© 2015 IJSRST | Volume 1 | Issue 5 | Print ISSN: 2395-6011 | Online ISSN: 2395-602X
Themed Section: Science and Technology

An Analysis of Determinants of Cocoa Export Trade In Nigeria (1981 -2014): A Bounds Testing Approach

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ABSTRACT

This study examined the determinants of cocoa export in Nigeria between 1980 and 2014 using Autoregressive Distributed Lags modeling approach to cointegration, with Secondary data spanning 1980 to 2014 on Nigeria's value of cocoa beans exports, volume of cocoa beans exports, cocoa beans export, cocoa beans output, comparative export performance index for Nigeria in cocoa, world volume of cocoa bean export, exchange rate, price of crude oil, per capita income which were obtained various issues of CBN statistical bulletin, CBN annual reports and statement of account, statistical database of the Food and Agricultural Organization of the United Nations (FAOSTAT). The cointegration results show there is a long-run equilibrium relationship between cocoa export volume and the selected explanatory variables. The OLS results provide a positive and significant relationship between cocoa comparative export performance, and world export volume of cocoa. However, the results show an inverse relationship between cocoa export volume in Nigeria and per capita income, cocoa export price and price of crude oil. The findings of this study indicate that Nigeria has a comparative advantage in cocoa export. An enabling environment and farming- incentives supply created by Nigerian government and relevant export partners will go a long way in stimulating cocoa producers and also reposition Nigeria towards sustainable cocoa production and export in the country.

Keywords: Export, Cointegration, Cocoa, Export price.

I. INTRODUCTION

Agriculture has been the most important single activity in the Nigeria economy, with about 70% of the total working population engaged in it. In spite of the predominance of the petroleum sub-sector in Nigeria's economic growth and development, agriculture remains a major source of economic resilience (Ojo and Akanji 1996). It is the largest non-oil export earner, a key contributor to wealth creation and poverty reduction, the largest employer of labour (Central Bank of Nigeria, 2005). Cocoa export plays a pivot role in this regard in Nigeria.

Cocoa belongs to the family steruliacaea and genus theobroma. It is a perennial tree crop grown in tropical climates, with over 66 per cent produced by smallholder farmers in West Africa. Since the introduction of the crop into Nigeria in about 1874 (Oyedele, 2007), it has grown to be a major export crop. Nigeria is the third largest producer of cocoa in Africa, producing about 12 percent of the total world production behind Ivory Coast which produces 35 percent and Ghana's 13 percent (Wilcox and Abbot, 2004).

According to Erelu (2008), the production capacity of cocoa in Nigeria at present has reached about 385, 000 metric tones per annum, an increase of 215, 000 metric tones from year 2000 production level. This disposition places Nigeria as the fourth highest cocoa producing nation in the world after Ivory Coast, Indonesia and Ghana. By implication, Nigeria competes favourably with other frontline producing nations in supplying the world market.

In terms of foreign exchange earnings, no single agriculture export commodity has earned more than cocoa. With respect to employment, the cocoa sub-sector still offers, quite a sizeable number of people employment both directly and indirectly. It is an important source of raw materials, as well as source of revenue to governments of cocoa production states (Nkang 2007).

However, the oil boom in the early nineteen seventies caused a drastic fall in the percentage contribution of the agricultural sector to 35 percent of GDP in the early eighties. The nation used to produce about 15% of world cocoa and was second largest producer of the crop in the world in the 60s (Utomakili and Abolagba 1996). Despite the huge potentials of cocoa in stimulating agricultural growth in Nigeria, it is surprising and unfortunate to note that the trend of cocoa production in Nigeria is not on a steady accent at a time the country eagerly seeks for diversification from its monolithic economy that is built around crude oil exports to launch herself into the world's 20th greatest economies come 2020 (envisaged in Vision 2020). At present Nigeria has lost its role as one of the world's leading exporters of agricultural commodities. In addition, the country is currently suffering from a declining as well as fluctuating income from its heavy dependence on oil exports.

Today, the country is far behind the New World major producers such as Cote'd' Ivoire, Ghana and Indonesia. One of the most dramatic events in Nigeria over the past decade was the devaluation of the Nigerian Naira with the adoption of a Structural Adjustment Programme (SAP) in 1986. A cardinal objective of the SAP was the restructuring of the production base of the economy with a positive bias for the production of agricultural exports. The foreign exchange reforms that facilitated a cumulative depreciation of the effective exchange rate were expected to increase the domestic prices of agricultural exports and therefore boost domestic production (Adubi and Okunmadewa 1999).

