ANALYSIS OF THE RELATIONSHIP BETWEEN EXPORTS INCENTIVE SCHEMES AND MANUFACTURED EXPORTS IN NIGERIA

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Abstract

This study analyses the relationship between Exports Incentive Schemes and the Performance of manufactured 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 manufactured Exports and Exports Incentive Schemes in Nigeria. The bounds tests used in the study revealed that there is no long run equilibrium relationship between Exports Incentive Schemes and the performance of manufactured Exports (MNF) in Nigeria. It is of high importance to note that the granger casualty tests indicate that there was a unidirectional relationship running from Manufactured Export (LMNF) to Export Expansion Grant (LEEG). All other variables showed evidence of no causal relation. Therefore, the study recommends that the existing Export Expansion Grant (EEG) scheme should be enhanced to improve the performance of Manufactured Exports in Nigeria.

Keyword: Export Incentive Schemes, Manufactured Exports, ARDL, Ganger Causality

1.INTRODUCTION

The world has witnessed a greatest development in the past decades on export promotion policies. This sweeping change is not just a result of drive to improve exports but also and perhaps more significantly to achieve higher and sustainable growth and development (Safadi, 1998). Similarly, Nigeria has over the years set up various incentives schemes for business firms and companies whose business is export based. The incentives ranges from tax exemption to duty drawbacks as well as other form of grants.

This development in export promotion has spawned the attention of researchers, academics and policy makers over the link between revenue forgone on the account of export promotion and low level of tax revenue, albeit, that is not an issue if genuine export do take place. Dismally, the level of export particularly manufactured exports had been declining in Nigeria over the years which raises some critical questions that this study seeks to answer. This include: is there a significant relationship between export incentive schemes and manufactured export in Nigeria? What is the direction of causality between them? Thus, providing an answer to the above questions will provide a background for contextualization of the impact of export incentive schemes on manufactured export.

The novelty of this work lies mainly on three aspects. First, it investigates specifically the effect of export incentive schemes on the promotion of manufactured exports. This is a breakthrough in the literature as majority of the previous studies did not disaggregate export into various sectors making their findings unclear and misleading. Secondly, the empirical methodology is based on a new and advanced approach and wide specification are applied. Lastly, the study adds knowledge to the existing body of literature.

The paper is structured into five sections, following the introduction, section 2 presents review of related literature; section 3 focuses on methodology and sources of data; while section 4 discusses the results and findings of the study. Section 5 concludes the study with recommendations for policy action.

2. THEORETICAL CONSIDERATION AND REVIEW OF RELATED EMPIRICAL LITERATURE

In the recent decades, particularly in developing countries, export-growth has become a principal strategy in the process of growth and development. Whatever the argument in the empirical literature, the success of countries like south Korea, Japan, Taiwan, Indian, China and so on provide concrete evidence in favour of positive correlation between export and economic growth and development. The pursuit of this strategy requires the adoption of certain policies in form of incentives which differs across countries.

There is a general agreement that an organised and stable macroeconomic environment with less uncertainties is necessary for the development of export in a country. In line with this, there are two divergent views on how best a country can achieve sustainable export growth. While the first school believes that export expansion can be achieved through free trade strategy, which involves no control and restrictions in the international markets. They argue that perfect competition guarantees efficient allocation of resources and wipe out factors militating against export expansion. On the other hand, the other school advocates the adaption of interventionist policies in advancing exports. According to them, perfect competition does not exist in foreign market and the export industries are dominated by increasing returns to scale. Brander and Spencer (1985) and Krugman (1986) have shown that specific export subsidies has a capacity to raise the growth of export and general wellbeing of a country.

Export incentive schemes have been in existence long before trade policy argument were propounded. There are numerous empirical studies on the nexus between export incentive schemes and manufactured exports across the globe. For instance, in analysing the effect of these schemes for eight Latin American countries, Nogues (1990) finds that only in Brazil export policies become relevant in increasing and improving exports.

