EFFECT OF OIL AND NON-OIL EXPORTS ON ECONOMIC GROWTH IN NIGERIA: AN ARDL APPROACH

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Abstract
This study examines the effect of oil and non-oil exports on economic growth in Nigeria, covering a period of thirty-three years i.e. from 1990 to 2022. The research was based on the Two-Gap Model. The research utilised time series data obtained from the statistics bulletin of the Central Bank of Nigeria (CBN). The data analysis methods utilised included the Augmented Dickey-Fuller (ADF) statistic, the Autoregressive Distributive Lag (ARDL) technique, and the Error Correction Model. The major finding of the research is that oil exports have a significant and positive effect on the Gross Domestic Product (GDP) in both the short and long run. Likewise, non-oil exports have a positive and significant impact on GDP, both in the short and long run. Nevertheless, the exchange rate has a significantly negative impact on GDP in both short and long run. The study concluded that both oil and non-oil exports have a positive and significant influence on the growth of the Nigerian economy. The study recommended among others that the Nigerian government should diversify its range of products, simplify the export procedures and strengthen Nigerian businesses in order to increase the percentage of non-oil exports in the total Nigerian export volume for increased economic growth.
Keywords: Oil Export, Non-Oil Export, Exchange Rate, Economic Growth, Gross Domestic Product.

Introduction

Over time, it has been shown that international commerce provides a means for the influx of income into an economy. This is particularly true when the value of commodities that are exported from such an economy is greater than the value of the items that are imported. Exportation is essential for an economy to enhance its income and stimulate economic development (Matthew, Charles, Dorathy & Suleiman, 2017). Exports have a significant impact on economic development by generating revenue for the state budget and providing foreign currency that can be utilised to enhance infrastructure and foster an appealing investment environment. Furthermore, the expansion of exports,

including both oil and non-oil exports, drives companies to expand their production and lower their production costs, resulting in increased productivity and the attainment of economies of scale. Additionally, it plays a crucial role in enlarging the local market and enhancing the level of competitiveness, which motivates the nation to enhance its output and adopt new technology in its manufacturing process (Mohsen, 2015).

Adenugba and Dipo (2013) stated that when there is a large demand for exports, output increases. This, in turn, creates more jobs, brings in more income for the country, and improves its trade and payment balances. This highlights the role of exports in a country's economic growth. Agricultural products and a handful of other important minerals supported the economy from the age before independence all the way until the late 1960s. The country's economy has become utterly reliant on the oil industry as a whole due to the country's rich oil reserves, the robust oil market, and the attractive price of crude oil. Consequently, the economy forsook every other industry that had been bringing in foreign currency. This is a classic example of the de-industrialization that sometimes follows an economic phenomenon called a boom in natural resources. As a consequence of its deindustrialization, Nigeria now relies mostly on imported consumer goods. The domestic production of consumer products in Nigeria is inadequate due to the neglect of the country's industrial sector (Bature, 2012).

According to Omjimite and Akpolodje (2019), Nigeria's heavy reliance on exporting crude oil has significant consequences for its economy due to the extreme volatility of the oil market. Due to its reliance on crude oil exports, the Nigerian economy is vulnerable to the unpredictable changes and fluctuations of the global oil market. Consequently, any sudden shifts in international oil prices would have an immediate impact on the home economy. The negative repercussions of over reliance on oil trade have increased the need to diversify the Nigerian economy by shifting away from oil and towards non-oil export commerce. The non-oil trade is widely thought to have significant potential to drive the Nigerian economy towards the desired growth and development. Onwualu (2017) argued that adopting the value chain approach to agriculture has the potential to stimulate economic growth in Nigeria. This approach can generate various activities, create jobs, and promote industrialization. Consequently, it positions non-oil sub-sector exports as a key driver for sustainable economic growth in the country. Vincent and Oluchukwu (2013) state that successive Nigerian administrations have made consistent attempts to promote the growth of non-oil export trade by implementing favourable policies. Various policies have been put into place with varying degrees of success. To name a few: the import substitution policy of industrialization in the 1960s, which sought to shield domestic industries from foreign competition through tariffs, subsidies, and import quotas; the Structural Adjustment Programme, which liberalised trade in the mid-1980s; and the export promotion policy of the 1990s, which boosted government assistance for small and medium-sized businesses in an effort to boost productivity and ease the export of domestic goods.

