THE IMPACT OF EXCHANGE RATE FLUCTUATIONS ON AGRICULTURAL EXPORTS IN NIGERIA

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Abstract

This paper analyse the short and long-run impacts of exchange rate fluctuations on agricultural exports volume in Nigeri, using annual time series secondary data covering a period of 34 years (1981-2014). Autoregressive Distributed lag (ARDL) Model was used as the tool of analysis; the independent variables include the official exchange rate, agricultural loans and the relative prices of agricultural exports while the dependent variable is agricultural export volume. Generalized Autoregressive Conditional Heteroskedasticity (GARCH) was used to estimate the volatility of exchange rates and other diagnostic tests. The short-run results revealed that the official exchange rate and agricultural loans have a significant positive impact on agricultural export volumes, which have the

effect of expanding the dependent variable while the relative prices of agricultural exports has significant negative impact on agricultural exports volume, which also have the effect of contracting the dependent variable. The long-run results revealed similar findings with the exception of official exchange rate which have a statistically significant negative impact on agricultural exports volume, i.e. contrary to normal expectations. The paper recommends the relevance of a stabilizing exchange rate from the present downward trend and providing farm equipment and input on credit basis by the government and private sector institutions rather than loanable fund that can be redirected to other activities other than agriculture.

Keywords: *Exchange rate, Agricultural Exports, Autoregressive Distribution Lag Model*

Introduction

Prior to independence in 1960 up to the early 1960s, the economy was characterized by the dominance of exports (mostly agriculture) and commercial activities. In spite of the fluctuations in world commodity prices, agriculture contributed about 65% to GDP and represented almost 70% of total exports. It provided the foreign exchange that was utilized in importing raw materials and capital goods. Peasant farmers produced enough to feed the entire population. Various Marketing Boards generated much revenue the surplus of which was used by government to develop the basic

infrastructure needed for long term development (Tule, 2015).

Since the emergence of the oil industry in the late 1960s, the role of agriculture in the economy has been on the downward trend, especially its contribution to GDP, where its share to GDP fell from 48.23 % in 1971 to almost 21% in 1977 (Anyanwu et al 1997). However, according to Mbutor and Al-Hassan (2013), agricultural sector contribution to growth in the GDP grew only at 6.9 % in 2003. On the average, the sector grew at 7.2 % between 2005 and 2007. From 2008 to 2011, growth of the agricultural sector began to decline. It grew by 6.3 %, 5.9 %, 5.8 % and 5.7 % in 2008, 2009, 2010 and 2011, respectively. By 2012, the growth in the agricultural sector declined to 3.9 %. In 2013 agricultural production grew by 4.5 %, favorable weather conditions and sustained implementations of the initiatives under the Agricultural Programme (ATAP) were largely responsible for the growth in the sector (CBN, 2014).

Despite its weakness, agriculture is still the dominant sector of the Nigerian economy, contributing about 42.00 % from 2000-2007 of the Gross Domestic Product (GDP), which fell to 32.85% in 2008 consequent upon the Global Financial Crisis. The upward trend continued in 2009 to 37.05 % and again the share fell to 30.33% in 2010 but later picked up slowly in 2011 and 2012 as 30.99% and 33.08%, respectively (CBN, 2012).

Countries in the world attempted to accelerate economic growth by designing export-led growth strategy. For example, Mehra (1991) affirmed that the adoption of

Structural Adjustment Programme in many African countries has been to encourage the shift to exportable cash crops. Fanta and Teshale (2014) asserted that a robust economic performance of the "Four Asian Tigers" in the second half of the 20th century has been largely attributed to the performance of the external sector where the export sector was given a greater emphasis. This indicates the importance of the exchange market to economic growth.