Mukherjee, Pal, Deb, Ray and Goyal (2016) in their analysis of the impact of export incentive schemes on manufacturing export in India found that despite subsidies, grants and other incentives, manufacturing export has not grown as expected. Similarly, Kumar (2016) found that export promotion council has contributed immensely in enhancing exportation of bicycles in India. Furthermore, Johnson (2016) summed that export incentives would serve as an impetus for growth and development for African countries if properly undertaken and established. In another study by Carbonl (2016) on the effect of public support on export, it is found that there is significant impact of public support on export among European manufacturing firms.

Thereupon, the degree to which export influences growth in an economy has been debated extensively in economic literature. There are plethora of studies that found that export promotes growth (Ajmi, Aye, Balcilar& Gupta, 2013; Amiri&Gerdtham, 2011; Bajo-Rubio & Diaz-Roldan, 2012; Shan & Sun, 1998; Shan &Jusoh, 2012), Stimulate foreign earnings (Alvarez, 2011), encourage local and international trade (Evers & Knight, 2008). Contrary, there are other studies that found an insignificant relationship between export and economic performance (SeeTrost&Bojnec, 2016).

From the foregoing literature review, the debate seems to be mainly driven by the results from the impact of export initiative schemes on expansion of aggregate export whilst there have been few studies that adopt impact of export initiative on specific sectors. However, it should be noted that the role of export initiative is diverse across sectors of the economy. Thus, there is need to investigate the effect of export initiative schemes on sectoral export which is indispensable for policy formulation and implementation.

3. METHODOLOGY

3.1. Sources and Method of Data Collection

The source of data for this study was secondary in nature. Specifically, Quarterly Time Series data on some selected exports incentive schemes for a period of twenty-five years (1990-2014) were sourced for the study. Data on the independent variables were obtained from the Annual Publications of the Manufacturers Association of Nigeria (MAN), Federal Ministry of Finance, the Nigerian Customs Services (NCS) and the Incentives Unit of the Nigerian Export Promotion Council (NEPC) for various years. On the other hand, data related tomanufactured exports were collected from the publications of the Central Bank of Nigeria (CBN) various years and online Statistical Database. These sources are used because they are more reliable

and efficient sources of gathering useful information relevant to this study.

3.2. Method of Data Analysis

The data collected for the study has been analyzed using an Autoregressive Distributed Lag (ARDL) model and Granger causality test for the specified econometric model. Since time series data are notably not stationary overtime, this study applied augmented Dickey Fuller (ADF) test for stationarity to test for unit root in order to avoid spurious results.

3.3. Estimation Procedure

3.3.1. Unit Root Test for Stationarity of Series Variables

In conducting a study using time series data, firstly, we shall ensure that all variables included in the model are stationary. This is to ensure that each variable in the model has a constant mean and variance. However, since most time series data are not stationary, that is different periods give new information about the mean, variance and co-variance. Therefore, a variable is integrated of order 1 (1) if its first difference is stationary. To whatever degrees, if the variable is not stationary in the first difference, then there is needed to differentiate it twice or beyond to make it stationary Gujarati and Sanjeetha (2007). For this purpose, the study used the conventional augmented Dickey-Fuller (ADF) unit root tests as a tool for identifying stationarity (or non-stationarity) of a variable by running Ordinary Least Squares (OLS) regression of levels variables on their lag values as contained in Gujarati and Sanjeetha (2007).
Consider a variable Y that has unit root represented by a first-order autoregressive AR (1):

$Y_t = \beta Y_{t-1} + U_t$..... *(2)*

Where Y_t is the GDP at time t, U_t is the disturbance error term which assumed to be independently and identically distributed random variable. If the absolute value of the coefficient β is less than1, Y_t is stationary. However, if the absolute value of the coefficients equal or greater than 1, then Y_t is non-stationary, and unit root exists Gujarati and Sanjeetha (2007).

