



Achieving Inclusive Growth in Nigeria through Exports: An Empirical Investigation

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Authors' contributions

This work was carried out in collaboration among all authors. We all read and approved the final manuscript.

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ABSTRACT

The study investigated the effectiveness of export in the attainment of inclusive growth in Nigeria. The study functionally expressed inclusive growth as a function of oil export, non oil export, investment and foreign direct investment. In order to achieve the objectives of the study, a number of literature were reviewed, however, there were empirical regularities in the literature embracing inclusive growth as critical determinant of sustainable growth. Within the context of secondary data which spanned the period 1970-2016, the study utilized econometric technique to analyze inclusive growth model. In the model, real per capita income (proxy inclusive growth) is expressed as a function of oil exports, non oil export, investment and foreign direct investment. In particular, a number of diagnostic tests were carried out on the data before estimation in order to prevent spurious results. These include the unit root test, co-integration test and vector error correction tests. The stationarity test indicated that the data were stationary at first difference, while the co-integration test suggested long run co movement among the variables. In addition, the vector error correction model indicated the relationships among the inclusive growth fundamentals. Findings from the results indicated that in the long run, the coefficients of oil and non oil exports have negative effect on inclusive growth (proxied by real GDP per capita) while investment and foreign direct investment impacted positively on inclusive growth, while in the short run, oil exports and non

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oil export positively and significantly influenced inclusive growth in Nigeria. This study further suggested that government should intensify policy towards stimulating oil export and promote foreign investment inflows. More so, policy thrust should also embrace diversification of the economic base from monolithic base structure to agriculture.

Keywords: Inclusive growth; exports and VAR.

1. INTRODUCTION

Over the past few years, the attentions of policy makers have shifted from mere growth episodes to a broad-based growth which is inclusive in nature. Thus, inclusive growth can be characterized as broad-based growth that is nondiscriminatory in participation. Inclusive growth is an objective that resonates globally. It is a concept that advances equitable opportunities for economic participants during economic growth with benefits incurred by every section of society. The concept of inclusive growth expands upon traditional economic growth models to include focus on the equity of health, human capital, environmental quality, social protection and food security. The definition of inclusive growth implies direct links between the microeconomic and macroeconomic determinants of economy and economic growth. The microeconomic dimension captures the importance of structural transformation for economic diversification and completion, while the macro dimension refers to changes in economic aggregates such as the country's gross national product (GNP) or gross domestic product (GDP), total factor productivity and the aggregate factor inputs. Sustainable economic growth requires inclusive growth. Maintaining this is sometimes difficult because economic growth may give rise to negative externalities such as a rise in corruption, which is a major problem in developing country.

The inclusiveness of growth in a nation is a function of various factors such as export earnings, agriculture, savings, investment, import, institutions amongst others. A perfect understanding of the variables that are key in determining inclusive growth is germane in order to employ appropriate policies, plans and programmes for the attainment of a broad-based growth subject to resources constraint [1].

The Nigerian economy is opened with a large dependence on international trade to earn foreign exchange and satisfies her local demands through importation. The Nigerian economy has been considerably driven by oil

export while the non-oil export has consistently lagged behind the oil sector performance. Various attempts have been made to promote balanced growth in Nigeria. Various national development plans, Structural Adjustment Policies (SAP), Millennium Development Goals (MDGs), Sustainable Development Goals (SDGs) and Economic Recovery and Growth Plan (ERGP) are indicative of inclusive growth framework.

Domestic and international trades present options to attaining growth with inclusion, policy makers have tilted in favour of the capacity of exportation for foreign exchange earnings, promotion of industrialization, employment creation and poverty reduction as means of attaining growth with inclusiveness. To realize this, the Nigerian export base has to be diversified. The pursuit of diversification of the Nigerian export base has resulted in establishment of Nigerian Export Promotion Council (NEPC), Nigerian Export-Import Banks (NEXIM) and other macroeconomic and trade management policies [2].

The impact of these giant efforts is obvious in the emergence of the Nigerian economy as the largest in Africa and 21st in the world with an average annual growth rate of above 7.5% in the decade prior to the immediate past recession [2]. Statistical evidence [3] show that in 1970 the real GDP of the nation stood at ₦4219 million, it astronomically rose to ₦31,546.8 million and ₦267,550 million in 1980 and 1990 respectively. In 2000, it reached ₦32,9178.7 million, while for 2010 and 2016 the figures were ₦54, 612.20 million and ₦67,931.24 million respectively. From the data above, there has been an obvious upward trend in the value of real GDP which indicates a consistent economic progress. However, for 1970 the oil export value stood at ₦509.6 million with non-oil export earnings of ₦376.0m, respectively. For 1980, 1990 and 2000 the figures were ₦13632.3 million and ₦554.4 million, ₦106,626.5 million and ₦3,2596 million, ₦1,920,9004 million and ₦24, 8229 million respectively. Total export stood at ₦34, 542, 900, 000 in 1990, ₦41, 383, 150, 000, ₦93, 240, 370,

000, and ₦109,520, 000, 000 in 2000, 2010 and 2015 respectively. The data above portrays the leading role play of the oil sector in growth process in Nigeria. The non-oil sector has fluctuated due to reckless abandonment of agriculture, infrastructure and industrialization processes in terms of allocation and enabling environment for businesses to thrive this is responsible for the obvious wane in its value from an all time high of ₦1130.2 billion in 2013 to ₦665.8 billion in 2016 [3].

