

REVISITING THE EXPORT LED GROWTH HYPOTHESIS (ELGH) FOR NIGERIA: A COINTEGRATION AND CAUSALITY APPROACH

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ABSTRACT

The basic theorizing of the ELGH is that countries can record significant levels of growth if there could be expansion in the export. However, the empirical evidence for the ELGH is mixed and inconclusive. In this paper we re-examine the ELGH for Nigeria. The paper utilizes time series data for the period 1963 to 2013. Applying the framework of cointegration and causality, the following findings were made. First is that manufacturing export has strong positive long run impact on growth, in contrast the primary product component generates negative impacts on growth. Similarly, the Granger causality test result also supports the ELGH for the case of manufacturing product. On the overall the estimation result conforms to the prediction of the ELGH while at the same time points out the differentiated impacts of these two components of exports on growth. In view of this result we recommend that economic policy reforms particularly should be aimed at designing mechanisms to replace primary product export dependence with manufacturing export promotion through intensified economic diversification.

Keywords: ELGH; Economic Growth; Cointegration and Causality

1. INTRODUCTION

It has long been established both within and outside the analytical spectrum of economic studies that exports especially of manufactured goods are strong growth inducing factor in the growth equation of any country. This notion has culminated to become what is now popularly known as the export led growth hypothesis (hereafter, ELGH). The

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We are profoundly thankful to Usenobong Akpan for his insightful comments in the draft copy of this paper.

proponents of this hypothesis argue that export expansion robustly contributes to economic growth in the short and the long run horizon and thus export should be seen not just as a growth inducing factor but particularly as the engine of growth especially for developing countries.

The theoretical argument in support of the ELGH is firmly rooted in the theorizing of the Ricardian model of international trade. However, there exist a plethora of empirical studies in this topic which have also been accompanied with vast inconsistencies and mercurial outcomes. Thus the empirical literature remains largely incongruous.

The conventional wisdom employed to justify this hypothesis is manifold. Thus interestingly one is most likely to find the proponent of the ELGH arguing along the following broad lines. First, exports can provide the foreign exchange to finance imports that incorporate knowledge of foreign technology and production know-how, thereby promoting cross-border knowledge spillovers (Grossman and Helpman 1991). Second, exports can increase productivity by concentrating investment in the most efficient sectors of an economy, those in which the country has a comparative advantage (Kunst and Marin 1989). Third, since combining the international market with the domestic market facilitates larger-scale operations than does the domestic market alone, an expansion of exports allows countries to benefit from economies of scale (Helpman and Krugman 1985). Fourth, and perhaps most importantly, the export sector may generate positive externalities on the non-export sector (Feder 1983). The sources of these knowledge spillovers include, on the one hand, incentives for technological improvements, labor training, and more efficient management due to increased international competition and, on the other hand, direct access to foreign knowledge through relationships with foreign buyers (Chuang 1998).

However, it has also been demonstrated vigorously in the literature that the positive spillovers from export could in some cases amount to another grandiloquent embellishment of a theory for developing countries.

For instance, it is common knowledge that most developing countries especially in Africa are heavily dependent on primary export commodities. Such exports are most certain to shift the economy away from competitive manufacturing sectors in which many externalities required for sustainable growth are generated, while the primary export sector itself does not (by its nature) have many linkages with, and spillovers into, the economy (Sachs and Warner 1995; Herzer 2007).

It is also widely acknowledged that, exports of primary goods tend to be very susceptible to large price fluctuations and dynamics of the international market due to their

relatively high income elasticities. Increased exports may therefore lead to increased macroeconomic uncertainty, which, in turn, may hamper efforts for economic planning and reduce the quantity as well as the efficiency of domestic investment (Dawe 1996).