The Nigerian foreign exchange market is of recent origin. In fact, prior to 1962, there was no formal foreign exchange market in the country. Linked with a long tie with her former colonial master, Britain, the Nigerian pound was tied to British Pound Sterling with easy convertibility. This scenario contributed largely to the late development of an active foreign exchange market in Nigeria. During this period, the foreign exchange earned by the private sector (mainly from agriculture) was held in balances abroad by commercial banks, which acted as agents for local exporters. Sequel to the establishment of the Central Bank of Nigeria (CBN) in 1958 and the subsequent centralization, the foreign exchange market became imperative. This ultimately led to the enactment of the first exchange control law in Nigeria-the Exchange Control Act 1962 (Okororie, 2008).

Owing to the strong link between the exchange rate and agricultural export, especially during flexible the exchange rate regime, a period of decrease in agricultural exports volume in associated with increase in earnings.

According to Essien (1990), cocoa products of 116.2 million kg earned ₦239.1 million in 1985 but in 1987 cocoa products of 92.4 million kg earned ₦419.5 million and since then the receipt has continued to increase with the exception of 1984 despite a lower export volume. The monetary value of agricultural exports, which stood at an average of ₦725.8 million in 1981-1989, increased to ₦802.7 million in 1990-1999. On the other hand, the rate of agricultural exports to total exports ratio during the same period stood at 0.038, but declined to 0.014, although the export baskets also expanded with non-traditional export commodities, such as tubers, fruits and spices coming on board (Anyanwu, et al 2010).

From the foregoing, this paper intends to analyse the impact of foreign exchange on agricultural exports in Nigeria and is presented in five sections. Following the introduction, section two is the theoretical framework and empirical literature review while section three covers the methodology and sections four and five are devoted to results and conclusions and policy implications, respectively.

Statement of the Problem

When the economy depended on agricultural exports, exchange rate volatility was less pronounced. Ogunleye 2010 (as cited in Umaru et al., 2013) noted that the real exchange rate in Nigeria has been principally influenced by external shocks resulting from the vagaries of the price of world agricultural commodities and oil price; both are main sources of Nigerian export and foreign exchange earnings. And according to Imimole and

Enoma (2011 as cited in Oyinbo et al 2014), the exchange rate over-valuation prior to deregulation helped to cheapen imports of competing food items as well as agro-based and industrial raw-materials. The result was rapid expansion in the importation of these goods to the detriment of the local production of similar goods, thereby reducing agricultural exports.

During the period of a fixed exchange rate, the Nigerian currency was perceived to have been over-valued. In order to find a realistic value of the naira, a Second-tier Foreign Exchange Market (SFEM) emerged in September 1986 under the Structural Adjustment Programme, which marked the beginning of flexible or floating exchange rate regimes. Various related market-based exchange rate policies were experienced and different downward exchange rates, as a Dual exchange rate system (the introduction of SFEM with the initial First-tier Foreign Exchange Market). In September 1986, the value of the naira stood at 2.0206/$. The Dutch Auction System (DAS) of bidding in April 1987 made the naira depreciate to 4.0179/$. In the single enlarged Foreign Exchange Market with various pricing methods. In July 1987 naira depreciated to 4.2723/$ with the creation of Inter-Bank Foreign Exchange Market (IFEM). In January 1989, the naira depreciated to 12.9377/$. In the pegged exchange rate system in 1994, the naira stood at 21.8861/$ in the Autonomous Foreign Exchange Market (AFEM). In 1995, the naira remained unchanged at 21.8861/$. With the re-introduction of IFEM in October 1999, the naira continued depreciating to 108.000/$. In the Retail Dutch Auction System

(rDAS) of foreign exchange management in July 2002, the naira depreciated to 130.8500/$. In the Wholesale Dutch Auction System (wDAS) in February 2006 to October 2013, the naira depreciated to 141.7600 and again rDAS in 2013 to date (Omotosho, 2015).