The misery index of the economy (inflation cum unemployment rates) has been on increase despite the impressive growth episodes recorded. The rate of unemployment stood at 4.1% in 1991, increased to 13.4% in 2004, further rose to 14.9% and 23.9% in 2008 and 2011 respectively. Nigeria literacy rate lies below that of Uganda, Tunisia, Togo, Yemen, Cameroun, Kenya and South Africa as only 59.6% of Nigerians are literates. The above variables trend shows a case of growth without inclusion. Furthermore, in 1980, of 65 million Nigerians, 17.1 million lived below the poverty line of \$1.9 per day, this represents 27.2% of the total population. The figure rose to 34.7m people out of the total population of 75 million, depicting 46.3%. In 1992, the population in poverty though increased in absolute value to 39.2 million, its fraction in total population reduced to 42.7%. This trend reversed in subsequent years as the proportion rose to 65.6% and 69% in 2010 and 2016 respectively [3]. Inequality gap as shown by Gini co-efficient for the country remains wide with 0.43 in 2004 and 0.45 in 2010 [4]. Despite policies attempt by past and present governments, the welfare levels of Nigerians have remained low as evident in the absolute poverty figures and illiteracy rates. Following [2] Nigeria is ranked 158th out of 188th countries with over 120 million people living below the poverty line. She is also ranked 144 out of 162 countries on literacy rate. These situations clearly depict growth without inclusion.

However, previous studies which have examined inclusive growth episodes in Nigeria for instance, [2] report a long run positive relationship between inclusive growth and foreign direct investment in Nigeria. Furthermore, Inflation and population negatively impacted inclusiveness of growth in Nigeria the study reported. A recent study by [5], posit that government spending plays a significant role in determining inclusive growth in Nigeria. These studies and others neglected the prime role of export in driving inclusive growth in

Nigeria. Had these studies incorporated exports as an explanatory variable, their result would have been more robust with profound policy options.

This study is the first to the best of our knowledge to consider the export sector as a key determinant of inclusive growth in Nigeria. It will open up further research areas for empirical investigation with a new dimension in an effort to promote inclusive growth in Nigeria. With the objectives of ascertaining the impacts of exports (Oil and Non-Oil) on inclusive growth in Nigeria, the study goes further to elicit other variables that determine inclusive growth episodes in Nigeria.

The study is structured into five distinct sections. Section one contains the introduction of the study. Section two reviews the literature while section three discusses the theoretical framework and analytical procedures. Section four presents and analyzes the data. Section five details out the summary, conclusion and proffers policy options.

2. EMPIRICAL AND THEORETICAL REVIEW

2.1 Empirical Literature on Inclusive Growth

Following the 2008 global economic meltdown, inclusive economic growth has become an issue that continues to be of substantial theoretical and empirical interest in both developed and developing countries. Various studies [6,7] have investigated the importance and benefits of inclusive growth beginning with [8], who pioneered the measurement of inclusive growth through the social opportunity function. Their findings revealed that growth is defined as inclusive if it increases the social opportunity function, which depends on two factors namely; average opportunities available to the population, and how opportunities are shared among the population. In addition to this [9] suggested that a development strategy with inclusive growth as the overarching goal should have two mutually reinforcing strategic anchors: first, high and sustainable growth to create productive and decent employment opportunities; and second, social inclusion to ensure equal access to opportunities.

Studies such as [10,11] pointed out that the rapid pace of growth is unquestionably necessary for substantial poverty reduction but for growth to be

sustainable in the long run, it should be broad based across the sectors and inclusive of the large part of the country's labor force. They also considered that inclusive growth exacerbates in opportunities like health, education, communication & transport, public services, nutrition and sanitation facilities for the destitute segment of the society. Furthermore, [12] reinstated that there is no universal definition of inclusive growth or inclusive development but inclusive growth is accompanied by lower income inequality so that the increment of income accrues disproportionately to those with lower incomes.

In 2015, [13] employed 31 year data set from 1979 to 2010 in analyzing the measurement and determinants of inclusive growth for both emerging markets and low income countries. Their findings revealed that macroeconomic stability, human capital, and structural changes are the foundation for achieving inclusive growth, while the role of technological change emphasized in the literature has a less discernible impact. Adding to these factors, [6] discovered the importance of fiscal policies (increase spending on health, education, and social safety nets) in achieving inclusive growth. They also suggested a need for labor market reforms to boost the labor share of total income; and reforms to make financial systems more inclusive. Furthermore, the findings of [14] opined that social expenditures, spending on education and educational attainment rates are important for fostering inclusive growth while macro-financial stability, with particular attention to inflation risks, is critical for promoting inclusive growth. Raheem et al. [15] however suggested that augmenting health expenditure with natural resource appears to be more significant for making growth process inclusive.

