EXPORT EXPANSION AND GROWTH IN NIGERIA: AN EMPIRICAL ANALYSIS

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ABSTRACT

This paper investigates the impact of exports on economic growth in the period 1991-2014 for Nigeria. Economic theories have shown that export being one of the key macroeconomic variables has a positive relationship with economic growth. Therefore, this study specifically test the hypothesis on whether or not exports have positive and significant impact on output growth in the Nigeria economy using a model based on a modified neoclassical production function where exports are taken as an input in the production process. And to derive consistent, unbiased, and efficient estimators of the structural equation, the model so developed was estimated by Ordinary Least square (OLS) method after a unit root test was conducted by the use of the Augmented Dickey-Fuller (ADF) test. Also, Granger-Causality test was carried out to avoid autocorrelation problem among the variables. The results of the estimation analysis obtained demonstrated that there is a significant and positive relationship between exports and output growth in the Nigerian economy. This shows that the policies that will increase export in the Nigerian economy should be encouraged.

Keywords: Economic growth, Export, Neo-classical, production function.

INTRODUCTION

The state of the Nigerian economy prior to the oil-boom (1960-1973) was the same as the one experienced in many other developing countries. The contribution of virtually all sectors of the economy grew rapidly. However, in terms of the contributions of the different sectors of the economy to the Gross Domestic Product (GDP) during this period, agriculture was the most important component of the economy, supplying the needed food requirements and employment opportunities for the majority of the population. It also provided raw materials for the industrial sector and was the chief foreign exchange earner for the country. Later, during the oil-boom period (1974-1981), agriculture's share of the GDP declined drastically, and the share of manufacturing sector in the GDP was still negligible, while that of oil increased tremendously. During this period, oil dominated the country's economic and financial performance to such a degree that changes in the fortunes of this single commodity affected significantly all sectors of the economy. Oil displaced agriculture as the major foreign exchange earner for the country and the prime mover of the economy. Therefore, the engine of Nigeria's economic growth at this time was its oil exports. Historically, Nigeria exports primarily petroleum and a few other raw materials such as cocoa, rubber, palm kernel, organic oils, and fats. The dependence on oil for its export caused Nigeria to become especially vulnerable to world oil price fluctuations. During the colonial years, Britain was Nigeria's leading trading partner. After independence, Nigeria diversified its trading partners. It now trades worldwide with about 100 countries. The United States replaced Britain as the major trading partner in the 1970s. Other major trading partners include Germany, France, the Netherlands, Canada, Japan, Italy, and Spain. Nigeria's meager trade with Eastern Europe and the former Soviet Union declined even further after the collapse of Euro-

Communism and the breakup of the Soviet Union in the early 1990s. Nigeria also trade with some African countries but mainly with members of the Economic Community of West African States (ECOWAS). Prior to 1966, Nigeria had a persistent trade deficit. However, the rapid growth of the oil sector reversed that trend. Nigeria is famed to be immensely blessed with natural resources, yet it still has some relatively stagnant economic conditions due to a number of factors such as lack of sufficient human capital, high levels of unemployment, presence of weak governance, poverty, unstable policy environment. And because of the aforementioned factors, Nigeria's economic growth rate had been very slow or virtually stagnant which makes growth difficult to achieve. This economic reality has forced Nigeria to take measures directed in pursuing a vigorous export promotion strategy. Although exports are one of the fundamental sources of foreign exchange earnings and export-driven activities yield a substantial amount of employment in Nigeria, there is no recent empirical evidence to estimate its effects on economic growth.

The Nigerian government has emphasized the need to generate jobs and improve the welfare of its citizens and to this end, the economy needs to grow. One way of achieving this growth as earlier suggested is by increasing the country's exports. Increasing the exports basically implies putting more resources to use which will increase the employment rate of the country and also yield other benefits such as increase in per capita income, increase in the general standard of living and so on. Therefore, this study will empirically test the hypothesis of whether or not there is a positive relationship between exports and economic growth for the period 1991-2014.