However, the production of this export crop in Nigeria has suffered a reduction in recent years owing to a number of factors (Oluyole and Sanusi, 2009). Villalobos (1989) identified some of these factors as: low yield of the crops, land constraint, disease incidence and pest attack , inadequacies in the supply and use offarm input and low rate of adoption of appropriate technology . In addition, Oduwole (2004) in his study identified aging cocoa farms as one of the factors responsible for the decline in cocoa production in south western Nigeria. Many farms were over 40 years old and such farms constitute as much as 60 percent of the cocoa farms in Nigeria. Farms in South – south and South eastern zones are relatively younger and mostly in their productive phase (Oluyole and Sanusi, 2009).

According to Verter and Bečvářová (2014), Nigerian cocoa products were historically marketed through monopoly by the Nigerian marketing board (NCB), under the direct control of the government (Cadoni, 2013). To foster trade liberalization in African countries, the World Bank (WB) and the International Monetary Fund (IMF) introduced a program, called Structural Adjustment Programme (SAP) between 1980 and 1990. The banks stressed that agricultural marketing boards in countries like Nigeria and Ghana were ineffective, and they suggested in liberalizing agriculture following to the liberalization of foreign exchange or free market pricing policies. Consequently, the government of Nigeria was the first West African country to scrap its board (abolished marketing boards in the country) in 1986, and liberalized cocoa trade in the same year (Gilbert, 2009).

Through SAP, Verter and Bečvářová (2014) explained; that Nigeria was expected to implement certain policy reforms as a condition for receiving financial assistance from these world's financial institutions. The policy conditions included among others: trade liberalization; privatization of state corporations; and currency devaluation. The cogent objectives for liberalization in cocoa products were to accelerate competition in the marketing chain and export, to hand off states and donors from the burden of marketing cocoa products while at the same time obtaining a higher share of the world prices for cocoa producers. They argued that, markets are more efficient and competitive than the State in resource allocation and that the appropriate role of the government should be to provide a conducive environment and investment climate for the private sector to flourish. During the SAP period in Nigeria, currency exchange control on all currency transactions were also abolished as soon as the era of liberalization

began in 1986. They argued that floating exchange rate is better than fixed exchange rate. Thus, market forces should be allowed to determine the value of domestic currency against the basket of international currencies.

Cadoni (2013) reported that overall, export crop liberalization, and cocoa liberalization in particular, has led to a declining use of agricultural inputs, as well as to declining quality of cocoa beans. Specifically, the switch to private trade lead to lesser quality control and declining export coordination, with lesser opportunities for forward selling, sales by tender and sales on CIF basis. Specifically, exports of cocoa beans represented close to 60 percent of total production between 2006 and 2010 with the exception of 2006 and 2008. Data on export quantities are conflicted between sources (FAOSTAT, UNCOMTRADE and national sources) UNCOMTRADE and the Nigeria Custom Service reported very limited export amounts in 2006.

Many researchers in the past had tried to examine the determinants of cocoa export trade in Nigeria. According to Verter and Bečvářová (2014), Abolagba et al. (2010) and Ndubuto et al. (2010) attempted to explore factors that seem to be affecting the export of cocoa from Nigeria. They found that Nigerian cocoa production positively associated with cocoa exports from the country to other parts of the world. They stressed that Nigeria has high comparative advantage in the exportation of cocoa products.

Daramola (2011) in his study, examined the export performance of cocoa and palm kernel in Nigeria. Applying cointegration and error correction model (ECM), the results he obtained showed an association between cocoa export and quantity produced, producer price, world prices
and real exchange rates in Nigeria. He also discovered a long run relationship between cocoa export and all the explanatory variables in the cointegration model. He emphasised that the world price is a strong determinant of cocoa export from Nigeria, the world price of cocoa export is an incentive for farmers to increase production and export.

Akanni *et al* (2004), examined the impacts of trade liberalization on the major agricultural products such as cocoa, palm kernel, groundnut and palm oil in Nigeria. They found out that there is free trade associated with these export commodities. They argued that, stakeholders should formulate policies that would stimulate investment in cocoa and other products to increase annual output, export and earnings.