Therefore, inclusive growth requires, by definition, both economic growth and inclusion. As far as inclusive growth in Nigeria is concerned, [2] examines the determinants of inclusive in Nigeria and reports that a negative relationship between government consumption, education expenditure and inclusive growth both in the short-run and the long-run. In contrast, inflation and population growth variable indicate a positive effect on inclusive growth in the short-run but turned out negative in the long-run. Finally, initial capital and FDI showed a negative relationship in the short run, but a significantly positive contribution to inclusive growth in the long-run. [7] utilized a growth diagnostic approach based on the Business Enabling

Environment Approach (BEEA) and Employability Analysis Approach (EMPA) in examining the basic constraints to inclusive growth. Their findings identified two broad categories of constraints to inclusive growth in Nigeria, namely: constraints to business environment in Nigeria; and employability challenges of Nigerian graduates. They also discovered that these constraints are directly related to poor physical infrastructure, poor human capital formation, particularly, in the educational system and the inability to transform output growth to job creation. In the same vein, [16] asserted that it is absolutely imperative that government at all levels should promote a broad-based growth that generates productive employment, redistributes income, enhances equity and involves the active participation of the poor if the incidence of poverty is to be reduced in Nigeria. While most of these findings are based only on analysis of correlation coefficients among relevant variables, it is widely documented that despite the rise in economic growth, incomes of the majority of Nigerians have not risen.

More recently, [17] examined the role of health and population growth on inclusive growth in 14 African countries (including Nigeria) from 1995 to 2012 adapting the same method as [13]. The study discovered that population growth decreases the effect of inclusiveness while adequate financing of the health sector is fundamental to improve pro-poor growth in Africa. Conversely, the study conducted by [18] found a one-way causality through inclusive growth to financial development through financial deepening measure. They also discovered that either a low level or high level of openness on trade and capital investment is desirable for inclusive growth in Nigeria.

The foregoing review of empirical studies indicated that recent studies have not provided adequate information in favour of exports as a vital determinant of inclusive growth in Nigeria. The results of some of the studies show that business environment and employability challenges are constraints to inclusive growth, while others studies in Nigeria have focused on inclusive growth as a means of poverty alleviation and financial development.

2.2 The Harrod-Domar Growth Theory

The H-D model is popularly known as the two gap model in development literature. This theory

was postulated by Sir Fredrick Harrods and Evsey Domar who attributed economic growth to total national savings, capital efficiency (MEC) and depreciation in capital stock. In their earlier analysis, the model for growth was limited to the closed economy.

$$\text{Thus: } Y_g = f(s, k, \delta) \quad (1)$$

$$Y_g = \beta(s) - \delta \quad (2)$$

In review of this theory, the early model of Harrod and Domar was built on the assumption of exogeneity of variables under consideration. Furthermore, technical progress was neglected as a key determinant of growth and finally, the assumption of fixed factor intensity which does not allow factor substitution is unrealistic.

In a revised work by the authors, the model was extended to the external sector where foreign capital inflow plays an amplifying role in achieving economic growth. This version of H-D model proves relevant to less developed countries (LDCs) like Nigeria which lacks the required savings capacity to stimulate the required minimum investment for growth. But, the extension of the scope to external sector opens up opportunities for LDCs to obtain funds from the international market for domestic investments to attain the desired growth rate.

The H-D model with international sector is:

$$Y_g = \beta(s + f) - \delta \quad (3)$$

Where β MEC

s savings

f foreign capital inflow ($\frac{f}{y}$)

δ depreciation

This theory has become relevant to developing economies after the extension to international trade which serves as an integral source of foreign exchange inflow for LDCs. This theory provides the hub around which this study revolves.

3. METHODOLOGY OF THE STUDY

3.1 Data Source and Definition

The time series data on inclusive growth, oil export, non-oil export, gross fixed capital

formation and foreign direct investment were collected between 1970 and 2016 from the Central Bank of Nigeria (CBN) online statistical publication, World Bank (WB) Data, and World Pen Table. The data on the real GDP per capita will be used as a proxy for inclusive growth in Nigeria, this is because, actual data on inclusive growth as captured by poverty reduction statistics are largely unavailable, hence, per capita income becomes the closest available data to measure inclusive growth episode is in Nigeria.

3.2 Methods of Data Analysis

The method of data analysis involves both descriptive and analytical procedures. The descriptive tools entail the use of graphs and tables. The analytical tools are based on econometric analyses. The empirical analyses involve the use of diagnostic tests such as unit root tests for stationary of each of the variables and co-integration to examine the long-run relationship among the variables. The parameters were estimated using the Vector Autoregression (VAR) technique. The choice of VAR method of regression is based on its ability to simultaneously estimate the long run and short run dynamics of the model. In addition, so long as the variables are integrated of order one, the result of the VAR estimates possess the idea properties of unbiasedness, efficiency, consistency and sufficiency. The analyses were carried out using E-view 8.

