REAL EXCHANGE RATE AND AGRICULTURAL EXPORTS IN NIGERIAN

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Abstract

This paper empirically investigates the link between RER and agricultural exports. The main objective is thus to empirically establish the impact of RER on agricultural exports in Nigeria. This is significant since agricultural export has not improved significantly despite various exchange rate policy. The ECM was used to analyze the data. The result indicates that RER lagged by 1 period has a positive and significant impact on agricultural exports. The money supply has a positive and significant impact on agricultural exports. Interest rate lagged by one period has a negative and significant impact on agricultural exports. The one period lagged inflation rate has a positive and significant impact on agricultural exports. The ECM shows that the adjustment is satisfactory. Improved production of agricultural products for exports through public private partnership was recommended.

Keywords: *Agricultural exports, RER, money supply, interest rate, ECM*

Introduction

Exchange rate policies have important consequences for the development process. It could be recalled that the Real Exchange Rate (RER), provides the direction on the movement of resources since it measures the terms of trade between the traded as well as non-traded aspects of the society. The importance of RER lies in the fact that its appreciation or depreciation can influence the level of economic progress in the country (Hashim and Zarma, 1996). Babatunde and Shuaibu and (2019) noted that government only controls the RER indirectly through the control of the nominal exchange rate backed with appropriate fiscal as well as monetary policies. They added that capital inflow normally causes the exchange rate to appreciate in Nigeria. This hinders the growth pf the tradable commodity sector which include the agricultural sector. It has also been argued by Gutawa, Akinola and Muktau

(2017) that exchange rate as an indicator of relative prices affects agricultural export more than the fiscal policy indicators. Anwi, Mills and Zhao (2013) were of the opinion that policies which affects exchange rate have influence on agricultural exports.

Oyejide and Ogun (1995) as well as Ogun (2000) did a classification of the exchange rate regimes into four categories which are: the regimes of fixed exchange rate which ranged from 1960 to 1970 and the regime of adjustable peg which ranged from 1974 to 1978. The third regime is the floating of the exchange rate which ranged between 1978 to 1985. The market oriented or flexible exchange flexible exchange rate regime started at the introduction of SAP in 1986. However, the prevailing system in Nigeria is managed float in which monetary authorities periodically intervenes in the FOREX market (Ismaila and Imoghele, 2015). In terms of the contribution to income, employment generation, food supply and foreign exchange earnings, agricultural exports play a leading role (Omojimite, 2012). Omalaran (2013) noted that the agricultural sector contributed over 70 percent of employment and provided over 80 percent of foreign exchange (forex) earnings mainly through exports.

Although, the agricultural sector has been the main stay of the Nigerian economy, the narrative was changed with the discovery of crude oil which led to the neglect of this all important sector (Wasiu and Ndukwe 2018). Just like other sectors of the economy, the agricultural export was greatly affected by the fluctuations in the RER. The deregulation of the exchange rate brought about by the Structural Adjustment Programme (SAP) focused more on market forces in determining the exchange rate. The deregulation of the RER reduced the cost of exports and increased the cost of imports. Obstfeld (2002) added that perturbations in exchange rate affects both the domestic prices and foreign prices, making an alteration in spending between domestic goods and foreign goods. The problem has been that most of the inputs that facilitated the production for agricultural exports are imported at high costs due to the depreciation of the naira. This is even made worse, since the exports of agricultural products from Nigeria are mainly in the form of raw materials such as cocoa, rubber etc at reduced costs but we import finished agricultural produce and agricultural facilities such as chocolate at high cost. This has hindered the progress of the agricultural sector (Oyakhilome et al (2014).

Thus, despite the depreciation of the RER, the performance of agricultural exports have not been impressive over the years. For example, even though agricultural exports took an upward swing in absolute terms, its share in total exports continued to take a downward trend. Agriculture contributions to total exports declined from 6.60 percent in 1988 to 3.28 percent in 1996 and declined further to 0.42 percent in 2005 (Babatunde and Shuaibu, 2012).

The contribution of agricultural exports to GDP has been on the decline from 40 percent in 1986 to 20 percent in 1990 (CBN, 2013). This has reduced agricultural exports and increased the food imports bills of Nigeria (Omoloran 2013). The depreciation of the RER by about 3.91 percent in between 2008 and 2009 due to the global financial crisis caused the share of agricultural exports of Real Gross Domestic Product (RGDP) to fall by 0.58 percent. The contribution of agricultural exports to the RGDP declined further by 0.84 percent and 0.64 percent between 2009 and 2010.

