AMERICAN JOURNAL OF ECONOMICS AND BUSINESS MANAGEMENT

ISSN: 2576-5973
Vol. 5, No. 3, 2022

Export Diversification and Economic Growth in Nigeria

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Abstract: The main aim of this paper is to establish the relationship between export diversification and economic growth in Nigeria between 1970 and 2019 in order to determine if there was a change in the relationship between export diversification and economic growth in Nigeria as contained in the SAP policies. This period of investigation was divided into two main short run periods - pre SAP and post SAP. The findings of this study reveal that there was a high degree of export concentration on primary items. In reality before the deployment of SAP, the mean index of diversification was 1.001 while Post SAP was 0.963 for the whole 50 year period the average diversification index was around 0.98. The findings also show that the models regressors were statistically significant in explaining the influence of export diversification on Nigerian economic growth. The study discovered that GDP per capita in previous years, non-oil exports natural resource endowments, institutions and real exchange rate had positive and significant effects on economic growth whereas the herfindahl export concentration index and oil exports had negative effects on GDP per capita. The herfindahl index over the whole period was 0.98 showing that the Nigerian economy was heavily reliant on primary exports with the oil and gas sector dominating. Based on the findings, the followings were recommended. There is the need to get some country-wide "horizontal basics" right. This entails good macroeconomic management policies including running a counter-cyclical fiscal policy (low inflation, realistic exchange rate, and low fiscal and external deficits), anti-export bias policies and measures to mitigate adverse social effects of reforms needed to align domestic to international prices. This would help to address the problems of coordination failure.

Keywords: Export Diversification, Economic Growth, Oil Exports and Non-Oil Exports.

1.0 Introduction

In recent times, both economic historians and development economists have been puzzled with the realism of how resource-poor regions are vastly outperforming the resource-rich ones in their process of economic transformation through diversification. For instance, during the 17th century, a resource-poor Netherlands eclipsed Spain – a resource-rich economy despite the over flow of gold and silver from the Spanish colonies in the New World. In the 19th and 20th centuries, resource-poor countries like Switzerland and Japan surged ahead of resource-rich economies like Russia and some other Soviet Union members (Ugbaka and Effiong, 2019). Economic diversification is not a new strategy in Nigeria. As a matter of fact, it has been on the political agenda since oil and gas became the main and almost the sole source of revenue to the government for over half a century ago. There has been of recent political focus on diversification of the economy motivated by multiple problems arising

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

from the developmental constraints to the falling prices of oil and gas at the international market (Ugbaka and Effiong, 2019).

Nigeria relies on the sale (export) of crude oil as its main source of export earnings. Its premium quality, the Bonny Light Brent is of high demand internationally due to low carbon content. The feeding-bottle federalism of Nigeria fails to support development efforts across the states in Nigeria in two important respects. First, it fails to generate a stable and sufficient income for the population, and second, it fails to create job opportunities for the swiftly growing and well-educated groups of young citizens.

Among the various problems of developmental constraints, falling oil prices at the international market among others. Again, the undiversified export structures which caught the attention of this study are the institutional weakness to drive the process of export diversification, dominance of the economy on few sectors (particularly oil and other primary products), drastic and sudden rise in exchange rate after the implementation of SAP, volatility in earnings from export proceeds due to unstable prices of primary product exports, failure of the market to guarantee profitability for firms to diversify, shift of focus from one primary products to another due to falling prices at the international market, terms of trade deterioration, inability of the country to diversify towards manufactured goods, dismal economic performance as a result of poor implementation of most trade policies, (coordination failure) among other issues.

With the current turn of events occasioned by the falling price of oil to as low as US$50 per barrel, Nigeria is not enjoying the best of all times. The country is presently suffering the adverse effects of dwindling revenue from crude oil and gas sector, which today account for about 95 percent of its revenue. The grave consequences of this trend has resulted to a number of problems such as devaluation of the Naira (or exchange rate volatility), depletion of external resources (stagnation of savings), depletion of funds for Federal and States allocation, delay in payments of salaries of civil servants, possible delay and demise of infrastructural projects (Threat to capital expenditure), abysmal activities in the capital market, job cut and project deferment in oil and gas sector (unemployment), economic diversification (a shift away from oil and gas sector), reduction in the pump price of fuel, inflation hike, rise in debt servicing, worsening productivity in manufacturing and other productive sectors and inability to implement national budgets.