3.3 Model Specification

The model was specified in form of multiple linear regression model.

Functional Model

$$y_t = f(\text{Oil Export, Non-oil Export, Investment, FDI}) \quad (4)$$

$$y_t = f(\text{OX, NOX, INV, FDI}) \quad (5)$$

Mathematical Model

$$y_t = \beta_0 + \beta_1 \text{OX} + \beta_2 \text{NOX} + \beta_3 \text{INV} + \beta_4 \text{FDI} \quad (6)$$

Econometric Model (natural log form "ln")

$$\ln y_t = \beta_0 + \beta_1 \ln \text{OX} + \beta_2 \ln \text{NOX} + \beta_3 \ln \text{INV} + \beta_4 \ln \text{FDI} + \mu \quad (7)$$

Description of Variables in the model		
Variables		Definitions
Dependent Variable:		
y	-	Real GDP per Capita
Explanatory Variables:		
OX	-	Oil Export (₦'Billion)
NOX	-	Non-Oil Export (₦'Billion)
INV	-	Gross Fixed Capital Formation (₦'Billion)
FDI	-	Foreign Direct Investment (₦'Billion)
Error term:		
u	-	Error term in model

Where:

- β_0 = intercept of the model
- β_1 =partial elasticity coefficient of OX with respect to y.
- β_2 = partial elasticity coefficient of NOX with respect to y.
- β_3 =partial elasticity coefficient of INV with respect to y.
- β_4 = partial elasticity coefficient of FDI with respect to y.

The 'A priori' Expectations

It is necessary to state the theoretical relationships in respect of the expected signs and the values of the parameters between dependent and independent variables. Thus, the a priori expectations are stated as follows:

$$\beta_0 > 0; \beta_1 > 0; \beta_2 > 0; \beta_3 > 0, \text{ and } \beta_4 > 0$$

The skewness values for most of the variables are between -0.65 and 1.68, with some of the variables having negative and positive signs indicating skewness to the left and right. The kurtosis indicates the peakness or flatness of the data relative to a normal distribution. It shows that the foreign direct investment inflows (FDI) satisfy this condition with an expected value of 0.015. The probability value of all the variables except OX and NOX are significant.

4. ANALYSIS OF DATA AND PRESENTATION OF RESULTS

4.1 Normality Test

The descriptive statistics was carried out on all the variables specified in the estimated equation to find out whether they are normally distributed or not. Table 1 presents the descriptive statistics.

The Pearson's correlation coefficient for the variables in the model is presented in Table 2. The result revealed that oil exports (OX) and non oil exports (NOX) positively correlated with real GDP per capita (Yt). The correlation matrix further indicated that investment and FDI GDP negatively correlated with real GDP per capita. However, the analysis of short-run correlation

Table 1. Summary statistics

	YT	OX	NOX	INV	FDI
Mean	0.014720	1.166313	2.282311	0.745242	2.838759
Median	0.012129	1.099957	2.304059	0.911668	2.697521
Maximum	0.031128	1.913888	4.156040	1.531745	10.83256
Minimum	0.007273	0.414973	-0.292430	0.000000	-1.150856
Std. Dev.	0.007117	0.404507	1.415067	0.469418	2.083440
Skewness	1.129942	0.119730	-0.115601	-0.647309	1.681641
Kurtosis	2.934771	2.057282	1.549329	2.093001	7.291451
Jarque-Bera	10.00968	1.852698	4.225886	4.893257	58.21778
Probability	0.006705	0.395997	0.120882	0.086585	0.000000
Sum	0.691850	54.81671	107.2686	35.02637	133.4217
Sum Sq. Dev.	0.002330	7.526807	92.11106	10.13627	199.6733
Observations	47	47	47	47	47

Source: Computed from E-View 8.0 by the Author

List of variables: Yt = Real GDP per capita ; OX = Oil Export; NOX = Non Oil Export; INV = Gross Fixed Capital Formation; FDI = Foreign Direct Investment Inflows

relationships may be spurious. As a result, a more rigorous analysis must be undertaken to underpin the effect of OX, NOX, INV and FDI on real GDP per capita.

4.2 Unit Root Test

The importance of tests for stationarity of variables is rooted on the fact that regression involving non-stationary variables leads to misleading inferences since the estimated coefficients would be biased and inconsistent. When all or some of the variables are not stationary, it is important therefore to carry out appropriate transformation (differencing) to make them stationary. The Dickey Fuller class of tests and the Phillips-Perron unit root tests for stationarity were used to test for variable stationarity. Table 3 shows the result of the unit root tests. Akaike information criterion is used to determine the duration of delays in both tests.

The unit root tests show that all the variables are stationary at first difference (I_1). In order to determine how to model the short-run dynamics of the Real GDP per capita, it is therefore important to carry out test for co-integration.

