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Impact of export incentive schemes on the performance of agricultural exports in Nigeria

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Abstract. This paper examines the impact of export incentive schemes on the Performance of agricultural exports in Nigeria, using quarterly time series data from 1990-2014. The study employed Autoregressive Distributed Lag (ARDL) model to cointegration analysis and Granger causality test to examine the long run and causality relationship between growth in the Performance of agricultural exports and export incentive schemes in Nigeria. The bounds tests used in the study revealed that there is no long run equilibrium relationship between export incentive schemes and the performance of agricultural exports in Nigeria. It is of high importance to note that the granger casualty test indicates that there was a unidirectional relationship running from agricultural export (AGR) to export expansion grant (EEG), export development fund (EDF) to agricultural export (AGR). Since the findings of the study show that export development fund has positive and significant impact on the performance of agricultural exports in Nigeria, the study suggests that major concern should be given to its management and disbursement to ensure stable growth in the sub-component (agriculture) of non-oil export in Nigeria. This can be achieved through adequate funding by the concerned authority.
Keywords. Export incentives, Non-oil exports, Causality, ARDL, Nigeria.
JEL. J43, Q00, Q10.

1. Introduction

Export promotion policies are the most efficient tools for growth and development, adopted by many countries since 1970s. Nigeria is not exclusive because its economy is one that largely depends on foreign trade particularly for exporting one commodity at a time. For instance, at independence, the major export commodity was cocoa and the leading sector in the economy was the agricultural sector, but today, the major exporting commodity is crude oil and the leading sector is now the petroleum sector (Adesoji & Sotubo, 2013). This has not allowed for balanced growth in the economy and some sectors have been allowed to grow at the detriment of others which has made the country's economy remain a developing one. Successive governments in Nigeria realized the need to diversify the country's productive base and therefore introduced various policies such as the Import Substitution Industrialization Strategy (ISI), the Nigerian Export Promotion Council (NEPC), the Export Promotion Strategy (EPS), Structural Adjustment Programme (SAP), the Nigerian Export-Import (NEXIM) bank and

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Export Processing Zone (EPZ). Despite all these efforts, the performance of the non-oil exports has remained very low, miserable and discouraging.

The performance of agricultural sector in the past decades is nothing to be desired in Nigeria in spite of the efforts made to promote the sector over the years. Abogan, Akinola & Baruwa (2014) noted that despite various policies, strategies and reform programmes, the contribution of agricultural export have been miserable, discouraging and below its full potential. Even though, various studies have been conducted on the analysis of relationship between export incentives schemes and the growth of Nigeria's agricultural exports, these studies are not without observed gaps which this study intends to fill. For example, Adesoji & Sotubo (2013) evaluated the performance of Nigeria's Export Development Strategies on the performance of the Agricultural and Mineral sub-sectors. However, their work suffered from methodological problems in which simple percentages and frequency distributions (Descriptive Statistics) were applied as tools of analysis. These statistical techniques may not be appropriate in drawing up useful conclusions on export-growth nexus, as rigorous statistical techniques and diagnostics tests are required to examine the time trend of the variables controlled in the model.

Similarly, Mohammed (2010) employed Ordinary Least Squares (OLS) technique to examine the impact of export development strategies on the performance of non-oil exports in Nigeria for the period of twenty years. Although the findings of the study revealed a positive relationship among the variables, this might also have been a misleading result as the number of observations in the study was relatively small in conducting a robust time series econometric research. The study also suffers a serious limitation in terms of its theoretical and conceptual issues mainly because most of the reviewed literatures were not recent. Furthermore, Fanta & Teshale (2014) studied the types and trend of export incentive schemes and their effect on export growth in Ethiopia using variables such as export growth, financial incentives and real GDP. The major problem of their study also was that of small sample size (2003-2011) and hence there is need to handle large sample.