Despite the adoption of these policies at various stages to maintain a stable exchange rate, the situation remained abortive. Exchange rate fluctuation continued, especially after the Structural Adjustment Programme (post-SAP era). Therefore, the downward trend of the country's currency impacted greatly on agricultural export product. Previous studies conducted on the relationship between exchange rate and agricultural exports mostly employed OLS, VECM or VAR models to measure either short-run or long-run impacts, such as Okputu *et al* (2012), Umaru *et al* (2013), Oyinbo *et al* (2014) and Fidan (2008). While studies like that of Essien et al (2011) used single crop-cocoa as the proxy of agricultural exports. This study, on the other hand used fourteen (14) cash crops (cocoa inclusive) as the dependent variable and also employed the Autoregressive Distributed Lag (ARDL) model as an analytical tool in the study. This technique has the advantage over VECM or VAR, as it is suitable and applicable for small sample size and can also estimate both short-run and long-run relationships simultaneously.

Consequently, exchange rate fluctuations discourage firms from undertaking investment, innovation and trade. It may also deter firms from entering into export markets, thereby weakening investors' confidence in the sector. Also, it raises the price of imported inputs, such

as seeds, fertilizers, pesticides and capital equipment, thereby reducing the agricultural commodities and the income of farmers and exchange rate risk, which leads to capital reversal considered unfavorable for the economy at these trying times. There is, therefore, the need to conduct study which will investigate the impact of exchange rate fluctuations on agricultural export in Nigeria from 1981 to 2014 on four variables, namely agricultural export volume, exchange rates, relative price of agricultural export and agricultural loan.

In view of the foregoing, this study intends to answer the following research questions:

(1) To what extent do exchange rate fluctuations have impact on agricultural exports volume?
(2) To what extent does relative export price have an impact on agricultural exports volume?
(3) To what extent do agricultural loans have impact on agricultural exports volume?

Objectives of the Study

The general objective of the study is to empirically analyze the impact of the exchange rate fluctuations on agricultural export volumes in Nigeria.
Specific objectives include:

(i)   To investigate the impact of relative exports price on the agricultural exports volumes.
(ii)   To evaluate the effects of agricultural loans on agricultural exports volume.

Research Hypotheses

The following hypotheses are stated for this study:

H_{O1}: Exchange rate fluctuations have no significant impact on agricultural exports volume.

H_{O2}: Agricultural exports prices have no significant impact on agricultural exports volume.

H_{O3}: Agricultural loans have no significant impact on agricultural exports volume.

Theoretical Framework

The main objectives of the exchange rate policy in Nigeria are to preserve the value of the domestic currency, maintain a favorable external reserves position and ensure external balance without compromising the need for internal balance and the overall goal of macroeconomic stability. The use of the exchange rate as an instrument of control in the Nigerian economy has been rather limited. During the period of fixed exchange rate (1960-1986), the country pegged its currency with the Great Britain Pound (GBP) sterling until the devaluation of the sterling in 1967. Thereafter, the country's currency maintained parity with the U.S dollar up to 1973 when the Nigerian pound was changed to the Naira because the exchange rate policy of pegging it to U.S dollar became a drag on its economy, thus depleting external reserves within the periods. The fixed exchange rates were established for both pound sterling and the U.S dollar at £ 0.5833 and U.S $1.5200 to =₦=1.00, respectively (CBN 2002).

The total value of export earnings depends not only on the volume of these exports sold abroad but also on the price paid for them. If export prices decline, a greater volume of exports will have to be sold merely to keep total earnings constant. The main theory for the declining commodities terms of trade is known as the Prebish-Singer hypothesis, after two famous development economists, who explored its implication in the 1950s. They argued that there was and would continue to be (long-term) decline in the terms of trade of primary-commodity exporters due to a combination of low income and the price elasticities of demand (Todaro and Smith 2011).

According to the Heckscher-Ohlin theorem, the immediate cause of international trade is the differences in the relative prices of commodities between countries. These differences in the commodity prices arise on account of the differences in the factor supplies. The Heckscher-Ohlin theorem, for instance, predicted that the capital surplus country specializes in the production and export of capital intensive goods and the labor surplus country specializes in the production and exports of labour intensive goods (Mannur, 1995).