3.3.2. Autoregressive Distributed Lag (ARDL) Model Approach to Cointegration Test

The study employed Autoregressive Distributed Lag (ARDL) bounds testing procedure to test the long run equilibrium relationship between exports incentive schemes and manufactured exports in Nigeria. The ARDL has several advantages over other conventional techniques of cointegration such as Engel and Granger (1987); Johansen (1988); Johansen and Jeselius (1990); Gregory and Hansen (1996). First, it can be applied irrespective of whether the underlying variables are I(0), I(1) or a combination of both . Second, the model takes a sufficient number of lags to capture the data generating process in general to specific modeling frameworks. Third, the error correction model (ECM) can be derived from ARDL through a simple linear transformation, which integrates short run adjustments with long run equilibrium without losing long run information. Fourth, the small sample properties of the ARDL approach are far superior to that of Johensen and Juselius cointegration technique. Fifth, endogeneity is less of a problem in the ARDL technique because it is free of residual correlation. Sixth, it allows that variables may have different optimal lags, while, it is impossible with conventional procedure. Finally, as Pesaran and Shin (1999) argued, the appropriate lags in the ARDL model are corrected for both serial correlation and endogeneity problems.
The ARDL approach to cointegration is estimated using the following equations:

$$\Delta \ln MNF_t = \alpha_0 + \alpha_1 \ln MNF_{t-1} + \alpha_2 \ln EEG_{t-1} + \alpha_3 \ln MIBS_{t-1} + \alpha_4 \ln EDF_{t-1} + \sum_{i=1}^{a} q_1 \Delta \ln MNF_{t-1} +$$

$$\sum_{i=1}^{b} q_2 \Delta \ln EEG_{t-1} + \sum_{i=1}^{c} q_3 \Delta \ln MIBS_{t-1} + \sum_{i=1}^{d} q_4 \Delta \ln EDF_{t-1} + \mu_{t8} \text{ ----------(1)}$$

$$\Delta \ln EEG_t = \alpha_0 + \alpha_1 \ln EEG_{t-1} + \alpha_2 \ln MNF_{t-1} + \alpha_3 \ln MIBS_{t-1} + \alpha_4 \ln EDF_{t-1} + \sum_{i=1}^{a} q_1 \Delta \ln EEG_{t-1} +$$

$$\sum_{i=1}^{b} q_2 \Delta \ln MNF_{t-1} + \sum_{i=1}^{c} q_3 \Delta \ln MIBS_{t-1} + \sum_{i=1}^{d} q_4 \Delta \ln EDF_{t-1} + \mu_{t9} \text{ ----------(2)}$$

$$\Delta \ln MIBS_t = \alpha_0 + \alpha_1 \ln MIBS_{t-1} + \alpha_2 \ln MNF_{t-1} + \alpha_3 \ln EEG_{t-1} + \alpha_4 \ln EDF_{t-1} + \sum_{i=1}^{a} q_1 \Delta \ln MIBS_{t-1} +$$

$$\sum_{i=1}^{b} q_2 \Delta \ln MNF_{t-1} + \sum_{i=1}^{c} q_3 \Delta \ln EEG_{t-1} + \sum_{i=1}^{d} q_4 \Delta \ln EDF_{t-1} + \mu_{t10} \text{ ----------(3)}$$

$$\Delta \ln EDF_t = \alpha_0 + \alpha_1 \ln EDF_{t-1} + \alpha_2 \ln MNF_{t-1} + \alpha_3 \ln EEG_{t-1} + \alpha_4 \ln MIBS_{t-1} + \sum_{i=1}^{a} q_1 \Delta \ln EDF_{t-1} +$$

$$\sum_{i=1}^{b} q_2 \Delta \ln MNF_{t-1} + \sum_{i=1}^{c} q_3 \Delta \ln EEG_{t-1} + \sum_{i=1}^{d} q_4 \Delta \ln MIBS_{t-1} + \mu_{t11} \text{ ----------(4)}$$