LITERATURE REVIEW

Most of the literature on trade and growth centers on the relationship between exports and output growth. This relationship between exports performance and economic growth has been of considerable interest to development economists in recent years. Exports were found to be highly significant in the relationship between export and growth. The growth of GDP was significantly correlated to the growth rate of exports in a number of studies done in several developing countries. Export expansion is an important feature of the growth process. It is a necessary condition for sustained rapid growth in a market economy. Kravis (1970) noted that since exports are component of aggregate output, then one would expect a positive relationship in terms of the correlation coefficient. Some studies by Michalopoulos and Jay (1973), Michaely (1977), Balassa (1978), Heller and Porter (1978), Tyler (1981), Feder (1983), Ram (1985), Marin (1992), and Thornton (1996) showed that exports contributed to GNP growth without changing the volume of exports due to increased efficient use of resources. However, Keesing (1967), and Balassa (1978) demonstrated that this increase in GDP was due to various beneficial aspects of exports, such as greater capacity utilization, economies of scale, incentives for technological improvements, and efficient management due to competitive pressures abroad. Michalopoulos and Jay (1973), in a study of 39 countries, estimated an aggregate neoclassical production function, using domestic and foreign capital and population as its factors of production. The study revealed after the estimations that the power of the function was increased when export was included as an additional factor. Michaely (1977) found a significant relationship at the 1% level in the estimation of the relationship between the changes in proportion of exports to the rate of GNP in 41 countries for the period 1950-1973. Following in the tradition of Michalopoulos and jay (1973), Balassa (1978) estimated the effects of exports on economic growth in a production function-type framework for a sample of semi-industrial countries in the 1960-1973 periods. The method used involved the inclusion of exports to capital and labor in a

cross-section equation formulated to determine the inter-country differences in index of economic growth. Though the results understated the effects of export growth on GNP, nonetheless, there is still a positive relationship between the growth of exports and GNP. The same method was later used by Tyler (1981) in a large group of middle income countries for the period 1960-1977 where an empirical relationship between economic growth and export expansion in developing countries was observed through an inter-country cross-section analysis. Models by Grossman and Helpman (1990), Rivera-Batiz and Romer (1991), Romer (1990) stated that expanded international trade increases the number of specialized inputs, increasing growth rates as economies become open to international trade. Buffie (1992), and (Francisco and Ribeiro, 2000) considered how export shocks can produce export-led growth. Abdulai and Jaquet (2002) tested the ELG hypothesis for Cote-D'voire. And for the period 1961-1997, the authors examined the short and long term relationship between economic growth, exports, real investments, and labor force. Time series techniques used were co-integration and ECM. The authors found evidence of one long-run equilibrium relationship among all the variables used. They also found causality, both in the short-run and in the long-run, flowing from exports to economic growth. Also, bidirectional causation between the variables was found. Hachicha (2003) tested the dynamic relationship between exports and economic growth in Tunisia using annual data for the period 1961-1995. The author using an export augmented Cobb-Douglas production function and conducted a unit root tests for all the series using the ADF test; it was found that all series were I(1). And Co-integration test was conducted using Johansen and Juselius's procedure. The author estimated the co-integrated VAR models using either one or two lags according to the Akaike information Criterion (AIC). The variables in the production function and those in the export demand and supply functions were found to be co-integrated. Also, Granger-causality test was conducted using the maximum-likelihood estimator to estimate the long-run relationship between the variables; the results showed a strong association between exports and economic growth, supporting the ELG hypothesis. Although most of the empirical work supports the export-led growth hypothesis, there is no overall consensus on this very issue. While some economists like (Krueger, 1978; Chenery, 1979; Tyler, 1981; Kavoussi, 1984; Ram, 1985, 1987; Chow, 1987; Fosu, 1990; and Salvatore and Hatcher, 1991) seem to generally agree that exports benefit economic growth; others such as (Jung and Marshal, 1985; Kwan and Cotsomitis, 1990; Ahmad and Kwan, 1991; Dodaro, 1993; Oxley, 1993; Yaghmaian, 1994; and Ahmad and Harnhirum, 1995) did not find much support to the export-led-growth hypothesis.