The oil and non-oil sectors of Nigeria's economy have both contributed significantly to the country's progress in the last fifteen years. The Central Bank of Nigeria (CBN) report for 2021 emphasises the substantial influence of oil and non-oil

exports on the Nigerian economy. Important functions performed by exports include creating jobs, increasing consumer spending, increasing tax revenue, increasing GDP, strengthening foreign exchange reserves, and supplying energy to commercial and industrial sectors. Put simply, both oil and non-oil exports serve as crucial sources of foreign currency earnings, alleviating the strain on the balance of payments and generating job possibilities. Export operations, both in the oil and non-oil sectors, are often believed to promote economic development via many means, including the establishment of production and demand connections, as well as the realisation of economies of scale resulting from access to bigger international markets (Ruba & Thikraiat, 2019). In recent years, there has been a decline in oil prices, resulting in less income from Nigeria's oil industry. This would restrict the government's ability to pursue expansionary fiscal policy by increasing public spending. This has had a detrimental effect on the amount of investment, resulting in a rise in the unemployment rate.

Consequently, these factors have resulted in a decline in foreign exchange earnings, a decrease in GDP, a reduction in external reserves, a shortage of foreign currency, and elevated prices of products (inflation), given our significant reliance on imports. All of these occurrences were a direct consequence of the abrupt decline in the global oil price. The persistent underwhelming performance of the non-oil sectors in the economy, coupled with the susceptibility of the external sector, highlights the pressing necessity to reintroduce diversification efforts towards the neglected non-oil sectors. Our economic performance will improve as a result of increased foreign profits from non-oil exports. Nigeria is only one of several countries whose exports, oil and non-oil alike, have been the subject of research into the effects on global economic growth. Evidence from this research, however, shows that opinions on how oil and non-oil exports affect Nigeria's GDP development are contradictory and even objectionable. Research by Khayati (2021), Badreldin and Ahmed (2021), Ugwo, Umeh and Ochuba (2019), and Zafar and Mohammad (2018), among others, has shown that exports of goods and services, whether they are oil or not, may contribute positively to economic development. On the other hand, Imoughele and Ismaila (2015), Onodugo and Ikpe (2020), and Aremu (2016) all found that both forms of exports may hinder economic progress. Given the current state of affairs, this research aimed to objectively analyze how oil and non-oil exports impacted Nigeria's economic growth.

Objectives of the Study

The aim of this study is to examine the effects of oil and non-oil exports on economic growth in Nigeria. Other specific objectives include:

1. To ascertain the effect of oil export on Gross Domestic Product in Nigeria.
2. To determine the effect of non-oil export on Gross Domestic Product in Nigeria.
3. To examine the effect of exchange rate on Gross Domestic Product in Nigeria.

Statement of Hypotheses

This study was guided by the following null hypotheses:

H_{01}: Oil export does not have significant effect on Gross Domestic Product in Nigeria.

H_{02}: Non-oil export has not significantly affected Gross Domestic Product in Nigeria.

H_{03}: Exchange rate has no significant effect on Gross Domestic Product in Nigeria.

Theoretical Framework

This study utilised the Two-Gap Model as its theoretical basis. Harrod (1939) and Domar (1946) put out the Two-Gap Model, which is seen as a closed-economy post-Keynesian growth model. The primary premise of the model is that the underdevelopment of most nations may be attributed to either a lack of domestic savings to support investment opportunities or to limits in foreign currency that hinder the financing of necessary capital and international commodities. The concept assumes that the manufacture of investment goods requires the importation of a commodity that is not produced locally. The model is shown in this manner:

$$Y = C + I + (X-M) \quad (1)$$

In which (X-M) equals to net export.

Equation (1) can be rearranged as:

$$Y + M = C + I + X \quad (2)$$

Therefore, sources of income in the economy = uses of resources in the economy.

Further breakdown of Equation (2) will result to:

$$S + C + M = C + I + X \quad (3)$$

Deducting C from both sides and defining savings (S= Y-C),

$$S + M = I + X \quad (4)$$

The two-gap model is then denoted by:

$$M-X = I-S \quad (5)$$

(Foreign exchange gap) = (Savings gap).

Essentially, the concept posits that if the amount of savings within a country is insufficient to reach the desired pace of economic development, there is a gap between savings and investment. To address this disparity, it is necessary to attract Foreign Direct Investment (FDI). Additionally, if the highest import demand required to meet the growth objective exceeds the maximum feasible level of exports, it results in a scenario of substantial imports that will result in a deficit in foreign currency. This results in the trade deficit, which may be rectified by foreign assistance. Although this model has a realistic contribution, it is not without faults, as noted by Abdullahi, Aliero, and Abdullahi (2013). The model's sole concentration on the savings-investment gap for achieving growth leaves it vulnerable to certain limitations. The model fails to address the transformation issue of being a closed economy growth model by neglecting the performance of the borrower's external sector. This theory's advocacy of domestic savings as an essential strategy to achieve a specific pace of development is its relevance to the present study. Furthermore, it proved that exports are vital to a country's economic growth and progress.