Another concern relates directly to the ability of the non-export sector in a developing economy to absorb potential knowledge spillovers from the export sector depends on its absorptive capacity. In particular, domestically oriented firms using very backward production technology and low-skilled workers may be unable to make effective use of knowledge spillovers derived from exports. Similarly, it can be argued that a certain level of technology and human capital in the export sector itself may be necessary to acquire and efficiently utilize foreign technology (Edwards 1993 and World Bank

2009). From this discussion, it can be intuitively deduced that the productivity effects of exports are ambiguous and depend upon several factors, chief among which include the level of primary export dependence, the degree of absorptive capacity, and the posture of trade policy and several other factors.

The key implication derived from this analysis is that the effects of exports on national output through productivity may differ significantly from country to country depending on the stage of growth of the country. Thus it can plausibly be inferred that such growth inducing effect is country specific. Another implication of the above discussion is that the productivity effects of exports may differ over time, as well. For example, in the short run, exports may increase economic through the productivity channel. If, however, the increase in exports induces an expansion of sectors that do not exhibit positive externalities while other sectors with positive externalities shrink, the associated productivity loss will more than offset the traditional static specialization gains in the long run. Accordingly, exports may have positive short-run, but negative long-run effects.

We derive our curiosity to carry out this study based on the implications that precedes the fore going analysis. In this study, we attempt to shed additional light on this crucial topic by testing the validity of the ELGH for Nigeria. Nigeria offers an interesting case study because of its past and prevailing economic growth and export performance. During the last four decades Nigeria experienced a relatively consistent pattern of economic growth, which was accompanied by a significant increase of exports with primary exports accounting for more than 50 percent of the export component both in relative and absolute terms.

We examine the empirical literature from two angles. The first is the issue of whether, how and to what extent does export expansion contribute to the process of economic growth. Questions about the association amongst export, productivity, and the efficiency

of capital (with regard to the ability to use knowledge and technology obtained from export) fall in this category. The question of causality between export and growth can also be considered from this perspective. The second angle relates to the question of whether export promotion can stimulate productivity and therefore growth. Evidence on this question has been adduced from countries where trade reforms took place. There is also a voluminous econometric evidence purporting to address this question by examining income elasticities of exports, imports and growth equations. The new evidence we offer in this paper relates to both aspects of the debate.

The paper is structured as follows: Section I introduces the paper, immediately following is section II which reviews the empirical evidence on the ELGH and argues that a time series approach is more fruitful than the cross-section approach. Section III examines the relationship between export and economic growth and develops a model for the estimation, Section IV presents the econometric methodology employed for the study, while section V offers some new evidence from the estimation result and points out some of the sequencing and pre-conditions which allegedly are at the root of transmitting the positive spillovers of export to the domestic economy. Lastly, we summarize and conclude the paper in Section VI.

2. REVIEW OF PREVIOUS STUDIES

Characteristically the ELGH has been one of the most controversial research topics among international economists.

Though the theoretical literature on the ELGH is robustly and firmly demonstrated, the empirical studies investigating the ELGH are inconclusive at best. These divergence has been traced to the methodology adopted by these studies and thus has been classified into four groups based on the data framework utilized.

The first group includes studies that use cross-sectional data. Cross sectional data has been widely used to examine variety of macroeconomic relationships of which the ELGH is one. A number of studies have utilized this approach to study the ELGH. Notable among such studies include; Kravis (1970), Michalopoulos and Jay (1973), Voivodas (1973), Michaely (1977), Balassa (1978a, 1978b, 1985), Heller and Porter (1978), Tyler (1981), Feder (1983). Using this approach Kavoussi (1984) finds that increase export are significantly and robustly correlated with faster current and future rates of economic growth, physical capital accumulation and efficiency improvements. From these results the author conclude that the relationship between export and growth is not just a contemporaneous correlation and that export seems importantly to lead economic growth. Thus in

general, these studies collectively provide evidence in support for the positive relation between export expansion and economic growth.

However, great skepticism has been developed about the consistency and reliability of estimates obtained from this set of data. The limitations of the cross sectional data estimation stem from heterogeneity of slope coefficients across countries. Lee et al. (1995) shows that convergence tests obtained from cross-country regressions are likely to be misleading because the estimated coefficient on the convergence term contains asymptotic bias.