4.3 Tests for Co-Integration

Before proceeding to Johansen test for co integration, it is necessary to perform the optimal

lag selection for the model. The optimal lag length for the model is one as shown in Table 4.

The result of the co integration condition is presented in Table 5 using the methodology proposed by Johansen and Juselius (1990). In the co integration table, both the trace and maximum-Eigen value tests indicated one (1) co-integrating equation at 5% level of significance.

The long run parameter estimates as derived from the normalized co-integrating equation is presented in Table 6.

The results show that the coefficients of oil and non oil exports has negative effect on real GDP per capita while investment and foreign direct investment impacted positively on real GDP per capita. The justification for the negative signs on the coefficients of oil and non oil exports could be attributed to the global crash in the oil prices in the international market. This affected the revenue inflows of the government and consequently constrained the expenditure flows to human capital development. The positive signs on the coefficients of investment and foreign direct investment could be attributed to economic diversification as a result of the decline in revenue inflow from oil.

Table 2. Correlation matrix

	YT	OX	NOX	INV	FDI
YT	1.000000	0.708661	0.634114	-0.031169	-0.006724
OX	0.708661	1.000000	0.881648	0.454426	0.187037
NOX	0.634114	0.881648	1.000000	0.388186	0.396597
INV	-0.031169	0.454426	0.388186	1.000000	0.296354
FDI	-0.006724	0.187037	0.396597	0.296354	1.000000

Source: Computed from E-View 8.0 by the author

Table 3. Stationarity test results

Variable	ADF test statistics	Critical values		PP test statistics	Critical values		Order of integration	
		1%	5%		1%	5%		
Yt**	Level	-2.4006	-3.5777	-2.9251	-2.3629	-3.5777	-2.9251	I ₁
	1 st Diff	-6.6448	-4.1705	-3.5107	-6.6447	-4.1705	-3.5107	
OX**	Level	-1.6555	-3.5777	-2.9251	-1.6522	-3.5777	-2.9251	I ₁
	1 st Diff	-6.8568	-4.1705	-3.5107	-6.8877	-4.1705	-3.5107	
NOX**	Level	-1.6659	-3.5777	-2.9251	-1.6659	-3.5777	-2.9251	I ₁
	1 st Diff	-7.2259	-4.1705	-3.5107	-7.2278	-4.1705	-3.5107	
INV**	Level	-1.9946	-3.5811	-2.9266	-2.0374	-3.5811	-2.9266	I ₁
	1 st Diff	-6.5150	-4.1756	-3.5130	-6.7245	-4.1756	-3.5130	
FDI**	Level	-3.5498	-3.5777	-2.9251	-3.4498	-3.5777	-2.9251	I ₁
	1 st Diff	-6.4755	-4.1809	-3.5155	-20.0146	-4.1705	-3.5107	

** denote level and intercept.

Source: Computed from E-View 8.0 by the Author

Table 4. Criteria for selecting lag length

Lag Order Selection Criteria
 Endogenous variables: YT OX NOX INV FDI
 Exogenous variables: C
 Date: 09/19/18 Time: 07:40
 Sample: 1970 2017
 Included observations: 44

Lag	LogL	LR	FPE	AIC	SC	HQ
0	6.187135	NA	6.52e-07	-0.053961	0.148788	0.021228
1	223.2036	374.8466*	1.07e-10*	-8.781981*	-7.565488*	-8.330847*
2	244.4835	31.91992	1.32e-10	-8.612888	-6.382651	-7.785808
3	262.5823	23.03474	2.04e-10	-8.299194	-5.055212	-7.096169

* indicates lag order selected by the criterion
 LR: sequential modified LR test statistic (each test at 5% level)
 FPE: Final prediction error
 AIC: Akaike information criterion
 SC: Schwarz information criterion
 HQ: Hannan-Quinn information criterion
 Source: Computed from E-View 8.0 by the Author

Table 5. Co-integration test results

Date: 09/19/18 Time: 07:54
 Sample (adjusted): 1972 2016
 Included observations: 45 after adjustments
 Trend assumption: Linear deterministic trend
 Series: YT OX NOX INV FDI
 Lags interval (in first differences): 1 to 1
 Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.621718	82.82186	69.81889	0.0032
At most 1	0.371578	39.07668	47.85613	0.2572
At most 2	0.206379	18.17221	29.79707	0.5534
At most 3	0.131045	7.770492	15.49471	0.4903
At most 4	0.031701	1.449639	3.841466	0.2286

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.621718	43.74518	33.87687	0.0024
At most 1	0.371578	20.90447	27.58434	0.2820
At most 2	0.206379	10.40172	21.13162	0.7063
At most 3	0.131045	6.320853	14.26460	0.5724
At most 4	0.031701	1.449639	3.841466	0.2286

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Computed from E-views 8

The essence of error correction mechanism representation is to capture the effects of short run movement in the empirical model in the study. It involves moving from over

parameterized to a parsimonious modeling. In the study an over parameterized equations were estimated by setting the lag length long enough to capture the dynamics of the model. The over