Relatively, a drastic reduction in public spending on account of oil price volatility may also lead to social instability, discouraging domestic and foreign investments and reducing future growth. Therefore, it is important that there is the need to give a good attention to, and do a careful analysis on the need to diversify the export base of the economy. These concerns underscore the need for this study.

2.0 Literature Review

Ferreira (2019) examined the impact of export expansion and diversification on economic growth using bounds test for co-integration within autoregressive distributed Lag (ARDL) framework and a dynamic OLS (DOLS) model and found that export diversification in Costa Rica is characterized by weak linkages between multinational corporations operating in the free zones, and the rest of the economy. The result showed that export diversification had no long-run effect on economic growth during the period of study.

Al-Marhubi (2018) in comparing the benefit of export diversification between the developed and developing countries using cross sectional data from 1961 to 1981 for 91 countries, and with the use of two equations (growth equation and export diversification equation), the results from the equations

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

were quite conventional implying a positive relationship between export diversification and economic growth. He concluded by recommending that for developing countries, a more diversified export basket leads directly to faster growth and further more increases the possibility for fruitful investment, which in turn is positively related to economic growth. Forgha, Sama and Atangana (2018) in their study on "the effects of export diversification on economic growth" in Cameroon between 1980 and 2012, and applying the vector Autoregressive (VAR) technique found a positive and significant relationship between export diversification and economic growth. Based on the results, they recommended export expansion by acquiring new production technique amongst others to induce growth.

Hess (2018) observed that the effect of export diversification is dependent on the income level of a country using a panel growth model (Solow) for 91 countries for the years 1960 to 2000, Hess' argues that export concentration is detrimental to per capita income growth. On the contrary, Hess' suggestion that income level of a country depends on export diversification is inconclusive because there are other macro-economic variables that positively affect GDP growth. Moreover, there is no limit to export diversification since technology continually evolve almost on a daily basis. Therefore, export diversification and value added are continually necessary to both developed and developing countries in this dynamic world.

Also, Feentra and Kee (2018) examined the relationship between changes in export variety and economic growth across sixteen (16) sectors in South Korea and Taiwan over the period 1975 – 1991 in order to ascertain the linkages between changes in export variety and growth in total factor productivity. The study found positive and significant impact of export variety on productivity. In some other group of countries such as organization for economic cooperation and development (OECD) countries, Onodugo, Ikpe and Anowor (2017) examined the relationship between non-oil export and economic growth in Nigeria for the period 1981 – 2012. The study adopted the Augmented production function (APF) and the endogenous growth model (EGM) and found a very weak and infinitesimal impact of non-oil export in influencing the rate of change in level of economic growth in Nigeria.

Hamed, Hadi and Hossein (2017), using time series data from 1971 – 2013) and employing the vector auto regressive technique prove that exports and foreign direct investment (FDI) have a positive impact on economic growth. Without conducting a multicolinearity test on exports and FDI cast doubt on the strength of the relationship existing between the variables in the model. Kugler (2016) examines the determinants of exporting behaviour of the Venezuela manufacturing companies and assessed whether multinational corporations (MNCs) subsidiaries stimulates exports at both the extensive and intensive margins. The specification allows for export know-how diffusion to be both vertical (across the sectors via supply chains) and horizontal (within the sectors). Using pooled data set for the period 1995 to 2001 from the Annual Venezuelan manufacturing survey, the study found export promotion effect of better input availability to potentially induce MNCs demand and supply.

Adewuyi and Arawomo (2016) analyzed export diversification in the context of price uncertainty using Nigeria as a case study. The study follows the modern portfolio theory on efficient portfolio diversification based on return-risk trade-off to examine the effect of world price uncertainty and other factors on export earning variability. Adopting the three methods (vertical, horizontal and Herfindahi index), the study showed that Nigeria's export was more diversified in the 1970s and the periods towards 2012; but got concentrated in the 1980s and 1990s. The GMM estimator of the study revealed that world market price, uncertainty, openness, export concentration, foreign income volatility and output (GDP) supply shock are major causes of Nigeria's export earnings variability.

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

Sanjay (2011) observed the relationship between export diversification and economic growth for the period of 1980 to 2008. Based on vector Error Correction modeling and Johansen co-integration analysis, the study found an inverse relationship between export concentration and economic growth. The study call for the need to promote export diversification through appropriate incentives provisions, dealing with market information and failures, promoting entrepreneurship as well as providing a competitive business environment for sustained economic growth.

