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Cash Crop Output and Foreign Currency Exchange Rate in Nigeria: A Vector Error Correction Model Analysis

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Abstract

This study examined the relationship among cash crop exportation, real exchange rate, nominal exchange rate, and exchange volatility. This study focuses on the effects of the exchange rate on cash crop exportation in Nigeria. This study covers a four-decade period between, 1980 and 2020. The study used a pairwise granger, Distributive Lag (ARDL) bounds testing approach to co-integrate the long-run relationship among the variables. The outcome of the study shows that there is unidirectional causality between cash crop production and nominal exchange in the long run. The result also reveals that there is unidirectional causality between exchange rate volatility in the long run. The result further shows that there is a bidirectional causality between exchange rate volatility and the real exchange rate. This study recommended that the government should participate actively in the money market in order to effectively guard the volatility of the market which will go a long way to enhance economic stability.

Keywords: Agricultural output; Economic Stability; Exchange rate; Exchange Volatility; Nominal exchange rate; Real exchange rate.

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1. Introduction

Agriculture is the mainstay of most developing economies. The theory of economic growth propounded in 1954 by Lewis [1] postulates that agriculture is the source of industrial development and economic growth. [2] opine that agriculture is an engine that drives most developing economies of the world to their ultimate level of economic fortune. Some scholars opine that agriculture is the foremost determining factor that engenders economic growth and advancement. However, it has been seen in many quarters that lack of good storage facilities and the absence of formidable processing mechanism are responsible for the dwindling output of agriculture products in emerging economies like Nigeria [3]. Most emerging economies do not have good storage facilities and this singular factor is responsible for the reduction in quality and quantity of agricultural output in low income countries in recent times [4]. Extant literature reveals that there are other internal factors within the national ecosystem that determine the volume of export of agricultural product. Some scholars opined that macroeconomic variables are the major factors that influence the volume of cash crop exportation while some other scholars argue that governmental policy is a major factor that determine the volume of agricultural produces exportation [5]. Akanbi, *et al.* [6] opines that Agriculture and macroeconomic policy have a synergetic relationship in most nations of the world. The author further argue that agriculture is a subset of the macroeconomic hence needs an all-encompassing macroeconomic policy for it to thrive.

The shift in East Asian monetary climate in the late 70s triggered the vacillations of the Japanese Yen when compare with the American Dollars. This development made currency conversion and international trade relationship an issue for discourse in accounting and economics research in modern times. [7] reports that trade movements were ominously influenced by actual conversion rates starting in the early-90s. There have been no

consensus classification for currency conversion rate by researchers. Different schools of thought look at exchange rate from their own standpoints. The social school of thought decomposed exchange rate into three main theoretic fundamentals of currency conversion determinants, namely: the traditional flow model; the port-folio balance model; and the monetary model as well as the purchasing power parity model, which is a sub-set of the monetary model [8].On the other hand, the neoclassical school of thought disintegrate exchange rate into; actual conversion rate, actual conversion rate impulsiveness and actual variation movement in conversion rate. Adubi [9] argue that the higher the volatility in currency conversion rate, the greater the threat connected to the variable. The authors postulate that exporters are not just after proceed or revenue gotten from exportation but are also concern with the effect of instability in prices on the incomes of such prices as it shocks on their revenues. Adubi [9] contends that Real Exchange Real (RER) impulsiveness causes ineptitude in distribution of resources, alteration in productivity and distortion in employee engagement plan. Exchange rate determination varies from one nation to another and from a particular time to another. Nigeria has witnessed frequent radical shifts in the exchange rate policies in the past three decades. Sometime in the history of Nigeria exchange rate was determined by administrative fiat, that is, by fixing the rate to one or more convertible currencies without regard for the appropriate market value of the home currency. Report that the Nigerian foreign exchange market in the 1990s was made up of three stratum: the allowed foreign exchange market; the autonomous market and the parallel market.

The allowed foreign exchange is one where the conversation of the local currency exchange into foreign currency is based on market forces while the autonomous foreign exchange market is that in which authorized dealers together with foreign exchange end users and the CBN itself are participants. Furthermore, the parallel market as an informal market that exists together with the authorized market. The parallel market is also known as black market [5].

The fiscal, monetary, trade and exchange rate policies, are pertinent to the volume of agricultural products exported. Essentially to the aforementioned policies is price setting, a key determining factor of agricultural supply reaction to governmental transformation agenda and strategies [10]. In spite of the fact that consecutive governments' efforts, plans, schemes and the commendations to improve volume of agricultural output, anecdotal evidence reveals that output from agriculture has dwindled over the years [11].Prior studies on the influence of exchange rate on agricultural production are enormous and inconclusive.

The studies on the effect of exchange rate on agricultural produce view the subject matter from different stand points, for instance Akanbi, et al. [6] discussed exchange rate and agricultural export in Nigeria between, 1986 and 2012 holistically while Akinniran and Olatunji [12] investigated effects of exchange rate on agricultural export in Nigeria from stratification of cash crop stand point. Diverse authors whose works were reviewed in this study failed to decompose exchange into its constituents which it makes it distinct from prior studies. The insertion of new variables into existing models forms the gap in knowledge that this study intend to fill. Aforementioned is the motivation of this research work.

2. Literature Review

Yakub, et al. [13], empirically examine currency conversion rate impulsiveness and trade movements in Nigeria from 1997 to 2016. A GARCH model was employed to produce the nominal conversion rate volatility sequence using Autoregressive Distributed Lag ARDL to identify the long-run association amid the chosen variables. The research work states that exchange rate impulsiveness influenced trade flows in Nigeria negatively, in the immediate term but does not have influence on trade in elongated terms. Furthermore the study reveals not paying attention to exchange rate volatility will to lead to declination trade flows in Nigeria in immediate terms.