The RER depreciated further between 3.7 percent and 2.89 percent between 2014 and 2015 and 2016 (Michael, 2017). The nominal exchange rate and RER depreciated by about 32.07 percent and 16.19 percent between the period of 1981 to 1990 but was more stable at 4.33 percent and 6.65 percent between 2001 and 2007 (Omolara, 2013).

Oriavwote and Dicksom (2014) and Ismaila and Imoughele (2016) noted that despite numerous government attempts to stabilize the exchange rate, the naira depreciated throughout the 1980s and this has not changed. More so, the appreciation of the RER that characterized the oil boom era hindered the level of incentives available by the non-oil tradables, particularly agricultural exports (Michael, 2017). Michael (2017), however, argued that the fall in the contribution of agricultural exports to foreign exchange earnings does not in any way implies that the agricultural sector has been sidelined by the seemingly lucrative oil sector. In addition, Ogunkoya and Shobayo (2015) noted that in the era when agricultural sector contributed a major part of the foreign exchange, RER were less volatile since more Nigerians were willing to trade the product with currencies included in the computation of the RER.

The objective is thus to empirically investigates the link between the RER and agricultural exports in Nigeria. Although few authors attempted to assess the

relationship between exchange rate and agricultural exports, most of the results lacks consensus. Majority of the studies focused on exchange rate and agricultural output and not exports. It must be noted that not all output from the agricultural sector are exported since some are consumed domestically. In addition, the RER which reflects the actual competitiveness of an economy was used instead of the nominal exchange rate.

Following this introduction, the next component of the paper is the theoretical perspective which is closely followed by the empirical literature and econometric procedure. The paper ends with conclusion and recommendation.

Literature Review

Conceptual Framework

The paper draws from the Dutch Disease Syndrome (DDS) to evaluate the connection between RER and agricultural exports as demonstrated by Corden (1984) and Michael (2017). The sector used by the model has a booming sector represented by B, the lagging sector represented by L and the non-tradable sector represented by N. The activities of the oil and gas sector are captured by B while the agricultural export declining performances are captured by L. The N is related to the services sector of the economy. B and L focus on traded goods facing global prices not directly under their control;. Also, the DDS suggests that the outcome of the production process in any sector is greatly determined by factors relevant to that sector and by the availability of labour which is mobile among and between the three sectors. He also posits that factor prices are flexible since they are determined by market forces. Also, factors of production are immobile at the global level. Thus, from B, the model produces two different effects which are:

Spending effect: If the additional income from B is spent directly or indirectly, given a positive income elasticity for N. the price of N relative to the price of traded goods will increase. The phenomenon called real appreciation works by obtaining resources from B and L into N. It also works by altering demands away from N towards B and L.

The Resource Movement Effect: a rise in the marginal product of labour in B because of the boom results in an increase in the demand for labour which

then force labour away from L and N. This has two interesting dimensions. First, is the de-industrialization which connotes movement of labour away from L to B resulting in the reduction in the output of L. It does not need RER appreciation and does not also affect the market for N.

The second effect is called **indirect Industrialization**. Given the RER, the labour moves away from N into B. This alteration in resources generates excess demand for N in addition to that which was brought about by spending effect. This brings about more RER appreciation. Thus, the result is the movement of more labour away from L into N and this strengthening the de-industrialization that comes from the earlier spending effect.

Empirical Literature

Empirically, Ibekwe (2020) assessed the impact of exchange rate on the output of the agricultural sector in Nigeria between the period of 1987 to 2019. The OLS technique was adopted and the results revealed that nominal exchange rate have positive and significant impact on the output of the agricultural sector. However, interest rate and inflation rate has negative and insignificant effect on agricultural production in Nigeria. Gutawa and Mahmud (2019) examined exchange rate instability and agricultural exports in Nigeria using the Generalized Autoregressive Conditional Heteroskedasticity (GARCH). The result showed that exchange rate has a positive impact on agricultural exports. Alegwu et al. (2019) attempted to establish the effect of RER perturbations on the exports of agricultural products in Nigeria using the VECM framework. With data spanning the period between 1970 to 2014. It was revealed that RER volatility has a negative but insignificant effect on agricultural exports in the short run. Wasiu and Ndukwe (2018) investigated the connection between exchange rate changes and agricultural performance in Nigeria. The study is between 1981 and 2016. The findings, using the bounds test for cointegration revealed that no long run relationship exists between RER and agricultural performance in Nigeria. It revealed that factors that affect changes in agricultural performance are RER, real appreciation and depreciation and government expenditure on agricultural output.