Empirical Literature

Khayati (2021) examined the impact of both oil and non-oil exports on the economic development of Bahrain from 1977 to 2018. The cointegration study revealed a strong and positive correlation between economic growth and exports. Nevertheless, the impact of oil on real gross domestic product is the most significant. Additionally, the results showed that oil exports contributed to economic growth, both immediately and in the long run. Badreldin and Ahmed (2021) conducted an empirical research that looked at the impact of Saudi Arabia's exports (oil and non-oil) on the country's economic performance from 2005 to 2019. The information came from Saudi Arabia's General Authority for Statistics. We estimated the study models' linear and non-linear versions utilising the ordinary least squares technique. Oil exports and non-oil exports both contributed positively to Saudi Arabia's economic performance throughout the study period.

In their research, Onodugo, Ikpe, and Anowor (2020) utilised time series data from 1981 to 2018 to analyse the impact of non-oil exports on Nigeria's economic growth. The study analysed data utilising the Endogenous Growth Model (EGM) and the Augmented Production Function (APF). Research demonstrated that non-oil exports contributed little to the overall pace of economic development in Nigeria.

In their 2019 study, Ugwo, Umeh, and Ochuba looked at how crude oil exports affected Nigeria's economic growth. The study found that exporting crude oil improved Nigeria's economic performance by 32%. Researchers concluded that the government should do more to maximise the use of crude oil and its byproducts. This necessitates tackling several elements that lead to the under-, mis-, and non-utilization of crude oil, including technology, human capital, manpower capital, finance, bureaucratic bottleneck, public policy, and regulatory legislation.

To find the long-term association between economic growth and variables including oil exports, imports, and government consumption expenditure, Zafar and Mohammad (2018) utilised the Johansen cointegration technique. The results showed that oil exports and government consumption expenditures are significantly and persistently correlated with economic growth. And there is a negative relationship between imports and GDP growth in the long run. The impact of oil and non-oil exports on Nigeria's economy were both studied by Ajayi (2016). The study concluded that oil exports had a more substantial impact on Nigeria's economic growth than non-oil exports after reviewing the literature on macroeconomic policy and comparing the two. The primary reason for this is the disregard for agriculture that has persisted since the start of the oil boom.

From 1981 to 2015, Aremu (2016) analysed the effects of Nigeria's exports on the economy, both oil and non-oil. In order to analyse the data, the researchers utilised the following tests: ADF and PP unit root, Johansen cointegration, Granger causality, impulse response functions (IRF), and variance decomposition (VD). While oil exports are negatively correlated with economic growth, non-oil exports are positively correlated, according to the research. To determine how non-oil exports affected Nigeria's GDP growth, Oruta (2015) analyzed the country's trade data. Analyzing CBN statistics bulletin data from 1980 to 2010, this research utilised the Ordinary Least Square (OLS) approach. The research showed that the model followed a normal distribution and that the error term was constant across the run. The unit root test also verified that the data were stationary after the analysis. Aside from oil, non-oil exports were seen as having a major impact on Nigeria's economic growth. The implication is that the country's exchange rate remained stable during the year under consideration.

The impact of exchange rates on Nigeria's non-oil exports was the subject of a 2015 study by Imoughele and Ismaila. The study relied on time series data collected by the CBN from 1986 to 2013 for its analysis. The researchers utilised the enhanced Dickey Fuller unit root test and Johansen co-integration. Their research proved that non-oil exports suffer when the exchange rate is valued. To lessen the impact of inflation on exports other than oil, they advocated that the central bank make stable exchange rates a top priority. The findings would have been better if we had utilised the Auto Regressive Distributed Lag (ARDL) estimation method,

which works well when variables show stationarity at different levels following unit root testing.

Adenugba and Dipo (2013) conducted a research on the relationship between non-oil exports and the economic development of Nigeria, specifically focusing on agricultural and mineral resources. The research assessed the efficacy of Nigeria's export promotion policies in expanding the productive foundation of the Nigerian Economy beyond its heavy reliance on Crude oil as the primary source of foreign currency. The research was conducted from 1981 to 2010. The study's findings indicate that non-oil exports in the Nigerian economy have fallen short of expectations, raising doubts about the efficiency of the chosen export development tactics. The research indicated that the Nigerian Economy has not yet achieved diversification from crude oil export. Consequently, the crude oil sub-sector remains the most significant sector of the economy.