All in all, any export diversification policy that is intended to shift focus away from oil export should emphasize more on the development of non-oil export. To this effect, this study shifted focus from oil and gas to the non-oil sector. Consequently, natural resource endowments proxy by the ratio of primary product export to gross domestic product (GDP) was included in this study, which most studies do not incorporate in their analyses on export diversification and economic growth.

3.0 Methodology

The research design considered appropriate for this study is the quasi−experimental research design which aims to test hypotheses based on economic theories, statistical and econometric methods are used for estimating parameters of a model, simulate the economy and to generate scenarios under available data set where strategic interactions among economic variables are analyzed.

Model Specification

There are extensive research works on the empirical relationship between export diversification for the attainment of economic growth. The model of this study is anchored on the works of Lal, I., S. Muhammad, M. Jalil & A. Hussain (2017) and Elshamy (2013) where economic growth is expressed as a function of export diversification and some other control variables. It recognizes the interrelationship between economic growth and export diversification in a structural equation model. The specification allows for the identification of the channels through which export diversification and other policy interventions affect economic growth over time. The model is stated as:

$$y_t = \emptyset_0 + \emptyset_1 EXD + \emptyset_2 X + U \qquad 3.1$$

Where;

y_t is the economic growth; EXD representing export diversification; X is the other control variables, U is the disturbance term, t is the time period and ϕ are the parameters. From equation (3.1), the growth rate of commodity X can be derived so that the determinants of economic growth without exogenous technological change can be written as:

$$\begin{aligned}\mathrm{RGDPPC} = {} & \beta_0 + \beta_2\mathrm{OILEXP} + \beta_3\mathrm{NONOILEXP} + \beta_1\mathrm{HIREXIN} + \beta_4\mathrm{NREND} + \beta_5\mathrm{INST} \\ & + \beta_6\mathrm{REXRATE} + \lambda\mathrm{GDPPC}_{t-1} \\ & + \mu \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots..3.2\end{aligned}$$

Where: RGDPPC is the real gross domestic product per capita.

OILEXP is value of oil export

NONOILEXP is the value of non-oil export

HIREXIN is the Hirschman concentration Index

NREND is the natural resource endowments

INST is the Institution (proxy by contract intensive money

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

REXRATE is the real exchange rate while

μ is the error term with its assumed normality.

All variables are in their logarithmic form so as to harmonize the unit of measurement and provide an opportunity to interpret the coefficients as elasticity. Hence, the logarithmic form of equation (3.2) becomes:

$$\text{Log}RGDPPC = \beta_0 + \beta_1 logOILEXP + \beta_2 logNONOILEXP + \beta_3 logHIREXIN + \beta_4 logNREND + \beta_5 logINST + \beta_6 logREXRATE + \lambda logGDPPC_{t-1} + \mu \ldots\ldots\ldots 3.3$$

4.0 Data Analysis

4.1 The Unit Root Test

Table 4.1: Results of Unit Root Test

Variables	Critical value at 5%	ADF	Status
GDPPC	-2.932	-4.202011	1(1)
OIL EXP	-2.932	-5.148182	1(1)
NON-OIL EXP	-2.932	-4.040437	1(1)
HIREXIN	-2.9303	-3.811577	1(0)
NREND	-2.932	-6.698987	1(1)
INST	-2.932	-4.176809	1(1)
EXR	-2.932	-4.0274	1(1)

Source: Own computation, using E-views 10

Note: Critical values for ADF = 0.05

From table 4.1, all the variables (except HEREXIN) were stationary in their first difference. As a result, the Johansen's cointegration approach was used to determine the number of cointegrating equations. In order to determine the optimal lag length for the Johansen cointegration test, the VAR (Vector Autoregression) test based on the Schwarz information criterion (SIC) was used. The result shows that the optimal lag length is one. Using the selected optimal lag length, the likelihood ratio statistics which depends on the Maximum Eigen values of the stochastic matrix of the Johansen (1991) procedure is used.