Table 6. Long run parameter estimates of the model

Dependent variable: Yt		
Variable	Coefficient	Standard error
OX	-0.039271	0.01398
NOX	-0.008944	0.00394
INV	0.033035	0.00597
FDI	0.006300	0.00140

Table 7. Over parameterized model

Dependent Variable: ΔYT
 Method: Least Squares
 Date: 09/22/18 Time: 12:51
 Sample (adjusted): 1985 2016
 Included observations: 32 after adjustments

Variable	Coefficient	Std. error	t-Statistic	Prob.
C	0.044557	0.015293	2.913458	0.0121
ΔYT(-1)	-0.104133	0.096444	-1.079727	0.2999
ΔOX	0.536374	0.120603	4.447443	0.0007
ΔOX(-1)	0.464946	0.159712	2.911154	0.0121
ΔOX(-2)	0.421746	0.142715	2.955159	0.0112
ΔOX(-3)	0.258571	0.168434	1.535147	0.1487
ΔNOX	0.383431	0.133693	2.867995	0.0132
ΔNOX(-1)	0.074527	0.143560	0.519136	0.6124
ΔNOX(-2)	-0.147026	0.143862	-1.021995	0.3254
ΔNOX(-3)	-0.176888	0.135901	-1.301597	0.2156
ΔINV	-0.057258	0.078395	-0.730378	0.4781
ΔINV(-1)	-0.105688	0.100524	-1.051367	0.3122
ΔINV(-2)	0.049632	0.099881	0.496910	0.6275
ΔINV(-3)	-0.026251	0.106568	-0.246335	0.8093
ΔFDI	-0.046970	0.018238	-2.575432	0.0231
ΔFDI(-1)	-0.031529	0.018976	-1.661505	0.1205
ΔFDI(-2)	-0.037916	0.016542	-2.292139	0.0392
ΔFDI(-3)	-0.034052	0.016978	-2.005664	0.0662
ECM	-0.270867	0.026051	-10.397566	0.0000
R-squared	0.945379	Mean dependent var		0.048302
Adjusted R-squared	0.869751	S.D. dependent var		0.133267
S.E. of regression	0.048096	Akaike info criterion		-2.944518
Sum squared resid	0.030072	Schwarz criterion		-2.074237
Log likelihood	66.11229	Hannan-Quinn criter.		-2.656045
F-statistic	12.50029	Durbin-Watson stat		2.779474
Prob(F-statistic)	0.000019			

Source: Computed from E-View 8.0 by the Author

parameterized model is presented in the Table 7. The over parameterized model is simplified until theory consistent and data coherent results are achieved by one by one deleting of insignificant variables. The result of the parsimonious ECM is presented in the Table 8.

The short run dynamic changes of real GDP per capita with respect to oil export, non oil export, investment and foreign direct investment variables can be analyzed in the context of an error correction model (ECM) obtained from the parsimonious model. Table 8 presents the

parsimonious growth model. Given the adjusted R^2 value of 0.86, it can be concluded that 86% of the net systematic variation in real GDP per capita is explained by the combined explanatory variables of oil export, non oil export, investment and foreign direct investment. The F-Value of 21.50 is highly significant, an indication that the explanatory variables jointly explain variation in economic growth during the period of study. The Durbin Watson (D.W) statistic of 1.85 indicates the absence of serial correlation in the model. The error correction term is appropriately negative and significant at the 5% level. The

ECM term of -0.087 means that any deviation in economic growth from its long run value that will occur in one period will be partially corrected in the following period. In other words, about 8.7% of the error in period one will be corrected in the following period. This result suggests that the speed of adjustment of economic growth to the long run equilibrium path is very slow. The short run estimation of the model (obtained from the parsimonious ECM model), in Table 8 indicates

that contemporaneous oil export (OX), lagged one and two periods oil exports and current non oil export (NOX) positively and significantly influenced real GDP per capita. However, lagged two period non-oil export influenced real GDP per capita Nigeria negatively. Similarly, lagged one period and contemporaneous foreign direct investment influenced real GDP per capita negatively. Foreign direct investments in both lag one and two periods affect real GDP negatively.

Table 8. Parsimonious error correction model

Dependent Variable: ΔY_T
 Method: Least Squares
 Date: 09/22/18 Time: 12:55
 Sample (adjusted): 1983 2016
 Included observations: 34 after adjustments

Variable	Coefficient	Std. error	t-Statistic	Prob.
C	0.040518	0.011836	3.423348	0.0023
ΔOX	0.533975	0.117643	4.538951	0.0001
$\Delta OX(-1)$	0.362635	0.114511	3.166810	0.0043
$\Delta OX(-2)$	0.414792	0.132747	3.124671	0.0048
ΔNOX	0.211836	0.123760	1.711665	0.1004
$\Delta NOX(-2)$	-0.236785	0.126070	-1.878205	0.0731
$\Delta INV(-1)$	-0.074149	0.092408	-0.802403	0.4305
ΔFDI	-0.035556	0.016972	-2.095006	0.0474
$\Delta FDI(-1)$	-0.046303	0.013791	-3.357373	0.0027
$\Delta FDI(-2)$	-0.019398	0.013329	-1.455389	0.1591
ECM	-0.086685	9.997767	0.008670	0.0000
R-squared	0.903378	Mean dependent var		0.034498
Adjusted R-squared	0.861368	S.D. dependent var		0.141143
S.E. of regression	0.052552	Akaike info criterion		-2.797830
Sum squared resid	0.063520	Schwarz criterion		-2.304007
Log likelihood	58.56311	Hannan-Quinn criter.		-2.629422
F-statistic	21.50401	Durbin-Watson stat		1.852632
Prob(F-statistic)	0.000000			