In a similar fashion, Quah (1993) points out that the technique is predicated on the existence of stable growth paths and shows, using data from 118 countries, that long-run growth patterns especially for developing countries are unstable. Thus, under these circumstances the cross-country variations in results are difficult to interpret. To ameliorate the drawbacks that have been associated with the cross sectional data analysis approach the second group in this study examines the ELGH within the framework of time series data analysis approach. This approach allows these studies to investigate the causal relationship between export expansion and output growth for individual countries using Grangers (1969) or Sims (1972) causality test.

Among these studies are Jung and Marshall (1985), Chow (1987), Hsiao (1987), Bahmani-Oskooee et al. (1991), Dodaro (1993), Sharma and Dhakal (1994), Love (1994), and Riezman et al. (1996). Overall, these studies suggest that export growth has no causal effect on output growth in the majority of developing countries.

However, they do not examine whether exports and GDP are cointegrated. Specifically, most of these studies test for causality by employing simple VAR models in growth rates or first differences. It is well known that the use of stationary first differences (or growth rates) avoids possible spurious correlations, but this approach precludes the possibility of a long-run or cointegrating relationship between the level of exports and the level of output a priori. Moreover, using first differences may lead to misspecification bias if a long-run or cointegrating relationship between the levels of the variables exists (Granger 1988).

Indeed, there are some studies that estimate VAR models of the (log) level of exports and the (log) level of GDP. However, standard F-tests for Granger causality based on VAR models in levels are not valid if the underlying variables are non-stationary and not cointegrated (Toda and Phillips 1993). In light of these limitations, the third group of studies uses cointegration techniques to examine the long-run relationship between exports and output for individual countries. This group includes, for example, Bahmani-Oskooee and

Else (1993), Van den Berg and Schmidt (1994), Ahmad and Harnhirun (1995), Al-Yousif (1997), Abu-Qarn and Abu-Bader (2004), Love and Chandra (2004), Bahmani Oskooee and Oyolola (2007), and Bahmani-Oskooee and Economidou (2009).

Taken as a whole, these studies suggest that in most developing countries there is a positive long run relationship between exports and output, and that causality runs from exports to output or in both directions. A limitation of these studies, however, is the low power of the tests due to the small sample size associated with the use of individual country time-series data.

Therefore, the fourth group of studies employs panel cointegration methods to examine the export-led growth hypothesis. Panel tests have higher power due to the exploitation of both the time-series and cross-sectional dimensions of the data. To the best of our knowledge, this group includes only four studies and the results are mixed. While Bahmani-Oskooee et al. (2005) and Reppas and Christopoulos (2005) conclude that long-run causality is unidirectional from GDP to exports, the results of Parida and Sahoo (2007) suggest that increased exports are caused by increased GDP; Jun (2007), on the other hand, finds support for positive long-run effects running from exports to GDP and vice versa. However, these studies also have limitations.

Reppas and Christopoulos (2005) and Parida and Sahoo (2007) consider only a relatively small number of countries. More specifically, Reppas and Christopoulos analyze a sample of 22 African and Asian countries, while the sample of Parida and Sahoo includes only four South Asian countries. Thus, it is questionable whether the results are representative for the group of developing countries as a whole. Another limitation is that Parida and Sahoo (2007) and Jun (2007) use within dimension panel cointegration estimators, which, by construction, are unable to capture the heterogeneity of the long-run coefficients across countries.

Hence, these studies do not allow conclusions regarding the long-run effects of exports (and thus the validity of the export-led growth hypothesis) for individual countries. Furthermore, the methods used in these studies do not take account of potential cross-sectional dependence, which could have biased the results.

Hence, from the foregoing it can be concluded that none of the approaches seems to be completely rid of methodological flaws. However, despite the short-coming that have been keenly pointed out, some of this approaches offer some interesting avenues which can be utilized and backed with more rigorous analysis.