4.2 Co-Integration Test

A test of co-integration among these variables was carried out with the aid of a reduced rank procedure as developed by Johansen (1991) and Johansen and Joselius (1990. The test results are shown in table 4.2 below:

Table 4.2 Johansen Co-integration Test with Trace Statistic

Hypothesized No of CE(s)	Eigen Value	Trace Statistic	5 Percent Critical value	1percent critical value
None **	0.737768	146.8640	124.24	133.57
At most 1	0.565028	89.30742	94.15	103.18
At most 2	0.441366	53.51102	68.52	76.07
At most 3	0.254446	28.47384	47.21	54.46
At most 4	0.193954	15.84784	29.68	36.65

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

At most 5	0.131045	6.576403	15.41	20.04
At most 6	0.012398	0.536462	3.76	6.65

Source: Own computation using E-views 10.0 Note: (**): Denotes rejection of the null **hypothesis at 5 percent and 1 percent levels.**

The results show that the Trace test indicated one (1) co-integrating equation at both the 5 percent and 1 percent level of significance. This indicate that there exist, a long-run relationship between per capita GDP and all the explanatory variables in the model. The implication is that there are both long-run and short-run relationships among the variables under consideration. As a result, the long-run relationship and vector error correction model (VECM) was estimated. This shows that in the long run, all the variables of interest are statistically significant since the absolute value of the t-statistic are greater than two.

4.3 Pair wise Granger-Causality Test

In an attempt to detect the impact of the regressors of the model on GDPPC, a pairwise Granger-Causality test is conducted as reported in table 4.3. The table reveals pattern of causality running from GDPPC to the regressors of the model (with exception of exchange rate variable which is seen to Granger-cause GDPPC with serious policy implication).This implies that the causality happens prior to its effect and has unique information about the future values of the effects. The causality results show that exports do not lead to growth but growth causes exports over the relevant historical time period. In other words, the hypothesis of export-led growth can be rejected in the Nigerian case.

Direction of causality	F-test	Prob. Value	Decision
GDPPC ⟶ OILEXP	1.44675	0.24800	Do not reject
GDPPC ⟵ OILEXP	0.24582	0.78330	Reject
GDPPC ⟶ NONOILEXP	2.45487	0.09939	Do not reject
GDPPC ⟵ NONOILEXP	1.29038	0.28695	Reject
GDPPC ⟶ NREND	2.20154	0.12455	Do not reject
GDPPC ⟵ NREND	1.25311	0.29715	Reject
GDPPC ⟶ INST	0.30124	0.74165	Do not reject
GDPPC ⟵ INST	0.24614	0.78305	Reject
GDPPC ⟶ EXCR	1.37629	0.26481	Reject
GDPPC ⟵ EXCR	5.72298	0.78305	Do not reject

Source: Own computation, using E-views 10.0 Note: Direction of causality: Reverse of causality (feedback effect)

The above causality result clearly shows a very weak causality between economic growth and export concentration index (the HIREXIN). This suggests that concentrating the economic base on primary products exports is detrimental to economic growth, hence, the need for export diversification as catalyst for growth. The reasoning behind this weak causality is that even though Nigeria has been harnessing and utilizing her primary products to grow the economy, there were little or no value-addition in terms of improved per capita growth which is clearly a reflection of the "Dutch disease" hypothesis.

4.4 Short-Run Dynamic Relationships between Export Diversification and Economic Growth in Nigeria

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

In order to examine the short-run dynamic relationships between export diversification and economic growth in Nigeria, the entire time frame (1970 – 2019) was divided into two major economic events, namely: Pre-Structural Adjustment Program (Pre-SAP) and Post-Structural Adjustment Program (Post-SAP). This is to enable the study examine whether there is a structural change (or structural stability) in the relationship between the variables under investigation. As a matter of fact, the first objective of SAP was "to restructure and diversify the productive base of the economy in order to reduce the dependence of the economy on oil sector and on imports. While it may be argued that the Nigerian economy would have been worst-off if SAP had not been implemented, the extent to which SAP achieved its goal of "re-directing" the economy from inward-looking import substitution strategy to outward-looking export promotion strategy before the official abandonment of the program in 2006 is still a subject of debate. Findings from this study showed that prior to the implementation of SAP in 1986, the mean index of diversification (HIREXIN) between 1970 and 1985 was 1.001 while the mean index of diversification after SAP had been implemented (1986 – 2019) was 0.963. Ordinarily, the mean index of diversification prior to the introduction of SAP should have been lower (as expected) than the mean index of diversification after SAP had been implemented.

