

Original Research Article

NONOIL EXPORT – GROWTH NEXUS IN NIGERIA : MACROECONOMIC BASE FOR NONOIL EXPORT- LED GROWTH POLICY

ABSTRACT

Public hue and cry about Nigeria's overdependence on oil has now faded into an inaudible whisper and a mere rhetoric as diversification of the Nigerian economy still remains an unsettled issue. However, the dwindling international oil price has rendered the country insolvent thereby creating a need to exploit nonoil sources. Only policies borne out of research would prove effective for stimulating nonoil sources to contribute maximally to growth. Not infrequently, though, researchers employed models in expanded form in their continuing futile search for key factors to mediate between two sets of discordant evidences which often emerge as outcomes of their inquiries . This study revealed a preferred choice for a more robust factor analytic model to isolate potent factors influencing nonoil export-growth nexus in Nigeria. Results indicate that there was positive significant relationship between nonoil export and growth in Nigeria which was solely attributable to the influence of foreign direct investment and trade liberalization. Moreover, the study revealed that the active variables in the constellation of foreign direct investment and trade liberalization provided the theoretical constructs for a new nonoil export-led growth policy. It was concluded that the practical value of this article derives from its end product-a dynamic nonoil export-led growth policy with components of budgetary policy, exchange rate policy, human resource development policy, credit policy, and import substitution/export promotion policy. It was recommended, inter alia, that petroleum exporting countries should channel foreign direct investment to nonoil sectors in order to render the sectors viable and so augment their productive bases.

Keywords: *Nonoil export, economic growth, macroeconomic base, nonoil export-led-policy.*

Jel classification: E60, E61, H00, O47.

1. INTRODUCTION

Successive governments in Nigeria had adopted different policies including structural Adjustment Programme (SAP) aimed at diversifying the Nigerian economy and reducing overdependence on oil. With the rebasing of the country's GDP, Nigeria has emerged as the largest economy in Africa and the seventh fastest growing

economy in the world (1). However, the crash of international oil price has caused abrasion in the Nigerian economy resulting to economic slow down and devaluation of naira by the Central Bank of Nigeria (CBN). Sequel to this development, the federal ministry of finance had proposed austerity measures in order to curtail wasteful expenditures and generate revenues for the federal government. Certainly, this has raised serious issues bordering on the extent of diversification of the Nigerian economy and its absorptive capacity. It is these issues which were sought to be addressed in the present study. These unsettled issues would be resolved if the contribution of nonoil export to the country's GDP has been enhanced. This would serve as an indication that the policies of successive governments in Nigeria were effective for diversifying the economy and reducing the country's dependence on oil.

2. LITERATURE REVIEW

The review of related literature has been organized under theoretical literature review and empirical literature review.

2.1 Theoretical Literature Review

Theories on growth and international trade were discussed in this section.

2.2 Theories on Economic Growth

Several theories on economic growth were put forth by eminent scholars. However, only the theories on economic growth which were considered relevant to the conduct and advancement of this study were reviewed.

2.3 Endogenous Growth Theory

Endogenous growth theory emphasizes different growth opportunities in physical capital and knowledge capital. The endogenous growth theory is based on the notion that there are substantial external returns to capital; the major assumption is that better technology is produced as a by product of capital investment. It specifically assumes that technology is proportional to the level of capital per worker in the economy overall, and that technology is labour-augmenting. Endogenous growth theory states that a high saving rate leads to a high growth rate. Countries with higher investment will end in a steady-state with higher per capita income but not with a higher growth rate. This suggests that countries do converge conditionally, and thus endogenous growth theory is not very important for explaining international differences in growth rates, although it may be quite important for explaining growth in countries on the leading edge of technology. Endogenous growth theory relies on constant returns to scale to accumulable factors to generate ongoing growth, it emphasized the difference between social and private returns when firms are unable

to capture some of the benefits of investment. In summary, in endogenous growth models technology progress depends on saving, particularly investment directed toward human capital (2). Obviously, endogenous growth theory finds applicability in Nigerian situation with low technology base and capital intensive productive activities.

2.4 Export-led Growth Theory

This theory states that the growth of exports has a favourable impact on economic growth, i.e. that exports are a main determinant of overall economic growth. It holds that the overall growth of countries can be generated, not only by increasing the amounts of labour and capital within the economy, but also by expanding exports; hence exports can perform as an engine of growth (3). One of the main arguments in support of the hypothesis is that export growth may affect total factor productivity through dynamic spillover-effects on the rest of the economy (4).

Theoretical agreement on export-led growth emerged among neoclassical economists due to the success of the free-market, and outward-oriented policies of the East Asian Tigers. This hypothesis was propounded based on the thought that promoting exports will enable developing countries to correct imbalances in the external sector and assist them in their full recovery (3).

This theory was put forth as an alternative to import substitution which is an inward-oriented strategy of development (5). The strategy was prevalent in developing countries that possess large domestic market due to the large population size, and where the supportive measures and incentives are not available to encourage producers to exploit the export market. This policy strategy was resorted to by developing countries in the context of declining world markets for their primary commodities, rising balance of payments deficits on current account (6).

The export-led theory has implication for developing countries like Nigeria which rely more on export of raw materials and less on export of finished products. Its relevance in the Nigerian economy is resounding as Nigeria is a monolithic economy with overdependence on oil. The main thrust of the federal government trade policy has shifted drastically away from overdependence on oil to diversification of Nigerian economy through increase of nonoil export.

2.5 Theories on International Trade

Theories on international trade which were considered relevant to the present study have been discussed in this section.

2.6 Theory of Comparative Advantage

Comparative cost theory of international trade was put forth by D. Ricardo in 1817, developed by J.S. Mill and C. F. Bastable and reformulated by F.W. Taussig and G. Haberler (7,8). Ricardo suggested that the less efficient nation should specialize in the production of the commodity in which it is relatively less cost inefficient i.e., where its absolute disadvantage is the least, while the more efficient country should specialize in producing that in which its absolute advantage is the greatest i.e., the commodity in which is more efficient in producing. This theory is superior to Adam Smith's absolute advantage theory in the sense that it is possible for a nation not to have an absolute advantage in anything, but it is not possible for one nation to have comparative advantage in everything, and the other nation to have comparative advantage in nothing. This is because comparative advantage depends on relative costs (9). The importance of the comparative advantage theory in the present study derives from the discernable traces of trade transactions between Nigeria and its trading partner under comparative advantage paradigm.