The time series approach presents some interesting quality which allows for country specific analysis, thus overcoming the idiosyncratic properties that are often overlooked in cross-section approach. Similarly, using this approach, the question of causality and co-integrating relationship between export and growth can be robustly established. Thus, having this mind and in line with previous literature, this study will employ the time series approach.

3. EMPIRICAL SPECIFICATION AND METHODOLOGY

In light of the preceding discussion and in order to capture the impact of exports on output through the productivity channel, we start with the specification of an augmented production function

below:

$$Y_t = f(A_t K_t^\alpha L_t^\beta) \dots \dots \dots (1)$$

Where Y_t is the real GDP growth rate, while A_t , K_t and L_t are respectively the levels of total factor productivity, capital and labour employment. In (1) above we can express A_t as a function of exports (X_t) and other exogenous factors (F_t) that are thought to traditionally affect growth in real GDP. Thus we have:

$$A_t = f(X_t, F_t) \dots \dots \dots (2)$$

An equation such as (2) may not sufficiently reveal the causality of the key components of export; that is primary products export and manufacturing products export. Similarly, the fact that there is a dichotomy between the relative effect of manufactured and primary exports in validating the ELGH also justify the need to examine their individual effect. Hence, to capture the separate effects of these two aspects of export we decompose the export variable into its manufacture and primary products components as below:

$$X_t = f(X_{mt}, X_{pt}) \dots \dots \dots (3)$$

Where X_{mt} and X_{pt} indicate the manufacturing exports and the primary exports respectively.

Next, we proceed by combining (3) and (2) as below

$$A_t = f(X_{mt}, X_{pt}, F_t) \rightarrow A_t = f(X_{mt}^\gamma, X_{pt}^\delta, F_t^\rho) \dots \dots \dots (4)$$

Finally we substitute $X_{mt}^\gamma, X_{pt}^\delta, F_t^\rho$ in place of A_t in (1); thus we obtain:

$$Y_t = f(X_{mt}^\gamma, X_{pt}^\delta, F_t^\rho, K_t^\alpha, L_t^\beta) \dots \dots \dots (5)$$

There following index $\gamma, \delta, \rho, \alpha$ and β are the individual elasticities of output with respect to X_{mt}, X_{pt}, F_t, K_t and L_t .

We proceed further by taking the natural logs, (i.e. ln), of both sides of equation (3) which results in the following linear function: Taking natural logarithm, ln , and letting lower case alphabets denote the logarithm of both sides of equation (5) results in the following linear function:

$$y_t = \emptyset + \gamma x_{mt} + \delta x_{pt} + \rho f_t + \alpha k_t + \beta l_t + \varepsilon_t \dots \dots \dots (6)$$

in which all coefficients are constant elasticities, \emptyset is a constant parameter, and ε_t is the residual error term, which reflects the effects of unobserved and unmeasured effects on the regressand.²

4. ECONOMETRIC METHODOLOGY

The current paper adopts the framework of the co-integration and causality analyses to estimate the nexus between export and economic growth. The two methods allow us to estimate a VAR model to examine the long term relationship and the direction of the causality between the key variables in the model. However, prior to the estimation of any VAR model the test for stationarity must be carried on the data in order to ascertain the order of integration of the variables. It is also stated in the econometric literature that the cointegration and causality tests all precede the stationarity test.³

4.1 Tests for Stationarity

The test for stationarity also known as the unit root test has formed an integral basis in empirical research. Two of the most used frameworks for this test include the Augmented Dickey Fuller (ADF) and the Phillip-Perron (PP) approaches. We thus begin

² However, the estimate of γ and δ cannot be used to measure the average productivity effect of exports on output. Since exports are a component of output via the national accounting identity, a positive and significant relationship between exports and output is almost inevitable, even if there are no productivity effects. To remedy this problem, we separate the impact of exports on output from that incorporated through the national accounts identity, by considering real output net of exports: $N = Y - X$ (e.g., Greenaway and Sapsford 1994; Siliverstovs and Herzer 2007). By replacing the logarithm of real GDP growth rate, $ln(y_t)$ with the logarithm of non-export output.