Olubukoye, et al. [14], conducted a research work to establish the association of currency conversion rate with declination in production of farm produce in Nigeria from 1986 to 2016. The work employs Johansen's co-integration test and Vector Error Correction Model (VECM). Their result reveals that all the variables are co-integrated. Vector Error Correction Model (VECM) specifies a unit surge in Real Effective Exchange Rate (REER). The result of the causativeness shows that there is unidirectional causation amid real effective exchange rate and cost of exportation. This infers current conversion depreciation has emblematic association with aggregate revenues from exportation.

Uduakobong and Williams [15], conducted a study to ascertain the link of currency conversion rate impulsiveness to revenue derived from exportation of non-oil in Nigeria employing yearly data from 1970 to 2015. The research work used the VECM and the Granger interconnection test to find out the relationship between these variables. The outcomes of the research work reveal that non-oil revenue is positively connected to currency conversion in the elongated term. The outcome reveals that it will take four years for revenue from non-oil exportation to get back to its symmetry cost when dislocated by the impulsiveness in currency conversion rate. The result also shows currency conversion has one-directional causation with revenue generated from non-oil exportation

In addition, Akinniran and Olatunji [12] carry out a research work to find out connection of currency conversion rate to exportation of crop in Nigeria from 1986 to 2010. The study used multivariate regressions to establish the association of the independent variables with the dependent variable. The result shows currency conversion rate depreciation positively connected to cash crop production. The result of the study revealed that currency exchange depreciation in the Structural Adjustment Program (SAP) the pre SAP eras has no emblematic influence on crop exportation.

Aro-Gordon [16], conducted a research work to find out the causation currency conversion rate and exportation expansion in Nigeria. The study employed econometric apparatuses to establish the connection the explanatory

variables to regressors. The result shows that conversion has no causation with exportation output in the immediate term and has no emblematic correlation in the elongated term.

Akanbi, *et al.* [6], on the other hand, carried out a study to find out causation of currency conversion rate impulsiveness using ARCH model and quarterly. The influence of currency conversion rate impulsiveness on crop exportation using VECM with two dissimilar methods. The outcomes of study show that currency conversion rate impulsiveness is negatively related to cash crop exportation in Nigeria.

Udah and Nwachukwu [10] being specific to Cocoa, conducted a research work to find out causation of currency conversion rate on exportation of cocoa for 23 three years using co-integration test and t-test. The t-test reveal that cocoa is directly proportionate with currency conversion rate but inversely proportionate with free trade and global cost of cocoa.

Gatawa and Mahmud [17], carried out a study to ascertain the causation of currency conversion rate vacillations with crop exportation in Nigeria using ARDL method of inquiry while GARCH was also employed to guesstimate the impulsiveness of currency conversion rates. The result shows that currency conversion positively influences cash crop exportation in the immediate term. This also shows that comparative values of cash crop output negatively influence cash crop output in the long run. The result shows that in the elongated term currency conversion negatively impact crop output.

Others such as: Salisu, *et al.* [18] performed a research work to find out the connection of exportation raw material extracted from farm produce to currency conversion rate and economic advancement in Nigeria. Yearly data were employed for the 32 years. The Auto Regressive Distributed Lags (ARDL) model and co-integration approach were also employed to find out the causation among the regressor and explanatory variables. The outcome of the research work shows that exportation of farm produce raw materials have negative correlation with currency conversion rate.

Ajinaja, *et al.* [19], perform a study to find out the causation of economic growth, currency conversion rate vacillation (EXCt) and fund from international investors on exportation output of agricultural products (Xt) in Nigeria. Ordinary Least Square method was statistical method for enquiry employed. The outcome of the study shows that there a unidirectional causation among currency conversion rate, economic growth and Foreign Direct Investment

Adaramola [20], performed a study to ascertain the connection of actual currency conversion rate impulsiveness on volume of exportation in Nigeria. The research work employed OLS statistical technique and VECM. The author employed the ARCH and GARCH models to ascertain the incidence of impulsiveness of actual currency conversion rate succession. The outcome of the study reveals that actual currency impulsiveness positively influence exportation capacity in elongated terms.

In addition Owuru and Farayibi [21] looked at currency conversion rate movements and exportation capacity in Nigeria from 1970 to 2015 using descriptive statistics and OLS statistical technique to find out the link of explanatory variable to the regressor. The outcome of the work reveals that currency conversion rate volatility is directly proportionate to exportation capacity in Nigeria.

Okorontah and Odoemena [22] carryout a study to ascertain association of currency conversion rate vacillation with economic advancement in Nigeria using yearly data for the period 26 years, 1986-2012. The study adopted the Ordinary Least Square (OLS) statistical technique and VECM to find out the association of the independent variable with the dependent variable. The outcome of the study shows that currency conversion rate has weak association with economic advancement in Nigeria.

Amassona and Odeniyi [4] analyzed the association of currency conversion rate impulsiveness and economic advancement in Nigeria stressing on the eulachon of global business dealing and the procuring capacity of the ordinary Nigerian. Standard Deviation technique was employed to approximate the vacillation intrinsic in the model for a time span of forty-three years (1970-2013). Supplementary methods such as VECM and OLS were coopted for investigating data extracted from the field. The outcome of the study shows that currency conversion rate has no emblematic relationship with economic advancement in the immediate term.

Conclusively, Omotola [23] looked at the influence of currency conversion rate vacillations on industrial sector capacity in Nigeria from 1986 to 2014, a time span of twenty-eight years. Exchange Rate (EXC) was evaluated by employing least square statistical technique. The outcome of the study reveals that currency conversion rate has no emblematic relationship with industrial capacity in Nigeria for the period under review.

3. Materials and Methods
This study used of secondary data obtained from the Central Bank of Nigeria Statistical Bulletins for the relevant years, from 1980 to 2020.

