



The Impact of Financial Sector Reforms on the Nigerian Agricultural Export Performance

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Authors' contributions

All the authors collaborated to carry out the research. Author AJA was responsible for sourcing, analysis and typing of data. Author NEB assisted in sourcing of relevant literature and proofreading of manuscript while author OWI proofread the final version of the manuscript.

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ABSTRACT

The performance of the export subsector is one of the vital indices in measuring the impact and successes of several financial reform programmes carried out in Nigeria. Accordingly, the study estimated the effect of financial sector reforms on major agricultural exports in Nigeria from 1970-2009. Secondary data used for the study were analyzed using cointegration and error correction model (ECM). The empirical results disclosed that financial sector reforms significantly affect major agricultural export commodities such as cocoa, palm kernel and palm oil in Nigeria both in the long and short-run. Chow test result showed significant difference between agricultural exports (cocoa and palm oil except palm kernel) function in the pre-financial sector reforms and during the financial sector reforms period. The study advocated for the provision of appropriate promotion incentive and production such as abolishing of export prohibition, establishment of export development funds and researches into producing disease resistance, early maturing and high yielding varieties that will enhance the production of high agricultural yielding crops meant for export. Also, institutional framework that will boost disbursement of funds to cash crops sub-sector in the country needs to be strengthened. Lastly, policies that would reduce interest rate should be formulated.

Keywords: Agricultural exports; error correction model; financial sector reforms.

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1. INTRODUCTION

The catalytic role played by the financial sector in fostering economic development of various countries of the world cannot be undermined. For instance, a well-developed and healthy financial sector served as a catalyst of economic growth [1]. Nigeria's financial sector has been fragile and unstable for more than two decades after independence. These situations were occasioned by lots of complex restrictions on entry into the Nigerian banking sector, high exchange rates, increasing fiscal deficits and high inflationary rate. These led to the introduction of financial reforms by the government in order to restore financial and macroeconomic stability [2].

[3] stated that the Nigeria's financial sector has envious records of reforms spinning from the pre-Central Bank of Nigeria or free banking era to the regulation and the deregulation era. Prior to the deregulation of the financial sector, Nigerian economy depended solely on agricultural exports. Agriculture was the dominant sector contributing a significant proportion of the Gross Domestic Product in the 1960s. Cash crops such as cocoa, cotton, palm oil, palm kernel, groundnut, rubber and timber were the major export crops in the country. Following oil discovering in the 1970s, the sector became neglected. Consequently, agricultural GDP fell from 63 percent in the 1970 to 20.6% in 1980 and declined further to 23.3% in 2003 [4]. This steady decline and instability in the agricultural exports as a result of oil boom in the country has been described by the term "Dutch Disease" by researchers like [5,6] and [7]. World Bank attributed this decline to the oil shocks of 1973-1979, which gave way to large receipt of foreign exchange and neglect of agriculture in Nigeria [8]. During this period, [9] reported that agricultural exports were negligible and represented about 0.2% of total exports while an estimate of 6% of Nigerians were employed in the rural sector. Despite this neglect, agricultural sector is still known for its contribution to employment, food production, foreign exchange earnings and industrial inputs. For instance, [10] reported that the sector employed about 65 million people and contributed about 41% of the Gross Domestic Product (GDP). This implied that citizens derived their livelihood mostly from the export of these commodities, especially cocoa, cotton and palm oil. [8] reported that these three cash crops contributed 65% and 88% of total and agricultural export revenue in 1973 respectively.

Undoubtedly, Nigeria's agricultural exports have been unstable since the discovery of oil in mid 1970s with decline in agricultural output by 24.2%. From 1980, output performances has not only slowed down, but have been highly unstable [8]. This, coupled with the collapse of the Commodity Board affected export commodity prices, distorted macroeconomic and agricultural policies prevailing in the environment and resulted in declining agricultural outputs, dismal export performances thereby rendering Nigeria a net importer of agricultural products [7]. Hence, the introduction of the financial sector reforms with the deregulation of interest rate in 1987 as a component of Structural Adjustment Programme (SAP) was aimed at revamping the agricultural sector, ensuring macroeconomic instability and fiscal imbalances while pursuing export-oriented, private sector-led economic growth through market-based system [2].