Meanwhile, Yusuf and Yusuf (2007) in examining some factors that determine the export performance of three major export crops in Nigeria (cocoa, rubber and palm kernel) during the era of liberalization applied error correction model (ECM) to the study. The results showed that each of the three variables in the equation was cointegrated. Their results indicated that there exist both short run and long run equilibrium relationships between the dependent variables and their determinants. They called for the promotion of agricultural exports as an integral tool to reduce the burden of Nigeria's dependence on oil exports.

While many of those studies have used either OLS or the Johansen's error correction modeling approach this study will be applying the ARDL approach to cointegration analysis. Also, those studies did not include all the variables used in this study. In view of the significance of cocoa as a principal crop export and a major source of foreign earnings from non-oil exports in Nigeria, it is has become very important more than ever before to examine the factors driving cocoa export in Nigeria.

This study is organized as follows: section 1 presents an introduction alongside some empirical evidence related cocoa exports in Nigeria. Section 2 presents the methological approach to the study. Section 3 shows the results of the analysis and its presentation while section 4 presents the conclusion and policy recommendations.

II. METHODS AND MATERIAL

A. Model Specification

ARDL modeling approach to cointegration was used in examining the determinants of cocoa export trade in Nigeria. This study sticks to the use of fewer but relevant variables among the lots noted in literature. The study set volume of cocoa beans exported as the dependent variable.

Empirically, the model is stated as ;

$$LEXPvol = f(LEXP, LCPROD, LCEP, LEXPvolW, LER, LPo, LGDP) \quad \ldots.1$$

Where;

$LEXPvol =$ Natural log of volume of cocoa beans exports from Nigeria

$LEXP =$ Natural log of cocoa beans export

$LCPROD =$ Natural log of cocoa production (output) for Nigeria

$LCEP =$ Natural log of comparative export performance index for Nigeria in cocoa beans

$LEXPvolW =$ Natural log of world volume of cocoa bean export

$LER =$ Natural log of exchange rate

$LPo =$ Natural log of price of crude oil

$LGDP =$ Per capita income

In as much as various research works have made use of average world price as proxy for export price, I deem this inappropriate. This stand it take is justified on the grounds that, in spite of the world price quoted on the international markets for exports of various commodities, countries face different prices based on the quality of the products they export (with some attracting premiums in the process), their primary destinations and on their respective performances. In this regard, it made use of the export price faced by exporters from Nigeria instead of the world market price quoted on various websites. The export price for cocoa beans from Nigeria is calculated as follow;

$$Export\ \mathrm{Price} = \frac{Export\ value}{Export\ volume} * 1000$$

The outcome represents the export price of cocoa beans. It multiplies the primary fraction by 1000 because value of exports reported by the agricultural trade statistics on the FAO is in$1000, while the volume of exports is in tonnes. The comparative export performance index (CEP) is as well computed using the following formula:

$$CEP = \frac{(X_{IB} / X_B)}{(X_{IA} / X_A)}$$

Where;

$X_{IB} =$ Value of cocoa beans exports from Nigeria

$X_B =$ Total value of agricultural exports from Nigeria

$X_{IA} =$ Value of world exports of cocoa bean

$X_A =$ Total value of world agricultural exports

In line with specification by Shende and Bhole (1999), Kumer *et al* (2008) and Nwachuku *et al* (2010), the modelling included world volume of cocoa beans exports to help capture implication of changes in intentional trade and demand on exports from Nigeria.

B. ARDL Model Specification

As obtained in Fosu and Magnus (2008), in order to empirically analyze the long-run relationships and dynamic interactions among the variables of interest, the model was estimated by using the Bounds testing cointegration procedure developed by Pesaran et al (2001). This procedure was adopted for the following three reasons. Firstly, the bounds test procedure is simple as opposed to other multivariate cointegration techniques such as Johansen and Juselius (1990). Secondly, it does not require the pre-testing of the variables included in the model for unit roots unlike other techniques, it is applicable irrespective of whether the regressors in the model are purely or mutually cointegrated. Thirdly, the test is relatively more efficient in small or finite sample data sizes as is the case in this study. Following Pesaran *et al* (2001), we applied the bounds test procedure by modeling the long-run equation as a general vector autoregressive (VAR) model.

$$z_t = c_0 + \beta t + \sum_{i=1}^{p} \phi i z_{t-i} + \varepsilon_t, t = 1,2,3,\ldots T \quad \ldots 2$$

