} + \sum_{j=0}^{n} \alpha_2^i \Delta RFE_{t-j} + \sum_{k=0}^{o} \alpha_3^i \Delta INF_{t-k} + \sum_{m=0}^{p} \alpha_4^i \Delta INT_{t-k} + \delta ect_{t-1} + \varepsilon_t ----(8)$$

$$\Delta AGVA_t = \alpha_0 + \sum_{i=1}^{m} \alpha_1^i \Delta AGVA_{t-i} + \sum_{j=0}^{n} \alpha_2^i \Delta RFE_{t-j} + \sum_{k=0}^{o} \alpha_3^i \Delta INF_{t-k} + \sum_{m=0}^{p} \alpha_4^i \Delta INT_{t-k} + \delta ect_{t-1} + \varepsilon_t ----(9)$$

Data Analysis and Results

Testing for Unit Root

Data from time series are generally described by a stochastic pattern that can be eliminated by differentiation. Therefore, the unit root is a test of the non-stationary or stationary existence of the data employed in this description. This is to find out whether there is a spurious or nonsensical relationship between foreign exchange rates and performance of agricultural export in Nigeria. Thus, as shown in table 1.1, the study employed Augmented Dickey-Fuller (ADF) techniques to test and verify the series unit root property and model stability.

Table 1.1: Result of the Unit Root Test

Variable	ADF Test Statistics		
	ADF	Critical Value	Order of Integration
AVC	-6.978246	-4.309824*	I(1)
AGCU	-3.508251	-3.207094***	I(1)
AGVA	-5.840353	-4.252879*	I(1)
INT	-4.204566	-3.580623**	I(1)
INF	-3.707572	-3.562882**	I(0)
RFE	-3.477945	-3.204699***	I(0)

Source: Authors Computation, 2022 (Eviews-12

From Table 1.1, it could be observed that the results from ADF showed that four of the variables (which are AVC, AGCU, AGVA and INT) are integrated at order one; while two of the variables (which are INF and RFE) are integrated at order zero.

The variables which were found to be stationary at first difference, have their ADF test statistics as: -6.978246, -3.508251, -5.840353, -4.204566; and they were found to be greater than the critical values of: -4.309824 (at 1%); -3.207094 (at 10%); -4.252879 (at 1%); -3.580623 (at 5%) respectively.

Co-integration Test (Bound Test Approach) Results

If there is equilibrium relationship or a long term in the variables, it means that they are co-integrated. To avoid false or fake regression situations there must be a pre-test. Table 1.2 presents the summary results of ARDL bounds test for Co-integration for the three models (agricultural volume model, agricultural capacity utilization model; and for agricultural value-added model) using AIC recommended lags

Table 1.2: Bound Test-Co-integration Results

AVC-Model	F-statistic	3.642942**			**Decision**
	Significance	5%	*I*(0)	2.39	Co-integrated
			I(1)	3.38	
AGCU-Model	F-statistic	3.793283**			Co-integrated
	Significance	10%	*I*(0)	2.39	
			I(1)	3.38	
AGVA-Model	F-statistic	15.31406**			Co-integrated
	Significance	5%	*I*(0)	2.39	
			I(1)	3.38	

*Note: ** significant at 5%*

Source: Authors Computation, 2022 (Eviews-12)

The co-integration test result from Table 1.2 showed that there is a long-run or equilibrium relationship on foreign exchange rates and AVC. This was captured by the F-statistic value of 3.642942, seen to be greater than the lower (*I*(0)) and upper bound (*I*(1)) critical values of 2.39 and 3.38 respectively at the 5% significance level.

Co-integrating relationship was also found to exist between foreign exchange rates and AGCU, as captured by the F-statistic value of 3.793283, found to be greater than the lower (*I*(0)) and upper bound (*I*(1)) critical values of 2.39 and 3.38 respectively; and also at the 5% significance level.

Lastly, there is an evidence of co-integrating relationship between foreign exchange rates and AGVA, as the F-statistic value of 15.31406 is greater than the lower (*I*(0)) and upper bound (*I*(1)) critical values of 2.39 and 3.38 respectively at the 5% significance level.

The study thus, concludes that long-run or equilibrium relationship exists between the independent and dependent variables in Nigeria within the period under review; and as such the study proceeds to conduct error correction models.

Model Estimation and Results Evaluation

The study has established positive co-integrating connection between foreign exchange rates and performance of agricultural export in Nigeria; as such, the study moves to calculate the long-run models and error correction. The ARDL-ECM result examines in what manner the ARDL model changes to the long-run equilibrium. The study utilised a general-to-specific modelling approach to derive a satisfactory reduced short-run dynamic policy captured in Table 1.3, 1.4, and 1.5.