In line with this objective, various reform policies and incentives have been put in place by the government such as: liberal trade policy, devaluation of nominal naira exchange rate, monetary expansion control; strict fiscal discipline to encourage the production and export of non-oil tradable, expanding Nigeria's export Market, duty draw-back scheme (export bonus), currency retention scheme etc. Despite the aforementioned initiatives, the trends in output of agricultural export crops continue to decline over time [7].

Several empirical studies have been carried out to assess the effect of liberalization/reforms on agricultural export in the country during and after the reforms period. For instance, [11] assessed market liberalization and its effects on Nigeria agriculture using incidence analysis. The result showed that export crops received greater degree of protection during liberalization. [12] evaluated the effect of trade liberalization on food security in Nigeria. Their findings revealed that there was an improvement in the food security status of Nigerians during liberalization but could not have been better without adequate attention through supportive policies and programmes. [13] examined the determinants of agricultural exports in Nigeria using error correction model. The result showed that world price of major agricultural communities, world income and past agricultural output were determinants of agricultural exports in Nigeria. Others like [14] examined the effects of liberalized trade and exchange rate policies on agriculture in Nigeria using incidence analysis on cocoa, rubber and palm kernel. They observed that the incidence parameter significantly influenced the relative price level while exportable and home goods were close substitutes in the liberalization periods. However, only few studies have focused on the impact of financial sector reforms on agricultural exports, considering the role of financial sector reforms on agricultural growth and development. Hence, this study bridges that gap by contributing to the body of knowledge that has already existed in the literature. It is against this backdrop that this study examines impact of financial sector reforms and agricultural exports in Nigeria from 1970-2009.

2. MATERIALS AND METHODS

2.1 Data Sources

The study made use of secondary data obtained from Central Bank of Nigeria (CBN), Statistical Bulletin, Annual Report and Statements of Account of Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS) and National Population Commission. Data series of interest covered the period of 1970-2009.

2.2 Analytical Techniques

The study employed cointegration approach including Error Correction Mechanism (ECM) to analyze the data. The export supply model is specified in equation as follows:

$$\Delta \ln QTY_i = \theta_0 + \theta_1 \Delta \ln OPT_{i-2} + \theta_2 \Delta \ln RP_{i-2} + \theta_3 \Delta \ln IR_{i-2} + \theta_4 \Delta \ln FSRGDP_{i-2} + \theta_5 \Delta \ln PCTP_{i-2} + \theta_6 \Delta \ln AGRGDP1_{i-2} + \theta_7 \Delta \ln AGINV_{i-2} + \theta_8 \ln TRND + \theta_9 \Delta \ln QTY_{i-2} + \theta_{10} DUM + \theta_{11} ECM_{i-1} + U_i \quad (1)$$

Where:

QTY_i	=	Cocoa Export Quantity (metric tons)
OPT_i	=	Output of Cocoa (metric tons)
RP_i	=	Relative Price of Cocoa (naira)
IR_i	=	Interest Rate (naira)
$FSRGDP_i$	=	Financial Sector Real Gross Domestic Product (naira) proxied for financial Sector Reforms
$PCTP_i$	=	Per Capita Real GDP of Major Trading Partner U. S (naira)
$AGRGDP1_i$	=	Agricultural Sector Real Gross Domestic Product (naira) proxy for agricultural growth
$AGINV_i$	=	Agricultural Investment (naira) Agricultural Investments (represented by Foreign Investment plus Domestic Investment. The Foreign

		Investment was proxied for Foreign Private Investment (FPI) in agricultural sector while Domestic Investment was proxied for Credit to agriculture)
$TRND_i$	=	Trend Variable to capture technological change over time measured in Year (in number) from 1970 to 2009
DUM_i	=	Dummy variable to capture policy shifts (Pre-financial sector reforms =1; Financial sector reforms = 0)
ECM_i	=	Error correction model
U_i	=	Stochastic error term
i	=	1-3, $t = 1$ represents Cocoa, $t = 2$ represents Palm Kernel and
$t = 3$		represents Palm oil.