2.7 Heckscher-Ohlin Theory

The theory is also known as factor production theory. It was put forth by Eli Hecksher and Bertil Ohlin. The theory states that the pattern of international trade is determined by the relative factor of production existing in countries. The theory also explains two issues in the theory of comparative advantage – issues relating to the factors determining the effects of trade on factor income in the trading countries and issues relating the difference in relative factor endowments and factor prices between nations as the most determinants of trade. Hecksher Ohlin's theory operate under the following assumptions: (i) There are two countries, two commodities and two factors. (ii) There is perfect competition in both factor and product market. (iii) Factor inputs, labour and capital in the two countries are homogenous. (iv) Production function also exhibits constant return to scale. Production possibility curve in concave to the origin. Under these assumptions the theory posits that the less developed countries that are labour abundant should specialize in the production of primary product especially agricultural product because the labour requirement of agriculture is high except in the mechanized form of farming. On the contrary, the less developed countries should import capital intensive product mostly the manufactured goods from developed countries that are capital intensive .

Heckcher-Ohlin theory concludes that trade increase total world output, all countries gain from trade, trade enables countries to secure capital and consumption of goods from other parts of the world. Thus, trade stimulates economic growth. This theory provides a theoretical base for the present study which investigates the impact of nonoil export on growth in Nigeria as Nigeria has continued to remain an exporter of primary product from agricultural sector that is labour intensive.

2.8 New Trade Theory

This theory was developed by Paul Krugman in the late 1970s. The theory explains that a critical factors in determining international pattern of trade are the very substantial economies of scale and network effect that can occur in key industries. These economies of scale and network effect can be so significant that they outweigh the more traditional theory of comparative advantage. In some industries, two countries may have no discernible differences in opportunity cost at a particular point in time. But, if one country specializes in particular industries then it may gain economies of scale and other network benefits from its specialization. Another element of this theory is that firms which have the advantage of being an early entrant can become a dominant firm in the market. This is because the first firms gain substantial economies of scale meaning that new firms can't compete against the incumbent firms. This means that in these global industries with very large economies of scale only firms that produce cheap goods of high quality and on a large scale can ever hope to compete in the international market. Under this theory under wise known as competitive advantage theory, there is likely to be limited competition with the market dominated by early firms which entered leading to form of monopolistic competition. This means that the most lucrative industries are often dominated in capital intensive countries, who were the first to develop these industries (10). This theory has wide applicability in the Nigeria situation where trade sector was characterized by low balance of trade-foreign direct investment ratios, small shares of manufacturers in the country's exports, and low credit-worthiness rating (11). Both Heckscher-Ohlin theory and competitive advantage theory have provided a necessary base for the present study which seeks to investigate the impact of nonoil export on Nigeria's GDP. However, the theory of competitive advantage has overriding importance in this study as it constituted the current ruling trade paradigm in the globalized economy. Thus, it could be considered superior to Heckscher-Ohlin theory which derives its strength from Nigeria's advantage in the production and export of primary products and where production is labour intensive. In other words, the strength of competitive advantage theory derives from the weakness of Heckscher-Ohlin theory.

2.9 Empirical Literature

Several studies have been carried out in Nigeria and overseas to determine the impact of nonoil export in economic growth. In order to establish a priori justification for the present study a brief review of only recent studies in this area has been presented in this section.

Okoh (12) studied the implication of global integration for increasing Nigeria's nonoil export. The study employed vector error correction model in order to establish long-run relationship among growth in nonoil exports, growth in import of capital inputs and global integration. She reported a finding which indicates that global integration was not significant in explaining the behaviour of nonoil export in the long-run as well as in the short-run. She also found that growth in import of capital inputs positively impacted on growth of nonoil exports. A drawback of this study is its lack of clear-cut period of study. Notwithstanding, it has provided a strong basis for comparison with result of the present study.

Chukwuigwe and Abali (13) carried out a study to determine the impact of monetary and fiscal policies on nonoil export in Nigeria. The study covered the period 1974 to 2003. They employed OLS technique. They concluded that exchange rate affected negatively nonoil export. The implication of this study for the present study is that exchange rate should be included as one of the independent variables. However, it failed to provide a base for comparing its findings with the findings of the present study.

Efobi and Osabuohien (14) studied the level of interaction between Agricultural Credit Guarantee Scheme Fund (ACGSF) and nonoil export in Nigeria. They employed vector auto-regressive technique for the analysis of their data. The study covered the period 1978 to 2007. They reported that there was a long-run relationship, though minimal, between ACGSF and nonoil export in Nigeria. The implication of the finding of this study is that agricultural product constituted a sizeable component of nonoil export. However, it did not establish nonoil export-growth nexus in Nigeria which incidentally was the focus of the present study.

Waithe et al. (15) carried out a study on export-led growth using Mexico as a case study. They employed an export-augmented neoclassical production function for testing the validity of export-led-growth hypothesis in Mexico for the period 1960 to 2003. They reported a finding which suggests that in the short-run the export-led hypothesis was valid while there was an inverse relationship between exports and GDP in the long-run. Even though the finding of this study has no direct bearing on the present study, it provided an insight into export-growth nexus.

Usman (5) had embarked on a study to determine export in Nigeria. The study covered the period 1988 to 2008. Data were analyzed using multi-linear regression technique. He reported that nonoil export contributed significantly to the variance in GDP in Nigeria. A limitation of this study is the ambiguity of its design which appeared to be in conflict with its stated objective. A study designed to identify the determinants of nonoil export could not be expected to yield results on the

218 **magnitude and direction of contribution of nonoil export to GDP. The model adopted**
219 **in this study has been adapted for the present study.**

220 **Adebile and Amusan (16) studied the contribution of nonoil export to economic**
221 **growth in Nigeria with particular reference to cocoa industry. The study covered the**
222 **period 1961 to 2009. They analyzed the data using descriptive statistics of skewness**
223 **and Kurtosis as well as the time series component of trend. They reported that there**
224 **was a downward trend in export of cocoa between 1961 and 1985 and an upward**
225 **trend between 1986 and 2009. They concluded that Nigeria's involvement in the**
226 **nonoil export is the most viable alternative to oil. A major limitation of this study is**
227 **that the technique of data analysis was not suitable to warrant the kind of**
228 **generalization drawn by the authors. Nevertheless, the study had aroused the**
229 **interest of researchers in the area of nonoil export.**