METHODOLOGY

The argument concerning the role of exports as one of the main determinants of economic growth is not new. It goes back to the classical economic theories by Adam Smith and David Ricardo, who argued that international trade plays an important role in economic growth, and that there are economic gains from specialization. It was also recognized that exports provide the economy with foreign exchange needed for imports that cannot be produced domestically. There are several influential studies that provided a useful framework for analyzing the relationship between exports and economic growth such as Baldwin and Forslid (1996), Segerstrom, Anant and Dinopoulos (1990), Grossman and Helpman (1990), and Rivera-Batiz and Romer (1991). The basic idea of this literature is that exports increase total factor productivity because of their impact on economics of scale and other externalities such as technology transfer, improving skills of workers, improving managerial skills, and increasing productive capacity of the economy. Another advantage of export-led growth is that it allows for a better utilization of resources, which reflects the true opportunity cost of limited

resources and does not discriminate against the domestic market. There are also other studies that conclude that there is a positive relationship between exports and economic growth, such as Balassa (1978), Jung and Marshall (1985), Ram (1985 and 1987), Chow (1987), Shan and Sun (1988), Bahmani-Oskoee, Mohtadi and Shabsigh (1991), Khalifa Al-Youssif (1997). And most of these studies attributed the effects of exports on economic growth to such factors as economies of scale, increased capacity utilization, productivity gains, and greater product variety. It is also argued that exports of goods and services provide the opportunity to compete in the international markets that leads to technology transfer and improvement in managerial skills. Development is complex, and its pattern can be influenced by many variables, endogenous and exogenous. Growth has been retarded in some developing countries by deterioration in their terms of trade, inflation, and high interest rates which have made progress very difficult. But the link between exports and growth are there, operating mostly through resources mobilization and efficient use of resources. Exports undoubtedly have a pivotal role in the Nigerian's economic growth. They play a key role on both the supply side and the demand side of the economy. On the supply side, they provide the basis to acquire through foreign exchange the imported capital goods and technology which are necessary for gearing Nigeria's productive system towards a rapid economic growth. They also serve to energize the domestic productive system by way of being the harbinger of international competitiveness. On the demand side, they act favorably and serve to pop up the aggregate demand. Indeed, the whole efficiency of resource allocation is, to a large extent, mirrored in terms of export performance.

There are large differences among the empirical studies with regards to statistical techniques used. According to Sharma and Panagitidis (2005), we can distinguish between three methods: (a) using the correlation between exports and GDP; (b) using the aggregate production function with exports as explanatory variable; and (c) emphasizing the existence of threshold effects. They also pointed out that the econometrics methods used in most of the empirical investigations are dominated by the work of Granger (1969, 1988), Sims (1972), Engle and Granger (1987), Johansen (1988, 1995) and Johansen and Juselius (1990). Regarding the causality between exports and economic growth, given that exports represent one of the main components of GDP, the direction of causality may run from exports to growth and vice versa.

The model used in this study is represented by an algebraic equation. However; to derive consistent, unbiased, and efficient estimators of the structural equation, the hypothesis was tested using Ordinary Least Square (OLS) regression technique. And to test the significant of the policy variables; statistical tests, such as the F-test, t-test, and the Durbin Watson statistics were used. In order to test the relationship among the policy variables in the behavioral equation developed; it was necessary to assume that their coefficients are the estimators of the population parameters. It was also important to ensure that the explanatory variables in the model are independent; meaning that they are not correlated among themselves and they do not influence each other. Therefore, Granger-Causality test was carried out to avoid autocorrelation problem among the variables without which the population estimates may be biased; therefore, statistical insignificant. Since the data used are time series data, we therefore conduct a time series analysis. And in other to avoid "spurious regression", we first test for the stationarity of the individual series by conducting a unit root test to determine the appropriate time series technique to be used. Also for stationarity reasons, we took the natural log of these variables so as to solve the stationarity problem before carrying out a unit root test followed by a regression using ordinary Least Square (OLS) method.

From similar and previous empirical studies using the technique of modified Neo-classical production function, we developed a model of export-led-growth using exports, labour, and capital as inputs to the production process. And this modified production function can be appropriately specified as follows:

$$RGDP = f(XR, L, K) \quad (1)$$

Where:
RGDP = Real Gross Domestic Product which is taken as proxy for economic growth
XR = Real export of goods and services
L = Labour input
K = Capital input
To obtain unbiased estimates of the behavioral equation, the production function has been linearized as follows:

$$\ln RGDP = \beta_0 + \beta_1 \ln XR + \beta_2 \ln L + \beta_3 \ln K + \mu \quad (2)$$

For the relationship among the parameters in each of the behavioral equations, the hypothesis was specified as follows:
H_0: $\beta_1, \beta_2, \beta_3 > 0$
H_1: $\beta_1, \beta_2, \beta_3 < 0$
Where,
β_1, β_2 and β_3 which are the parameters to be estimated are also the regression coefficients of the explanatory variables in each of the equations under investigation, and μ is the stochastic error term that are assumed to have zero mean and constant variance.