Source: Computed from E-View 8.0 by the Author

4.4 Vector Error Correction Model

Table 9. Vector error correction results

Vector Autoregression Estimates
 Date: 09/23/18 Time: 19:39
 Sample (adjusted): 1972 2016
 Included observations: 45 after adjustments
 Standard errors in () & t-statistics in []

	YT	OX	NOX	INV	FDI
YT(-1)	0.833774 (0.23706) [3.51718]	-28.04346 (19.1391) [-1.46525]	18.16026 (22.2956) [0.81452]	4.497390 (24.2582) [0.18540]	13.35544 (256.639) [0.05204]
YT(-2)	-0.025397 (0.23484) [-0.10815]	19.01465 (18.9599) [1.00289]	-26.40572 (22.0869) [-1.19554]	-20.43987 (24.0312) [-0.85056]	-10.48590 (254.237) [-0.04124]
OX(-1)	-0.002727 (0.00250) [-1.09198]	0.732956 (0.20160) [3.63564]	-0.172654 (0.23485) [-0.73516]	1.442176 (0.25553) [5.64395]	-1.485946 (2.70333) [-0.54967]

OX(-2)	0.008025 (0.00322) [2.49526]	0.259656 (0.25965) [1.00004]	0.150408 (0.30247) [0.49727]	-0.853673 (0.32909) [-2.59402]	-0.740799 (3.48163) [-0.21277]
NOX(-1)	0.000723 (0.00232) [0.31167]	0.295621 (0.18729) [1.57838]	0.601568 (0.21818) [2.75717]	-0.436218 (0.23739) [-1.83756]	0.436897 (2.51145) [0.17396]
NOX(-2)	-0.000884 (0.00230) [-0.38368]	-0.238183 (0.18593) [-1.28106]	0.352865 (0.21659) [1.62918]	0.311176 (0.23566) [1.32046]	0.336155 (2.49313) [0.13483]
INV(-1)	-0.003435 (0.00159) [-2.15876]	-0.186308 (0.12847) [-1.45016]	-0.090902 (0.14966) [-0.60738]	0.847273 (0.16284) [5.20321]	0.518633 (1.72272) [0.30105]
INV(-2)	-1.78E-05 (0.00121) [-0.01474]	0.037536 (0.09740) [0.38538]	0.099488 (0.11346) [0.87683]	-0.019747 (0.12345) [-0.15996]	0.836571 (1.30605) [0.64053]
FDI(-1)	0.000103 (0.00016) [0.63088]	-0.004372 (0.01322) [-0.33069]	0.022435 (0.01540) [1.45658]	-0.002116 (0.01676) [-0.12627]	0.285247 (0.17730) [1.60887]
FDI(-2)	6.84E-05 (0.00017) [0.39855]	-0.007038 (0.01385) [-0.50802]	0.024716 (0.01614) [1.53155]	0.003650 (0.01756) [0.20788]	0.033379 (0.18576) [0.17969]
C	-0.000286 (0.00135) [-0.21178]	0.168426 (0.10913) [1.54337]	0.221148 (0.12713) [1.73959]	-0.038343 (0.13832) [-0.27721]	1.709393 (1.46333) [1.16816]
R-squared	0.952510	0.898052	0.988280	0.876902	0.375798
Adj. R-squared	0.938542	0.868068	0.984833	0.840697	0.192210
Sum sq. Resids	0.000106	0.687803	0.933381	1.104943	123.6708
S.E. equation	0.001762	0.142230	0.165688	0.180273	1.907191
F-statistic	68.19338	29.95045	286.7081	24.22027	2.046958
Log likelihood	227.8217	30.21837	23.34886	19.55230	-86.59886
Akaike AIC	-9.636519	-0.854150	-0.548838	-0.380102	4.337727
Schwarz SC	-9.194890	-0.412521	-0.107210	0.061526	4.779356
Mean dependent	0.015040	1.193454	2.390740	0.778364	2.859395
S.D. dependent	0.007106	0.391577	1.345376	0.451667	2.121998
Determinant resid covariance (dof adj.)		4.56E-11			
Determinant resid covariance		1.12E-11			
Log likelihood		248.0342			
Akaike information criterion		-8.579296			
Schwarz criterion		-6.371153			

4.5 Discussion of Results

In order to represent the long run and short run relationship between real GDP per capita and its fundamentals, we specified and reported the results of Vector Error Correction Model in the entire sample period.