230 **Ningi (17) carried out a study on the financing of nonoil export in Nigeria. He used**
231 **primary data from 120 nonoil firms. Data were analyzed using m, SD, and multiple**
232 **regression technique. He found that nonoil exports financing by banks significantly**
233 **accounted for slightly 16 per cent of variance in nonoil export performance. The**
234 **strength of this study lies in its application of multiple regression technique to**
235 **analyze data from extremely large sample that yielded reliable result. Although the**
236 **study has not yielded any finding as a priori expectation yet it has reported findings**
237 **which indicate that nonoil export financing was not receiving due attention.**

238 **Alimi and Muse (18) studied the role of export in the growth process of Nigeria. The**
239 **study covered the period 1970 to 2009. The variables included in the analysis were**
240 **total export, oil export, nonoil export and GDP. They employed econometric**
241 **technique involving unit root test, co-integration analysis, VAR Granger Causality**
242 **Exogeneity Wald test. They reported that there was uni-directional causality**
243 **between export and economic growth in Nigeria in three measures of exports and**
244 **the direction of causality runs strictly from economic growth to export. A major**
245 **limitation of this study is the restricted scope of the model adapted in which there**
246 **were only three independent variables. Nevertheless, the study had yielded major**
247 **determinants of nonoil export which were included in the analysis of the present**
248 **study.**

249 **Onodugo et al. (19) investigated the impact of nonoil export on economic growth in**
250 **Nigeria. The study covered the period 1981 to 2012. The study employed**
251 **conventional tests for mean reversion and co-integration. The study revealed that**
252 **nonoil export did not contribute significantly to economic growth in Nigeria. The**
253 **study has relevance for the present study as it provided a strong bases for**

comparison with the findings of the present study. The model used in this study was adapted for the present study.

Alley et al. (20) studied the impact of oil price shocks on economic growth in Nigeria. The study covered the period 1981 to 2012. They employed “general methods of moment” for the analysis of data. They concluded that oil price shock impacted negatively on economic growth. This study has direct application in the present study which has adapted its model for the conduct and advancement of this study.

Abogan et al. (21) embarked on study to determine the impact of nonoil export on economic growth in Nigeria. The study spanned across the period 1980 to 2010. The study employed OLS involving Augmented Dickey Fuller and Philips Perron and Johansen co-integrated tests. Results suggest that nonoil export had moderate significant impact on economic growth in Nigeria. This study has relevance for the present study which has derived its theoretical base from the earlier study.

Mehrara (22) carried out a study using panel data from selected 11 oil exporting countries, to determine the causal relationship between nonoil trade and GDP. His study covered the period 1970 to 2011. He employed unit root test and co-integration technique to analyze a three-variable model. His results indicate that nonoil trade did not have any significant effect on GDP in the short-and long-run. Obviously, what has limited the applicability of this study to the present study is the ambiguity in model specification which treated trade as share of nonoil exports and imports to GDP.

Alam, et al. (23) carried out a study on the relationship between exports and economic growth in the industrial sector in Iran. The study covered the period 2002 to 2010. They employed econometric tool involving multiple regression to determine the nature of relationship between export and economic growth in industrial sector. They concluded that there is a positive significant relationship between export and economic growth in industrial sector. Even though this study is fraught with computational aberrations, still it has created some insight into the nature of relationship between nonoil export and growth amongst scholars in petroleum exporting countries.

Imoughele and Ismaila (24) studied the impact of exchange rate on nonoil export. The study covered the period 1986 to 2013. They employed ADF test and Johansen co-integration test and OLS technique. Their study revealed that effect exchange rate, money supply, credit to the private sector and economic performance were determinants of nonoil export. This study has implication for the present study as these determinants of nonoil export have been included as relevant variables in the analysis. However, it is important to note the computational fallacy inherent in the analysis of data collected from small sample.

Gokmenoglu et al. (25) tested the validity of export-led growth hypothesis for Costa Rica. The study covered the period 1980 to 2013. They employed Johansen co-integration and Granger causality test. They reported findings which indicate there was a long-run relationship between export and economic growth and that there was a unidirectional causality from economic growth to export growth of cost Rica. This study has created deep insight into the current interest exhibited by researchers in this area of study.

Nwankwo (26) studied the diversification of nonoil export products as a measure for achieving accelerated economic growth in Nigeria. The study covered the period 1981to 2014. He employed OLS , over-parametization and parsimonious. His findings indicate that there was a long-run equilibrium relationship between nonoil export and economic growth in Nigeria. This study has important implication for the present study as it has provided a priori expectations for comparison with findings of the present study.

Adel (27) studied the effects of oil and nonoil exports on economic growth in Syria for the period 1975 to 2010. He analyzed the data using ADF unit root test, Johansen co-integration test, Granger causality test, impulse response function (IRF) and variance decomposition (VD) analysis. He found that GDP was positively and significantly related with oil and nonoil exports. Again, the study had yielded results that would serve as a basis for comparison with the findings of the present study for a facile integration into existing economic literature.

2.10 Summary of Review

Critical survey of related literature has revealed almost immediately a common feature of inadequate sample to warrant the application of econometric tools for reliable results. With only a few exceptions, including Waithe et al. (15), Adebile and Amusan (16), Ningi (17), Alimi and Muse (18), and Mehrara (22), several studies had employed only moderate samples (a little above 30). Certain studies including Usman (5), Alam et al. (23), and Imoughele and Ismaila (24) had even applied OLS involving multiple regression in the analysis of data for extremely small sample. It is a well-known fact that the larger the sample, the more reliable are the results of data analysis with most econometric techniques.

It is not surprising then that the findings of these studies are conflicting. It is not difficult to observe two sets of discordant research evidences in this area of study. Studies which reported positive significant relationship between nonoil export and growth include the following: Usman (5), Alimi and Muse (18), Abogan et al. (21), Alam et al. (23), Gokmenoglu et al. (25), Nwankwo (26) and Adel (27). On the

contrary, studies which found inverse relationship between nonoil export and growth include Chukwuigwe and Abali (13), Onodugo et al. (19) and Mehrara (22).

Not infrequently, researchers had sought a prior justification for replication of these studies on account of these conflicting results. The natural consequence of their continuing search for key variables to mediate between the two set of conflicting findings is expanded models containing new additional variables. This has led to a complicated situation where every new research solution constitute itself into another new research problem. This becomes a self perpetuating, irreversible process.

Perhaps what is more puzzling is the rapidity with which Nigerian researchers replicate studies on impact of nonoil export on economic growth between 2011 and 2015. This portends the level of restiveness and despair among these researchers. More importantly, it is a glaring evidence that diversification of the economies of petroleum exporting countries and indeed less-developed countries has continued to remain an unsettled issue. To continue to expect a different result while still using exactly the same technique over the years is, to say the least, expecting too much.