RESULTS

Table 1: Augmented Dickey Fuller Test

Variables	Level		First difference		Remark
	Intercept	Trend & Intercept	Intercept	Trend & Intercept	
RGDP	2.553283	-1.514370	-3.238085-**	-4.471018**	stationary at first difference
XR	-0.847141	-3.285478	-6.634878**	-4.635440**	stationary at first difference
L	-1.769173	-0.713061	-3.292280**	-3.106932**	stationary at first difference
K	0.987430	-1.219023	-3.607696**	-5.368706**	stationary at first difference

Note: ** shows Stationarity @ 5% level of significance
Source: Author's computation

Table 2: Estimated Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	43.26445	8.941496	4.838614	0.0001
LXR	0.309075	0.129124	2.393635	0.0266
LL	-8.567014	2.018990	-4.243218	0.0004
LK	0.430194	0.099933	4.304806	0.0003
R^2=0.95	$\hat{R}^2$ = 0.94	F-statistic=135.8	F_{Prob} 0.000	DW= 1.85
Akaike criterion= -1.5 Schwarz= -1.3 RSS= 0.21				

Source: Author's computation

Table 3: Cointegration Test

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.836329	69.42482	47.85613	0.0002
At most 1	0.473987	29.60710	29.79707	0.0526
At most 2	0.409675	15.47363	15.49471	0.0504
At most 3 *	0.161605	3.877838	3.841466	0.0489
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.836329	39.81773	27.58434	0.0008
At most 1	0.473987	14.13346	21.13162	0.3542
At most 2	0.409675	11.59579	14.26460	0.1268
At most 3 *	0.161605	3.877838	3.841466	0.0489
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

Source: Author's computation

Table 4: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
XR does not Granger Cause RGDP	19	0.16401	0.9690
RGDP does not Granger Cause XR		9.64565	0.0031
L does not Granger Cause RGDP	19	1.41899	0.3138
RGDP does not Granger Cause L		5.37094	0.0185
K does not Granger Cause RGDP	19	0.63701	0.6786
RGDP does not Granger Cause K		6.93222	0.0087
L does not Granger Cause XR	19	2.40681	0.1292
XR does not Granger Cause L		0.52376	0.7531
K does not Granger Cause XR	19	0.33656	0.8772
XR does not Granger Cause K		3.89032	0.0438
K does not Granger Cause L	19	0.65829	0.6650
L does not Granger Cause K		4.51543	0.0298

Source: Author's computation

DISCUSSION

To appreciate the empirical relevance of the theoretical framework already developed, equations have been fitted to Nigeria's annual data for the period 1991 – 2014 from the World Bank data base (World Bank, 2015) using OLS technique. All the equations were estimated in log-log form. Thus, the coefficients are elasticities. These elasticities indicated the direction and magnitude of the impact of these exogenous variables on economic performance. Initially, we started by examining the stationarity properties of the variables using unit root test. This is necessary since the stationarity of the data is an important determinant of the type of technique that is appropriate for the analysis. Therefore, we test for the order of integration using the Augmented Dickey-Fuller (ADF) test only for unit root because it is the most commonly used in empirical research. The result depicted that all variables are not stationary at level I(0) but stationary at first difference I(1) at 1% level of significance which means that they are integrated of the same order. And since the variables are stationary at first difference, we proceed to test for long-run relationship between the variables using Johansen co-integration test. From the results obtained, the variables used are

co-integrated which implies that the variables have a long-run relationship because both trace and max test indicates 1 co-integrating eqn(s) at the 0.05 level therefore, we reject the null hypothesis of no co-integration. And from the Granger Causality test done; it was found that Causality was from RGDP to XR, from RGDP to L, from XR to K and from L to K.
The results are summarized as follows:

$$\ln RGDP = 43.26 + 0.31\ln XR - 8.56\ln L + 0.43\ln K \quad (3)$$
$$(4.83)\ (2.39)\qquad (-4.24)\qquad (4.30)$$