The reason for using cointegration is to overcome the problems of spurious correlation associated with non-stationarity of time series data which eventually generate long run relationship [15,16,17]. According to [18], two variables are co-integrated if they have a long-term or equilibrium relationship. To test for the presence of a long-run relationship, the maximum likelihood method developed by Johansen [19,20] was utilized. Using the Johansen approach, two test statistics can be used in testing the number of cointegrating vectors: the Trace and the Maximum Eigenvalue statistics. The null hypothesis for the trace test was that there are at most r cointegrating vectors, while for the Max Eigenvalue test, the null of $r = 0$ was tested against the alternative that $r = 1$; $r = 1$ was tested against the alternative that $r=2$ and so on. The Schwarz Information Criterion (SIC) was used to select the optimal lag length for the cointegration test.

To ascertain the order of integration of the variables, a preliminary step analysis was carried out to test for the presence of unit-roots using two standard specifications: the Augmented Dickey-Fuller (ADF) and Phillip Perron (PP) both at intercept only. The later was used for confirmation test. The essence of the test was to show whether the time series have a stationary trend and if non-stationary, to show the order of integration at which they become stationary.

The hypothesis for the unit root test is:

- $H_0: \infty = 1$
- $H_1: \infty < 1$

To examine the short-run effects of financial sector reforms on growth of major agricultural exports in Nigeria, an error correction modeling (ECM) analysis is conducted. The essence of the ECM is to capture the dynamics in the agricultural export crops of cocoa, palm kernel and palm oil in Nigeria in the short-run through the speed of adjustment to the deviation from the short-run equilibrium.

Chow test employed by [21,22] was used to test for structural differences between the two periods namely, pre-financial sector reforms period (1970-1986) and financial sector reforms period (1987-2009). The Chow test formula is given as:

$$F^* = \frac{[\sum e_3^2 - (\sum e_1^2 + \sum e_2^2)] / (K_3 - k_1 - k_2)}{(\sum e_1^2 + \sum e_2^2) / (k_1 + k_2)} \quad (2)$$

Where:

$\sum e^2_1$ and k_1 = error sum of squares and degree of freedom respectively for Pre-financial sector reforms (Pre- FSR) period.

$\sum e^2_2$ and k_2 = error sum of squares and degree of freedom respectively for financial sector reforms (FSR) period.

$\sum e^2_3$ and k_3 = error sum of squares and degree of freedom respectively for Pooled data.

For the test of homogeneity of slope, the Chow's F-statistic is calculated as follows:

$$F^* = \frac{[\sum e^2_4 - (\sum e^2_1 + \sum e^2_2)] / (K_4 - k_1 - k_2)}{(\sum e^2_1 + \sum e^2_2) / (k_1 + k_2)} \quad (3)$$

Where:

$\sum e^2_4$ and k_4 = error sum of squares and degree of freedom respectively for from Pooled data with a dummy variable (Pre-financial sector reforms=1; financial sector reforms = 0), while other variables remained as earlier defined.

Test for differences in intercepts, the Chow's F- statistics is calculated as follows:

$$F^* = \frac{(\sum e^2_3 - \sum e^2_4) / (K_3 - k_4)}{\sum e^2_4 / k_4} \quad (4)$$

The variables are as earlier defined. The observed F-ratio was compared with the theoretical value to take a decision. If the calculated F- value exceeds the tabulated F- value, then the intercepts are assumed to be different between test variable.

3. RESULTS AND DISCUSSION

3.1 Effect of Financial Sector Reforms on Major Agricultural Exports

The results of Augmented Dicker Fuller (*ADF*) and Phillips-Perron (*PP*) unit root tests are presented in Table 1 below. Augmented Dicker-Fuller (*ADF*) and Phillips-Perron (*PP*) unit root test were applied on all the data series in their log forms. Results showed that all the variables possessed unit-roots at one percent level of significance and become stationary only after transforming them to their first differences therefore integrating in the order of 1 {i.e, *1(1)*} using intercept specification except for agricultural output growth that suggested that the series were stationary at level, that is, *1(0)*. However, the logs of cocoa export quantity (*QTYCO*) and financial sector real gross domestic product (*FSRGDP*) respectively had conflicting results on the levels of integration. While *ADF* test revealed that the series were *1(1)* stationary, the *PP* test indicates that the series were stationary at levels, *1(0)*. Therefore, to have a uniform conclusion, Dickey-Fuller GLS (*ERS*) approach was employed which validates the conclusion from the *ADF* test.