Certainly there is a dire need for a change in the technique for data analysis. This new technique is simply factor analysis which combines the predictive powers of multiple regression with its own inherent capacity for excavation to isolate potent factors which would mediate among the conflicting findings of earlier studies. Beyond this, factor analysis has the robust feature of yielding coefficient of determination (r^2) to determine the extent to which nonoil export contribute to the variance on economic growth. In this way, factor analysis performs both exploratory and confirmatory function. As a more robust technique, factor analysis works well with moderate sample to yield highly reliable results when the factors contain adequate number of variables which are sufficiently correlated among themselves.

3. RESEARCH METHODOLOGY

The method and procedure adopted for the conduct and advancement of this study have been discussed in this section.

3.1 The Data

The data for the study were sourced from Central Bank of Nigeria (CBN), National Bureau of statistics and World Bank indices. The study spanned across the period 1980 to 2014. The variables included in the analysis are those included in the various models used in econometric studies to determine the impact of nonoil export on economic growth. The choice of these variables and their ordering in the scheme of

this work have ensured that they conformed to linearity and stationary assumptions for a facile application of a more robust technique.

3.2 Empirical Model

As stated, the broad objective of this study is the identification of the factors which influenced the relationship between nonoil export and economic growth in Nigeria. The present study has employed the model used by Usman (5) to identify the determinants of nonoil export and economic growth in Nigeria. Usman (5), had adopted the model expressed as a functional relationship in the form :

$$GDP = f (NOE, X_{noe}, CPI, ER)$$

Where GDP is gross domestic product; NOE is nonoil export earnings; X_{noe} is nonoil export for previous year; CPI is consumer price index, ER is exchange rate.

Several studies had adapted Usman's (5) model in various versions as presented below:

Onodugo et al. (19) version is in the form:

$$Y = f(L, K, OX, NOX, DOP)$$

Where Y is GDP; L is labour force; k is capital stock; OX is oil export; NOX is nonoil export; DOP is index of trade openness.

Abogan et al. (21) version is in the form:

$$rgdp = f (nonx, excr, inf)$$

where rgdp is real gross domestic product; nonx is nonoil export, excr is exchange rate; inf is inflation rate.

Imoughele and Ismaila's (24) version is in the form:

$$NOE = f (EXR, RGDP, INFR, OPEN, M_2, CPS)$$

where NOE is nonoil export; EXR is exchange rate; RGDP is real gross domestic product; INFR is inflation rate, OPEN is degree of economic openness; M_2 is broad money supply; CPS is credit to the private sector.

Thus, it has become necessary to include these determinants of nonoil export and economic growth. In conjunction with FCE, PIV, PCI and BOT (Federal consumption expenditure, private investment, per capita income and balance of trade

respectively) which were also included in analysis of reviewed studies. In this way, the assumption of linearity and stationarity of time series data were satisfied.

Therefore, the model for the present study has been presented as a linear function in the form:

$$\text{GDP} = f(\text{EXC}, \text{INF}, \text{FCE}, \text{PIV}, \text{OPN}, \text{CAP}, \text{LBR}, \text{CPI}, \text{PCI}, \text{OEX}, \text{NOE}, \text{BOT})$$

where OPN is openness; CAP is capital; LBR is labour; OEX is oil export. All other abbreviations are as previously stated.

3.3 Factor Model Specification

Common factor model was used for this study. The justification for choice of common factor model was the application of Usman's (5) model which expresses a linear functional relationship among GDP, NOE, Xnoe, CPI, ER. Onodugo et al. (19) had also expressed a functional relationship among Y, L, K, OX, NOX, GDP. In line with the above stated models, the present study has also adopted a model which expresses a functional relationship among GDP, EXC, INF, FCE, PIV, OPN, CAP, LBR, CPI, PCI, OEX, NOE, BOT. Common factor model is appropriate when the variables are assumed to be a linear function of a set of latent variables (28,29). This model assumes that the variance can be divided into common and unique components with the unique variance being further divided into specific and random error variance (30).

There are 13 variables – GDP (CRN), EXC, INF, FCE, PIV, OPN, CAP, LBR, CPI, PCI, OEX, NOE and BOT. Factor analysis model requires that the variables included in the analysis should be linearly related to each other (31). Scatterplots of pairs of variables conformed to linearity. The factor model used for this study was developed by Cornish (31). The model had been expressed algebraically in the form:

$$X_i = \alpha_{i1} F_1 + \alpha_{i2} F_2 + \dots + \alpha_{im} F_m + e_i$$

Suppose there are p variables $X_1, X_2, \dots, X_p$ measured on a sample of n subjects, variable i is a linear combination of m factors $F_1, F_2, \dots, F_m$ and $m < p$, where α_{is} are the factor loadings for variable i and e_i is that part of variable X_i that cannot be explained by the factors.

Since there are 13 variables, the rule of thumb requires that only one-third of the total number of variables could be extracted as factors. Therefore, the factor analysis model has been written in the form:

$$\text{GDP} = \alpha_{i1} F_1 + \alpha_{i2} F_2 + \alpha_{i3} F_3 + \alpha_{i4} F_4 + e_i$$

where α_{i1} is the factor loading of factor 1

α_{i2} is the factor loading of factor 2

α_{i3} is the factor loading of factor 3

α_{i4} is the factor loading of factor 4

e_i is the part of criterion variable GDP that cannot be explained by the factor.

3.4 Validation Technique

To determine the suitability of factor analysis for the study, Kaiser-Meyer-Olkin (KMO) statistic and Bartlett's test of sphericity have been computed. KMO statistic was used to ascertain whether or not the factors were comprised of sufficient number of variables while Bartlett's test (Chi-square) was used to ascertain whether or not the variables were sufficiently correlated. KMO statistic should exceed 0.7 to justify the application of factor analysis while chi-square value should be significant at 0.05 confidence interval to infer that the variable were sufficiently correlated (31).

KMO statistic (computed) = .769

KMO statistic (criterion) = > .700

Approx. Chi Square value = 678.022

df = 78

sig. = .000

As can be seen above, KMO statistic is 0.769 since this is greater than the criterion KMO statistic of 0.700, KMO statistic of 0.769 was considered to be significant. Again, Chi-Square is 678.022, df 78, $p \leq 0.000$. Since $p \leq 0.05$ is greater than $p \leq 0.000$, Chi-Square value of 678.022 was considered to be significant. These results suggest that the factors were comprised of sufficient numbers of variables and that the variables were sufficiently correlated. This has warranted the application of factor analysis for data analysis in the present study.