$R^2 = 0.95$; $F = 135.8$; $DW = 1.85$

From the above regression result, the production function exhibits satisfactory results in terms of correct signs except labour input which is negative but statistically significant. The coefficients are all statistically significant at 5% critical level. The Durbin Watson statistics is approximately 2.0, suggesting the absence of first-order serial correlation. It also suggests that no important variable has been omitted from the theoretical specification of the model. From equation (3), it is seen that the output elasticities of exports, labour, and capital were 0.31, -8.56, and 0.43, respectively. In other words, over the study period, holding labour and capital constant, a 1 percent increase in exports will led on average to about a 0.31 increase in output indicating that exports have a very high influence on GDP explaining 31% of its variations. As a result, output is increased and productivity growth is achieved over the study period. The coefficient of Multiple Determination (R^2) gave 0.95 suggesting that 95% of the variations in GDP can be explained by these explanatory variables. It was also noted that the F-statistics is very high showing a very good fit with a low probability which indicates that the whole model is statistically significant. Therefore, it can be concluded that the statistical significance of exports at the 5 percent level means that the hypothesis that export is positively related to output cannot be rejected.

CONCLUSIONS

The analysis of the experience during the period (1991-2014) in Nigeria confirms the view that exports are important positive determinant of aggregate output. During most of this period, export serves as the engine of growth in the economy. Hence, export greatly influenced other factors that determine output growth. Therefore, after the equation was formulated and estimated, the results showed that the influence of exports on output was positively significant. Hence, the hypothesis that there is a positive relationship between exports and output cannot be denied. The obvious conclusion, therefore, is that a direct relationship exists between exports and output growth during the study period.

This paper provides empirical evidence supporting the view that the success of economies which adopts export-oriented policies is due, at least partially, to the fact that such policies bring the economy closer to an optimal allocation of resources. The export sector confers positive effects on all other sectors of the economy. Therefore, it is recommended that policies that will have any distorting impact on the allocation of resources within the sector, thereby generating considerable costs in terms of economic efficiency should be discarded. Since future economic growth will depend on the pace and effectiveness of policy reforms designed to eliminate distortions in the export sector of the economy, reforms of the pricing policy should constitute a major component of any remedial program. If the Nigerian economy were to become modern and efficient, they must be given both the opportunity and the motivation to reduce costs. Indiscriminate reduction of the rate of protection and the reduction of the implicit taxes on exports alone are not the solution. Better physical infrastructure, better education and training, and more industrial experience can contribute to

the ability to reduce cost and raise productivity. Lower protection and the reduction of the implicit taxes on exports can only increase the motivation. Improved efficiency means better utilization of productive factors and widening domestic markets. Also, improved efficiency creates greater possibilities for augmenting the exports of the non-oil sectors, which are of importance for both improving the balance of payments and maintaining a high growth rate of output. The government should also implement policies that would provide exporters with duty-free imported inputs, such as intermediate and capital goods that will facilitates the growth of exports, particularly, those engaged in labor intensive manufactures where competitive material costs are critical for successful penetration in the international markets. This will increase the potential to utilize capacity fully, thereby increasing productivity in the short and medium term, and hence increase total factor productivity in the non-oil sector of the economy. It will also accelerate the transfer of underemployed agricultural workers into more productive jobs in industry and related services. Apart from increasing import capacity, exports contribute to economic growth directly by raising incomes and providing demand for domestically produced inputs. This export-led growth can be achieved through sustained improvements in the pricing policies. Policies that would reduce price distortions and improve the efficiency of the market mechanism should be encouraged. Changes required in the system of protection cannot come overnight. It then seems appropriate to distinguish between the short-term and long-term policy changes. For the short-term, there is need to provide greater competitive pressures in the Nigerian non-oil sectors. For the long-term, policies should be devised to reduce discrimination against exports and improve resources allocation in the national economy. To increase incentives to exports, it would be necessary to abolish export license, reduce rate of domestic protection, and remove all other forms of subsidies. This will re-establish and strengthen the market mechanism in the economy.

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