Hypothesis one

Foreign Exchange Rates and Performance of agricultural export Volume in Nigeria
Table 1.3: ARDL Regression Result
Dependent Variable: D(AVC)

ARDL Error Correction Regression				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(AVC(-1))	-0.7055	0.184346	-3.82706	0.0123
D(RFE)	9.164678	1.482621	6.181402	0.0016
D(RFE(-1))	-0.98868	1.094113	-0.90363	0.4076
D(RFE(-2))	4.472565	1.236556	3.616953	0.0153
D(INF)	9.212627	2.723365	3.38281	0.0196
D(INF(-1))	-11.9096	2.45619	-4.8488	0.0047
D(INF(-2))	7.366478	2.241361	3.28661	0.0218
D(INT)	-14.3228	3.202153	-4.47287	0.0066
D(INT(-1))	21.32017	3.551261	6.003549	0.0018
D(INT(-2))	21.43774	3.505539	6.115392	0.0017
CointEq(-1)*	-0.560133	0.087799	-6.379758	0.0014
R-squared	0.841708	Mean dependent var		0.85
Adjusted R-squared	0.611466	S.D. dependent var		2.836829
F-Statistics (and P-value)	9.768266 (0.00002)	Akaike info criterion		4.257852
Durbin-Watson stat	2.007263	Schwarz criterion		5.066691

Source: Authors Computation, 2022 (Eviews-12)

The ect(-1) depicts adjustment of the speed to bring back the long run in the activity model coming after an interruption. The coefficient of the estimated ect(-1) equals -0.5601 puts forward a prompt speed of adjustment back to the long-run equilibrium. The coefficient is appropriately signed and to a greater degree significant at the 1 percent significance level. This hugely significant effect emphasised the fact that the existence of a stable long-term relationship.

The coefficient of determination (R-square) indicates that the model was reasonably fit in prediction. It showed that 84.17% changes in AVC were unanimously owed to RFE, INF and INT, while 15.83% not included variations was represented as the error term.

The overall importance of regression model, which is the F-statistic reveal a significant result as examined. The value of the F-statistic captures it at 9.76 and its associated value of 0.000002 at 5% level was found to be significant.

It is further proof in the result that among the variables, there is absence of autocorrelation as proven by Durbin Watson (DW) statistic of 2.00. It showed that the data can be depended upon and are impartial.

Hypothesis Two

Foreign Exchange Rates and Performance of agricultural export Capacity Utilization in Nigeria

Table 1.4: ARDL Regression Result

Dependent Variable: D(AGCU)

ARDL Error Correction Regression				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(AGCU(-1))	-0.45659	0.094461	-4.83358	0.0013
D(RFE)	-6.02E-05	0.000361	-0.16661	0.8718
D(RFE(-1))	0.002052	0.000488	4.204631	0.003
D(RFE(-2))	-0.00069	0.000517	-1.33548	0.2185
D(RFE(-3))	0.001405	0.000497	2.827868	0.0222
D(INF)	-0.0029	0.000633	-4.5786	0.0018
D(INF(-1))	0.00344	0.000834	4.12341	0.0033
D(INF(-2))	0.003392	0.000708	4.793683	0.0014
D(INF(-3))	0.003382	0.000742	4.556027	0.0019
D(INT)	85.12271	17.93108	4.747215	0.0015
D(INT(-1))	45.25082	10.14136	4.462009	0.0021
D(INT(-2))	37.72435	12.42301	3.03665	0.0161
D(INT(-3))	30.40713	10.16939	2.990065	0.0173
CointEq(-1)*	-0.38839	0.056976	-6.81672	0.0001
R-squared	0.930433	Mean dependent var		-0.03316
Adjusted R-squared	0.845958	S.D. dependent var		4.213092

F-Statistics (and P-value)	8.2556 (0.000)	Akaike info criterion	4.142062
Durbin-Watson stat	2.22199	Schwarz criterion	4.966539

Source: Authors Computation, 2022 (Eviews-12)

The Error Correction Model (ECM) parameter is negative, less than unity and significant at 5% level as expected. The ECM is an error correction term in the model to restore back equilibrium and validates that there exists a long run equilibrium relationship among the variables. The value of the ECM is 38.83%, meaning that the system corrects (or adjusts to) equilibrium in the following year at speed of 38.83% which is good.

To show the elucidatory capacity of the model and the reliability of the estimates, the coefficient of determination (R-square) was deployed. It indicates how the model was in a sensible way fit in forecasting. It emphasized that 93.04 percent alterations to AGCU were collectively due to RFE, INF and INT, at the same time 6.96% represents the white noise.