Therefore, this paper intends to bridge the aforementioned gaps in the literature by going further to employ a more robust econometric analysis in the form of Autoregressive Distributed Lag (ARDL) technique and Granger causality test to examine the long run and causal relationship between export incentive schemes and agricultural export in Nigeria. In order to achieve this, the paper is structured into five sections, including this introduction. The second reviews some empirical literature. The third section presents the methodology. The fourth section provides an empirical result, while the fifth concludes and offers recommendation to the paper.

2. Literature Review

In spite the number of works that examined the impact of export incentive schemes on the performance of agricultural exports in Nigeria, this paper will focus on the studies that examine the causal relationships between export incentive schemes and the growth of agricultural component of non-oil exports in Nigeria. For example, Adesoji & Sotubo, (2013) applied Ordinary Least Squares as an analytical technique to evaluate the performance of the Nigeria's export promotion strategies from 1981 to 2010. The findings from the study revealed that non-oil exports had performed below expectations giving reasons to doubt the effectiveness of the export promotion strategies that have been adopted in the Nigerian economy. Moreover, it was found that the Nigerian economy was still far from diversifying from crude oil exports and as such, the crude oil sub-sector continued to be single most important sector of the economy.

Following similar line of argument, Mohammed (2010) studied the impact of export development strategies on the performance of non-oil exports using time series data from 1989 to 2008 by employing Ordinary Least Squares (OLS)

techniques. The result indicated a strong positive relationship between the value of non-oil exports and the selected export development strategies. The study therefore recommended that government should put more emphasis on these export development strategies. Similarly, Olaleye *et al.*, (2013) employed the Granger Causality test to investigate the relationship between export diversification and economic growth in Nigeria using annual time series data for thirty (30) years ranging from 1983 to 2012. The study found that increase in agricultural outputs and potentials would impact on the welfare of the people. In addition, John & Samson (2012) investigated the effects of trade policies on Nigeria's non-oil exports using time series data from 1970 to 2010. The study employed both correlation and Ordinary Least Squares (OLS) estimation techniques. The findings showed that exportation of non-oil goods positively affected economic growth in Nigeria, implying that any country that diversified its exports base could stand a better chance of achieving its growth objectives.

Furthermore, in modeling for the impact of trade openness on Nigeria non-oil industrial performance for the period 1988-2010, Bakare & Fawehinmi (2011) found that trade openness has a positive and significant impact on the industrial performance. Using Ordinary Least Square regression analysis, it was recorded that a 1% increase in trade openness led to about 24% increase in non-oil (industrial) performance. Again, Usman (2009) assesses the determinants of non-oil exports in Nigeria. The data for the study ranged from 1988 to 2008. Ordinary Least Squares technique was applied in the analysis. Findings from the study reveal that there is no significant relationship between economic growth and non-oil export as well as exchange rate while other variables have significant relationship with economic growth which supports the linear hypothesis. This relation was found to be statistically insignificant. However, non-oil export exhibited a positive relationship with economic growth.

Using annual time series data from 2000 to 2012, Azeez, Dada & Aluko (2014) examine the effect of international trade on the economic growth of Nigeria. The study employed Ordinary Least Squares (OLS) estimation technique. It was found that international trade had a significant positive impact on the Nigerian economy for the reviewed period.

However, Oyetade & Shri (2013) studied the effects of non-oil components export on the economic growth in Nigeria using time series data covering the period 1980-2011. The study used three independent variables as agriculture, manufacturing and services sub-sectors; whereas Gross Domestic Product was used to represent the dependent variable. Ordinary Least Squares, Unit Roots, Serial Correlation Linear Model and heteroscedasticity tests were also carried out to analyze the significant contribution between the dependent and independent variables. The findings of the study reveal that agriculture and services sector of Non-oil export component contributed significantly to the economic growth of Nigeria. It also disclosed that there was no correlation and heteroscedasticity problem.