3.1. Cash Crop Production
This infers to the entire process that are entailed in selling cash crop production in the local market to other markets, usually global. It is quantified with cash crop index.

3.2. Real Exchange Rate
RER is describes in relations to NER attuned for comparative values of tradable and non-tradable commodities *(Pt*/Pt)* at a specific time *t*. *Pt** is the price index for tradable commodities whereas *Pt* is the price index for non-tradable. *Pt** is habitually proxies via which ever cost index that replicates additional of tradable commodities ' costs

in its configuration, whereas *Pt* is measured with the local economy purchaser price index, which replicate additional non-tradable commodities costs in its configuration. Conventionally, RER is computed as RER = NER. Pt* Pt

3.3. Real Exchange Rate Volatility

This quantifies the drifting floatation of actual currency conversion rate persistently. This inconsistency is quantified by building an index. This research work used coefficient of variation (CV) which articulates the dispersal of experiential data rate as a percentage of the average of a sequence as a quantified of currency conversion rate impulsiveness.

CV = S/Ȳ *100

where *S* and *Ȳ* signifies standard deviation and mean of the series, respectively. The study employs yearly RER values to calculate its impulsiveness.

Where Y stand for crop productivity, RER, NER and VERM are real exchange rate, volatility and misalignment.

3.4. Estimation Techniques

This research employs the ADF and Philips-Perron (PP) unit root test, panel Johansen co-integration test, VAR model, dynamic least square regression, full adjusted least square regression and pairwise granger.

3.5. Unit Root Test

In so far that period sequence data were employed for analysis, it is necessary to test for stationarity of individual data series to ascertain if they are stationary and are in order of integration. To carry out a previous analytic examination erstwhile the valuation of the model so as to scrutinize the period succession characteristics of the series. Two standard processes for unit root examination were employed. These are the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) examinations. The reason for this is to circumvent or avoid the problem of specious outcomes that are common with non-static periodic sequence models.

3.6. Co-integration Estimation

In an attempt to define the amount of co integrating trajectories, the Johansson's approach is employed using two dissimilar examination statistics. Johansson's is used to test co-integrating relationships between several non-stationary time series data. These are the trace examination statistics and the extreme Eigen – value test statistics. The trace statistics is employed to exam the null hypothesis so that the amount of deviating co-integrating association is equivalent to or less than "r" contrary to the alternative hypothesis of more than "r" co integrating relationship.

Johansen's methodology takes its starting point given by

$$\mathbf{y_t} = \mathbf{\mu} + \mathbf{A_1}\,\mathbf{y_{t-1}} + \ldots + \mathbf{A_p}\,\mathbf{y_{t-1}} + \mathbf{\varepsilon_t}\,\ldots \tag{4}$$

where *t* **y** is an *n*x1 trajectory of variables that are combination of order one – normally denoted I(1) and *t* **ε** is an *n*x1 vector of innovations. Equation (1) can be rewritten as

$$\Delta y = \mathbf{\mu} + \mathbf{\Pi y_{t-1}} + \sum_{t=1}^{p-1} \mathbf{\Gamma i y t - 1} + \mathbf{\varepsilon_t} \tag{5}$$

Johansen proposes two dissimilar probability percentage examinations of the implication of these recognized associations and thereby the decreased rank of the **Π** matrix: the trace test and maximum eigenvalue test.

$$J_{trace} = T \sum_{i=r+1}^{n} In(1 - \lambda) \tag{6}$$

$$J_{max} = -T \, In(1 - \lambda_{r+1}) \tag{7}$$

Here *T* is the sample size and λ_i is the *i*:th prevalent established connection. The trace examines the null hypothesis of *r* co-integrating vectors alongside the alternate hypothesis of *n* co-integrating vectors. This is describe as; the maximum probability proportion or the extreme value of Eigen statistic, for examining the null hypothesis of at most 'r' co-integrating trajectories contrary to the alternate hypothesis of 'r+l 'co-integrating vectors, is given. Where is the Eigen values, T is total number of observations. According to Johansen, within the null hypothesis both trace and statistics have nonstandard distributions and to estimate acute values for the statistics as engendered by Monte Carlo methods. In a case where Trace and Maximum Eigen-value statistics give diverse outcomes, the trace outcome ought to be selected.

3.7. Vector Error Correction Model

The constants of the model's constraints were calculated by the Vector Error Correction Model (VECM). The Augmented Dickey-Fuller (ADF) examination was employed as deterministic periodic sequence characteristics (for the existence of a unit root) of the stochastic variables. A factor is said to have a unit root or is I(1) if it is dynamic. The use of data characterized by unit roots may lead to adverse inaccuracy in numerical extrapolation. The Johansen method was employed to examine the co-integration in the model to ascertain if there is long-run association amongst the variables. If the variables are co-integrated, their long-run association will be utmost proficiently

denoted by an error-correction model. However, the VECM description does not enable short-run effects on the regress and but provide examination of the promptness of attuned long-run symmetry. The VECM is written below:

$$\Delta CROPRODi_t = \sum_{k-i}^{m} \theta_{1.1.j.k}\Delta CROPRODi_t + \sum_{k-i}^{m} \theta_{1.2.j.k}\Delta NER_{t-K} + \sum_{k-i}^{m} \theta_{1.3.j.k}\Delta RER_{t-K} + \sum_{k-i}^{m} \theta_{1.4.j.k}\Delta VRER_{-K} + \Lambda_{i.j.}.ECT_{i,t-1} + Ui_t,$$

Where
CPROD: crop production
NER: Nominal Exchange Rate
RER: Real exchange Rate
VRER: Volatility Real exchange rate volatility
ECT