Where:
α_0 = constant parameter
Δ= denotes the difference operator
∑qi= vector of the coefficients of export trade incentives variables in the models.
While, all the remaining variables remained as defined earlier
The null hypothesis in the above equations is H_0:$\alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = 0$. This indicates the absence of long run relationship. The alternative hypothesis is H_1: $\alpha_1 \neq \alpha_2 \neq \alpha_3 \neq \alpha_4 \neq 0$. The calculated F-statistics is compared with two sets of critical values as suggested by Pesaran, *et al*. (2001). One set assumes that all variables are I(0) and the other assumes they are I(1). If the calculated F-statistics exceed the upper critical value, the null hypothesis of no cointegration will be rejected irrespective of whether the variables are I(0) or I(1). If it is below the lower value, the null hypothesis of no cointegration cannot be rejected. If it falls inside the critical bound, the test is inconclusive.

3.4. Pairwise Granger Causality Test

Engel and Granger (1987) evidenced that if the two series X and Y integrated of same order i.e. I(1) and cointegrated, then there would be a causal relationship in at least one direction. But, If X and Y each are non-stationary and cointegrated, and then any standard Granger causality test will lead to spurious results. Therefore, alternative tests of causality based on an error-correction model should be applied as suggested by Behmiri and Manso (2012). However, if X and Y are both non-stationary and the linear combination of the series of two variables is non-stationary then the standard Granger-causality test should be adopted. Therefore, the causal relationship between exports incentive schemes and non-oil export has been examined using standard Granger causality test to indicate the direction of causality between series on condition that there exist no long run relationship among the variables.

4. EMPIRICAL RESULTS

4.1. Data Analysis

This section presents the descriptive statistic in order to make easy understanding of the variables under study. Table 4.1.1 presents the results of the descriptive statistic as follows:

Table 4.1.1 Descriptive Analysis

Variable	Obs	Mean	Std Dev.	Minimum	Maximum
MNF	96	12.68659	1.962840	9.023995	14.39269
EEG	96	20.29402	2.812404	15.11297	25.26779
EDF	96	2.965467	0.084363	2.775795	3.224093
MIBS	96	18.80233	0.071276	14.67569	20.75679

Source: Author's calculations using EVIEWS.

The data used in this study have been summarized in table 4.1.1 using descriptive analysis in form of mean, standard deviation, minimum and maximum values. However, the number of observations was ninety-six (96) representing the quarterly time series data for the period of twenty- five (25) years covered by the study. Manufacturing exports has the mean values of 12.68659 million naira and standard deviation of 1.962840 while 9.023995 and 14.39269 were recorded for minimum and maximum values in millions of naira respectively. Furthermore, the mean value of the export expansion grant as one of the incentive schemes used in the study was 20.29402 million naira with the standard deviation of 2.812404 million, whereas the minimum and maximum values stood at 15.11297 and 25.26779 million naira respectively. However, the Export Development Fund recorded the mean values of 2.965467 million naira with the standard deviation of 0.08363 million naira, whereas the minimum and maximum values were 2.775795 and 3.224093. Conversely, the manufacture-in-bond scheme has a mean of 18.80233 million naira; the standard deviation was 1.295337 million naira with the minimum and maximum values of 14.67569 and 20.75679 million naira respectively.

Table 4.2.1 Results of augmented Dickey-Fuller Unit Root Test

Variables	Level Value	Difference Value	Order of Integration
LMNF	-0.748000	-7.572995***	1(1)
LEEG	-1.529050	-6.328359***	1(1)
LMIBS	-1.903291	-5.747015***	1(1)
LEDF	-2.758662**		1(0)

Source: Authors' computation using EVIEWS, **and*** indicate level of significance at 1% and 5%, respectively.

Table 4.2.2 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 and Granger (1987), to conduct cointegration analysis, all variables must be integrated

of the same order. Therefore, this gives room for cointegration test.