Methodology

An ex post facto research approach was utilised in this study. Furthermore, time series data were utilised. The statistical bulletin of the Central Bank of Nigeria (CBN) was consulted for the data, which covered thirty-tthree years, from 1990 to 2022.

Model Specification

As a post-Keynesian growth model for closed economies, the Two-Gap Model put out by theorists Harrod (1939) and Domar (1946) formed the basis of this study's analytical approach. Empirically, the research utilised a multiple regression model to enhance the accuracy of economic estimations by increasing degrees of freedom and reducing collinearity. Economic growth is the dependent variable in the model, while oil and non-oil exports are the independent variables. Based on their empirical examination of the impact of oil and non-oil exports on Saudi Arabia's economic performance, Badreldin and Ahmed (2021) provided the model for this research. Still, the goals of this particular study informed the adjustments made to the model.

Here, the model in its functional version is given as:

$GDP = (OEXP, NOEX, EXR)$ (1)

More explicitly, the model is expressed as:

$GDP = \delta_0 + \delta_1 OEXP + \delta_2 NOEX + \delta_3 EXR + \mu_t$ (2)

Log linear form of the model is expressed as:

$logGDP = \delta_0 + \delta_1 logOEXP + \delta_2 logNOEX + \delta_3 logEXR + \mu_t$ (3)

Where;

GDP = Gross Domestic Product; NOEX = Non-Oil Export; OEXP = Oil Export; EXR = Exchange Rate; δ_0 = Regression constant; δ_1 = parameter of oil export (OEXP); δ_2 = parameter of non-oil export (NOEX); δ_3 = parameter of exchange rate (EXR); μ_t = Stochastic or error term which captures the effect of variables that are not included in the model.

Hence, the ARDL models employed log this study is specified as follows:

$$\begin{aligned}\Delta\log(GDP_t) = {} & \delta_1 + \alpha_{1i}\Delta\log(GDP_{t-1}) \\ & + \alpha_{2i}\Delta\log(OEXP_{t-1}) \\ & + \alpha_{3i}\Delta\log(NOEX_{t-1}) \\ & + \alpha_{4i}\Delta\log(EXR_{t-1}) \\ & + \sum_{t=1}^{p}\beta_{1i}\Delta log(GDP_{t-1}) \\ & + \sum_{t=1}^{q}\beta_{2i}\Delta log(OEXP_{t-1}) \\ & + \sum_{t=1}^{q}\beta_{3i}\Delta log(NOEX_{t-1}) \\ & + \sum_{t=1}^{P}\beta_{4i}\Delta log(EXR_{t-1}) \\ & + \varepsilon_{1i} \qquad (4)\end{aligned}$$

$$\Delta\log(OEXP_t) = \delta_2 + \alpha_{1i}\Delta\log(GDP_{t-1}) + \alpha_{2i}\Delta\log(OEXP_{t-1}) + \alpha_{3i}\Delta\log(NOEX_{t-1}) + \alpha_{4i}\Delta\log(EXR_{t-1}) + \sum_{t=1}^{p}\beta_{1i}\Delta log(OEXP_{t-1}) + \sum_{t=1}^{q}\beta_{2i}\Delta log(GDP_{t-1}) + \sum_{t=1}^{q}\beta_{3i}\Delta log(NOEX_{t-1}) + \sum_{t=1}^{q}\beta_{4i}\Delta log(EXR_{t-1}) + \varepsilon_{2i} \quad (5)$$

$$\Delta\log(NOEX_t) = \delta_3 + \alpha_{1i}\Delta\log(GDP_{t-1}) + \alpha_{2i}\Delta\ln(NOEX_{t-1}) + \alpha_{3i}\Delta\log(OEXP_{t-1}) + \alpha_{4i}\Delta\ln(EXR_{t-1}) + \sum_{t=1}^{p}\beta_{1i}\Delta log(NOEX_{t-1}) + \sum_{t=1}^{q}\beta_{2i}\Delta log(OEXP_{t-1}) + \sum_{t=1}^{q}\beta_{3i}\Delta log(GDP_{t-1}) + \sum_{t=1}^{q}\beta_{4i}\Delta log(EXR_{t-1}) + \varepsilon_{3i} \quad (6)$$

$$\Delta\log(EXR_t) = \delta_4 + \alpha_{1i}\Delta\log(GDP_{t-1}) + \alpha_{2i}\Delta\log(EXR_{t-1}) + \alpha_{3i}\Delta\log(OEXP_{t-1}) + \alpha_{4i}\Delta\log(NOEX_{t-1}) + \sum_{t=1}^{p}\beta_{1i}\Delta log(EXR_{t-1}) + \sum_{t=1}^{q}\beta_{2i}\Delta log(OEXP_{t-1}) + \sum_{t=1}^{q}\beta_{3i}\Delta log(NOEX_{t-1}) + \sum_{t=1}^{q}\beta_{4i}\Delta log(GDP_{t-1}) + \varepsilon_{4i} \quad (7)$$