To determine the whole importance of the regression model in the same extent, the F-statistic was used to evaluate it and was revealed that the results are significant. 8.25 captures the worth of the F-statistic and its affiliated p-value of 0.000 having been discovered to be significant at 5% level. The Durbin Watson (DW) statistic of 2.22 in the model emphasized that there is absence of autocorrelation between the independent and dependent variables (as it fell within the acceptable range of 1.5 and 2.4). This proves that unbiased estimates can be depended on to make decision on policy.

Hypothesis Three

Foreign Exchange Rates and Performance of agricultural export Value Added in Nigeria

Table 1.5: ARDL Error Correction Regression

Dependent Variable: D(AGVA)

ARDL Error Correction Regression				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(AGVA(-1))	1.037668	0.086699	11.96858	0.0013
D(AGVA(-2))	0.035936	0.056903	0.631519	0.5725
D(AGVA(-3))	-2.63654	0.20328	-12.97	0.001
D(REF)	29.08825	1.894067	15.35756	0.0006
D(REF(-1))	-16.9905	1.243886	-13.6592	0.0008
D(REF(-2))	12.38867	0.987773	12.54202	0.0011
D(INF)	27.31271	2.244818	12.167	0.0012
D(INF(-1))	-29.02	3.057898	-9.49018	0.0025
D(INF(-2))	-25.5089	2.359674	-10.8104	0.0017
D(INF(-3))	-44.9569	2.767935	-16.242	0.0005

D(INT)	9.28747	2.710911	3.425958	0.0417
D(INT(-1))	34.74633	2.701423	12.86223	0.001
D(INT(-2))	-4.44554	3.163681	-1.40518	0.2546
D(INT(-3))	-45.0603	3.766716	-11.9628	0.0013
CointEq(-1)*	-0.34682	0.019339	-17.9331	0.0004
R-squared	0.985399	Mean dependent var		0.125625
Adjusted R-squared	0.949709	S.D. dependent var		5.336756
F-Statistics (and P-value)	10.233 (0.000)	Akaike info criterion		3.366169
Durbin-Watson stat	2.29617	Schwarz criterion		4.419666

Source: Authors Computation, 2022 (Eviews-12)

As presumed, the lagged error correction term (ECT (-1) was significantly statistic at 5% less than unity and negative. The coefficient exposed that once there is disequilibrium in the system, an average (high) speed of 34.68% it will take to adjust itself back towards long-run equilibrium level. The coefficient of determination (R-square), which was used to measure the goodness of fit of the estimated model, indicates that the model is reasonably fit in prediction. It showed that 98.53 percent changes in AGVA were collectively due to RFE, INF and INT, while 1.47 percent unaccounted variations were captured by the error term.

In addition, the F-statistic value of 10.233 and its associated probability value of 0.000, indicates that the complete model is also significant at 5% level. The model also indicated that there was no autocorrelation among the variables as indicated by Durbin Watson (DW) statistic of 2.29. This showed that the estimates were unbiased and can be relied upon also for policy decisions.

Statistical Test of Hypotheses

H_{01}: Foreign Exchange Rates has no significant effect on the Performance of agricultural export Volume in Nigeria

Table 1.6: Wald Test results on Foreign Exchange Rates and Performance of agricultural export Volume in Nigeria

Test Statistic	Value	df	Probability
F-statistic	1.280560	(9, 5)	0.4122
Chi-square	11.52504	9	0.2414

Source: Authors Computation, 2022 (Eviews-12)

The Wald-test in Table 1.6 indicated that the calculated F-value for the relationship between Foreign Exchange Rates and the Performance of agricultural export Volume in Nigeria is 1.280560, and its probability value is 0.4122. Because the probability value is greater than 0.05 at 5% level of significance, it means it falls in the region of acceptance and as a consequence, hypothesis one in a null form (**H_{01}**) was accepted. The result

emphasizes that Foreign Exchange Rates has an insignificant effect on the performance of agricultural export Volume in Nigeria

H_{02}: Foreign Exchange Rates has no significant effect on the Performance of agricultural export Capacity Utilization in Nigeria

Table 1.7: Wald Test results on Foreign Exchange Rates and Performance of agricultural export Capacity Utilization in Nigeria

Test Statistic	Value	df	Probability
F-statistic	12.25883	(7, 5)	0.00255
Chi-square	14.25369	5	0.00293

Source: Authors Computation, 2022 (Eviews-12)

The Wald-test in Table 1.7 indicated that the calculated F-statistic value for the relationship between Foreign Exchange Rates and the Performance of agricultural export Capacity Utilization in Nigeria was found to be 12.25883 and its probability value was 0.0025. Because the probability value is less than 0.05 or 5% level of significance (and fell in the rejection region), hypothesis 2 in the null (**H_{02}**) was rejected. The study concludes, Foreign Exchange Rates has a positive and significant effect on the Performance of agricultural export Capacity Utilization in Nigeria

H_{03}: Foreign Exchange Rates has no significant effect on the Performance of agricultural export Value Added in Nigeria

Table 1.8: Wald Test results on Foreign Exchange Rates and the Performance of agricultural export Value Added in Nigeria.