With c_0 representing a (k+1)-vector of intercepts (drift) β denoting a (k+1)-vector of trend coefficients. Pesaran et al (2001) further derived the following vector equilibrium correction model (VECM) corresponding to

$$\Delta_{zt} = c_0 + \beta t + \pi z_{t-1} \sum_{i=1}^{p} \Gamma_i \Delta z_{t-1} + \varepsilon_t, t = 1,2,3 \ldots T \quad \ldots.3$$

Where the (k+1) * (k+1) matrices

$$\prod = I_{k+1} + \sum_{j=i+1}^{p} \psi_i, i = 1,2,\ldots\ldots, p-1$$

Contain the long-run multipliers and short-run dynamic coefficients of the VECM. Z_t is the vector of the variables y_t and x_t respectively. y_t are dependent variables defined as $LEXPvol$ where $LEXPvol = f(LEXP, LCPROD, LCEP, LEXPvolW,$ x_t is a vector matrix of 'forcing' regressors. We further assumed that a unique long-run relationship exists among the variables, the conditional VECM can now become:

$$\Delta y_t = C_{y0}\beta_t + \delta_{yy} y_{t-1} + \delta_{xx} x_{t-1} + \sum_{i-1}^{p-1} \lambda_i \Delta y_{t-1} + \varepsilon_{yt}, t = 1,2,\ldots..,T \quad \ldots 4$$

On the basis of equation (4) above, the conditional VECMs of interest can now be specified as:

$$LEXPvol = f(LEXP, LCPROD, LCEP, LEXPvolW, LER, LPo, LGDP)$$

Where δ the long run multipliers, c_0 are is the drift and ε_t are the white noise errors. All variables are previously defined.

There are 3 steps in testing the co-integration relationship between cocoa import demand and its explanatory variables. First, we estimated equation above by ordinary least square (OLS) technique. The presence of contegration was traced by conducting an F-test for the joint significance of the coefficients of the lagged levels of the variables. That is the null hypothesis

HO: $d_1 = d_2 = d_3 = d_4 = d_5 = 0$

against the alterative.

HA : d_1 or d_2 or d_3 or d_4 or $d_5 \neq 0$.

We denoted the test which normalize by $LEXPvol = f(LEXP, LCPROD, LCEP, LEXPvolW,$ Two asymptotic critical values bounds provide a test for cointegration when the independent variables are I(d) (where $0 < d < 1$): a lower value assuming the regressors are 1(0) and an upper value assuming purely 1(1) regressors. If the computed F-statistic is less than lower bound critical value, then we reject the null hypothesis and conclude that there exists steady state equilibrium between variables under study. However if the computed F-value falls within lower and upper bound critical values, then the result is in conclusive. The appropriate critical values for the F-tests are obtained. Critical values for the 1(0) series are referred to as the upper bound critical values while the critical values for the 1(1) series are referred to as lower bound critical values. For the second step, once the cointegration has been established consequent upon which a unique long run relationship exists among variables of interest, we specify a conditional ARDL (P, q_1, q_2, q_3, q_4, q_5, q_6, q_7, q_8, q_9) long run model for $LEXPvol$ as:

$$LEXPvol = f(LEXP, LCPROD, LCEP, LEXPvolW, LER, LPo, LGDP)$$

The lags length in the ARDL model was selected based on Schwarz Bayesian criterion (SBC).

In the final step, we obtained the short-run dynamic elasticities by estimating an error correction model associated with the long run estimates. This is specified as follows:

$$LEXPvol = f(LEXP, LCPROD, LCEP, LEXPvolW, LER, LPo, LGDP)$$

The symbols ϕ,ω,η, and e are the short-run dynamic elasticities of the model's convergence to long-run equilibrium and λ is the speed of adjustment. Δ represents the first difference operator and ECM_{t-1} is the one period lagged error correction term. The coefficient measures the speed of adjustment to obtain equilibrium in the event of shocks to the system.

C. Data Sources

Secondary data was employed for this study and specifically time-series data spanning from 1980 to 2014. Nigeria's value of cocoa beans exports, volume of cocoa beans exports, cocoa beans export, cocoa beans output, comparative export performance index for Nigeria in cocoa, world volume of cocoa bean export, exchange rate, price of crude oil, per capita income. The data were obtained various issues of CBN statistical bulletin, CBN annual reports and statement of account, statistical database of the Food and Agricultural Organization of the United Nations (FAOSTAT).