by briefly describing the mechanics that embody these two tests. First, the ADF test for stationarity begins with the estimation of an equation of the form below;

$$\Delta Y_t = \theta + \theta_t Y_{t-1} + \sum_{i=1}^k \theta_t \Delta Y_{t-1} + \epsilon_t \dots \dots \dots (7)$$

Where Δ is the first difference operator, θ is the coefficient of the preceding observation, Y_{t-1} is the immediate prior observation, ΔY_{t-1} is the differenced lagged term, k is the number of lags, θ_t is the parameter to be determined and ϵ_t is the disturbance term³.

Similarly, the PP test has also been used vigorously to test for unit root data. The PP test proposes an alternative (nonparametric) method of controlling for serial correlation when testing for a unit root. The PP method estimates the non-augmented DF test equation (7), and modifies the t-ratio of the coefficient so that serial correlation does not affect the asymptotic distribution of the test statistic.

The PP test is based on the statistic below:

$$t_\delta = t_\delta \left(\frac{\rho_0}{f_0} \right)^{\frac{1}{2}} - \frac{T(f_0 - \rho_0)Se(\delta)}{2f_0^{\frac{1}{2}}s} \dots \dots \dots (8)$$

Where δ is the estimate, and t_δ is the t-ratio of δ , Se is the coefficient of the standard error, and s is the standard error of the test regression. In addition, ρ_0 is a consistent estimate of the error variance in (8) calculated as $(T - k)s^{\frac{2}{T}}$ where k is the number of regressors. The remaining term, f_0 is an estimator of the residual spectrum at frequency zero.

4.2 Cointegration Analysis

The cointegration analysis is carried out within the framework of a VAR specification. The method developed by Johansen and Julius (1992) offers an interesting and efficient approach to identify and derive the cointegrating vectors that measures the long run coefficients of the variables in the model.

This method is based on a vector error correction (VECM) representation of a VAR_p model which can be written as

³ The test for stationarity is often carried using an appropriate number of lag selections. The lag selection for the ADF version is often based on the Schwarz Information Criteria (SIC). The test hypothesis is specified as below; $H_0: Y_{t-1}$ is $I(1)$. If the estimated θ is found to be negative and statistically significantly greater than the tabular or critical θ value tabulated in Mckinnon (1991) then the H_0 is upheld.

$$Y_t = \gamma_0 + \Gamma_1 Y_{t-1} + \Gamma_2 Y_{t-2} + \dots + \Gamma_{p-1} Y_{t-p+1} + \Pi Y_{t-p} + \mu_t \dots \dots \dots (9)$$

where Y_t is an $n \times l$ vector of the first order integrated [that is, $I(1)$ variables, $\Gamma_1, \Gamma_2, \dots, \Gamma_p$ are $n \times n$ matrices of unknown parameters and μ_t is a vector of normally and independently distributed errors with zero mean and constant variance.

The steady-state (equilibrium) properties of (9) are characterized by the rank of Π , a square matrix of size n . In our case, $n = 6$. The existence of a cointegrating vector implies that Π is rank deficient. Johansen (1988) derives the maximal eigenvalue and trace statistic for testing the rank of Π

If Π is of rank ($0 < r < n$) then it can be decomposed into two matrices of $\alpha(n \times r)$ and $\beta(n \times r)$ such that:

$$\Pi = \alpha\beta' \dots \dots \dots (10)$$

The rows of β are interpreted as the distinct cointegrating vectors indicating the long term convergence of the model to its steady state whereby $\beta'x$ forms stationary processes. They α are the error correction coefficients that reveal the short term dynamics in the model as well as the speed of adjustment toward equilibrium. Substituting (2) into (1) we get:

$$Y_t = \gamma_0 + \Gamma_1 Y_{t-1} + \Gamma_2 Y_{t-2} + \dots + \Gamma_{p-1} Y_{t-p+1} + \alpha(\beta Y_{t-p}) + \mu_t \dots \dots \dots (11)$$

Equation 11 forms the empirical specification for estimating the long-term relationship between export and growth⁴.