Table 1. Results of Augmented Dicker Fuller (ADF) and Phillips-Perron (PP) Unit root test

Logged Variables	ADF Level Intercept	1 st diff Intercept	PP Level Intercept	1 st diff Intercept	Conclusion
QTYCO	-0.873[0]	-5.729[0]***	-4.040[4]***		I(1), I(0)
QTYK	-1.805[0]	-8.252[0]***	-1.517[5]	-13.739[12]***	I(0)
QTYO	-2.585[0]	-8.698[0]***	-2.169[2]	-6.653[9]***	I(1)
OPTCO	-2.967[0]	-7.976[0]***	-2.902[1]	-8.314[6]***	I(1)
OPTK	-1.498[0]	-6.077[0]***	-1.483[1]	-6.107[2]***	I(1)
OPTO	-1.529[0]	-6.554[0]***	-1.542[1]	-6.576[3]***	I(1)
RPCO	-0.143[0]	-7.346[0]***	0.548[11]	-9.273[8]***	I(1)
RPK	-0.497[0]	-7.092[1]***	0.031[11]	-9.422[15]***	I(1)
RPO	-1.704[1]	-10.377[0]***	-3.172[4]	-10.796[1]***	I(1)
IR	-2.189[0]	-9.239[0]***	-1.979[1]	-9.828[2]***	I(1)
FSRGDP	-2.819[0]	-5.935[0]***	-6.044[26]***		I(1), I(0)
PCTP	0.113[0]	-4.979[0]***	0.004[2]	-4.976[0]***	I(1)
AGRGDP1	-6.039[0]***		-6.115[6]***		I(0)
AGINV	-1.702[0]	-5.891[0]***	-1.713[1]	-5.884[2]***	I(1)

Source: Computed by Author. Notes: *** indicates significance at 1% level. The values in bracket [] for the ADF test shows the optimal lag length selected by the SIC within a maximum lag of 9. The values in bracket for PP test indicates bandwidth selection, using the Newey-West's Bartlett Kernel

Since majority of the variables became stationary after first differencing and integrating in the order of 1 {i.e, 1(1)}, another test was conducted to examine whether the non-stationary variables were co-integrated. In other words, we tested the hypotheses about the rank of the cointegrating relationships that existed among the variables. The results from the Johansen cointegration tests are presented in Tables 2 and 3 respectively. From the tables, both the Trace and Maximum Eigenvalue tests indicated the presence of sufficient cointegrating vectors for cocoa, palm kernel and palm oil respectively. This revealed that there were proof of the existence of a long-run relationship among financial sector reforms, agricultural export crops and other policy variables in Nigeria. Therefore, applying the error correction model (ECM) would enable us to track the long-run relationship among the variables and tie it to deviation that may occur in the short-run [23].

To examine the effect of financial sector reforms on major agricultural exports in the short-run and identify the speed of adjustment whether there is departure from the long-run equilibrium, an error correction modeling (ECM) analysis was carried out for Cocoa, Palm Kernel and Palm Oil export supply as shown in Tables 4, 5 and 6 respectively. Results of the final parsimonious estimation showed that the explanatory variables explain about 96%, 88% and 95% of the variations in the export of Cocoa, Palm Kernel and Palm Oil in the model. This is validated by the value of the coefficient of determination, R-squared. The Durbin Watson Statistic of 2.07, 2.10 and 1.92 for cocoa export, palm kernel and palm oil revealed that the values fell within the accepted bound while the probability of the F-Statistic of 13.154 (P<0.01), 4.421 (P<0.01) and 16.714 ((P<0.01) for the three mentioned export crops suggests that the model has a very good fit.