Table 4.2.3 Bounds F-Test for Cointegration

Dependent variable	Function	F-statistic
LMNF	F_{LMNF} (LMNF/LEEG,LMIBS,LEDF)	1.189751
LEEG	F_{LEEG}(LEEG/LMNF,LMIBS,LEDF)	2.960247**
LMIBS	F_{LMIBS}(LMIBS/LMNF,LEEG,LEDF)	1.819170
LEDF	F_{LEDF}(LEDF/LMNF, LEEG, LMIBS)	2.606470
Asymptotic critical value	1%	5%
Upper Bound	4.66	3.67
Lower Bound	3.65	2.79

Source: Authors' computation using EVIEWS, ** indicates the presence of long run relation at 5% significance.

The bound F-test results for cointegration of the series MNF, EEG, EDF and MIBS have been reported above. The test statistics are prepared under the null hypothesis of absence of long run relation among the study variables. The bound F-test results for cointegration revealed that there is no cointegration among the variables. This is because the observed F_{LMNF} (LMNF/LEEG, LMIBS, LEDF) is 1.189751 which is quite smaller than the lower bound critical value of 2.79 at 5% significance level. This entails that there exist no long-run relationship between the dependent variable Manufactured Export (MNF) as sub component of the non-oil exports and the independent variables Export Expansion Grant (EEG) Export Development Fund (EDF) and Manufacturer-In Bond Scheme (MIBS) representing the export incentive schemes. However, the result reveal the presence of long run relationship among the variables when export expansion grant is taken as dependent variable, this is because, calculated F-statistic of 2.960247 for F_{LEEG}(LEEG/LMNF,LMIBS,LEDF), is greater than the lower bound critical values of 2.79 at 5% significance level.

Table 4.2.4 Pairwise Granger Causality Tests

Null Hypothesis	Obs	F-statistic	P-value
LEEG does not Granger Cause LMNF	94	0.59188	0.5555
LMNF does not Granger Cause LEEG	94	2.79591	0.0664*
LMIBS does not Granger Cause LMNF	94	1.64258	0.1993
LMNF does not Granger Cause LMIBS	94	0.01397	0.9861
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 LMNF	94	0.04689	0.9542
LMNF does not Granger Cause LEDF	94	0.63218	0.5338
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, note that * indicates the presence of causality at 10%.

Table 4.2.4 gives the outcomes of Granger causality tests. The results show an indication of one-way causality running from MNF to EEG at 10% level of significance. This was clarified by the probability value of 0.0664*.The conclusion on the path of causality was

made from the probability value of the test shown above. Granger causality was conducted using Pairwise Granger Causality to test the causal relationship between exports incentive schemes and manufactured exports (MNF) in Nigeria. The results showed that there was evidence of unidirectional causality running from MNF to EEG and MIBS to MNF at 5% and 10% levels of significance respectively, where the findings of no causality was evidenced in other variables captured in the model.

4.2. Diagnostics Results

The result of the diagnostic tests are presented in table 4.2.1. The validity of the estimated model is tested using different techniques including Breusch-Godfrey serial correlation LM test, Ramsey RESSET test, JarqueBera normality test and heteroscedasticity test. The residual passed all the diagnostic tests of no autocorrelation and no heteroscedasticity. Similarly, Ramsey Regression Equation Specification Error Test (RESSET) shows that the model is correctly specified and JarqueBera normality test indicates the acceptance of null hypothesis that the model is normally distributed.

Table 4.2.1: Diagnostics Results

Test	Test Statistic	P-Value
Breusch-Godfrey Serial Correlation LM test	0.51160	0.6014
Ramsey RESSET Test	0.9898	0.2842
JarqueBera Normality Test	0.2481	0.0016
Heteroscedasticity Test	4.6426	0.6014

Source: Computed by authors using Eviews.

5. CONCLUSION AND RECOMMENDATIONS

This study examines the causal relationship between various export incentive schemes and the performance of non-oil exports in Nigeria over the period 1990-2014. The authors applied autoregressive distributed lag model technique and Granger causality test and found that there is no long-run equilibrium relationship between export incentive schemes and the performance of manufactured exports in Nigeria. The absence of long run equilibrium relationship entails that the impact of export incentives schemes on the performance of manufactured exports in Nigeria was not significant and cannot be considered, especially in the long run.

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