4.3 Causality Test

The test for causality among time series variables has been a key objective of empirical research. The Granger test approach has received much attention in the literature.

To begin with

Let $A_t = \dots, -1, 0, 1, 2$ be the given information set including at least (X, Y) , the bivariate process of interest. Let $A_t = A_s; s < t$. Define X_t and Y_t similarly. Thus, for example, X_t represents all past values of X. Granger's definitions for the causal relationships thus implies that; between X and Y are:

⁴ A test of zero restrictions on the α is a test of weak exogeneity when the parameters of interest are in long run specification (Johansen and Juselius 1992).

X causes Y if

$$\sigma^2(Y|\hat{A}) < \sigma^2(Y|\hat{A} - X) \dots \dots \dots (12)$$

Where, $\sigma^2(Y|\hat{A})$ represents the minimum prediction error variance of Y given an information set A . Hence, if the inclusion of past values of X_{t-1} into the information set on which the prediction of Y is conditioned reduces the minimum prediction error variance, X is said to cause Y ⁵.

As usual, we will assume in the following that $A = X, Y$, and that X and Y are a pair of linear, covariance-stationary time series.

Thus X and Y can be modeled typically for causality as;

$$X_t = \sum_{i=1}^m a_i X_{t-1} + \sum_{j=1}^n b_j Y_{t-1} + \mu_t \dots \dots \dots (13)^6$$

The cointegration and causality specification will be employed for the purpose of estimating the model.

5. EMPIRICAL RESULTS

The traditional approach in establishing the cointegrating relationship in a model is to begin first with the test for the stationarity or unit root in the time series variables included in the model.

⁵ Two other scenarios can be derived from the above. Firstly, a feedback causality occurs between X and Y if X causes Y and Y causes X ; that is $\sigma^2(X|\hat{A}) < \sigma^2(X|\hat{A} - Y)$. Secondly, X and Y are independent if neither causes the other; that is $\sigma^2(Y|\hat{A}) < \sigma^2(Y|\hat{A} - X)$ or $\sigma^2(X|\hat{A}) < \sigma^2(X|\hat{A} - Y)$. Simply speaking, if the inclusion of past values of one series does not help lower the minimum predictive error variance of the other series, the two time series are said to be independent.

⁶ Where μ_t is a serially independent random vector with mean zero and finite covariance matrix. The decision rules for testing a, b, c and d would be tests of the null hypothesis that a certain set of coefficients is statistically zero at an appropriate level of significance.

Table 1: Unit Root/Variable Integration Test Results

ADF Test				PP Test		
Var.	Levels	Ist Diff.	Lags	Levels	Ist Diff	Lags
y_t	-0.586810	-5.225293**	0	-1.043283	-5.191449**	3
x_{mt}	-5.810365	6.834419**	3	-2.810365	-5.34042**	3
x_{pt}	-2.152263	-6.556697**	1	-1.746978	-6.55150**	4
fdi_t	-2.346279	-5.856114**	0	-1.301904	-5.28687**	13
ps_t	-4.029308	6.156412**	0	-2.501191	-7.46242**	30
k_t	-6.503549	-7.863703**	1	-1.288008	-7.028689**	3
l_t	-1.136123	-3.340502*	0	-1.288008	-3.511032**	3

Table 1 above summarizes the result for the unit root test exercise in levels and in first difference of the data. Evidence from the result indicates that the variables are all I(1) (that is, they are they are all stationary at their first difference). It can also be interpreted to imply that all the variables in the model exhibit mean reversion to their trend values after first differencing in an ADF and PP framework. The result gives further impetus and provides good ground for employing the use of cointegration technique in order to test for the existence of a stable long-run relationship between export and growth. Following a multivariate VAR estimation as specified in (9) we proceed with considering the cointegrating hypothesis in the model.