Ogunkoya and Shobayo (2015) using data between 1986 to 2012 studied exchange rate and agricultural exports in Nigeria using the OLS technique.

The result revealed that exchange rate has a significant impact on agricultural exports. Anigbogu, et al (2014) attempted an investigation of how agricultural supply responds to macroeconomic factors like exchange rate in Nigeria. The study covered the 1971 to 2008 period and revealed using the cointegration method that the agricultural output was inelastic to exchange rate volatility and to financial development. Oyakhilome et al. (2014) focused their study on the nexus between the deregulation of exchange rate and the share of agriculture in GDP between the 1986 and 2011 period. The VECM and granger causality tests were used to analyze the data. The findings revealed that exchange rate deregulation had a negative and significant influence on the share of agriculture in GDP.

Omalara (2013) assessed exchange rate and disaggregated agricultural production in Nigeria using a 2SLS technique and data covering between 1970 to 2008. The result revealed that exchange rate has a negative effect on crop and fishery output, but it has a positive impact on livestock and forestry. Babatunde and Shuaibu (2012) used the ARDL estimation technique to assess exchange rate changes and agricultural exports in Nigeria. The findings revealed that RER volatility have significant effect on agricultural exports. Also, agricultural exports prices significantly affects agricultural exports.

In summary, the works reviewed mostly focused on the impact of exchange rate on agricultural output. It must be recalled that not all output from the agricultural sector are exported since some are consumed domestically. This study however deviates from the studies reviewed since it focuses on the impact of the RER on agricultural exports and not the nominal exchange rate. This is symptomatic since the RER reflects the true competitiveness of an economy. Also, empirical literature do not show a uniform effect of exchange rate on agricultural exports; some studies show that exchange rate impacts positively while other studies show negative effects. These form the major gaps. This forms a major gap. The study also extends the data to 2020 and used modern and more encompassing econometric technique to analyze the data.

Methodology

Data and Source

The data used for the study include the following:

AGE = Agricultural export. This refers to both plant and animal products produced domestically for foreign market. *Source is World Bank, 2020*

RER = Real Exchange Rate. This is the nominal exchange rate multiplied by the by the price ratio between two countries, *Source is World Bank, 2020*

MS = Money Supply. This refers to the total amount of money held in the society at a point in time. *Source is World Bank, 2020.*

INT = Interest Rate. This is the amount or cost of borrowing which is attached to the principal. *Source is World Bank, 2020.*

INF = Inflation Rate. This is the percentage and persistent change of a price index over a period of time. *Source is World Bank, 2020*

Model Specification

This study draws from the work of Ibekwe (2020).. However, unlike Ibekwe (2020), this study used agricultural exports as the dependent variable. Also, unlike Ibekwe (2020), this study used the RER which is a true reflection of the true competitiveness of the economy instead of the nominal exchange rate. The study also extended the time framework to 2020 which encompasses several changes in exchange rate management.

The model that was developed for the study is thus specified below:

$AGE = b_0 + b_1RER + b_2MS + b_3INT\ b_4INF + u_t$

b_1**><0,** $b_2>0$, $b_3<0$, $b_4<0$

Method of Data Analysis

The cointegration technique and the Error Correction (ECM) were used to estimate the above model. The analysis commenced with the descriptive statistics which is preceded with the correlation analysis and the static regression. The unit root test which was used to test whether the variables are stationary or not and their other of integration forms the next stage of the analysis. This is to enable us ascertain whether the variables are stationary or not and their order of integration. This is followed by the cointegration test. The Johansen's methodology will be used to assess the existence or not of a long run relationship among the variables. The Error Correction Mechanism (ECM) which is the short run dynamic model will be used for policy analysis. This will be followed by various diagnostic checks.