Kandil and Mirzaie (2003) is the basic theory adopted in this study, which states that a positive shock to the exchange rate of the domestic currency (an unexpected appreciation) will make exports more expensive and imports less expensive. As a result, the competition from foreign markets will decrease the demand for domestic products, decreasing domestic output and price. While on the supply side, a positive shock to the exchange rate

(an unanticipated appreciation) decreases the cost of imported intermediate goods, increasing domestic output and decreasing the cost of production. Hence, the aggregate price level.

Conceptual Review of Literature

The exchange rate expresses the value of one currency in terms of another. When one currency appreciates, the other must depreciate (Lipsey and Crystal 1999). The rate is the price of one currency in terms of another (Economic Dictionary 2002). According to Hall and Tailor (1990), the exchange rate is the amount of foreign currency that can be bought with one dollar. Real exchange rate represents the rate at which domestic goods and services can be traded for those produced abroad. An increase in the real exchange rate --- also sometimes referred to as the "terms of trade"---- is good for a country in the sense that its citizens are able to obtain more foreign goods and services in exchange for a given amount of domestic production. The general conclusion then is that the higher the real exchange rate the lower a country's net exports will be holding constant other factors affecting export and import demand (Abel and Bernanke, 1998). The exchange rate changes when the free-market price of one currency rises in terms of another currency or that exchange has "APPRECIATED" and that the value of the currency has appreciated on the foreign exchange market. When the free-market price of a currency falls in terms of foreign currencies, on the other hand, the exchange rate has "DEPRECIATED" (Lipsey 2007). Therefore, a rise in the value of the naira vis-à-vis the dollar raises the dollar

price of Nigerian exports to America and lowers the naira price of Nigerian imports from America. A fall in the value of the naira has the reverse effect.

Empirical Literature Review

There are various studies that have investigated the influence of exchange rate fluctuations on agricultural exports. For instance, Batten and Belongia (1984); Kandilov (2003); Smith (2003); Mustapha and Nishat (2004); Omojimite and Akpokodje (2010); Nessabian and Naghizadeh (2012) and Yanikkaya et al (2013) all assert that there is a negative relationship between real exchange rate and agricultural exports from the demand side. And also studies conducted by Bernadina (2004) and Rano (2008) revealed a negative relation between real exchange rate and non-oil export (agricultural export inclusive) for Russia and Nigeria, respectively. Other studies carried out by Kandil et al (2004); Colacelli (2008); Young (2010); Essien et al (2011); Okputu et al (2012) and Umaru et al (2013) further stated that unanticipated appreciation of the domestic currency increases agricultural output from the supply side, though it depends on the combined effect of the elasticities of demand and supplied. But it weakens the bargaining power of primary goods in developing countries. Thus, the elasticity of supply outweigh, that of foreign demand as in line with the study conducted by Mannur (1995).

Mbutor, Ochu and Okafor (2013) stated that agricultural credit enhances productivity and promotes the standard of living by breaking the vicious cycle of poverty among

farmers. Essien et al (2011); Abedullah et al (2009) and Saboor et al (2009) as cited in Mbutor et al (2013) stated that timely and easy access to agricultural credit enables farmers to purchase the required input and machinery for carrying out farm operations and increasing production. Agricultural producers (mostly peasant farmers) have to produce more as the currency depreciates in order to maintain the same level of income. Rahman (1994); Sabouni and Piri (2008) and Essien et al (2011) stated that the export price is a function of agricultural exports. Therefore, it has a positive relationship with agricultural exports. According to Batten and Belongia (1984), the higher the price of U.S exports relative to those abroad, the smaller would be the demand for U.S agricultural exports.