Table 2. Johansen Cointegration Trace Test

Null Hypothesis	Alternative Hypothesis	Cocoa	Palm Kernel	Palm Oil
r = 0	r < 1	564.3001***	777.6670***	603.0584***
r = 1	r < 2	388.8362***	485.4192***	405.7188***
r = 2	r < 3	280.7830***	306.8077***	269.4203***
r = 3	r < 4	189.1695***	238.9456***	195.0942***
r = 4	r < 5	132.7563***	173.4597***	125.9244***
r = 5	r < 6	91.48282***	111.9762***	77.65970**
r = 6	r < 7	54.21239**	63.24020**	45.21185
r = 7	r < 8	33.68388**	34.01469**	24.76264
r = 8	r < 9	15.59718**	19.89164**	13.98665
r = 9	r < 10	4.382903**	6.535320**	6.394868**

Source: Computed by Author. Notes: r indicates the number of co-integrating vector. ***, ** are the significance levels at 1% and 5% respectively. P-values are obtained using response surfaces in Mackinnon et al., (1999)

Table 3. Johansen Cointegration Maximum Eigenvalue Test

Null Hypothesis	Alternative Hypothesis	Cocoa	Palm Kernel	Palm Oil
r = 0	r = 1	175.4639***	292.2478***	197.3396***
r = 1	r = 2	108.0531***	178.6115***	136.2985***
r = 2	r = 3	91.61356***	67.86207***	74.32609***
r = 3	r = 4	56.41323***	65.48586***	69.16982***
r = 4	r = 5	41.27343**	61.48348***	48.26472
r = 5	r = 6	37.27043**	48.73604***	32.44785
r = 6	r = 7	20.52851	29.22550**	20.44921
r = 7	r = 8	18.08670	14.12306	10.77599
r = 8	r = 9	11.21428	13.35632	7.591781
r = 9	r = 10	4.382903**	6.535320**	6.394868**

Source: Computed by Author. Notes: r indicates the number of co-integrating vector. ***, ** are the significance levels at 1% and 5% respectively. P-values are obtained using response surfaces in Mackinnon et al., (1999)

The results further showed that the coefficients of the error correction term (ECM) were negative and statistically significant at 1% probability level for the three export crops in the study. The results authenticate the presence of a long-run equilibrium relationship among the time series in each of the export crop equation. This revealed that the agricultural export crops during the financial sector reforms period were sensitive to the departure from their equilibrium values in the previous periods in Nigeria. The negative sign implied that, in the absence of variation in the independent variables, the model's deviation from the long-run relation is corrected by increase in the dependant variable while the ECM values of -1.271, -0.637 and -0.956 for Cocoa, Palm kernel and Palm oil export supply implied that 127.1%, 63.7% and 95.6% percent of the disequilibrium in the long-run relationship were corrected in the current year and it would take (1/1.271), (1/0.637) and (1/0.956) or seven months (of Cocoa), One year; six months (of Palm Kernel) and about one year (of Palm Oil) for full restoration back to the equilibrium after a short-run distortion, thus, correcting any deviations

from the long-run equilibrium. This therefore implied that financial sector reforms had effect on agricultural export crops in the short-run.