The result for the Johansen test for cointegration is reported in table 2⁷

⁷ τ denotes the hypothesized number of cointegrating equation. ϕ_{stats} and ρ_{stats} are the trace and maximum eigenvalue statistics respectively, while ϕ_{cv} and ρ_{cv} are the critical values for both test. Finally, ** and * indicate asymptotic significance at the 1 percent and 5 percent level respectively.

Table 2: Cointegration Test Result

Trace Test			Max. Eigenvalue Test	
H_0	$\phi_{stats.}$	$\phi_{cv.}$	$\rho_{stats.}$	$\rho_{cv.}$
$\tau = 0$	167.9059**	125.6154	49.05306**	46.23142
$\tau \leq 1$	118.8529**	95.75366	43.36620**	40.07757
$\tau \leq 2$	75.48665**	69.81889	32.27452**	33.87687
$\tau \leq 3$	43.21213**	47.85613	20.56037*	27.58434
$\tau \leq 4$	22.65176	29.79707	14.83188	21.13162
$\tau \leq 5$	7.819886	15.49471	7.107315	14.26460
$\tau \leq 6$	0.712571	3.841466	0.712571	3.841466

Estimation of an unrestricted VAR of the six variables, $y_t, x_{mt}, x_{pt}, fdi_t, ps_t k_t$ and l_t starting with a maximum lag structure of six, and using the SC criterion, suggested an optimum lag structure of order three. This model was free of serial correlation in the residuals as judged by the standard LM test. Therefore, a VAR (3) was employed in the Johansen (1988) test for cointegration among the variables. In addition, in order to discern the deterministic part of the model, several intercept and trend specifications of the cointegrating VAR were undertaken. In the final analysis, the likelihood ratio and SC statistics suggested a VAR model with unrestricted intercepts and no trend. Both the trace test and maximum eigenvalue statistics suggested a maximum number of three cointegrating vectors among the variables.

Overall, the cointegration test result presents robust evidence in support of the existence of a stable long run relationship in the model. We proceed further to investigate the nature of relationship by deriving both short-run and long-run coefficients of the variable from VECM estimation.

Table 3: Long-run Cointegrating and Short-run adjustment coefficients

LR Coint. Coefficients				SR Adj. Coefficients		
Dep:Var : y_t	β	β_σ	$t - stats.$	α	α_σ	$t - stats.$
x_{mt}	0.25665**	(0.03035)	[8.45535]	2.09642*	(0.70773)	[-2.96216]
x_{pt}	-1.02408**	(0.10340)	[-9.90387]	-0.23730*	(0.14506)	[-1.63594]
fdi	0.19065**	(0.01734)	[10.9939]	-0.46556*	(0.22987)	[-2.02535]
ps_t	-0.00495*	(0.00257)	[-1.92379]	-1.29788	(17.0421)	[-0.07616]
k_t	0.79471**	(0.10757)	[7.38778]	-0.22293*	(0.12657)	[-2.02535]
l_t	-0.00389	(0.13410)	[-0.02903]	-0.00226	(0.00186)	[-1.21529]

Table 5 shows the result for the VAR estimation of the model⁸. An inspection of the table indicates that manufacturing export exerts positive influence on economic growth proxied by GDP per capita. This result is in accordance with theoretical prediction of the ELGH. On the contrary, the cointegrating coefficient for primary export does not conform to the postulates of the ELGH as it takes on a negative and statistically significant value.

The estimation for both x_{mt} and x_{pt} offers insightful results that requires further explanation. First, manufacturing export interacts positively and significantly with economic growth indicating a meaningful long-run association of export with economic output. Conversely, primary product export impacts negatively on economic growth in the long run.

We now turn our attention to the set of control variables included in the model. The coefficients of the two variables (fdi_t and ps_t) foreign direct investment and political instability are in line with theoretical expectations. First, the parameter estimate for FDI shows a strong positive long run relationship with growth. For political stability the result is negative, implying that political instability inhibits economic growth.