Yakub (2010) adopted a modified IS-LM framework to investigate the effect of the exchange rate on the output of different (agricultural, manufacturing and services) sectors in Nigeria. Oyinlola et al (2010) employed exports and imports functions to examine the long-run and short-run impacts of the exchange rate and price changes on trade flows in Nigeria. Essien et al (2011), Okputu et al (2012) and Umaru et al (2013) used Ordinary Least Square (OLS) regression to investigate the effects of price and exchange rate fluctuations on agricultural exports in Nigeria. Bernardina (2004), Mustapha and Nishat (2004), Hashemi and Akbari (2009), Hasanov and Samadova (2011) and Oyinbo et al (2014) used the Vector Error Correction Model (VECM) to examine the causal relationship between exchange rate deregulation and the agricultural share of GDP in

Nigeria. Smith (2003) employed the two stages least square (2sls) method to analyze the effect of the real exchange rate on aggregate exports. Fidan (2008), Silva and Ferreira (2012) and Karimi (2014) adopted the VAR model, impulse response function and variance decomposition as method of analysis. Kandil (2009) adopted the Rational Expectation Model to examine the difference between the effects of unanticipated currency appreciation and depreciation on the major components of the trade balance. Goudarzi et al (2012) and Mehare and Edriss (2013) employed the Autoregression Distributed Lag model (ARDL) to investigate the effect of exchange rate volatility on selected agricultural exports (Pistachio, Saffron and dates) in Iran. Yanikkaya et al (2013) used Gravity equation to investigate the bilateral agricultural exports flows of Turkey to 46 countries. And finally, in a study conducted by Mastan (2015) the estimation was made using random effects and difference Generalized Method of Moments (GMM) to examine the impact of exchange rate fluctuations on agricultural exports of Sub-Saharan Africa (SSA) countries.

It is evident from the above review that studies on the impact of exchange rate fluctuations on agricultural export have no dominant approach. The choice of a particular approach or methodology and expected outcomes depend on a particular economy and its nature, the objective of the study and the availability of data

Methodology

The study employed the time-series secondary data, which was sourced from the Central Bank of Nigeria (CBN) statistical bulletin (2014), the International Financial Statistics (IFS) and the National Bureau of Statistics (NBS) websites. Annual data were used and cover the period of 1981 – 2014, that is, 34 observations. The variables employed in this study include the following: agricultural exports volume, domestic export price, consumer price index and world export price, the official exchange rate and agricultural loans. All the variables are expressed in their log form.

The Autoregressive Distributed Lag (ARDL) model was employed and also the classical unit root test (Augmented Dickey Fuller & Phillip-Perron) Bayes Information Criteria (BIC) took into consideration the optimum lag selection included in the model. And also the Generalized Autoregressive Conditional Heteroskedasticity (GARCH) model was used to estimate the volatility of exchange rates in line with the study conducted by Hashemi & Akbari (2009), Goudarzi et al (2012), Umaru et al (2013) and Karimi (2014). And the Breusch-Godfrey test for serial correlation was employed; the model used Johansen-Juselius cointegration to ascertain the long-run relationship among the variables. Other necessary diagnostic tests were carried-out.

The model is given as

$$AEV = f(OER, REP, AGL) \text{----------------------} (1)$$

$$\ln AEV_t = \beta o + \beta_1 \ln AGL_t + \beta_2 \ln OER_t + \beta_3 \ln REP_t + U_t \text{ -- } (2)$$

$$\beta_1 > 0; \beta_2 > 0; \beta_3 < 0$$

Where:

AEV = agricultural export volume.

REP = relative export price.

OER = official exchange rate.

AGL = agricultural loans.

β_0 = vector of the intercept.

β_1 = vector of the parameter of agricultural loans.

β_2 = vector of the parameter of official exchange rate.

β_3 = vector of the parameter of relative export price.

U = error term.

t = time period.

Data Presentation

The Unit Root Test

The time-series data were tested for unit roots using Augmented Dickey Fuller (ADF) and PP with the assumption of trend and intercept. The Phillips-Perron test results show that all the variables under study were non-stationary at level form (exhibit random walk) but stationary at first difference at the 1% level of significance.