Table 4. Error Correction Model for Cocoa Export

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	0.368959	0.130440	2.828562	0.0164
D(LNOUTCO)	0.135134	0.079770	1.694047	0.1183
D(LNOUTCO(-2))	-0.150423	0.099998	-1.504261	0.1607
D(LNRPCO)	-0.234974	0.078453	-2.995109***	0.0122
D(LNRPCO(-1))	-0.138648	0.067814	-2.044520**	0.0656
D(LNRPCO(-2))	0.060145	0.062409	0.963724	0.3559
D(LNIR)	0.211673	0.096664	2.189768**	0.0510
D(LNIR(-1))	0.410476	0.098353	4.173516***	0.0016
D(LNIR(-2))	-0.267918	0.103319	-2.593120**	0.0250
D(LNFSRGDP)	-0.381149	0.155065	-2.457993**	0.0318
D(LNFSRGDP(-1))	0.841169	0.183121	4.593502***	0.0008
D(LNFSRGDP(-2))	0.538858	0.144497	3.729187***	0.0033
D(LNRGDPTP(-1))	-0.378758	0.097564	-3.882157***	0.0026
D(LNRGDPTP(-2))	0.401020	0.115602	3.468965***	0.0052
D(LNAGRGDP1)	0.061022	0.012428	4.909873***	0.0005
D(LNAGRGDP1(-2))	-0.026282	0.008854	-2.968511***	0.0128
D(LNINV(-1))	0.139211	0.069246	2.010401**	0.0696
D(LNINV(-2))	-0.115112	0.069154	-1.664586	0.1242
D(LNTRND)	-179.2984	57.20662	-3.134225***	0.0095
D(LNTRND(-1))	230.2808	74.96187	3.071972***	0.0106
D(LNTRND(-2))	-66.45021	22.32816	-2.976072***	0.0126
D(DUM)	-0.773389	0.256493	-3.015243***	0.0118
D(LNQTYCMT(-1))	0.321051	0.260228	1.233730	0.2430
D(LNQTYCMT(-2))	0.537277	0.166033	3.235957***	0.0079
ECM(-1)	-1.270688	0.279041	-4.553774***	0.0008
R-squared	0.966329	Mean dependent var		0.002321
Adjusted R-squared	0.892864	S.D. dependent var		0.300942
S.E. of regression	0.098503	Akaike info criterion		-1.594186
Sum squared resid	0.106732	Schwarz criterion		-0.494520
Log likelihood	53.69535	Hannan-Quinn criter.		-1.210373
F-statistic	13.15364***	Durbin-Watson stat		2.070141
Prob(F-statistic)	0.000043			

Source: Computed by Author. Note: ***, ** and * represents 1%, 5% and 10% significance levels respectively

3.1.1 For cocoa export

The ECM result for cocoa export showed that relative price and dummy variables were negative and statistically significant thus a determinant factor of cocoa export quantity in the short run at 5% and 1% levels respectively. This implied that in the short run of the reforms period, increase in these variables would reduce the possibility of increasing cocoa export supply in the country. For relative price, devaluation of naira against the dollars is expected to improve the cocoa export because of the Purchasing Power Parity (PPP) that holds in Nigeria. The economic implication is that if the naira is depreciated, there will be a positive

impact on the agricultural export. However, this result is at variance with the findings of [13]. Other variables such as past values of interest rate, past values of financial sector reforms RGDP, per capita RGDP of major trading partner, agricultural sector real gross domestic product, past values of agricultural investments, past values of trend, dummy and past values of cocoa export quantity exerted significant positive influence on cocoa export in the short-run in Nigeria. This implied that any increase in these variables would increase cocoa export quantity in the short-run. The past values of the variables already mentioned indicated that the past period of the variables significantly affects the current period of cocoa export quantity.

Table 5. Error Correction Model for Palm Kernel Export

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	2.596836	0.589895	4.402199***	0.0007
D(LNOUTK)	-1.010170	0.573153	-1.762478*	0.1015
D(LNOUTK(-1))	-2.147149	0.485761	-4.420173***	0.0007
D(LNOUTK(-2))	0.865746	0.429916	2.013754**	0.0652
D(LNRPK)	-1.192204	0.246116	-4.844070***	0.0003
D(LNRPK(-1))	-1.149511	0.281464	-4.084043***	0.0013
D(LNRPK(-2))	-0.803131	0.202059	-3.974728***	0.0016
D(LNIR)	2.163516	0.626248	3.454728***	0.0043
D(LNIR(-1))	1.901390	0.548636	3.465669***	0.0042
D(LNIR(-2))	0.775288	0.400545	1.935585*	0.0750
D(LNFSRGDP(-1))	0.617578	0.313711	1.968623*	0.0707
D(LNFSRGDP(-2))	2.848163	0.757137	3.761753***	0.0024
D(LNRGDPTP(-1))	2.052630	0.401847	5.107985***	0.0002
D(LNRGDPTP(-2))	-0.911403	0.530464	-1.718123*	0.1095
D(LNAGRGDP1(-2))	-0.167964	0.048382	-3.471616***	0.0041
D(LNINV)	-0.171461	0.222301	-0.771302	0.4543
D(LNTRND)	-856.5297	230.5968	-3.714405***	0.0026
D(LNTRND(-1))	1063.261	304.4618	3.492263***	0.0040
D(LNTRND(-2))	-290.6958	91.79450	-3.166811***	0.0074
D(DUM)	1.201885	0.900052	1.335350	0.2047
D(DUM(-2))	-1.055823	0.676576	-1.560538	0.1426
D(LNQTYKMT(-1))	0.733492	0.227996	3.217134***	0.0067
ECM(-1)	-0.637254	0.165935	-3.840387***	0.0020
R-squared	0.882094	Mean dependent var		-0.048038
Adjusted R-squared	0.682562	S.D. dependent var		0.776857
S.E. of regression	0.437694	Akaike info criterion		1.444614
Sum squared resid	2.490488	Schwarz criterion		2.456307
Log likelihood	-3.003059	Hannan-Quinn criter.		1.797722
F-statistic	4.420808***	Durbin-Watson stat		2.106158
Prob(F-statistic)	0.004003			