The statistical significance of this finding showed a systematic decrease in HIREXIN between the two periods which actually tend to encourage diversification effort in line with the objective of SAP even though, the economy witnessed a high degree of export concentration on primary products in both periods, leading to undiversified export structures. The dramatic and sudden rise in the exchange rate over the years tended to affect per capita GDP through its effects on cost and availability of imported raw materials and capital goods during the Post-SAP era were inimical to diversification efforts. The lumpy depreciation of Naira during the liberalization period only accentuated the adverse effects of exchange rate depreciation on diversification effort.

The implication of this finding is that an appreciating exchange rate would help to diversify the export base of the economy through a prudent management of foreign exchange resources, especially proceeds from oil exports. This means that the continued dominance of the economy by a few sectors (mostly in their primary stage) seems inevitable at the short-to-medium-term such that the economy can take maximum advantage of their dominance to pursue the policies and programs of diversification.

Table 4.4: Estimation of the short-run Dynamic Relationship between Export Diversification and Economic Growth in Nigeria

Variable	Coefficient	Std Error	t-Statistic	Prob.
LOGOILEXP	- 0.301398	0.089199	- 3.378957	0.0081
LOGNONOILEXP	- 0.046509	0.113663	- 0.409181	0.6920
LOGHIREXIN	- 0.295159	0.701168	- 0.420954	0.6837
LOGNREND	0.125322	0.145798	0.859558	0.4123
LOGINST	0.049626	0.035258	1.407500	0.1929
LOGREXRATE	- 0.252739	0.307367	- 0.822270	0.4322
CONSTANT	4.600289	0.794009	5.793793	0.0003

R-Squared	0.910334	Mean Dep. Variable	4.044375
Adjusted R-Squared	0.850556	SD dep. Variable	0.115929
S.E of Regression	0.044816	Akaike Inf. Criterion	- 3.072872
Sum. of Sq. resid.	0.018076	Schwarz Criterion	- 2.734865
Log Likelihood	31.58298	F-Statistic	15.22868

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

Durbin-Watson Stat.,	2.280180	Prob. (F-Statistic)	0.000297	

Source: Own computation, using E-views 10.0

Table 4.4 was estimated with the assumption that there is no structural difference between estimates of Pre-and-Post-SAP era and therefore, estimates the relationship between export diversification and economic growth in Nigeria for the entire period. In other words, the regression estimates assumed that the intercepts as well as the slope coefficients remains the same over the entire period- meaning that there is no structural change. However, estimates of table 4.4 assume that the regressions in the two periods are different both in the intercepts and parameter estimates.

A look at the estimated coefficients showed that the relationships between export diversification and economic growth in Nigeria are not the same in the two sub-periods as the (mean) change in economic growth as a result of a unit change in the export diversification index are statistically different. Whether this change was due to the Structural Adjustment Programme (SAP) implemented by the Babangida Administration in 1986 is difficult to conclude. However, these structural changes may be caused by differences in the intercepts or slope coefficients (or both). Under the null hypothesis, regressions in periods 1 and 2 of table 4.4 are statistically not the same. That is, there is no structural stability in the models. Following Chow (1960), the computed F-statistic was 1.20 while the tabulated F-statistic was 2.27 with K = 8, v = 14. Therefore since the F-calculated is less than F-tabulated, the study do not reject the null hypothesis of parameter stability or the null hypothesis of no structural stability – meaning that there was no structural change at 5 percent level of significance. Consequently, the use of estimates of table 4.5 in interpreting the relationship between export diversification and economic growth in Nigeria may be justified.

Variables	Coefficient	Std Error	t-Stat	
Coint Eq 1	- 0.292403	0.20473	[- 1.42821]	
D[GDPPC (-1)]	- 0.731595	0.38196	[- 1.91535]	
D[GDPPC (-2)]	- 0.499301	0.29941	[- 1.66761]	
D[OILEXP (-1)]	- 64.24049	44.6647	[- 1. 43828]	
D[OILEXP (-2)]	- 33.71650	26.7982	[- 1. 25816]	
D[$OILEXP_{t-1}$ (-1)]	- 30.60005	28.8136	[- 1.06200]	
D[$OILEXP_{t-2}$ (-2)]	- 34.53439	26.8181	[- 1. 26773]	
CONSTANT	6.339925	4.28118	[1. 47074]	

Source: Own computation, using E-views 7.0

Table 4.5 shows the exploration of the short-run dynamics among the variables through the use of Vector Error Correction Model (VECM). This model allows for the introduction of previous disequilibrium as independent variables in the dynamic behavior of existing variable. The VECM associates the changes in the GDP per capita to the changes in the lagged values of the other variables and the disturbance term of lagged periods. The coefficients of the speed of adjustment are all negative and statistically significant at 5 percent level. This shows the rate at which variables return to their long-run equilibrium every year after wondering away from their steady state resulting in the retention of the level information as all variables in the model are treated exogenously. This provided an advantage of testing the long-run relationships among the variables.