The estimation of VECM model enables us to assess the long run and short run dynamic relationship between real GDP per capita, oil export, non-oil export, investment and foreign direct investment. It is clear from the results in Table 9 that any past disequilibrium in the long run relationship among the system variables will be corrected over time as shown by the negative sign of the Error Correction Mechanism (ECM).

As shown by Table 9, lagged one period real GDP per capita positively influenced contemporaneous real GDP per capita, Non-oil export, investment and Foreign Direct Investment. However, lagged one period Real GDP per capita negatively related with oil export. Within the same discussion, lagged two periods Real GDP per capita negatively influenced current Foreign Direct Investment, but positively related to oil exports.

Lagged one period oil export negatively correlated with current real GDP per capita, non-oil exports and FDI. The coefficient of oil export in lagged one period positively correlated with contemporaneous oil export influenced real GDP per capita, current OX and NOX

positively, while it affected negatively INV and FDI.

Again, a positive relationship existed between lagged are non-oil export, real GDP per capita, OX, FDI and current NOX. A negative relationship is observed between lagged one period NOX and INV. Lagged two period NOX affected Real GDP per capita and OX negatively while it positively influenced current NOX, INV and FDI.

The impact of investment in lagged one period influenced Real GDP per capita, oil export and NOX negatively while it affected investment and FDI positively. However, lagged two INV influenced Y_t and INV negatively, while it recorded a positive relationship with OX, NOX and FDI.

The coefficient of FDI in lagged one period positively influenced Real GDP per capita, NOX and FDI, while it correlated inversely with OX and INV. Again, the coefficients of Real GDP per capita, OX, NOX and INV are significant at 5%. Within the same discussion, lagged two period FDI positively influenced Y_t , NOX, INV and current FDI.

The coefficient of determination (R^2) accounts for the overall effects of explanatory variables on the dependent variable. The R^2 is 94%. Overall, from the empirical analysis, in the short run, OX constitutes the credible determinants of Real GDP per capita. In the long run, investment and FDI drives Real GDP per capita.

5. CONCLUSION AND POLICY IMPLICATION

5.1 CONCLUSION

This study investigates the relationship between inclusive growth and exports in Nigeria. In a multiple regression model specified, inclusive growth was proxied by Real GDP per capita as the dependent variable, while the independent variables included Oil export (OX) and Non-Oil Export (NOX), Investment (INV) and Foreign Direct Investment (FDI). Overall, from the empirical analysis, in the short run, OX constitutes the credible determinants of Real GDP per capita. In the long run, investment and FDI drive Real GDP per capita. This implies that the achievement of inclusive growth in the short run requires stimulation of oil export, while sustainability of inclusive growth is better

pursued with investment enhancement and foreign direct investment attracting policies. Again, NOX does not drive inclusive growth in Nigeria. In addition, it takes two period of lag before the positive effect of FDI is felt on the inclusive growth. About similar period, FDI stimulates Non-oil export, and Investment, while it serves a drag on Oil export. Again, we can conclude on the basis our findings that previous period investment negatively influenced inclusive growth, oil export and non-oil export. While past two period investment bears a positive effect on Oil Export, Non-Oil Export and FDI in Nigeria.

5.2 Policy Options

The following policy suggestions provided on the basis of our findings are relevant to the government of Nigeria and other LDCs with similar structural characteristics as Nigeria. To investors and industrialists, these recommendations are of vital importance.

The Federal Government of Nigeria and all states should collaborate to sustain oil export output as it has the capacity to promote inclusive growth in the short run. To this end, sustainable peace efforts are recommended in the oil producing regions of the country through communal security of oil facilities, adoption of free education and health services for all within the region so as to reap the benefit of oil output maximization.

Policy makers and economic planners should shift attention toward the diversification of the Nigerian economy into the non-oil produce if sustained inclusive growth is to be achieved in Nigeria. Diversification into agriculture and technical innovations has the capacity to provide employment for the poor and vulnerable in our society. This is a way forward to growth that is inclusive.

The economic and political environment in the country should be fashioned in a manner that it can attract more Foreign Direct Investment. Since FDI drives inclusive growth, the government should take this opportunity to attract more FDI by providing a social, political and economically stable environment. Within the same discussion, FDI should be invested in real sector with the capacity for industrialization and stimulation of foreign exchange earnings.

Furthermore, gross fixed capital formation (INV) in the real sectors- agriculture, manufacturing

and critical Infrastructure be encouraged. Both government and private sector should increase their levels of participation in the economy by investing more in the non-oil sector of the Nigerian economy as earlier identified. This has multiplier effects on inclusive growth, non-oil export and complements Foreign Direct Investment. To attain this, the cost of capital should be attractive enough to promote competition and avoid crowding out effect on the private sector. Again, security must be strengthened nation-wide, religious tension dowsed, and political environment refined with consistent economic policies. These will eventually promote both domestic and Foreign Investment inflow to the country.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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