4. Result and Discussion
4.1 Unit Root Result

Table-1. The unit root test for the variables at 5% sig level with no trend

Variable	ADF value (I)	PP value (I)	ADF value (0)	PP value (0)
CROPROD	-4.59 4 (2.925)*	-4.612 (-2.926)*	-0.854 (-2.925)	-0.540(2.925)
RER	- 5.261 (2.947)*	-17.78(-2.925)*	-10.439(-2.941)*	-5.953 (2.925)*
NER	- 4.341 (2.925)*	-21.11(-2.925)*	-7.102 (2.928)*	-4.385 (-2.925)*
VRER	-5.812 (-2.925)*	-8.227(-2.925)*	-5.812(-2.929)*	-1 .663 (-2.926)
	The F unit root test for the variables at 5% sig level at intercept.			
Variable	ADF value (I)	PP value (I)	ADF value (0)	PP value (0)
CROPROD	-4.551 (-3.510) *	-4.521 (3.521)*	-1.817(-3.510)	-1.486 (-3.08)
RER	-4.208 (-3.536) *	-17.60 (3.510)*	-9.713 (-3.533)*	-6.956 (3.508)*
NER	-4.785(-3.508) *	-20.941 (-3.52)*	-7.019 (-3.513)*	-4.645 (-3.508)*
VRER	-5.746 (-3.219) *	-8.358 (3.510) *	-3.219 (-3.510)	-2.409(-3.508)

Source: Researcher's computation
Significance * @5%

From Table-1, time series of CROPROD, RER, NER and VRER are static at 1[st]order as portrayed by the outright ADF figure and PP exceed the acute figure at 5% ADF critical values signifying that the variables are combined in order one, that is,. I (I). However, CROPROD and NER are dynamic at level because the entire values of ADF and PP value is not up to the critical values ADF and PP. To additionally affirm the static status of the variables ADF and PP examination were carried out with trend. The outcomes for ADF and PP reveal that entire components are static at 1st order since the outright values of ADF and PP exceed the correspondence critical values. The Unit test reveal that there is a combination of I(I) and I(0) of the complementary regressors, hence the Auto Regressive Distributive Lag (ARDL) testing should be continued.

4.2. Co-integration

When testing for co-integration to ascertain the existence of long-run relationship among the variables. The VECM model with two lags, depicted by AIC and HQIC is measured. The research work used a Pantula principle in order to ascertain the suitable boundaries in the model. The study started by calculating two supernumerary models. For these models the study further checked the maximum restraining, which contains constrained constant to the smallest limiting factor which includes a circumscribed trend in the model. The study relates the trace statistics with the critical values and discontinue if null hypothesis is not retained for the 1[st]period. The outcomes from the two approximating models are exhibited in Table 2a. And b.

Table-2a. Co-integration Rank Test (Trace) model 1

Hypothesized No. of CE(s)	Trace stat	0.05 Critical value	Max Stat	0.05 Critical value
0	104.3773	47.85613	50.60329	27.58434
1	53.77404	29.79707	29.50927	21.13162
2	24.26477	15.49471	22.89862	14.26460
3	1.366150*	3.841466	1.366150	3.841466

Source: Author's computation

Table-2b. Co-integration Rank Test (Trace) model 2

Max rank	Trace stat	0.05 Critical value	Max Stat	0.05 Critical value
0	55.39253	47.85613	27.72447	27.58434
1	27.66806*	29.79707	16.25003	21.13162
2	11.41803*	15.49471	9.950585	14.26460
3	1.467450	3.841466	1.467450	3.841466

Source: Author's computation

The null hypothesis for this examination is that "there is no co-integration amid variables". If the critical value exceeds the trace statistic, null hypothesis is not retained which means that "there is co-integration amid variables". Relating the analogous values for trace statistic and critical value for rank 0 for model 1 (104.37 and 47.85), the null hypothesis cannot be retained. But for rank 3, the null hypothesis can be retained which means that our selected variables are co-integrated and there is long-run connection. For rank 3 the trace statistic (1.36) is less than the critical value (3.84) which implies that three co-integrating equations exist. Additionally, associating the critical value at rank 0 for trace value and critical for model 2 (55.39 and 47.85), reveal that we can reject the null hypothesis. But for rank 1 and 2, null hypothesis is retained which implies that our selected variables are co-integrated are associated in elongated term. For rank 1 the trace statistic (27.66) is not up to the critical value (29.79) whereas for rank 2 the trace value (11.41) is not up to the critical value (15.49) which implies that at least two co-integrating equations exist

4.3. Impulse Response Function

In general IRF enquiry in time series analysis is significant in defining the influence of exogenous shocks on the variables of the system. All in all IRFs reveals the extent to which an unforeseen alteration in one variable at the starting influences another variable via time. Impulse response functions (IRFs) have appreciable information on two vital features. Firstly, graphs permit us to understand how the shock in one of the variables stimulate the present and impending values of another variable and secondly it can be seen that the persistency of a shock, can offer us with some valuable foresights about the connection of variables to one another in the immediate term.. In order to analyze the dynamic effects of the model responding to certain shocks as well as extent of the effects among the three variables, further analysis was done through impulse response function and variance decomposition based on VECM, and the results for 10 periods (40 years) are obtained.