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

Table 4.6: Results of Linear Regression Analysis.

Variable	Coefficient	Std Error	t-Statistic	Prob.
Constant	4.966638	0.732470	6.780673	0.0000
LOGOILEXP	- 0.479219	0.173345	- 2.764539	0.0088
LOGNONOILEXP	0.125337	0.255689	0.490134	0.6269
HIREXIN	- 0.862944	0.344837	- 2.242361	0.0310
NREND	0.057795	0.027390	2.110082	0.0417
INST	0.150526	0.247872	0.607274	0.5474
REXRATE	0.008206	0.002524	3.250667	0.0025
$GDPPC_{t-1}$	0.336667	0.072992	4.612358	0.0000

R-Squared	0.813505	Mean Dep. Variable	4.257333
Adjusted R-Squared	0.778222	SD dep. Variable	0.753234
S.E of Regression	0.354723	Akaike Inf. Criterion	0.924852
Sum. Of Sq. resid.	4.655650	Schwarz Criterion	1.246036
Log Likelihood	- 12.80916	F-Statistic	23.05661
Durbin-Watson – Stat	1.526097	Prob. (F-Statistic)	0.000000

Source: Own computation, using E-views 7.0

Note: Significant at 5 percent level

4.6 Result of Autocorrelation in an Autoregressive Model

The estimated short-run GDP per capita shows that the export concentration variable (the Herfindahl Index) has the correct sign and that it is statistically significant as its p-value is about zero. The coefficient of adjustment, δ = (1 – 0.336667) = 0.663333, imply that about 66 percent of the discrepancy between the desired and actual change in per capita GDP is estimated annually, an interesting fast adjustment. To get back to the long-run GDP per capita income, all that is needed to be done is to divide the short run GDP per capita income function of equation 3.28 by λ and drop the $\log GDPPC_{t-1}$ term. The results are

$$\widehat{LogGDPPC_t} = 14.7523755 - 1.442342136 logOILEXP + 0.37228775 logNONOILEXP - 2.56319746 logHIREXIN + 0.17166815 logNREND + 0.44710649 logINST + 0.02437423 logREXRATE - - - - - - 4.1$$

As can be observed from estimate (4.1) above, the long-run export concentration elasticity is substantially greater (in absolute terms) than the corresponding short-run elasticity as reported in table 4.6 which is also true of the other elasticities even though their statistical and economic significance may appear dubious in the present instance. The estimated Durbin-Watson (D-W) test is 1.526097, implying absence of serial correlation (as the D-W value is relatively not close to 2 as is observed in most empirical studies in which autoregressive model is estimated). It means that this is a trustworthy value of D-W test.

Since the Durbin Watson cannot be used to test for autocorrelation in autoregressive model, it can be used as impute to compute the h-statistic. With the h-value having the standard normal distribution under the null hypothesis, the probability of obtaining h-value is very small. In econometrics, the probability that a standard normal variate exceed the value of ±3 is extremely small. In this study, the h-value of -2.21786846 has a conclusion that there is negative autocorrelation or absence of first-order autocorrelation. Hence, the empirical estimates are theory consistent and valid for analysis.

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

4.7 Discussion of Results

The regression estimates as presented in table 4.6 above is carried out in line with the empirical model for this study as specified in equation (3.2). The results are done at 5 percent level of significance to show the relationship between per capita gross domestic product (GDPPC) and the major regressors of the model. The least Squares estimate were done by the inclusion of the country-specific effects, having taking into consideration the potential endogeneity between the degree of diversification and per capita income.

On the whole, the regression results are plausible because the estimated t-ratios corresponding to the coefficient are statistically high while the coefficient of determination (defined by R^2) which measures the goodness of fit of the model is equally high. It explained that about 81 per cent of the total variation in per capita GDP is accounted for, by the regressors of the model. While, only about 19 per cent are not accounted for. This means that the explanatory powers of the regression equations are high. Since the value of the Durbin-Watson (D-W) statistic is 1.526097, autocorrelation is not a serious problem.