III. RESULTS AND DISCUSSION

A. Result of Unit Root Test

In order to examine the cointegration properties of a series in the ARDL methodology, it is important to examine the unit root properties of the series first. The Augmented Dickey Fuller (ADF) test was employed to

study the unit root properties of the data as shown in table 1. The unit root result shows that domestic cocoa export volume ($LEXPvol$) , world export volume of cocoa ($LEXPvolW$) , comparative export performance ($LCEP$), domestic cocoa production in Nigeria ($LCPROD$) , and crude oil price (LP_o) are all stationary at levels and therefore all have order of integration of 0 that is they are all I(0). While real exchange rate (LER), Per Capita Income ($LGDP$) and cocoa export price ($LCEXP$) have unit root properties i.e. they are all stationary at first differencing which implies they have order of integration of I(1). It is observed from the unit root test that none of the variables have order of integration of 2 that none of them is I (2). This implies that all the variables can be used for the ARDL modeling approach to cointegration.

Table 1: Result Augmented Dickey Fuller Unit Root Test.

Variables	**t-statistics**	**t-statistics**	
	Levels	**1st Differential**	**Order of Integration**
LEXvol	5.336***	6.052***	0
LEXPvolW	-5.336***	-6.051***	0
LCEP	-5.991***	-11.187***	0
LCPROD	-3.734**	-5.340***	0
LER	-2.662	-3.738**	1
LGDP	-0.099	-3.511**	1
LCEXP	-1.266	-6.285***	1
LP_o	-3.740**	-8.520***	0

Source: Data Analysis, 2015

*** Significant at 1% level
** Significant at 5% level
* Significant at 10% level

B. Co- integration Results and Diagnostics

In the section, ARDL (Autoregressive Distributive Lags) in applied to test the co- integration. For this procedure it is essential to determine the order of lag on the first difference of the variables. Schwarz Bayesian information criterion (SBC) was applied to obtain the lag lengths of each of the variables to be included in the model. OLS regression is estimated for the first different part of the equation and then tested for the joint significance of the parameters of the lagged level variable when added to the first regression.

Now, a long run relationship between the series is observed. According to the computed F- statistics from the Pesaran test reported in table 2, we can reject the null hypothesis of no cointegration at 1% significant level for determinants of cocoa export trade in Nigeria. The computed F- statistics for export volume equation is 5.763 and it is greater than the upper bound critical value of 4.694 at the 1% level of significance. This indicates that the alternative hypothesis of the existence of a unique co-integration relationship between cocoa exports and its determinants can be accepted for Nigeria in this case. In order words, that proved cocoa exports price, cocoa production (output) for Nigeria, comparative export performance index for Nigerian cocoa, world volume cocoa beans export, exchange rate, per capita income and price of crude oil are bound together in the long run relationship (cointegrated) when the volume of cocoa beans export is made the dependent variable.

Table 2: ARDL co-integration test for long – run relationship on export volume of cocoa beans

	$LEXPvol = f(LEXP, LCPROD, LCEP, LEXPvolW, LER, LPo, LGDP$ K = 7	5.763
Critical values	Lower Boun	Upper Bound
1%	3.418	4.694
5%	2.752	3.883
10%	2.410	3.492

Source : Data analysis, 2015

C. Long – run and Short- run error correction results and diagnostics for cocoa export volume in Nigeria.

This study made use of an ARDL approach to estimate and validate the long-and short-term determinants of cocoa export in Nigeria. Applying the ECM version of the ARDL model shows that the error correction coefficient, which determines the speed of adjustment,

has an expected and highly significant negative sign. The results indicate that deviation from the long-term cocoa export is corrected by approximately by about 68.3% in the following year for real prices of rice and wheat respectively. The estimated model passes a battery of diagnostic tests and the graphical evidence (CUSUM and CUSUMQ graphs) indicate that the model is fairly stable during the sample period. The analysis of the stability of the long-run coefficients together with the short-run dynamics, the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUM) of cocoa export in Nigeria point to the in-samples stability of the model (see CUSUM and CUSUMQ in Figures 1 and 2).