Results and Discussion

The result of the descriptive statistics is shown in the table below:

Table1: Result of Descriptive Statistics

	LAGE	LINT	LMS	LRER	INF
Mean	11.22410	2.642570	11.39103	2.098059	19.41463
Median	10.53399	2.882004	10.87554	2.293494	13.80000
Maximum	15.24010	3.586016	16.21658	5.021905	72.80000
Minimum	8.933836	1.791759	6.856357	-0.604404	3.200000
Std. Dev.	2.030225	0.511258	2.774031	2.201730	16.16899
Skewness	0.498900	-0.304262	0.103540	0.017106	1.636614
Kurtosis	1.846956	1.772866	1.898460	1.394903	5.059015
Jarque-Bera	3.972073	3.205105	2.146134	4.403242	25.54568
Probability	0.137238	0.201382	0.341958	0.110624	0.000003
Sum	460.1879	108.3454	467.0321	86.02042	796.0000
Sum Sq. Dev.	164.8725	10.45539	307.8098	193.9046	10457.45
Observations	41	41	41	41	41

Source: Author's computation, 2021

Table 1 showed that the mean of AGQ is 11.22 which is greater than the median of 10.53. This signifies that the AGE increased in most of the study period. The maximum value for AGE is 15.24 while the minimum value is 8.93. The standard deviation is a negligible 2.03. The average value for INT is 2.64 which is lower than the median of 2.88, implying the possibility of a potential decline in the INT. The highest and lowest values for INT are 3.59

and 1.79 respectively. The standard deviation of 0.51 is also negligible. The mean of MS of 11.39 is higher than the median of 10.88 implying that the money supply increased over the study period, supporting the expansionary monetary policy of the government. The maximum value is 16.23 while the minimum value is 6.86. The standard deviation is 2.77. The average and median values of RER are 2.09 and 2.29. These figures suggest a depreciation of the RER in the study period. The highest and lowest values for the RER are 5.02 and -0.60. The standard deviation is just 2.20. The mean and the median of INF are 19.41 and 13.80. Since the mean is higher, it signifies a rise in inflation rate. The skewness showed values greater than 0 in most of the cases which is an indication that the series is skewed to the right with a long right tale. The Jarque-bera showed probability values greater than 5 percent in most cases indicating that the residuals appear to be normally distributed.

The result of the correlation matrix is shown in the table below:

Table2: Result of Correlation Analysis

	LAGE	LINT	LMS	LRER	INF
LAGE	1	-0.456110858	0.198637822	0.34051464	-0.081624018
LINT	-0.456110858	1	0.739307863	0.80982703	0.24519316
LMS	0.19863782	0.73930786	1	0.949039711	0.00298088
LRER	0.34051464	0.80982703	0.94903971	1	0.024071592
INF	-0.081624018	0.24519316	0.002980889	0.024071592	1

Source: Author's computation

The result of the correlation analysis in table 2 indicates a weak but negative correlation between agricultural exports and interest rate with a coefficient of -0.46. The correlation between AGE and MS is positive and weak with a coefficient of 0.20. The correlation coefficient between RER and AGE is positive and weak with a value of 0.34. The correlation between INF and AGE is negative and weak with a coefficient ofc-0.08.

Before proceeding with the remaining segment of the results, we estimated a static long run results to assess the relevant parameters.

The result of the static model is shown in the Table 3:

Table3: Summary of Static Long Run Result: Dependent Variable: LAGE

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRER	0.493624	0.157235	3.139391	0.0034
LMS	0.619039	0.107575	5.754477	0.0000
LINT	-2.446082	0.339043	-7.214666	0.0000
INF	-0.371560	0.008935	-41.58299	0.0000
C	9.469254	1.291441	7.332316	0.0000

R^2= 0.82, DW= 2.16.