4.7.1 Oil Exports Coefficient

In a related development, the results showed that GDP per capita would decrease by about 48 percent (- 0.479219) for every one unit change is oil export, holding other variables constant. Perhaps, this is a surprising result in that with huge amount of petrodollar revenue generated from oil export over the years; economic growth and development are not being felt across the broad spectrum of the society. The negative contribution of oil exports to GDP Per capita clearly indicates diminishing returns to scale in the exploitation of oil resources in Nigeria. Indeed, greater oil revenue is a major factor in the Nigerian economy, but its effectiveness in terms of utilization should be a high priority. Although, the hydrocarbon reserves in Nigeria are still high, recent events in the global energy market suggest that greater oil exports from major oil exporting countries could lead to further OPEC caps on oil output, most especially as there exist no planned oil and gas capacity expansion coming on-stream in Nigeria. In essence, the road to export diversification would involve difficult policies to convey the importance of decreased concentration on the oil and gas sector and more productive allocation of resources to the non-oil sector as the results indicate.

4.7.2 Non-Oil Exports Coefficient

The relationship between export diversification and economic growth in Nigeria was also examined in the model bearing in mind the contribution of nonoil sector to GDPC. The results showed that GDP per capita would rise by about 13 percent (0.125337) for every one unit change in the non-oil exports of the economy, holding every other variable constant. Interesting, economic growth in the non-oil sector is very high compared to oil exports as indicated in the regression results. This implies that there is a strong growth trend in the non-oil sector than the oil sector. A possible explanation to this result is that because of strong domestic demand and timely policy measures of the government, per capita income growth can be enhanced to enhance strong visible export diversification. In essence, a more diversified export basket is expected to be associated with less volatility and might involve a wider range of sectors.

4.7.3 Herfindahl Index Coefficient

The model provides an overwhelming evidence that GDPPC would decrease by about 86 percent (-0.862944) for every one unit change in the export concentration on one sector holding other variables constant. As a matter of fact, an average measure of export concentration between 1970 and 2019

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

showed a Herfindahl Index of about 0.98 (that is 0.975) which implies that the Nigerian economy is highly concentrated on revenue from primary product particularly oil within the period. This high degree of export concentration (absence of diversification mechanism) implied a decrease in competition across sectors of the economy. The result implied that independently on the estimation procedure and the functional form of the model in equation (3.2), the economic growth level is always significantly and negatively related to the measure of economic specialization, being an opposite of diversification. Consequently, as countries grow and develop, export specialization decreases (diversification of exports increases). With the long-run marginal propensity to concentrate on primary product exports declining by -1.3 while the long-run marginal propensity to diversify increasing by 0.2066. In other words, a rise in per capita income by 1 percent is associated with a decline in the measure of specialization by about 0.86 percent to show that export diversification process takes place along the path of growth but that such growth is rather slow. By this, the result reject the null hypothesis that export diversification has no positive and significant relationship with economic growth in Nigeria.

4.7.4 Natural Resource Abundance Coefficient

The abundance of natural resources in an economy is likely to limit the scope of diversification and the sophistication of export structures, since countries abundant in natural resources tend to have high concentrated export structures. This position is supported by the result of the study. According to the findings, GDP per capita would marginally rise by about 6 percent (0.057795) for every one unit change in the natural resources endowment, holding other variables constant. In the Nigeria case, the abundant sector is oil and gas. Rather than exhibiting a negative relationship in line with the Dutch disease model, this study find a positive relationship between per capita GDP and natural resource endowment because in the Nigerian scenario, oil and gas sectors are clearly the leading sector of the economy, showing the path of growth and development to other sectors of the economy through investment.

4.7.5 The Role of Institutions Coefficient

The study also examines the role of institutions in promoting economic growth through export diversification. The main measure of institution used in this study is contract intensive money (CIM) as proposed by Clague, Keder, Knack and Olson (1999). The result shows that GDP per capita would rise by about 15 percent (0.150526) for every one unit change in institution, holding other variables constant. This implies that in societies where the rules of the game and property and contract rights are well defined, transactions that rely heavily on outside enforcement can be advantageous to economic growth. This can also be interpreted as evidence that better governance is associated with more export diversification including better accountability, rule of law, political stability, efficiency and effectiveness of human capital and control of corruption are among the critical determinants that may contribute substantially to expanding the scope of products that a country can export.