The Autoregressive conditional heteroscedasticity (ARCH) test for testing heteroscedasticity in the error process in the model has an F-statistic of 2.701 which statistically insignificant. This suggests that there is no heteroscedasticity in the model. The Breusch-Godfrey serial correlation Lagrange Multiplier (LM) test for higher order – serial correlation with an F-statistic of 0.883 which is also statistically insignificant could not reject the null of absence of serial correlation in the residuals. The Jacque – Bera X^2 statistic of 4.093 for the normality in the distribution in the error process shows that the error process is normally distributed. From the battery of diagnostic tests presented above, this study concludes that the model is well estimated and that the observed data fits the model specification adequately, thus the residuals are expected to be distributed as white noise and the coefficient valid for policy discussions.

It could be observed from the results in table 3 that the coefficient of error correction term (ECM) caries the expected negative sign and it is significant. The significance of the ECM supports co-integration and suggests the existence of long- run steady state equilibrium between cocoa export volume and other determining factors as specified in the model. The coefficient of -0.683 indicates that the deviation of cocoa export value from the long- run equilibrium level is corrected by about 68.3% in the current period.

The result in table 3 shows that cocoa export price had a negative impact on cocoa export volume. The significant and negative coefficients 0.205 in the long run and -0.443 in the short run signifies that cocoa export volume responded negatively to the change in cocoa export prices. This result suggests that a unit increase in export price will reduce cocoa export volume by 0.205 and 0.443 in the long run and short run respectively. This is true if we consider the fact that after the abolition of the cocoa commodities board in 1986 in Nigeria, cocoa quality regulatory mechanisms was also removed which subsequently compromised cocoa quality since that that and hence its export prices.

The comparative export performance index which reflects Nigeria's competitive advantage in cocoa export has a positive coefficient of 0.581 in the long -run. In the short –run, the coefficient is 0.190 and it is significant at 5% level. Nigeria being the 4th world largest producer of cocoa still has a significant comparative advantage in cocoa output. This could largely be due to the breed of cocoa that is cultivated in Nigeria, good soil types which supports cocoa cultivation and results of various research works towards cocoa productivity increase in Nigeria. Nigeria should explore other factors giving it a comparative advantage in cocoa production and capitalize it to drive the export of cocoa in Nigeria.

The world volume of cocoa beans export had a positive and significant effect on the volume of cocoa bean exported from Nigeria in both the short run. The coefficient (0.468) is statistically significant in the short-run at 5%. The result suggests world export volume of cocoa especially from the other high ranking cocoa producers in the world is not sufficient enough to significantly affect cocoa export in Nigeria. Instead, it is making room for significant cocoa export from Nigeria due to increasing demand globally.

Similarly the table shows that the coefficient of cocoa production in Nigeria for both the short- run and long run were negative. During the long- run a coefficient of -0.237 was observed while in the short- run a coefficient of -0.158 was observed. However, both were not significant statistically.

Per capita income in Nigeria which was proxied as real GDP has a negative and significant effect on cocoa export in Nigeria in the short -run. The coefficient is -0.392 in the short-run and it is significant at 1%. This result although contrary to a priori expectation could be understood if we consider the fact that the economy of

Nigeria is now over reliance on crude oil export which also account for more that 60% of Nigeria's income. Hence, a unit increase in the income accruing to the nation through crude oil export will cause a further neglect of the agricultural export sector of which cocoa is a major player.

The table shows a positive coefficient of crude oil price (0.051) in the long run but a negative coefficient of (-0.121) in the short run. However, while the negative coefficient in short run is statistically significant, that of the long-run is statistically insignificant. This result suggests that the crude oil price has no significant effect on cocoa production especially in the long- run. This negates the theoretical a priori expectation that the increase in the price of crude oil would cause a shift away from volume of export and discourage local production of cocoa bean. The expectation is however supported for the Nigeria cocoa sector in the short-run.

The result in table 3 shows that the real exchange rate has a negative but insignificant effect on the volume of cocoa export volume both in the long- run and in the short-run. The result is contrary to theoretical expectation of the devaluation of the nation's currency which is one of the major components of SAP.