Table 1A ADF tests

Variables	ADF Unit Root (at level)		ADF Unit Root (at first difference)	
	T-Statistic	Probability	T-Statistic	Probability
LAEV	-1.896252	0.6338	-5.601287***	0.0004
LAGL	-3.001138	0.1470	-5.734712***	0.0003
LOER	-0.868079	0.9480	-5.344886***	0.0007
LREP	-2.146658	0.5021	-5.524745***	0.0004

Note: *** indicate stationary at 1% level of significance. Lag length selection was automatic based on Schwarz Information Criterion.

Source: extracted from estimation output using E-views 9.0

Table 1B PP Unit Root tests

Variables	PP Unit Root (at level)		PP Unit Root (at first difference)	
	T-Statistic	Probability	T-Statistic	Probability
LAEV	-2.022050	0.5682	-5.869886***	0.0002
LAGL	-2.942443	0.1630	-7.957190***	0.0000
LOER	-0.834082	0.9518	-6.196275***	0.0001
LREP	-2.146658	0.5021	-5.575597***	0.0004

Note: *** indicate stationary at 1% level of significance. Lag length selection was automatic based on Schwarz Information Criterion.

Source: extracted from estimation output using E-views 9.0

As indicated in both Tables above, all the variables under consideration appear to be of 1(1) variable (i.e. stationary at first difference).

Cointegration Test

Table 2 Result of Johansen-Juselius Cointegration Tests

Hypothesized No. of CE(s)	Trace Statistics	Max-Eigen Statistics	Critical Values (5%) Trace	Max-Eigen
None r = 0	71.45333***	38.81344***	47.85613	27.58434
At most r ≤ 1	32.63988**	22.84978**	29.79707	21.13162
At most r ≤ 2	9.790101	9.245754	15.49471	14.26460
At most r ≤ 3	0.544347	0.544347	3.841466	3.841466

Note: (***) and (**) indicate 1% and 5% for Trace and Max-Eigenvalue cointegration eqn(s) at the 0.05 level.

The above Table shows both the Trace test and the Max-Eigen test are statistically significant to reject the null hypothesis of **r ≤ 1** and **r ≤ 2** at 1% and 5% significance level, respectively. Therefore, this signifies that there are two long-run cointegration relationships between the dependent and independent variables. As the model contains a cointegration relationship among the variables, then we can proceed to ARDL and the long run equation using the lag at which there is no autocorrelation (i.e. lag 2) based on VAR lag selection.

Table 3A Summary of long-run ARDL results of the computer printout is given in the table below.

4.3 Regression Results

Dependent Variable: Agricultural Exports Volume Independent Variables	
Agricultural loan	0.053113 (2.042916)*
Official Exchange Rate	0.129145 (9.066228)***
Relative Export Price	0.096552 (4.660558)***
C	8.634484

Note: figures in parenthesis are t-ratio, parameters are significant at 10% (*); 5% (**); 1% (***).

Table above depicted long-run relation which is written as;

Therefore, lnaevt = 8.634484 + 0.053113agl + 0.129145oer + 0.096552rep

Se	(0.025999)	(0.014245)	(0.020717)
T-sta	[2.042916]	[9.066228]	[4.660558]

From the Table above, Autoregressive Distributed Lag Model **c** = 8.634484, which is statistically significant at 1%, confirming the existence of a long-run relationship among the independent and dependent variables. And all the variables significantly affect agricultural exports volume (lnaev) at 1% and 10% significant levels in the long-run. Although the relative price index has a wrong sign, i.e. contrary to what the economic theory suggests from the demand standpoint, from the supply viewpoint, farmers (suppliers) produce more output when the price

rises. Therefore, the positive relationship between relative exports price and agricultural export volume is in order.

Table 3B Summary of short-run ARDL results of the computer printout is given in the table below. Regression Results

Dependent Variable: Agricultural Exports Volume Independent Variables:	
Agricultural loan	0.031172
	(2.088099)***
Official Exchange Rate	0.075290
	(3.286094)***
Relative Exports Price	-0.064126
	(-3.373400)***
R^2	0.95
F	96.87822

Note: the figures in parentheses are the t-ratio, parameters are significant at 1% (***).