⁸ Note: β and β_σ are the cointegrating coefficients and the standard errors respectively while α and α_σ are the short run adjustment coefficients and their standard errors respectively. Again, ** and * denotes asymptotic significance at the 5 percent and 1 percent.

Finally, the result for the input variables in the model; capital (k_t) and labour (l_t) is reported. Similarly, capital contributes positively and significantly to economic growth in the long run thereby reaffirming the theorizing of the Cobb-Douglas specification. However, we fail to establish a positive effect of labour employment on growth.

Interestingly, a quick inspection of the short run adjustment coefficients suggest that speed of convergence of the coefficients of x_{mt} and x_{pt} back to their steady state is rapid and significant.

The result of the pairwise Granger causality test between economic growth and the two export components variables based on Snedecor's F-Statistic at lag length 2 is shown in table 4 below:

Table 4: Granger Causality Test Result

H_0	Obs.	$F - stats.$	$Prob$
MX does not Granger Cause y_t	48	1.95538*	0.0295
GDPC does not Granger Cause x_{mt}	48	0.15432	0.8575
EX does not Granger Cause y_t	48	1.13714	0.3302
GDPC does not Granger Cause x_{pt}	48	1.15416	0.3249

The pairwise multivariate Granger causality test suggests that economic growth as proxied by per capita income (PCI) is Granger caused by the manufacturing export component, whereas for the primary export component we fail to reject the null hypothesis of the causality between x_{pt} and y_t . Also, the result further indicates that there is a unidirectional relationship between manufacturing export and growth. Put differently, x_{mt} Granger causes economic growth y_t without a feedback.

These two outcomes from the cointegrating regression and the Granger Causality test suggest that the manufacturing export component has a more robust impact in stimulating growth both in the short run and long run. This result contradicts the popular paradigm that fails to uncover the veil of dichotomy and the divergent impact of these two components of export on growth.

It further supports, the findings of Boriss and Herzer (2005) for Chile and Taban and Aktar (2005) for Turkey, which posit that export expansion especially for manufacturing product stimulate growth.

CONCLUSION AND POLICY IMPLICATIONS

We question the validity and consistency of the export led growth hypothesis (ELGH) within the empirical literature and proceed further to re-examine its relevance for the Nigerian economy. Few empirical studies have been dedicated to carry-out this investigation, and at the same time only a handful of these studies have employed the methodology used in this study. In particular is the fact that most studies fail to capture and point out the differentiated impact of the two major components of exports (i.e. manufacturing and primary products exports) on economic growth.

With this flaw in mind and in contrast to other previous studies, that addressed this question particularly for Nigeria, our paper is distinguished by several features. First, unlike previous studies we do not focus on the aggregated export value rather we dichotomize export into its two main components (manufacturing and primary products export) with the aim of unmasking their separate impacts on economic growth. Second, we go beyond the two-variable setup (exports and output) and address the cointegration and causality issues in a multivariate VAR model with six variables. Third, and finally, to avoid the problem of endogeneity, we separate the ‘economic influence’ of exports on output from that incorporated into the ‘growth accounting relationship by defining the output variable as net of exports.

Our main findings correspond partly to the ELGH. More specifically, we discover a robust positive long run relationship between the manufacturing export product and economic growth. However, on the contrary, the primary export component fails to relate positively with growth based on our empirical result. On the overall, we interpret it as a supportive empirical evidence in favour of the ELGH which has in more recent times preferred manufactured exports to primary exports. Hence our findings are in line with those reported in the existing literature (Amin Gutiérrez de Piñeres and Ferrantino, 1997; Agosin, 1999; Boriss and Herzer (2005) and Taban and Aktar (2005)).

Interestingly, we also record the failure of the primary exports to Granger cause output. This latter result underpins the idea that while testing the export-led growth hypothesis it is important to differentiate between the various types of exports, i.e. exports of primary and manufactured products, for example (see Ghatak et al., 1997). It also reinforces the notion that the long-run effect of exports on non-export GDP is significantly negatively associated with primary export dependence.

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