Ezeudu (2014) evaluates the contribution of non-oil in export financing in the development of Nigeria's economy using explanatory approach. The study however, indicated that given recent proactive efforts from the private sector and export processing zone especially efforts of the banking sector to finance export of commodities, changes are becoming noticeable in the Nation's export profile. Additionally, the study revealed that the Nigerian Export processing zone had in no small measure added value to non-oil exports in Nigeria. Moreover, Onyemaechi (2013) evaluate the oil and non-oil sectors of the Nigerian economy by looking at the time series data on the non-oil exports. The study revealed that existing incentive schemes for non-oil exports in the country have failed woefully. Again the study observed that the non-oil exports have not had brought any significant improvement in the country's trade balances. However, the non-oil sub-sector has continuously faced balance of payments deficits despite Federal government's efforts to embrace incentives aimed at encouraging non-oil exports.

3. Methodology

3.1. Data

The study used secondary data on some selected export incentive schemes and agricultural exports collected from Federal Ministry of Finance, the Nigerian Customs Services (NCS) and the Incentives Unit of the Nigerian Export Promotion Council (NEPC), publications of the Central Bank of Nigeria (CBN) various years and online Statistical Database. The study employed quarterly time series data for each variable from 1990 to 2014, hence 100 observations.

3.2. Definitions of variables

The dependent variable of the study is non-oil agricultural export (AGR) which is defined as the value of annual export of agricultural products measured in monetary terms. This dependent variable is believed to be affected by export expansion grant (EEG), export development fund (EDF) and manufacturers in-bond scheme (MIBS). EEG refers to the aggregate monetary incentives provided annually to exporters by the Nigerian Export Promotion Council, as component of fiscal incentives. On the other hand, MIBS is defined as the aggregate monetary incentives administered annually to exporters by the Federal Ministry of Finance in collaboration with the Nigerian Export Promotion Council, the Central Bank of Nigeria, the Standards Organization of Nigeria and the Nigerian Customs Services. EDF is the aggregate monetary incentives administered annually to exporters by the Federal Ministry of Finance in collaboration with the Nigerian Export Promotion Council and the Central Bank of Nigeria.

3.3. The Model

The following model is formulated assuming that the effect of export incentives on dependent variable is positive. Hence,

$$AGR_t = \alpha_0 + \alpha_1 EEG_t + \alpha_2 MIBS_t + \alpha_3 EDF_t + \mu_t \quad (1)$$

Where;

$AGRt$ = is the non-oil export of agricultural sector at time t

EEG = is the Export Expansion Grant

$MIBS$ = is the Manufacturers In-Bond Scheme

EDF= is the export development fund

Ut = Stochastic or random term that captures the influence of other export incentive schemes which are not included in the model.

α_1, α_2 and α_3 are slopes coefficients of the individual independent variables captured in the model.

3.4. Estimation Procedure

The ARDL approach to cointegration is estimated using the following equations:

$$\Delta \ln AGR_t = \alpha_0 + \alpha_1 \ln AGR_{t-1} + \alpha_2 \ln EEG_{t-1} + \alpha_3 \ln MIBS_{t-1} + \alpha_4 \ln EDF_{t-1} + \sum_{i=1}^{a} q_1 \Delta \ln AGR_{t-1} + \sum_{i=1}^{b} q_2 \Delta \ln EEG_{t-1} + \sum_{i=1}^{c} q_3 \Delta \ln MIBS_{t-1} + \sum_{i=1}^{d} q_4 \Delta \ln EDF_{t-1} + \mu_{t4} \quad (2)$$

$$\Delta \ln EEG_t = \alpha_0 + \alpha_1 \ln EEG_{t-1} + \alpha_2 \ln AGR_{t-1} + \alpha_3 \ln MIBS_{t-1} + \alpha_4 \ln EDF_{t-1} + \sum_{i=1}^{a} q_1 \Delta \ln EEG_{t-1} + \sum_{i=1}^{b} q_2 \Delta \ln AGR_{t-1} + \sum_{i=1}^{c} q_3 \Delta \ln MIBS_{t-1} + \sum_{i=1}^{d} q_4 \Delta \ln EDF_{t-1} + \mu_{t1} \quad (3)$$