Source: Author's computation

The R^2 indicates that 82 percent of the total variation in the AGE was explained by the RER, MS, INT and INF taken together. The variation explained outside the model is only 18 percent. The result indicates that the RER has a positive relationship with the AGE. It indicates that a depreciation of the RER by 1 unit increased the AGE by 0.49 units. The MS has a positive relationship with the AGE. An increase in the MS by 1 unit increased the AGE by 0.62 units. The INT has a negative linear relationship with the AGE. An increase in the INT by 1 unit reduced the AGE by 2.45 units. The INF has a negative relationship with the AGE. An increment in the INF by 1 unit decreased the AGE by 0.37 units. The result of the t-statistic indicates that the RER with a value of 3.14 and probability of 0.0034 has a statistically significant impact on agricultural exports. This result is however in agreement with the results of Ibekwe (2020), Guttaw and Mahmud (2020), Wasiu and Ndukwe (2019) . The result indicates further that the MS with value of 5.75 and probability of 0.000 is statistically significant in explaining the changes in agricultural exports. The t statistic for INT is -7.21 with probability of 0.0000. This insinuates that the INT is statistically significant in explaining the changes in agricultural exports. The value for INF is -41.58 with probability of 0.0000 which insinuates that the INF is statistically significant in explaining the changes in agricultural exports.

The result of the Augmented Dickey Fuller (ADF) and Phillip Peron (PP) unit root tests are shown in Table 4:

Table 4: ADF and PP unit root test result

Variables	**ADF**		**PP**		**Order of Integration**
	Level	**First Difference**	**Level**	**First Difference**	
AGE	0.011	4.144*	0.1781	6.222*	I (1)
MS	1.413	7.262*	1.808	4.226*	I (1)
INT	2.015	5.227*	0.447	4.084*	I (1)
INF	-0.218	-7.421*	-0.187	-5.051*	I (1)
RER	-0.882	-5.028*	-2.246	-8.284*	I (1)

NB: (1) * Indicates Stationary at the 1 percent level
(2) 1 percent critical value =3.761

Source: Author's Computation

The results of both the ADF and PP in Table 4 have something in common. They both indicated that all the variables were not originally stationary. Stationary status for all the variables were achieved after the first difference was taken. This result suggests that the variables were integrated of order 1 or I(1). In addition, all the variables were stationary at the 1 percent level. The permission has thus been granted by this result to conduct the cointegration test. The Johansen methodology becomes desirable. The result of the Johansen cointegration test is shown in Table 5:

Table 5: Summary of Johansen Cointegration Test Result

Hypothesized No. of CE(s)	Trace Statistic	0.05 Critical Value	Prob.**
None *	79.33055	69.81889	0.0072
At most 1	39.85166	47.85613	0.2279
At most 2	21.02184	29.79707	0.3563
At most 3	9.718851	15.49471	0.3030
At most 4	0.069434	3.841466	0.7921

Hypothesized No. of CE(s)	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	39.47889	33.87687	0.0097
At most 1	18.82982	27.58434	0.4278
At most 2	11.30299	21.13162	0.6171
At most 3	9.649417	14.26460	0.2360
At most 4	0.069434	3.841466	0.7921

Source: Author's computation

The result of both the trace statistic and the Max-Eigen statistic indicate the existence of one cointegrating equation. This result suggests the existence of a long run equilibrium relationship among the AGE, RER, MS, INT and INF. This result allows us to estimate the ECM.

The result of the over parameterized ECM is shown in the appendix The parsimonious ECM was extracted from the over parameterized ECM by eliminating the insignificant variables. Economic theory, Akaike Information Criteria (AIC) and Scwartz guided lag length selection. The result of the preferred ECM is shown in Table 6:

Table 6: Summary of Parsimonious ECM Result. Modeling: LAGE

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRER(-1)	0.729985	0.094324	7.739122	0.0000
LMS	0.480243	0.065976	7.279060	0.0000
LINT(-1)	-2.570012	0.194887	-13.18720	0.0000
INF(-1)	-0.013922	0.003571	-3.899028	0.0004
ECM(-1)	-0.772390	0.096859	-7.974366	0.0000
C	10.77898	0.783483	13.75777	0.0000