3.5 Eigenvalues for Determination of Number of Factors

Cornish (31) had recommended that to determine the number of factors to be extracted, say m, the number of eigenvalues should be divided by 1 to obtain m. The eigenvalues have been presented in a tabular form:

Table 1. Eigenvalues For Determination Of Number Of Factors

Component	Initial Eigenvalues			Extraction Sum of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	8.192	63.019	63.019	8.192	63.019	63.019
2	1.560	12.003	75.022	1.560	12.003	75.022
3	.937	7.211	82.233			

4	.740	5.692	87.925			
5	.719	5.530	93.455			
6	.407	3.133	96.588			
7	.181	1.394	97.982			
8	.115	.887	98.869			
9	.065	.501	99.371			
10	.054	.417	99.788			
11	.017	.128	99.916			
12	.009	.067	99.983			
13	.002	.017	100.000			

As can be seen above, the number of eigenvalues equals 2 when divided by 1 yields 2. Thus, accordingly only two factors could be extracted in this analysis.

3.6 Evaluation Criteria

Data were analyzed using factor analysis. The main focus of factor analysis was to determine the nature of the factor structure of nonoil export – economic growth nexus in Nigeria. The principal axes method was applied for the factorization of the inter-correlation matrix. This method is also known as the method of principal factor solution.

To keep the number of independent dimensions to the essential minimum, extraction of factors was restricted to only those values of correlation coefficients equal to or greater than unity. Furthermore, conservative rule of thumb for considering a factor as real is as follows: No attempt is made to take decision on the significance of unrotated loadings, e.g. as obtained from centroid method or the method of principal axes (32). Thus, following this principle, the Varimax rotation of the matrix was carried out.

By rotating the factors slightly in a clockwise direction, the strength of the relationship between the factors and the variables clustered near each other was increased (33,34). Rotation improves the meaningfulness, reliability and reproducibility of factors (29,35). Interpretation of results was based on the new values of factor loadings obtained through the use of 'Orthogonal Rotation' formula expressed in the form of $X_1 = X \cos \theta + Y \sin \theta$. Factor loadings which were equal to or greater than ± 0.4 were considered to be significant. Ford et al. (29) had suggested the inclusion of factor loading ≥ 0.4 . Factor loadings of the criterion variable were given for all factors disregarding the level of significance so as to ascertain whether or not the factors represented correlates of GDP. The process of factor extraction was discontinued when the number of factors (m = number of eigenvalues 2/1, i.e., 2) (31). Extracting too many factors may present undesirable error variance but extracting too few factors might leave out valuable common variance (36).

4. RESULTS

The results of data analysis have been presented in tables and discussed under the following subheadings:

- Inter-correlation matrix
- Nonoil export – growth relationship in Nigeria
- Factor structure of NOE-GDP nexus
- Varimax (rotated) factor structure of nonoil export-GDP nexus
- Factors influencing the relationship between nonoil export and GDP
- Categorization of factor correlates into policy instrument

4.1 Inter-Correlation Matrix

Inter-correlations among GDP and twelve independent variables have been presented in Table 2.

Table 2. Correlation Matrix (13x13) Among GDP(CRN) And Independent Variables.

S/No	Variables Codes	1	2	3	4	5	6	7	8	9	10	11	12	13
1	GDP	X												
2	EXC	.394	X											
3	INF	-.123	-.374	X										
4	FCE	.463	.782	-.310	X									
5	PVI	.295	.872	-.355	.623	X								
6	OPN	.285	.688	-.163	.514	.484	X							
7	CAP	.495	.882	-.343	.946	.745	.596	X						
8	LAB	.485	.483	-.246	.685	.334	.311	.739	X					
9	CPI	.489	.901	-.348	.912	.733	.649	.976	.736	X				
10	PCI	-.118	.058	.018	-.335	.082	.333	-.204	-.289	-.133	X			
11	OEX	.534	.857	-.335	.960	.691	.577	.966	.734	.973	-.269	X		
12	NOE	.342	.685	-.277	.784	.521	.484	.868	.860	.895	-.229	.858	X	
13	BOT	.522	.828	-.334	.896	.703	.504	.880	.530	.878	-.293	.940	.712	X

NB: All figures were rounded to three places of decimal.

As can be seen in Table 2, all the correlation coefficients are of zero order. The table also evinces that, with the exception of INF and PCI inter-correlations were greater than ± 0.30 . OPN and PVI had $r = 0.285$ and 0.295 respectively which are close approximations to 0.300 . Inter-correlations are therefore in conformity with

Tabachnick and Fidell (37) requirement that the correlation, r must be 0.30 or greater since anything lower would suggest a really weak relationship between the variables. Now, the generally low r 's of INF and PCI with other variables have cast a serious aspersion as to whether or not there has ever been a properly articulated policy to diversify the Nigerian economy and augment the productive capacities of sectors other than the oil sector.

4.2 Nonoil Export-Growth Relationship in Nigeria

Correlation coefficient between NOE and GDP, after partially out the effects of 11 other independent variables-EXC, INF, FCE, PIV, OPN, CAP, LAB, CPI, PCI, OEX, and BOT have been presented in Table 3 to facilitate discussion on nonoil export-growth relationship. Coefficient of determination (r^2) has also been computed to determine the percentage contribution of NOE to GDP in Nigeria.

Table 3 Partial Correlation and Coefficient of Determination Between NOE And GDP

S/No	Criterion Variable Predictor	GDP		Per cent contribution	Probability	Decision
		r	r^2			
1	NOE	0.342	0.1170	11.70	0.022	Significant

Table 3 shows clearly that: $r_{\text{noe/gdp}} = 0.342$ ($p \leq 0.022$) which yielded $r^2_{\text{noe/gdp}} = 0.1170$ representing 11.70 per cent. These results suggest that: (1) There was a positively significant relationship between NOE and GDP in Nigeria. (2) NOE has made a significant contribution of 11.70 per cent to GDP in Nigeria.

4.3 Factor Structure of NOE – GDP Nexus

The factor structure of NOE-GDP nexus has been presented in Tables 4 and 5 to facilitate the extraction of factors lying concealed in the interrelationships among the criterion variable and the independent variables.

Table 4 Principal Axes (Original) Factor Structure For NOE-GDP Nexus (N=35)

S/No	Variable Codes	Factor 1	Factor 2	h^2
1	GDP	0.541	-0.155	0.317
2	EXC	0.902	0.327	0.920
3	INF	-0.390	-0.121	0.167
4	FCE	0.934	-0.163	0.900
5	PIV	0.756	0.363	0.703
6	OPN	0.630	0.551	0.700
7	CAP	0.985	-0.027	0.970
8	LBR	0.743	-0.367	0.687
9	CPI	0.987	0.036	0.976
10	PCI	-0.185	0.879	0.808

11	OEX	0.985	-0.091	0.979
12	NOE	0.870	-0.176	0.788
13	BOT	0.914	-0.065	0.839

NB: Factor loadings are rounded to three decimal places.