$$\Delta \ln MIBS_t = \alpha_0 + \alpha_1 \ln MIBS_{t-1} + \alpha_2 \ln AGR_{t-1} + \alpha_3 \ln EEG_{t-1} + \alpha_4 \ln EDF_{t-1} + \sum_{i=1}^{a} q_1 \Delta \ln MIBS_{t-1} + \sum_{i=1}^{b} q_2 \Delta \ln AGR_{t-1} + \sum_{i=1}^{c} q_3 \Delta \ln EEG_{t-1} + \sum_{i=1}^{d} q_4 \Delta \ln EDF_{t-1} + \mu_{t6} \quad (4)$$

$$\Delta \ln EDF_t = \alpha_0 + \alpha_1 \ln EDF_{t-1} + \alpha_2 \ln AGR_{t-1} + \alpha_3 \ln EEG_{t-1} + \alpha_4 \ln MIBS_{t-1} + \sum_{i=1}^{a} q_1 \Delta \ln EDF_{t-1} + \sum_{i=1}^{b} q_2 \Delta \ln AGR_{t-1} + \sum_{i=1}^{c} q_3 \Delta \ln EEG_{t-1} + \sum_{i=1}^{d} q_4 \Delta \ln MIBS_{t-1} + \mu_{t7} \quad (5)$$

Where:

α_0 = constant parameter

Δ= denotes the difference operator

∑qi= vector of the coefficients of export trade incentives variables in all the models.

While, all the remaining variables remained as defined earlier

4. Emprical Results

This section presents the results of empirical analysis, starting with checking of the properties of the variables to be used in the analysis.

Table 1. *Results of Augmented Dickey-Fuller Unit Root Test*

Variables	Level Value	Difference Value	Order of Integration
LAGR	-1.778671	-2.691831**	1(1)
LEEG	-1.529050	-6.328359***	1(1)
LMIBS	-1.903291	-5.747015***	1(1)
LEDF	-2.758662**	-	1(0)

Source: author's computation using EVIEWS9.0 Software, **and*** indicate level of significance at 1% and 5%, respectively.

It is always important to check for the stationarity of the data to be used in order to ensure that none of the variables is stationary at second difference because the assumptions of ARDL bound test collapse if one of the variables is stationary at second difference. To achieve this, the augmented Dickey-Fuller (ADF) unit root test was conducted to test for the existence of unit root. Table 4.1 shows the results of Augmented Dickey-Fuller unit root test on the variables at their level and difference values.

The summary of the result shows that all the variables are non-stationarity in their level values except *EDF*. On the other hand, the stationarity property is found after taking the first difference of most variables at 5% critical level. As stated earlier, it is necessary to first perform unit root tests on the variables in order to ensure that none of the variables is integrated of order two 1(2) or beyond. The implication of the above results is that even though the variables are not stationary at their level values, they are integrated of the same order at their difference values. According to Engel & Granger (1987), to conduct cointegration analysis, all variables must be integrated of the same order. Therefore, this gives room for cointegration test.

Table 2. *Bounds F-Test for Cointegration*

Dependent variable	Function	F-Statistic
LAGR	F_{LAGR}(LAGR/LEEG, LMIBS,LEDF)	2.180892
LEEG	F_{LEEG}(LEEG/LAGR, LMIBS,LEDF)	2.601685
LMIBS	F_{LMIBS}(LMIBS/LAGR,LEEG,LEDF)	1.637182
LEDF	F_{LEDF}(LEDF/LAGR, LEEG, LMIBS)	2.351185
Asymptotic critical value	1%	5%
Upper Bound	4.66	3.67
Lower Bound	3.65	2.79

Source: Author's computation using EVIEWS 9.0 software.