Test Statistic	Value	df	Probability
F-statistic	7.160760	(8, 5)	0.0657
Chi-square	85.92912	5	0.0000

Source: Authors Computation, 2022 (Eviews-12)

Above all, the Wald-test in Table 1.8, showed that the F-value for effect of Foreign Exchange Rates on the Performance of agricultural export Value Added in Nigeria was found to be 7.160760; with a connected p-value of 0.0657. Because the p-value is greater than 0.05% level of significance, the third hypothesis which was stated in null form (**H_{03}**) was accepted. With this, conclusion is that Foreign Exchange Rates has no significant effect on the Performance of agricultural export Value Added in Nigeria.

4. Discussion of Findings

That Foreign Exchange Rates was seen to have insignificant effect on the performance of agricultural export Volume in Nigeria. This agrees with the results of Akinbode and Ojo (2018) whose findings revealed that the volatility of exchange rate does not affect export significantly in the long and short run. This may be to a limited extent ascribed to the inelastic qualities of agricultural commodities' supply most importantly in the short run. It was also exposed that there exists insignificant relationship among agricultural export and GDP, world prices, exchange rate and inflation. The findings further agreed with Omojimite (2012) whose study showed that foreign exchange fluctuations through spread of interest rate was found to have no positive and significant effect on agricultural output in Nigeria.

Furthermore, discovery from the analysis shows that foreign Exchange Rates has a significant effect on the Performance of agricultural export Capacity Utilization in Nigeria. It showed that the significant fundamentals were real exchange rate, real appreciation and depreciation (after some lags), has significant effect on agricultural export capacity utilization in Nigeria (after some lags) in the short run. This aligned with the findings of Aliyu, Mohammed and Behiye (2021) whose study showed that there is a relationship among between the variables.

Foreign Exchange Rates has no positive effect on the Performance of agricultural export Value Added in Nigeria. The implication of this findings is that unstable exchange rates impacted ineffectively on Performance of agricultural export Value Added in Nigeria. This agrees with Brownson et al (2012) whose study showed that in both long run and short run, real exports, real external reserves, inflation, and external debt have insignificant negative effects on agricultural productivity, whereas industrial capacity utilization and nominal exchange rate promote agricultural productivity in Nigeria. The study is in line with the Clarks Neoclassical model (1973) theory, which views exchange rate and trade flows as a perfect way for firms to earn foreign currency.

5. Conclusion and Recommendation

Empirical result disclosed no effect between foreign exchange rates and agricultural volume, which is the output sector in Nigeria in the long run. The study also concluded that foreign exchange rates does not cause agricultural volume to increase or perform well, which would have led to corresponding increase in

agricultural output at 5% level of significance. Also, the second null hypotheses revealed that foreign exchange rates have no negative and insignificant effect on the performance of agricultural capacity utilization in Nigeria. Based on the findings it is established that foreign exchange rates impact on agricultural capacity utilization as its optimum capacity utilization causes foreign exchange to increase in Nigeria within the period of reviewed. Finally, the study concludes that foreign exchange rates does not affect value added in Nigeria. With this, the study concludes that foreign exchange rates do not cause agricultural value added to contribute to the GDP of the economy and that foreign exchange does not influence agricultural sector value added to grow and conclude that their relationship is insignificant and negatively related. Based on these conclusions, the study recommends that Nigerian government should moderate and regulate the rate of exchange activities to make certain that it brings about better performance in the agricultural sector. Also, she should strongly attempt to make better the stand of the economy internationally with other nations of the world to expand the market for Nigerian agricultural exports. Finally, the government should change the focus of its policy in direction to the external agricultural sector and making sure that it adds in the most favourably way to output performance. As an intentional policy, the government should give support to rural area agriculture by which investors in distinct communities and commodities should be encouraged to set up agricultural industries, which will be solely on local raw materials comprising equipment and machines. Hence, this will increase and advanced the market capacity utilization and value added locally.

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