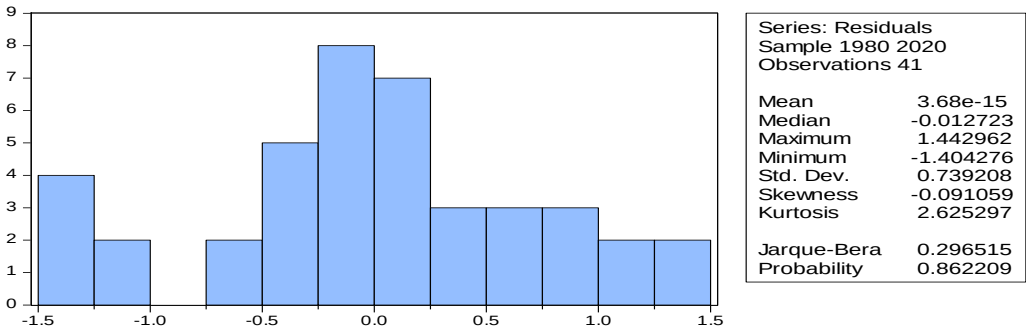
R^2 = 0.91, AIC= -0.80, SC= -1.05, DW=2.16

The coefficient of determination indicates that 91 percent of the total variation in the AGE has been explained by the RER, MS. INT and INF taken together. The one period lagged RER with a coefficient of 0.73 and t value of 7.74 and probability of 0.0000 indicates that the RER has a significant and positive impact on agricultural exports. It is an indication that a depreciation of the RER has the potential of increasing agricultural exports. This result is however in agreement with the results of Ibekwe (2020), Guttaw and Mahmud (2020), Wasiu and Ndukwe (2019). The coefficient of money supply is 0.48 and the t value of 7.28 and probability of 0.0000. This indicates that the money supply has a significant and positive impact on the level of agricultural exports. This suggests that expansionary monetary policy has a positive impact on agricultural exports. The one period lag value of interest rate is -2.57 and the t value is -13.19 with a probability of 0.0000 which indicates that interest rate has a negative and significant impact on agricultural exports. The one period lag inflation has a coefficient of -0.01 and t value of -3.90 has a significant and

negative impact on the AGE. The ECM is statistically significant and is rightly signed. It indicates a satisfactory speed of adjustment. It also indicates that about 77 percent of the errors have been accounted for. The various diagnostic checks results are shown below:

The result of the Jarque-bera normality test is shown in the figure below:

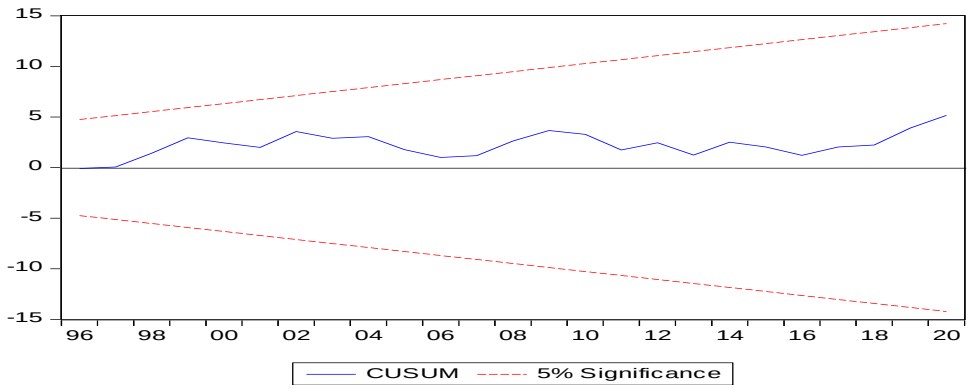
Figure1: Jarque- Bera Normality Test Result



Source: Author's Computation

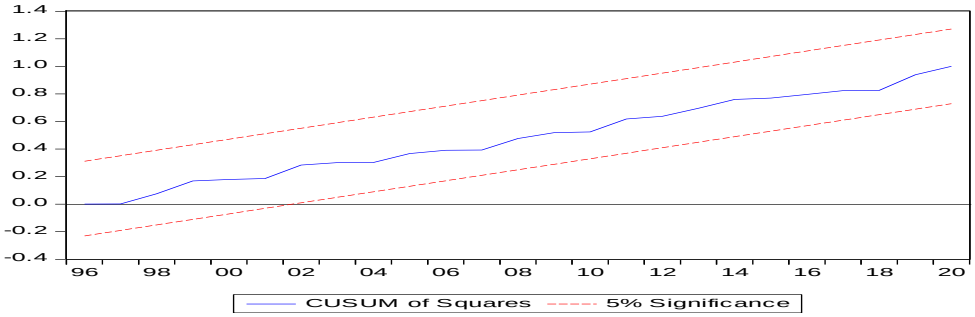
The Jarque-bera value of 0.30 and probability of 0.86 indicates a validation of the null hypothesis that the residuals are normally distributed. The result of the Cumulative Sum of Recursive Residual (CUSUM) as well as the Cumulative Sum of Squares of Recursive Residuals (CUSUMQ) suggests a validation of the null hypothesis that the residuals are normally distributed.