Results of the bounds tests for the number of cointegration ranks on AGR, EEG, EDF and MIBS have been presented in Table 2. The test statistics are structured under the null hypothesis of absence of co-integrating relation, F-statistic and Critical value at 5% and 1% respectively. The bounds test indicates the absence of cointegration (long-run relation) among the variables. These signify that there is no cointegration among the variables when all the variables are taken as dependent variables. These can be observed from the results of the computed F_{LAGR}(LAGR/LEEG,LMIBS,LEDF), F_{LEEG}(LEEG/LAGR,LMIBS,LEDF), F_{LMIBS}(LMIBS/LAGR,LEEG,LEDF), and F_{LEDF}(LEDF/LAGR, LEEG, LMIBS) that stood at 2.180892, 2.601685, 1.637182 and 2.351185 which are less than the lower bound critical value of 2.79 at 5% level of significance. The decision for accepting or rejecting the null hypothesis is stated as follows: If the estimated F-statistic is higher than the upper bound critical values at a given level of significance, then the null hypothesis of no co-integration is rejected. If on the other hand, the estimated F-statistic value is smaller than the lower bounds critical values, then there is no co-integration relationship among the series, null hypothesis cannot be rejected.

Table 3. *Pairwise Granger Causality Tests*

Null Hypothesis	Obs	F-statistic	P-value
LEEG does not Granger Cause LAGR	94	0.13874	0.8706
LAGR does not Granger Cause LEEG	94	2.99965	0.0549**
LMIBS does not Granger Cause LAGR	94	1.53146	0.2219
LAGR does not Granger Cause LMIBS	94	1.43410	0.2438
LEDF does not Granger Cause LAGR	94	2.80616	0.0658*
LAGR does not Granger Cause LEDF	94	0.81015	0.4480
LMIBS does not Granger Cause LEEG	94	0.97384	0.3816
LEEG does not Granger Cause LMIBS	94	0.40359	0.6691
LEDF does not Granger Cause LEEG	94	1.07429	0.3459
LEEG does not Granger Cause LEDF	94	0.71006	0.4944
LEDF does not Granger Cause LMIBS	94	1.23197	0.2966
LMIBS does not Granger Cause LEDF	94	1.39364	0.2535

Source: Author's computation using EVIEWS 9.0 Software,
Notes: that * and **indicate the presence of causality at 5% and 10%, respectively.

If the series of two variables are non-stationary and the linear combination of them is also non-stationary, it gives room for running the standard Granger-causality tests rather than vector error correction model. Table 3 provides the results of Granger causality tests of Agricultural export (LAGR) as sub-component of non-oil exports, Export Expansion Grant (LEEG), Export Development Fund (LEDF) and Manufacturer-In-Bond Scheme (LMIBS) representing the export incentive schemes in Nigeria. Based on the F-statistic and P-values reported, the null hypotheses suggesting that Agricultural Exports (AGR) does not granger causes Export Expansion Grant (EEG) and Export Development Fund (EDF) does not granger cause Agricultural Exports (AGR) are rejected. Therefore, the results reveal that causality runs from agricultural export (LAGR) to export expansion grant (LEEG). However, there is unidirectional causality running from export development funds (LEDF) to agricultural export (LAGR).

5. Conclusion and Recommendation

This paper examines the impact of export incentive schemes on the performance of agricultural exports in Nigeria, over the period 1990-2014. The authors applied autoregressive distributed lag model and Granger causality test and found that there is no long-run equilibrium relationship between export incentive schemes and the performance of agricultural exports in Nigeria. The absence of long run equilibrium relationship entails that the impact of export incentives schemes on the performance of agricultural exports in Nigeria was not significant and cannot be considered, especially in the long-run. Causal relationship between agricultural exports and export expansion grant is unitary, implying that it is agricultural exports that influences export expansion grant in Nigeria. Similarly, an evidence of one-way causality running from export development fund to agricultural exports in Nigeria was found, revealing that export development fund granger causes

agricultural exports without feedback. Since the findings of the study show that export development fund has positive and significant impact on the performance of agricultural exports in Nigeria, the study suggests that major concern should be given to its management and disbursement to ensure stable growth in the agricultural exports in Nigeria.

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