Table 4 presents original principal components factor matrix. The last column reveals the communalities (h^2). On the whole, factor analysis led to the extraction of two factors.

4.4 Varimax (Rotated) Factor Structure of Nonoil Export-GDP Nexus.

Orthogonal rotation of the principal axes (original) factor matrix has yielded new values for the factor loadings. The results have been presented in Table 5.

Table 5. Varimax (Rotated) Factor Matrix For Nonoil Export-GDP Nexus (N=35)

S/No	Variables Codes	Factor 1	Factor 2	h^2	$U^2=(1-h^2)$
1	GDP	0.529	0.191	0.317	0.683
2	EXC	0.539	0.793	0.920	0.080
3	INF	-0.246	-0.327	0.167	0.833
4	FCE	0.853	0.415	0.900	0.100
5	PIV	0.400	0.737	0.703	0.297
6	OPN	0.188	0.815	0.700	0.300
7	CAP	0.814	0.555	0.970	0.030
8	LBR	0.817	0.138	0.687	0.313
9	CPI	0.779	0.608	0.976	0.024
10	PCI	-0.665	0.604	0.808	0.192
11	OEX	0.852	0.503	0.979	0.021
12	NOE	0.808	0.367	0.788	0.212
13	BOT	0.779	0.582	0.839	0.161
Sum of Squares		5.92	3.84		
Percentage of Total Variance		45.52	29.50		
Percentage of Common Variance		45.52	29.50		

Table 5 shows the Varimax factor loadings along with communalities and uniqueness of variables. The total variance of any variable comprises of common variance (h^2) as well as specific and error variance. Now since it is usually difficult to separate specific variance and error variance, both are always combined and denoted by unique variance (U^2). This has been revealed in the last column of this table. At the end of each column of the factor the eigenvalues, i.e. percentages of total variance and common variance contributed by the factor were entered.

4.5 Factors Influencing the Relationship Between Nonoil Export and GDP

To identify factors 1 and 2 which have crystallized from data analysis, Table 5 was further split into two sub-tables-Tables 5.1 and 5.2 to facilitate discussion on the significant factor loadings of each of the rotated factors.

4.5.1 Factor 1

As has been explained earlier, the Varimax rotation of original factor matrix involving the determinants of nonoil export and GDP was carried out and the Varimax rotated version presented in descending order in Table 5.1.

Table 5.1. Varimax Factor 1

S/No.	Description of Variables	Codes	Factor Loading
4	Federal Consumption Expenditure	FCE	0.853
11	Oil Export	OEX	0.852
8	Labour	LBR	0.817
7	Capital	CAP	0.814
12	Nonoil Export	NOE	0.808
9	Consumer Price Index	CPI	0.779
13	Balance of Trade	BOT	0.779
10	Per Capita Income	PCI	-0.665
2	Exchange Rate	EXC	0.539
5	Private Investment	PIV	0.400
1	Gross Domestic Product	GDP(CRN)	0.529

NB: GDP is Criterion Variable

As can be seen in Table 5.1, Factor 1 had its highest loading on FCE (0.853). Positive significant loading on FCE implies that Factor 1 was a factor of federal government consumption expenditure. The next highest loading from OEX (0.852) clearly indicates that federal government financed the consumption expenditure from sale of crude oil since Nigeria is not an exporter of finished petroleum products. The next highest positive significant loadings on Factor 1 from LAB (0.817) and CAP (0.814) brought Factor 1 close to factor of production. As Factor 1 increased, FCE, OEX, LAB and CAP also increased. It is only reasonable to assume that the increase in FCE, OEX, LAB and CAP did not occur within the economy and cannot therefore be localized. There is no a priori reason why this should not be a valid assumption considering that a country such as Nigeria which allocates over 70 per cent of its annual budgets to recurrent expenditure can neither create jobs nor augment its capital base. It is then only logical to consider Factor 1 as 'foreign direct investment (FDI)'. Now, it is not difficult to link the positive significant loading of FCE (0.853) on Factor 1 to the huge cost associated with various federal government incentives to attract foreign investors. Certainly, increase in FDI would lead to increase in NOE (0.808), CPI (0.779), BOT (0.779), EXC (0.539), and PVI (0.400). Rising FDI accompanied by declining PCI (-0.665) is a natural consequence of foreign investors'

adoption of sophisticated technology and their preferred choice of foreign labour to local workers who are generally considered to be unskilled. Okafor and Jegbefumwen(38) had also observed that foreign investors preferred foreign workers to Nigerian workers whom they considered unskilled. Low absorptive capacity of domestic economy, coupled with skill-based technology change, had eroded the country's productive base thereby leading to steady reduction in national income and PCI.

The constellation of variables with highly significant loadings on Factor 1 (FDI) are FCE, OEX, LBR, CAP and NOE. These variables contributed significantly to the variance in FDI since, according to Kline (34), factor loadings are same as regression weights. Thus, FCE, OEX, LAB, CAP and NOE could be constituted into active constructs of nonoil export-led growth theory.

The extent of common factor variance contributed by Varimax Factor I (FDI) was found to be 45.52 per cent which is 45.52 per cent of the total variance in GDP contributed by the two factors. Positive significant loadings on NOE (0.808) and GDP (0.529) imply that Factor 1 i.e., FDI had positive valence for NOE and GDP. In other words FDI boosted the relationship between NOE and GDP in Nigeria.

4.5.2 Factor 2

Table 5.2 presents the significant loadings of Factor 2 in descending order.