Table above depicted short-run relation which is written as:

Therefore, lnaevt = 0.031172agl + 0.075290oer - 0.064126rep

Se	(0.014929)	(0.022912)	(0.019009)
T-sta	[2.088099]	[3.286094]	[-3.373400]

Results

As expected during the short-run period, there is a significant positive relationship between agricultural exports volume and agricultural loans. An increase in agricultural loans by one million, on average increases agricultural exports volume increases by 0.031%. There

is a significant positive relationship between agricultural exports volume and the official exchange rate. An appreciation of the naira by one unit, on average increases agricultural exports volume by 0.075%, which is the normal expectation from the supply side. And finally, there is a significant negative relationship between agricultural exports volume and relative exports price. Thus, a decrease in the relative price by one unit increases agricultural exports volume by 0.064%. All the parameters are statistically significant at the 1% level.

The goodness of fit means the R^2 value of about 0.95 means that 95 percent of the variation in agricultural exports volume is explained by agricultural loans, the official exchange rate and relative price of agricultural exports jointly.

To verify the adequacy of the model, we compared the F-statistic with critical F value at the 5% level. Fdf_1, Fdf_2 upper 5% = (F_{k-1}, F_{n-k}, $\alpha = 0.01$) = (F_{4-1}, F_{34-4}, $\alpha = 0.01$) = ($F_{3, \ 30}$ $\alpha = 0.01$) = 4.51 (one tail) since F calculated (96.87822) is greater than F tabulated (4.51). We conclude that our model is adequate and significant.

Where:
Fdf_1 = degree of freedom one.
Fdf_2 = degree of freedom two.
K = number of parameters.
N = number of observations.
α = percentage

Conclusion and Policy Implications

The study investigated the contemporaneous relationship among the official exchange rate, agricultural credit and the relative price of agricultural exports on agricultural exports volume. The findings of the study revealed that the official exchange rate and the relative price of agricultural exports are shown to be key determinants of Nigerian agricultural export volumes and thereby have a strong effect, generally in line with the empirical findings of Kandil et al (2004), Young (2010), Essien et al (2011), Okputu et al (2012) and Umaru et al (2013). And the effect of agricultural credit is found to be minimal on agricultural export volumes. All the parameters are statistically significant at the 1% level.

The inter-temporal effect of the aforementioned variables on agricultural export volumes is also similar to contemporaneous effect with the relative price of agricultural exports, which revealed a positive sign, and is contrary to normal expectations, though all the coefficients are statistically significant at the 1% level.

With regard to volatility, the analysis indicates that exchange rate volatility is probably not a major concern from the perspective of enhancing agricultural exports output; the effects of lower volatility are indirect and originate from long-term exchange rate commitments, such as currency unions and pegged exchange rate rather than short-term exchange rate fluctuations.

In order to address the aforementioned challenges the paper recommends the following:

The operation of a market-based exchange rate system so far has revealed gross imperfections. To boost agricultural export volume, the foreign exchange market has to be properly guided to ensure its orderliness and the proper equitable allocation of foreign exchange resources. As experienced in 1994 to 1998, the intervention of monetary authority ensured relative stability for the official exchange rate, since the appreciation of the exchange rate stimulates (increases) agricultural export output.

To strengthen and fully reap the gain of agricultural credit, as the analysis suggests, a weak link between agricultural loan and agricultural exports volume, government and private sectors, such as Banks, should focus directly on providing farm implements on credit basis, such as tractors, harvesters, etc. and farm input, such as improved seedling, pesticides and fertilizer, etc. and proper monitoring and supportive infrastructure, such as power, roads and storage facilities rather than loanable fund that can be redirected to other activities other than agriculture.

Government should also reduce the price of agricultural exports (mostly cash crops) indirectly through the provision of fiscal incentives example, tax free on import of agricultural processing equipment and tax holidays for other agriculture related input, thereby reducing the cost of production and the price of the products.

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