Figure-1. Response of VRER to CPROD
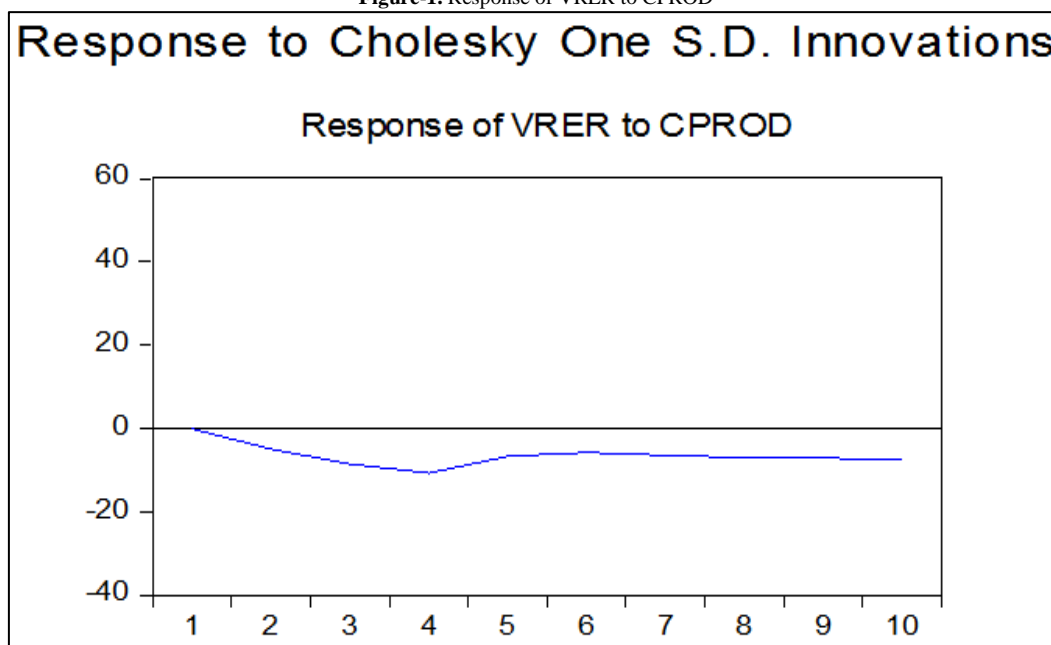
According to Granger test results, in consideration of the effect of VRER on cash crop production. The outcome displayed in figure 1, reveals that the effect of VRER on variation in cash crop production shock, it is found that VRER has negative shock and has little impact on cash crop production. VRER decline rapidly after a negative shock in the first period, it reaches its lowest point in the fourth period. It picks up to 10,000 in fifth period and reduces by 10,000 units in the seventh period. The relationship between VRER and cash crop production remain at a stable level from the seventh period to the ten period. This suggests that negative shock of VRER has little significant influence on cash crop production in the immediate term and negative influence in the elongated term
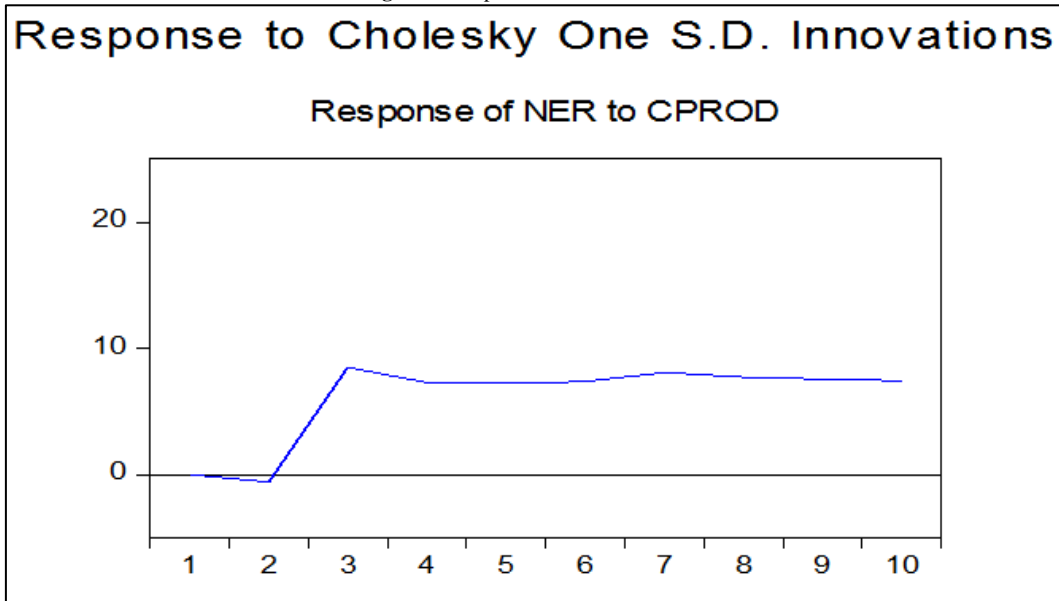
Figure-2. Response of NER to CPROD

Figure 2 is the impulse response function diagram of variations initiated fluctuation in cash crop production shocks. It is observed that in the first negative shock caused by influence of NER on cash crop exportation was seen in the first period and second period. The influence in third period. The strength of relationship increases gradually from the third period through the fourth period and then remain stable till the ten period.
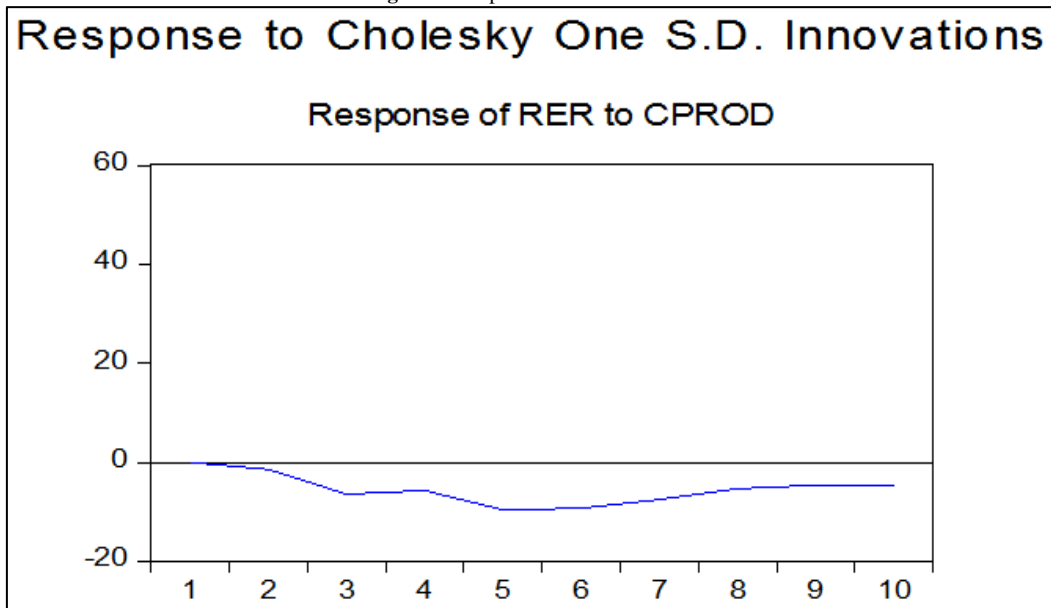
Figure-3. Response of RER to CROP