Table 5.2. Varimax Factor 2

S/No.	Description of Variables	Codes	Factor Loading
6	Openness	OPN	0.815
2	Exchange Rate	EXC	0.793
5	Private Investment	PIV	0.737
9	Consumer Price Index	CPI	0.608
10	Per Capita Income	PCI	0.604
7	Capital	CAP	0.555
11	Oil Export	OEX	0.503
13	Balance of Trade	BOT	0.482
4	Federal Consumption Expenditure	FCE	0.415
12	Nonoil Export	NOE	0.367
3	Inflation Rate	INF	-0.327
1	Gross Domestic Product	GDP(CRN)	0.191

As can be seen in Table 5.2, Factor 2 was most highly loaded on OPN (0.815). OPN is the only variable with 'very high' loading on Factor 2. With its next highest loading of 0.793 on EXC (trade transaction variable), Factor 2 comes close to 'Trade Liberalization'(TRL). This finds justification in the axiom that a country which relaxes import restrictions and pursues export promotion, attracts foreign investors whose

active participation in the country's stock market leads to the appreciation of its currency. Positive significant loadings on PIV (0.737), CPI (0.608), PCI (0.604), CAP (0.555), OEX (0.503), BOT (0.482) and FCE (0.415) are all compatible with the nomenclature in confirmatory factor analysis. Positive, though nonsignificant loading on NOE (0.367) implies that a country that pursues the policy of trade liberalization has positive valence for NOE. Negative, though nonsignificant loading on INF (-0.327) is an indication that a country which pursues the policy of trade liberalization tends toward reduction in inflation rates.

OPN is the only variable with very significant factor loading to constitute trade liberalization constellation. However, by the close approximation of 'high' significant factor loading on EXC(0.793) to very high significant loading of 0.800, EXC has been considered as one of the variables in Trade Liberalization constellation. Essentially therefore, the constellation of variables in Trade Liberalization include OPN and EXC.

The common factor variance accounted for by Factor2 i.e., Trade liberalization was 29.50 per cent which is 29.50 per cent of the total variance contributed by the two factors. Positive nonsignificant loading on NOE (0.367) and positive nonsignificant loading on GDP (0.191) imply that trade liberalization did not boost the relationship between NOE and GDP in Nigeria.

On the whole Factors 1 and 2 had explained the variance in GDP upto 75.02 per cent leaving out only 24.98 per cent of unexplained variance. Thus, the two-factor solution stands justified.

4.6 Categorization OF Factor Correlates into Policy Instruments

Categorization of factor correlates into policy instruments has been carried out in this section in order to constitute a viable nonoil export-led growth policy. This has been presented in Table 6.

Table 6. Classification Of Factor Correlates Into Nonoil Export-Led Growth Policy Instruments.

S/No.	Factor Correlates	Policy Instrument	Corresponding Policy
1	FCE	Budget	Budgetary Policy
2	OEX	Foreign Exchange Earnings	Exchange Rate Policy
3	LBR	Human Capital Investment	Human Resource Development Policy
4	CAP	Stock Market	Credit Policy
5	OPN	Import/Export	Import Substitution/Export Promotion Policy

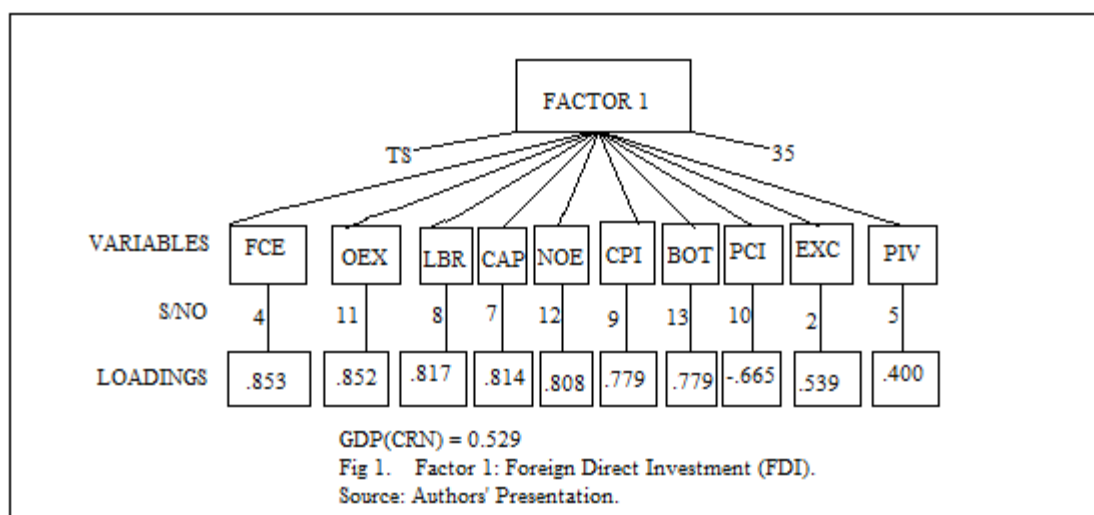
6	EXC	Foreign Currency	Exchange Rate Policy
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As can be seen in Table 6, factor correlates of GDP including FCE, OEX, LBR, CAP, OPN and EXC have been transformed into their equivalent policy instruments of budgets, foreign exchange earning, human capital investment, stock market, import/export and foreign currencies respectively. In turn, these policy instruments have been aptly constituted into their corresponding policies. These results indicate clearly that a viable nonoil export – led growth policy which has evolved from the analysis is comprised of the following components:

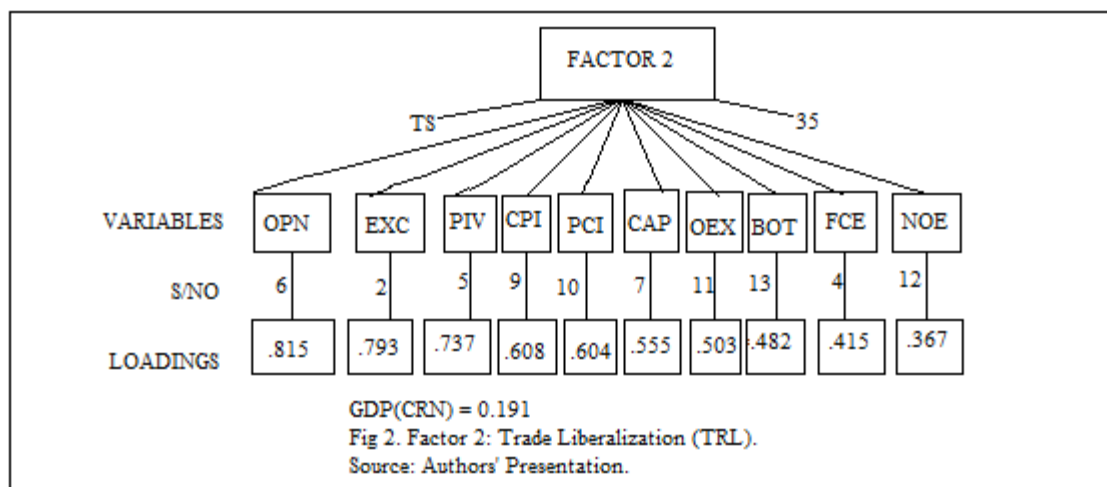
- Budgetary policy
- Exchange rate policy
- Human resource development policy
- Credit policy
- Import substitution/export promotion policy

4.7 Diagrammatic Representation of Factors

For at a glance appreciation, the factors have been presented diagrammatically in Figures 1 and 2 below.