Source: Computed by Author. Note: ***, ** and * represents 1%, 5% and 10% significance levels respectively

3.1.2 For palm kernel export

The empirical result revealed that past values of palm kernel output, relative price and past values of agricultural sector RGDP was negative and statistically different from zero. This

indicated that these variables significantly influence palm kernel export quantity in the short run but their increases would result to decrease in palm kernel export supply in the country in the short-run. However, the past values of palm kernel output and agricultural growth respectively showed that their past values would affect present values of palm kernel quantity. On the other hand, interest rate, past value of financial sector real Gross Development Product (RGDP), past value of per capita RGDP of major trading partner, past value of trend and past value of palm kernel export quantity were positive and significantly determine palm kernel export quantity in the short-run in Nigeria. This implied that increase in interest rate variable would increase palm kernel export quantity in the short-run while the past values of the variables indicated that the past period of the variables significantly affects the current period of kernel export quantity.

3.1.3 For palm oil export

The relative price and interest rate in ECM result of palm oil export is negatively significant at 1% and 5% levels respectively. The result of relative price of palm oil export is consistent with that of cocoa and palm kernel export earlier discussed. Thus, the same economic implication that affected cocoa and palm kernel export will also affect palm oil export because of the devaluation of naira which will positively impact on the agricultural export of palm oil while interest rate in palm oil export is at variance with cocoa and palm kernel export. This implied that increase in interest rate will cause a decrease in palm oil export quantity. The empirical result further revealed that coefficient of per capita real GDP of major trading partner, past value of trend, and dummy variable are positively significant at 1%, 1% and 5% levels respectively. This indicated that while the coefficient of per capita real GDP of major trading partner and dummy variables significantly determined palm oil export quantity, the past value of trend variable revealed that past values would affect present values of palm oil export quantity.

The result of the statistical tests for structural shift in cocoa, palm kernel and palm oil export supply function and differences between two periods were presented in Table 7. The calculated Chow's F- statistic for financial sector reforms effect is significant at 1% level for cocoa and palm oil except for palm kernel export supply function. The result confirmed that there were significant differences between cocoa and palm oil export supply function in the pre-financial sector reform and the financial sector reform periods. The tests for homogeneity of slopes in the pre-financial sector reform and financial sector reform showed that only cocoa export supply was statistically significant at 1 percent. This confirmed heterogeneity of slopes for the two periods under consideration. The calculated Chow's F- statistic for the test for differences in intercept was significant for palm kernel and palm oil except cocoa export supply. This result confirmed heterogeneity of intercepts for the pre-financial sector reforms and financial sector reform periods for palm kernel and palm oil export supply. Therefore, it is concluded that only palm kernel and palm oil supply function were heterogeneous and significantly different in the two periods under review.