Figure 3 is the impulse response function of RER on cash crop production shock. As shown in the figure 3, after a negative shock in the first period, RER fell to the peak in the fifth period and then increase in seventh period and then begin to rise slowly. The impact of RER on cash crop production shocks at its peak ineighth period and stay at a stable level to the tenth period. This shows that RERpositively impact on cash crop production.
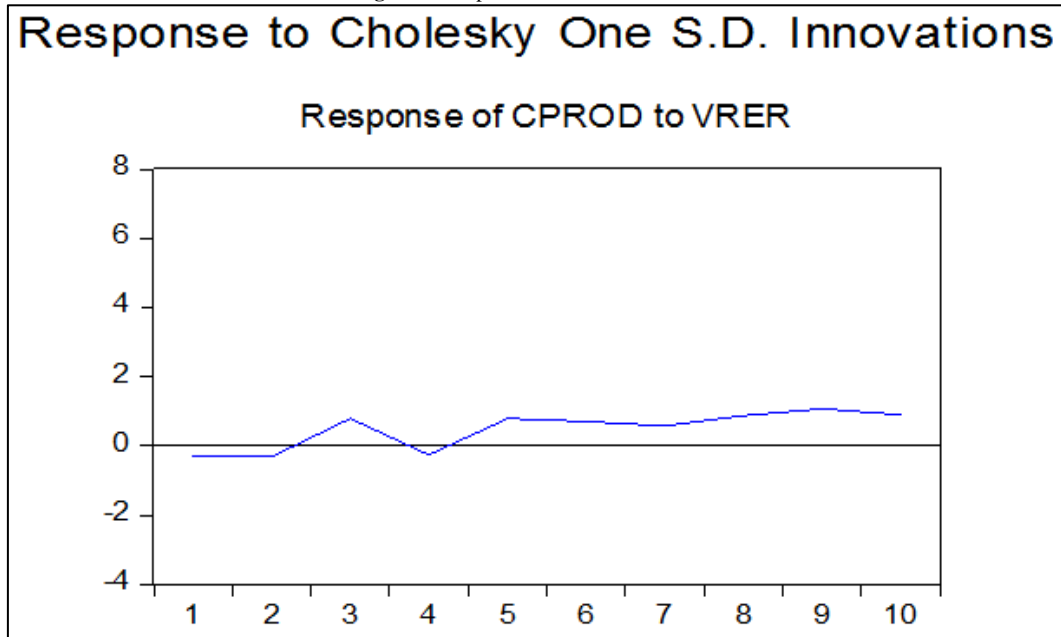
Figure-4. Response of CPROD on VRER

Figure 4 is the impulse response function of cash crop production ON VRER reveals that VRER intercept in second period. It was observed that after a negative shock in the first period, the shock decline to the lowest point in the fourth period, rise quickly and stay at a stable level to the ten period. This shows that cash crop production has positive shock on VRER.
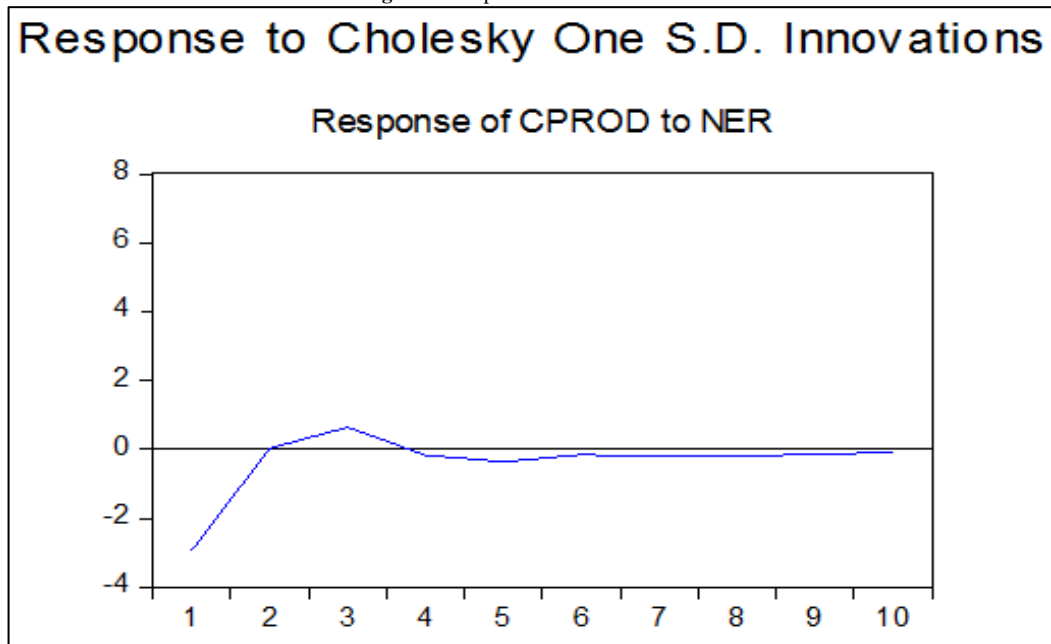
Figure-5. Response of CROP to NER