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647 4.8 Modal Summary

648 **The results of factor analysis have been aptly summarized in the following equation:**

649 **$GDP = 0.529FDI + 0.191 TRL$**

650 5. EMPIRICAL RESULTS AND DISCUSSION

651 **This section deals with the empirical results and the accompanying discussion.**

652 5.1 Empirical Results

653 **The major findings which have crystallized from this study includes the following:**

- 654 **1. There was a positive significant relationship between nonoil export and growth**
 655 **which is implicit in a positive contribution of nonoil export to growth in**
 656 **Nigeria.**
- 657 **2. Two potent factors influencing nonoil export and growth relationships in Nigeria**
 658 **were foreign direct investment and trade liberalization. While foreign direct**
 659 **investment was an active factor boosting the relationship between nonoil**
 660 **export and growth, trade liberalization remained a passive factor in the**
 661 **relationship between the two.**
- 662 **3. A viable nonoil export-led growth policy, is comprised of budgetary policy,**
 663 **exchange rate policy, human resource development policy, credit policy, and**
 664 **import substitution/export promotion policy.**

5.2 Discussion

To integrate this study into the existing economic literature, the findings of the study have been discussed hereunder.

An important finding of this study is that there was a positive significant relationship between nonoil export and growth which is implicit in a positive contribution of nonoil export to growth in Nigeria. This finding has come much in expectation. This is because for over two decades, successive governments in Nigeria have devised programmes and strategies to diversify the economy and so reduce overdependence on oil. As the largest economy in Africa, Nigeria has become a final destination to foreign investors and the single largest recipient of foreign direct investment in Sub-Saharan Africa. Therefore, it is possible that foreign participation in mining and agriculture has yielded exportable surplus in the nonoil sector. This particular finding has a practical value as it stands to mediate between two sets of discordant evidences on the impact of nonoil export on growth in petroleum exporting countries. This finding has confirmed the results of earlier studies reported by Usman (5), Alimi and Muse (18), Abogan et al. (21), Alam et al. (23), Gokmenoglu et al. (25), Nwankwo (26) and Adel (27). Certainly, the conflict in the findings of earlier studies was due to the influence of foreign direct investment and trade liberalization as extraneous variables in the models employed by the researchers. A strict control of these extraneous variables in the models would reduce to the barest minimum any such inconsistencies in the results of these studies.

Another finding of the study is that foreign direct investment and trade liberalization were two potent factors which influenced the relationship between nonoil export and growth in Nigeria. While foreign direct investment was an active factor which boosted the relationship between nonoil export and growth, trade liberalization remained a passive factor in the relationship between the two. These results are not altogether unexpected considering that foreign direct investment has always constituted an important source of foreign capital to augment the capital base of the recipient country. Okafor et al. (39) had reported that foreign direct investment contributed significantly to economic growth in factor Nigeria. Perhaps, what has come as a surprise is the emergence of trade liberalization as a passive factor in the relationship between nonoil export and growth. It is an established fact that trade is an engine of growth. However, a plausible explanation in the Nigerian situation is that unrestricted flow of goods and services across the country's borders exposes the infantile home industries to unhealthy competition with highly specialized foreign firms. The posture of trade liberalization as a passive factor in nonoil export-growth nexus is a natural consequence of undiversified, monolithic, import-dependent

country with low export base. Okafor (40), in his study had reported a finding which indicate that nonoil sources were not fully exploited in Nigeria. Moreover, there is the finding that a viable nonoil export-led growth policy is comprised of budgetary policy, exchange rate policy, human resource development policy, credit policy and import substitution/export promotion policy. Perhaps, this is a most startling feature of this article – the modeling of a nonoil export – led growth policy for Nigeria and indeed, OPEC. Essentially, the nonoil export-led growth policy derives its base from the constellation of variables of factors condensed out of the inter-correlations among common determinants of nonoil export and growth in Nigeria. The policy instruments of nonoil export-led growth policy are deeply moored in major macroeconomic theoretical constructs and are therefore in conformity with modern macroeconomic theories and practices. Okafor et al. (41) had also applied factor analysis for identifying potent factors which were constituted into a dynamic microfinance policy.

6. CONCLUSION AND POLICY IMPLICATION

6.1 Conclusion

The theory which has evolved from this study is that there was a positive significant relationship between nonoil export and growth in Nigeria which was influenced by foreign direct investment and trade liberalization. This theory has formed a strong base for developing the nonoil export-led policy for Nigeria, and by extension ,OPEC. The nonoil export-led growth policy has as its goal, the achievement of growth through foreign direct investment while adopting import substitution/export promotion strategies in order to protect the home industries. The nonoil export-led policy has been derived by constituting the correlates of the two isolated factors – foreign direct investment and trade liberalization into policy instruments. The theoretical and practical value of the nonoil export-led growth policy can be derived from the policy implications of the findings which have been presented in the next section.

6.2 Policy Implication

The findings of this study have several policy implications for Nigeria, and by extension, the oil exporting countries and even the developing economies. Firstly, there is a need to harness the positive significant relationship between nonoil export and growth for achieving sustainable growth in petroleum exporting countries. This would involve a shift of emphasis to the nonoil sector in order to diversify their revenue bases and so mitigate the external shock caused by the crash in international oil price.

Secondly, given foreign direct investment as a booster of the relationship between nonoil export and growth, a viable option for the petroleum exporting countries is the induction of foreign capital and technology in their nonoil sectors in order to augment their domestic productive capacities and harness foreign direct investment toward achieving sustainable economic growth.

Thirdly, there is a need for the petroleum exporting countries to take into cognizance the posture of trade liberalization as a passive factor on the relationship between nonoil export and growth. Certainly, the next priority is arguably the adoption of import substitution/export promotion in order to derive the full benefit of international trade while pursuing the policy of trade liberalization with extreme caution in order to protect their home industries.

Fourthly, is the desire to formulate a dynamic nonoil export-led growth policy-a need which is often highlighted by lack of clear policy objectives. It is therefore important that in formulating a dynamic nonoil export-led growth policy, all correlates of foreign direct investment and trade liberalization which impinge on nonoil export-growth nexus such as budgetary policy, exchange rate policy, human resources development policy, credit policy and import substitution/export promotion policy should be modelled as components of a new dynamic policy.

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