Table 6. Error Correction Model for Palm Oil Export

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	2.651199	0.929879	2.851122***	0.0110
D(LNOUTO)	0.643736	0.663146	0.970731	0.3453
D(LNOUTO(-1))	1.026890	0.675396	1.520427	0.1468
D(LNOUTO(-2))	1.886177	1.212680	1.555379	0.1383
D(LNRPO)	-0.534643	0.054019	-9.897293***	0.0000
D(LNRPO(-1))	0.125839	0.060527	2.079054**	0.0531
D(LNIR)	-0.994318	0.467700	-2.125975**	0.0485
D(LNFSRGDP)	1.326304	0.773843	1.713919	0.1047
D(LNRGDPTP)	2.742101	0.895820	3.060994***	0.0071
D(LNAGRGDP1)	0.031894	0.041514	0.768278	0.4529
D(LNAGRGDP1(-2))	0.047289	0.035829	1.319870	0.2044
D(LNINV)	-0.975499	0.945211	-1.032043	0.3165
D(LNINV(-1))	-0.374032	0.448300	-0.834333	0.4157
D(LNTRND)	-1618.355	418.6444	-3.865703***	0.0012
D(LNTRND(-1))	2203.348	560.2496	3.932796***	0.0011
D(LNTRND(-2))	-685.2729	171.2010	-4.002739***	0.0009
D(DUM)	2.630387	1.296134	2.029409**	0.0584
D(DUM(-2))	2.358766	1.250704	1.885951*	0.0765
ECM(-1)	-0.955630	0.145528	-6.566618**	0.0000
R-squared	0.946516	Mean dependent var		0.196846
Adjusted R-squared	0.889885	S.D. dependent var		3.165081
S.E. of regression	1.050287	Akaike info criterion		3.241253
Sum squared resid	18.75273	Schwarz criterion		4.076999
Log likelihood	-39.34256	Hannan-Quinn criter.		3.532951
F-statistic	16.71388***	Durbin-Watson stat		1.915610
Prob(F-statistic)	0.000000			

Source: Computed by Author. Note: ***, ** and * represents 1%, 5% and 10% significance levels respectively

Table 7. Tests for difference in Cocoa, Palm Kernel and Palm Oil Exports Supply Functions

Item	Error Sum of Square	Cocoa Export Degree of Freedom	Calculated F	Error Sum of Square	Palm Kernel Export Degree of Freedom	Calculated F	Error Sum of Square	Palm Oil Export Degree of Freedom	Calculated F
<u>Tests for FSR Effects</u>				Error Sum of Square	Degree of Freedom	Calculated F	Error Sum of Square	Degree of Freedom	Calculated F
Pre-FSR	6379.894	7		0.461	7		1.230	1	
Post-FSR	11280.036	14		9.737	14		13.758	10	
Pooled data	25675.53	30	5.646***	13.348	30	0.714	1384.274	20	1004.611***
<u>Tests For homogeneity of Slope</u>									
Pre-FSR	6379.894	7		0.461	7		1.230	1	
Post-FSR	11280.036	14		9.737	14		13.758	10	
Pooled data with Dummy	25613.911	29	6.330***	11.588	29	0.358	45.471	19	2.796
<u>Tests for differences in intercept</u>									
Pooled data	25675.53	30		13.348	30		1384.274	20	
Pooled data with Dummy	25613.911	29	0.069	11.588	29	4.411***	45.471	19	5529.383***

Source: Computed by Author, 2011

4. CONCLUSION

This study has analyzed the impact of financial sector reforms on agricultural export performance in Nigeria. Findings revealed the existence of both long and short-run relationship among variables between financial sector reforms and major agricultural export commodities in Nigeria. The study also discovered a significant difference between agricultural exports (cocoa and palm oil except palm kernel) function in the pre-financial and during the financial sector reforms period. This implied that export supply functions for financial sector reform period were superior to the pre-financial sector reforms period. Therefore, there is need to pursue policies that would encourage export and discourage import of agricultural commodities. Such policies should include: creation of an export development funds, insurance scheme, granting of tax rebates to exporters of agricultural commodities as well as interest rate stabilization. Also, policies that would enhance the output of cash crops should be vigorously pursued. This can be achieved through investment in research and development that would lead to evolution of high yielding, disease resistant and early maturing cash crops. Likewise, institutional framework that would enhance availability of credit to cash crop sub-sector in the country should be strengthened. This would attract new entry into the agricultural export business.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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