4.7.6 Real Exchange Rate Coefficient

The impact of exchange rate on economic growth through export diversification was also examined in this study. The result showed that GDP per capita would rise by about 1 percent (0.008206) for every one unit change in the real exchange rate, holding every other variable constant. This result is in line with most studies that found a small but less significant relationship between exchange rate and economic growth. The implication of this findings is that there exists, an asymmetric effect of currency undervaluation on economic growth depending on the choice of GDP per capita cut off threshold.

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
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4.7.7 Previous Level of GDP Per capita Coefficient

GDP Per capita depends more fundamentally on its past value ($GDPPC_{t-1}$) than any of the variables in the model. As a matter of fact, the result showed that GDPPC would rise by about 34 percent (0.336667) for every one unit change in the previous year's GDPPC holding every other variables constant. This result equally means that about 34 percent of the disequilibrium in per capita gross domestic product (GDP) in the previous year is corrected in the current period, with the speed of adjustment (1 - λ) of 66 percent. This also demonstrated the fact that both the predicted and the predictor variables go a long way in explaining the level of economic growth in Nigeria. This implies that export diversification takes place along the path of growth, and country fixed effects which are relevant in explaining the growth trajectory. This result is however, not advocating the abolition of existing focus on oil sector and natural resource exploitation but tries to advocate measures that can be adopted to enhance export diversification to guarantee balanced development across the real sectors of the economy.

5.0 Summary Conclusion and Recommendations

This study was conducted with the broad objective of investigating the relationship between export diversification and economic growth in Nigeria for the period 1970 and 2019. This period of investigation was divided into two main short-run periods of Pre-SAP (1970 – 1985) and Post-SAP (1986 – 2019) era in order to ascertain whether there was a structural change in the relationship between export diversification and economic growth in Nigeria as contained in the policies of SAP. Findings from this study show that in both time horizons, there was high degree of export concentration on primary products exports. As a matter of fact, the mean index of diversification prior to the implementation of SAP (1970 – 1985) was 1.001 while that of Post-SAP (1986 – 2019) was 0.963. On the average, the mean index of diversification for the entire 49 year period was about 0.98. Ordinarily, the mean index of diversification prior to the implementation of SAP should have been relatively lower than that of Post-SAP. With the reverse being the case, over the two periods, it could be stated that the Nigerian economy was largely undiversified in export earnings.

Since diversification would not occur overnight but driven by effective infrastructural development especially in the non-oil sector, it has to be accompanied by an appreciating exchange rate to help diversify the export base of the economy. Applying an endogenous growth mechanism as a framework for analysis, the study incorporated some of the most critical country-specific factors that determine export diversification process in the course of economic growth in Nigeria. The study found that the regressors of the model were statistically significant in explaining the impact of export diversification on economic growth in Nigeria. This argument is particularly important for Nigeria due to the risks which the country faces in periods of cyclical fluctuations occasioned by volatility in the prices of primary product exports, particularly oil, at the international market.

In specific term, the study found that GDP per capita in previous years period, non-oil exports, natural resource endowments, institutions and real exchange rates had positive and significant impact on economic growth while the Herfindahl export concentration index and oil export had negative impact on economic growth measured by GDP per capita. This is particularly so because, within the period of study, the average Herfindahl index was 0.98, implying that the Nigerian economy was highly concentrated on primary product exports with oil and gas sector as dominant. This high concentration resulted in a decrease in competition across all sectors of the economy.

ISSN 2576-5973 (online), Published by "Global Research Network LLC"
under Volume:5 Issue: 2 in February-2022 https://www.grnjournals.us/index.php/AJEBM

When a Granger-causality mechanism was applied, the result failed to support the export-led growth hypothesis but instead found that it is growth that leads exports. Based on the findings of this study, the following recommendations are made:

The exchange rate policy of preventing extended periods of over-valuation particularly on the down side of a cycle should be put in place. This could help in bridging the gap between savings and investment.

There is the need to have strong institutions that would regulate import, promote export utilize both external and internal debt, ensure good governance, and promote accountability as these would guarantee level-playing ground for all investors in the economy.

Expanding the range of export goods to reduce over concentration on oil exports is essential for a successful diversification plan. This would boost both domestic and external sector demand for locally made goods, thereby reducing volatility arising from the export of a single product.

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