Figure 5 is the impulse response function of cash crop production shock on NER. As shown in the figure 4-5, after a negative shock in the first period, CPROD rise to the peak in the third period and then decline in fourth period to negative and then begin to rise slowly. The impact become stable to the tenth period.
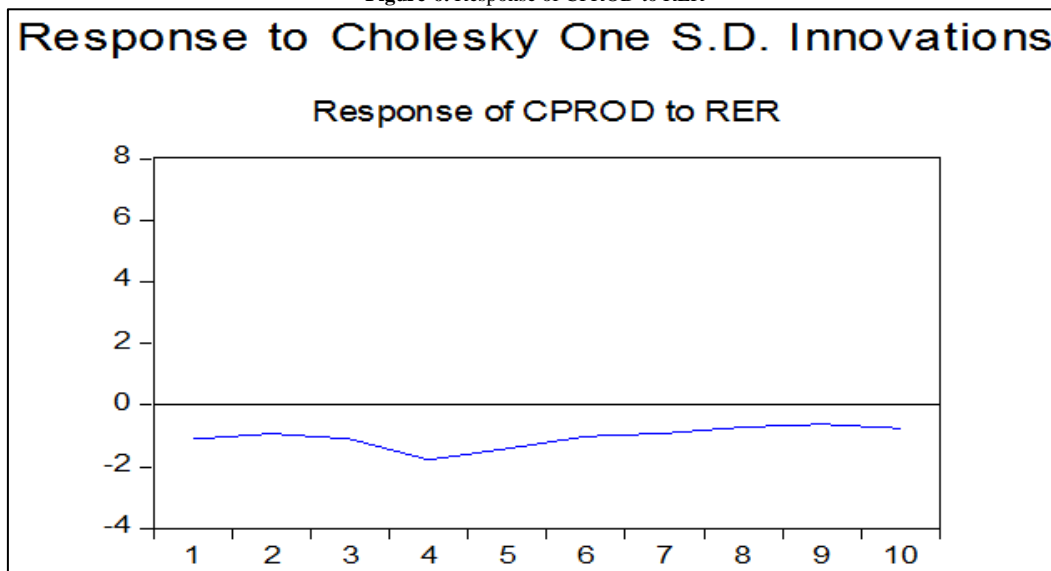
Figure-6. Response of CPROD to RER

Figure 6 is the impulse response function of cash crop production shock. As shown in the figure 4-6, after a negative shock in the first period, the impact of CPROD on declines toits lowest the point in the fourth period and then rise slowly in fifth period negatively. The impact become stable to the tenth period.

Table-3. Model Vector Estimation Correction

Long run estimate					
Dependent variable	Independent Variables	Coefficient	Standard Error	T-Stat.	R-square
CPROD	RER	0.1943	0.040*	4.805	0.448
CPROD	NER	-0.2056	0.046*	-4.129	0.551
CPROD	VRER	0.0860	0.080	0.803	0.512
ECM					
RER		-2.099	0.070*	-.2.989	
NER		-0.339	0.017*.	1.804	
VRER		-1.297	0.071*	-1.899	
Short run Estimate					
CPROD	RER	-0.0056	0.0169*	-2.0335	
CPROD	NER	0.0370	0.7049	0.4967	
CPROD	VRER	0.0004	0.0167*	2.0250	

Source: Author's computation
[ ]=t value, ()= coefficient value. P * donates p< 0.1, p** donates p< 0.01

Since the collapse of the Bretton-Woods system in 1973, the conversion rates of several nations have drifted significantly ultimately, and attention has given to predicting of exchange rates. Exchange rate has continue to be an ashen issue and an area that calls the attention of economists and financial experts, in most developing nations, undermining the massive work that have been done on the subject matter. This is mainly because currency conversion rate is not just a noteworthy comparative price of one legal tender in comparative term that link local and global market for goods and services, but it is similarly points at the effectiveness of a nation's interchange capacity when compared with other countries in an international market. Also, it acts as a pivotal that engenders bearable macroeconomic equilibriums in elongated term. There is no specific factors that can be said to be used to predict that there is currency conversion rate symmetry Williamson [24]. Exportation has upheld a stable upwards movement, and the National Bureau of Statistics (NBS) (2018) documents that exportation farm produce upsurge in first three months 54.9% in the last eighth of 2017 to N44.7bn ($144.5m), and annual basis by 170.9%. Full-year exportation of food produce upsurge by 180.7% over 2016 levels to hit N170.4bn ($550.9m) (NBS, 2018). Exportation assessment pointers remained affirmative in 2018 (NCS, 2018). It was also documented that main exportation volume in the April 2018 comprised rubber, hibiscus flower, cocoa butter, sesame seeds and frozen shrimp. The National Bureau of Statistics documents that volume of farm produce upsurge by 63.8% in first quarter of 2018 to $236.8m, signifying a 24% surge on annual output [25].

Although crop production and farm produce exportation have escalated extensively currently. UN Food and Agricultural Organisation of the United Nations (FAO) documents that food cultivation impediments lead to decrease in food production with value added per capita in the sector increasing by a value that is up to 1% yearly in current eras. FAO documented that it has been that because of dwindling output the Nigerian government lost $10bn

annually in exportation openings for foremost produces including cocoa, cotton, palm oil and groundnut, whereas upsurges in food output have been overtaken by population explosion, causing upsurge in crop outputs. The FAO recognized rice and cassava as produces with high prospect for upsurge in output and processing.., Nigeria is the world's largest cassava producer, accounting for 20% of global supply, 34% of African supply and 46% of West African supply [25].