Figure2: CUSUM test Result



Source: Author's Computation

Figure3: CUSUMQ test Result



Source: Author's Computation

This is because the lines of the CUSUM and the line of the CUSUMQ fell in-between the two 5 percent lines. Serial correlation LM and heteroskedasticity results are shown in Table 7:

Table 7: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.315767	Prob. F(2,32)	0.7315
Heteroskedasticity Test: White			
F-statistic	0.986614	Prob. F(20,19)	0.5133

Source: Author's computation, 2021

The result of the Breusch-Godfrey serial correlation test with probability of 0.7315 suggests the validation of the null hypothesis that the residuals are not serially correlated. The result of the white heteroskedastictity test with probability value of 0.5133 indicates that the residuals are homoskedastic with constant variance which is characteristics of time series data.

Conclusion and Recommendations

Drawing from the DDS framework, this paper attempts to unravel the impact of RER on the exports from the agricultural sector in Nigeria. The agricultural sector has been the bedrock of many economies in Sub Saharan Africa, including Nigeria. In the 1960s and 1970s, exports from agriculture constitute the major foreign exchange earnings of Nigeria. this abruptly changed with the discovery of crude oil which hindered the exports of agricultural products. lots of the agricultural products are not exported, but rather consumed locally due to lack of processing facilities. The ECM modeling framework was used to

analyze the data. The results conclude that the depreciation of the RER has the potentials of enhancing the exports of agricultural products. This is significant given that when the value of the exchange rate is low, viz-a-viz other currencies, it makes the exports of agricultural exports from Nigeria cheaper which ordinarily should increase the exports of agricultural products from Nigeria. This has however not been the case in Nigeria because the neglect of the sector as a result of the discovery of crude oil has seriously reduced the production of cash crops for exports. The bottlenecks in the value chain such as lack of storage facilities and financial incentives are also partly responsible for the low level o agricultural exports. Thus, the exports of agricultural product has not improved or benefited from the depreciation of the RER. An improvement in the production of exports commodities from the agricultural sector is therefore recommended. This should also include production of agro-allied commodities for exports. The production of agricultural exports could be facilitated through Public Private Partnership (PPP) framework. This will reduce the burden of government which will bring about more efficiency in the production of agricultural exports.

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Appendix

Appendix 1: Overparameterized ECM Result

Dependent Variable: LAGE
Method: Least Squares
Date: 10/06/21 Time: 11:46
Sample (adjusted): 1982 2020
Included observations: 39 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LRER	-0.265842	0.245771	-1.081664	0.2897
LRER(-1)	0.908295	0.343519	2.644087	0.0139
LRER(-2)	-0.020926	0.251383	-0.083242	0.9343
LMS	1.635767	0.623652	2.622887	0.0146
LMS(-1)	-1.465859	0.977161	-1.500120	0.1461
LMS(-2)	0.389875	0.634929	0.614045	0.5447
LINT	-0.315387	0.479622	-0.657573	0.5168
LINT(-1)	-2.048743	0.624571	-3.280239	0.0031
LINT(-2)	-0.173564	0.446337	-0.388863	0.7007
INF	0.002874	0.005805	0.495185	0.6248
INF(-1)	-0.362724	0.006328	-57.32323	0.0000
INF(-2)	0.004551	0.006436	0.707093	0.4860
ECM(-1)	-0.671653	0.154185	-4.356151	0.0002
C	9.811503	1.166004	8.414638	0.0000

R-squared	0.880811	Mean dependent var	11.32782
Adjusted R-squared	0.870832	S.D. dependent var	2.027838
S.E. of regression	0.346325	Akaike info criterion	0.990383
Sum squared resid	2.998519	Schwarz criterion	1.587559
Log likelihood	-5.312461	Hannan-Quinn criter.	1.204644
F-statistic	98.29359	Durbin-Watson stat	2.277056
Prob (F-statistic)	0.000000		