Table 3 : ARDL Static long –run and Short-run error correction model estimate for cocoa export in Nigeria *Selected Model: ARDL (1,1,1,0,0,1,1,0)*

Static Long – run equation	**Parsimonious Short – run equation**
Constant 1.755(0.255)	Constant 0.022(1.437)
$LGDP$ 0.029(0.321)	$\Delta LGDP(-1)$ -0.392(-4.370)***
$L\rho_o$ 0.051(0.288)	ΔLP_O -0.121(-2.620)**
LEX -0.042(-0.392)	ΔLEX -0.028(-0.470)
$LCPROD$ -0.237(-0.660)	$\Delta LPROD$ - 0.160(-1.570)
$LCEXP$ 0.205(2.912)**	$\Delta LCEXP$ -0.443(-3.647)***
$LCEP$ 0.581(2.199)**	$\Delta LCEP$ 0.190(3.782)***
$LCEXVoW$ 0.616(0.256)	$\Delta LCEXVoW$ 0.469(2.371)**
	$\Delta ECM(-1)$ -0.535(-7.416)***
	R^2 = 0.683
	AR LM F = 0.883(0.603)
	ARCH F = 2.701 (0.402)
	Normality X^2 = 4.093 (0.129)

Source: Data Analysis, 2015

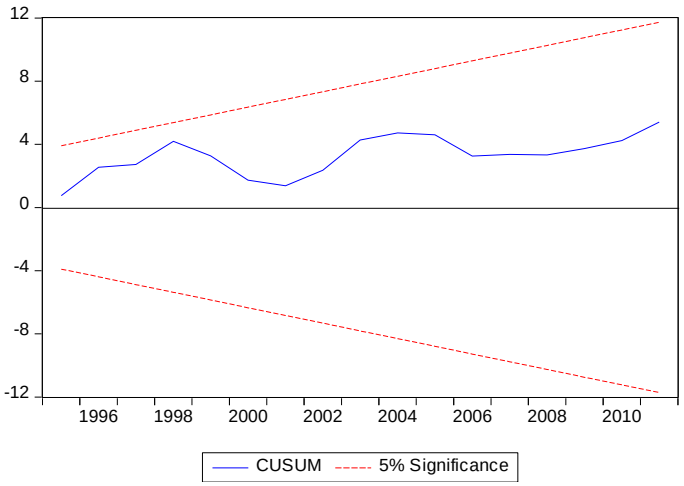

Figure 1: Plot of CUSUM statistics for coefficients of cocoa export in Nigeria

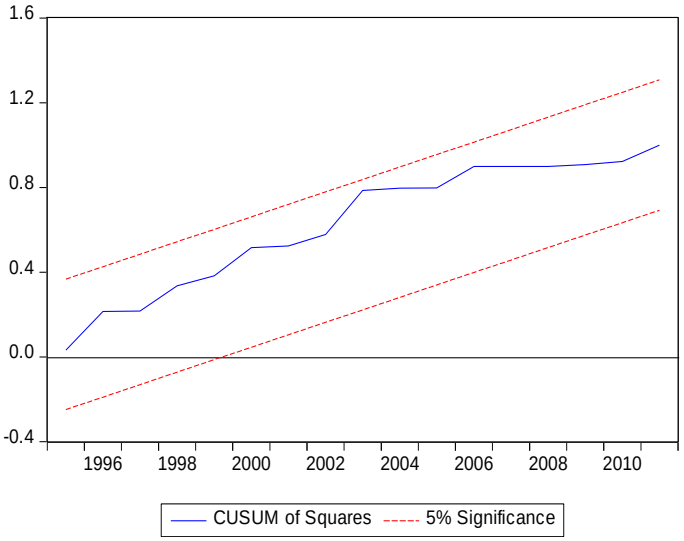

Figure 1. Plot of CUSUMQ statistics for coefficients of cocoa export in Nigeria

IV. SUMMARY AND CONCLUSION

The study estimated the key determinant of cocoa export volume in Nigeria using time series data. This results shows that in the long run, Nigeria's comparative advantage in cocoa production is the most important determinant of cocoa export for the nation. In the short – run however, all the independent variables used had a significant effect on the volume of cocoa export except the real exchange rate and local cocoa production.

V. RECOMMENDATION

The following are therefore recommended to improve cocoa export in Nigeria

- Policy actions regulating and further improving the prices of cocoa should be formulated and implemented. While cocoa farmers should be encouraged with the provision of cocoa production incentives such as high yielding varieties and other inputs, they should be educated on appropriate cocoa preservation techniques otherwise Nigeria's cocoa prices will continue to fall due to poor quality.
- Measures should be put in place to address existing inefficiencies in the domestic policy and trade environment, as this could suitably position the country to benefit from increase in international trade.
- To revive Nigeria cocoa export industry, measures should be put to place to significantly increase production and improve on the country's cocoa export sector competitiveness. In export of the commodity though quality improvement and use of appropriate export enhancing initiatives like reduction in farm taxation.

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