In Nigeria, crop production has assumed a vital function in the economic advancement particularly prior to the discovery of petroleum in marketable capacity in the 1970's. It is a known fact that Nigeria is endowed with copious land mass, which is productive for farming (Federal Ministry of Agriculture and Rural Development, 2017). Nevertheless, the contribution of agriculture to aggregate Government revenue in recent times is quiet low- less than 20% of the total revenue.

Post-2000, the contribution of cash crop production to GDP has experienced continuous declination. It dropped from 37.5% in 2002 to 26.3% in 2009 and then further dropped to 20.2% in 2014 before surging to 21.2% in 2016. The eras of declination in the proportion of crop output to aggregate GDP overlap with the era of escalation in conversion rate and retardation in enlargement of the sector's capacity. While the increase in currency conversion rate may be linked to extraordinary cost of shipping of farmhouse tool, consequently, escalates the aggregate production cost. Other exigencies such as bad road network may be responsible for the declination of the proportion of the sector to aggregate productivity as well as the retardation in the growth rate.

The agricultural sub-sector is one of the main segments of the economy and a main determining factor of elongated economic advancement in Nigeria with the segment playing a significant quarters to economy advancement via manufacturing of goods, currency conversion e and exports Ajudua, et al. [26]. Despite numerous strategies and systems that government employed during the democratic era, very little has been accomplished in terms of enlargement of productivity in sector. Some the programs employed by the government consist of the National Economic Empowerment and Development Strategy. To buttress the aforementioned VECM results is discussed extensively as follow:

VECM result reveals that RER has emblematic impact on at 10% cash crop output (CPROD)in long run as depicted p=-0.040 . The negative sign of EMC (eq) (p= 0.070) connotes that Real Exchange Rate has significant association with cash production in the elongated terms. The result also shows that Real Exchange Rate can explains 44.8% of cash crop exportation while about 55% is unaccounted for. This implies that upsurge in Real Exchange Rate led to upsurge in cash crop output in Nigeria from 10th year to 40th year. This result is in line with Adaramola [20] which reveals that Real Exchange Rate has positive effect on cash crop exportation volume and at variance with *a prior*. The result also reveal Real Exchange rate has negative impact in the first years (short-run) at 10% as depicted p=0.0169. This result implies that increase in Nominal Exchange Rate led to decrease in cash crop exportation output in the short run

Nominal Exchange Rate and cash crop exportation

The result further reveals that Nominal Exchange Ratehas an emblematic impact on cash crop exportation (CPROD) in the long-run at 10% as depict by p= 0.046. The negative sign of EMC (p= 0.017) connotes that it is probable for NER to influence cash crop exportation in the foreseeable future. The result also shows that Nominal Exchange rate explains about 55% of cash crop exportation while about 45% is unaccounted. The result shows that 10% rise in nominal value of exchange rate will to lead to decrease in cash crop exportation by 2 units in the long-run. This result at variance with Omotola [23] which reveals that nominal exchange rate has no emblematic effect on cash crop output but in line the *a prior* expectation that predicted a negative relationship between NER and cash crop output.

Finally, the result reveals that impulsiveness of real exchange Volatility of Real Exchange Rate has emblematic impact on cash crop exportation the in the elongated term at 10% as depicted by p=0.080. This implies that a sharp movement in real exchange rate in Nigeria led to reduction in cash crop exportation in Nigeria. This result is in line with Yakub, et al. [13] which found that VRER has a negative impact on cash crop output. The result is at variance with [Aro-Gordon [16]] which found that volatility of real exchange rate has no emblematic effect on cash crop output.The negative EMC (Eq) (p= 0.071) connotes that it is likely for VRER to influence cash crop exportation in the foreseeable future. The show that movement in real exchange rate in the immediate term as depict by p=0.0167. The result also shows that VRER explain about 51% of change in cash crop exportation while about 49% is unaccounted. The result shows that 10% rise in VRER led to about 0.08 units decrease in cash crop exportation,

5. Conclusion and Recommendations

In recent times, the conventional governments have tried to play the role of unbiased umpires by controlling the movement of currency through the instrumentality of monetary and fiscal policies. The government directly or indirectly advances the output of the private sector by resourceful distribution of limited resources. In acknowledgement of these roles, lots of governments world over ascribe prodigious significance to the classical performance of their economies embarking on monetary strategies such as taxation and foreign trade policies to enhance currency stability. To this end, this research work is set out at ascertaining the causation among cash crop production and foreign exchange. This study employed the ADF and Philips-Perron (PP) unit root test, panel Johansen co-integration test, VECM model, auto regression estimate, impulse response function and pairwise granger. Stability tests were also performed to ascertain the stability of the variable. The outcome of this research work shows that first, cash crop production and nominal have unidirectional causation with exchange in the long-run.

Second, the result reveals that there is there an emblematic association between real exchange rate in both in the short and long-run.

Finally, the result revealed that exchange rate volatility has emblematic relationship cash crop production in both short and long run.

Exchange rate is a vital macro-economic factor that if not properly curtailed can greatly affect other supplementary macroeconomic indicators and alters the general wellbeing of the economy towards optimality. Thus, this study examined the casualty among real exchange rate, nominal exchange rate and exchange volatility and cash crop production .From the result gotten, the study recommended that government should formulate sound exportation policies and statutory authorities monitor the activities of actors in the money market to ensure stability in foreign exchange market. The study further recommended that government should from time to time intervene in the foreign exchange market to ensure long-run equilibrium of the RER

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