Where:
GDP= Gross Domestic Product; NOEX = non-oil export; OEXP = oil export, EXR = exchange rate; Log = natural log; Δ = the difference operator a *t* = time lag; δ_1 - δ_4 = constant variables; $\alpha_1 - \alpha_4$ = long-run dynamic coefficients of the model; $\beta_1 - \beta_4$ = short-run dynamic coefficients of the model; $\varepsilon_{1i} - \varepsilon_{4i}$ = serially uncorrelated stochastic term with zero mean and constant variance.

In the context of advancing a log, the immediate-term dynamic parameters are determined by the estimation of an error correction model that is connected to the long-term estimations. The model is presented in the following manner:

$$\Delta\log(GDP_t) = \beta_0 + \sum_{t=1}^{p}\alpha_{1i}\Delta log(GDP_{t-1}) + \sum_{t=1}^{q}\alpha_{2i}\Delta log(OEXP_{t-1}) + \sum_{t=1}^{q}\alpha_{3i}\Delta log(NOEX_{t-1}) + \sum_{t=1}^{q}\alpha_{4i}\Delta log(EXR_{t-1}) + \delta ECT_{t-1} + \varepsilon_{1i} \quad (8)$$

$$\Delta\log(OEXP_t) = \beta_0 + \sum_{t=1}^{p} \alpha_{1i}\Delta log(OEXP_{t-1}) + \sum_{t=1}^{q} \alpha_{2i}\Delta log(GDP_{t-1}) + \sum_{t=1}^{q} \alpha_{3i}\Delta log(NOEX_{t-1}) + \sum_{t=1}^{q} \alpha_{4i}\Delta log(EXR_{t-1}) + \delta ECT_{t-1} + \varepsilon_{2i} \quad (9)$$

$$\Delta\log(NOEX_t) = \beta_0 + \sum_{t=1}^{p} \alpha_{1i}\Delta log(NOEX_{t-1}) + \sum_{t=1}^{q} \alpha_{2i}\Delta log(OEXP_{t-1}) + \sum_{t=1}^{q} \alpha_{3i}\Delta log(GDP_{t-1}) + \sum_{t=1}^{q} \alpha_{4i}\Delta log(EXR_{t-1}) + \delta ECT_{t-1} + \varepsilon_{3i} \quad (10)$$

$$\Delta\log(EXR_t) = \beta_0 + \sum_{t=1}^{p} \alpha_{1i}\Delta log(EXR_{t-1}) + \sum_{t=1}^{q} \alpha_{2i}\Delta log(OEXP_{t-1}) + \sum_{t=1}^{q} \alpha_{3i}\Delta log(NOEX_{t-1}) + \sum_{t=1}^{q} \alpha_{4i}\Delta log(GDP_{t-1}) + \delta ECT_{t-1} + \varepsilon_{4i} \quad (11)$$

Where: α_{1i} - α_{4i} = The model's short-run dynamic coefficients for converging to equilibrium. δ = the speed of adjustment which is expected to be negative. ECT = the lagged error correction term derived from the long run cointegrating relationships.

A Priori Expectation

This elucidates the theoretical connection between the signs and magnitude of parameters of the provided function. The a priori expectations are established based on the economic laws that govern the economic connection between the variables being examined (Koutsoyiannis, 2003). The a priori expectation refers to the theoretical connection that exists between the dependent and independent variables. Nevertheless, the anticipated correlation between the factors is methodically emphasised in the table below:

Summary A Priori Expectation

VARIABLES	DESCRIPTION	PARAMETERS	EXPECTED SIGN	MATHEMATICAL REPRESENTATION
OEXP	Oil Export	δ_1	Positive	$\delta_1 > 0$
POS	Non-Oil Export	δ_2	Positive	$\delta_2 > 0$
NOEX	Exchange Rate	δ_3	Negative	$\delta_3 < 0$

Source: *Authors' Ideas in Line with Economic Theory.*

Pre-Estimation Tests

The following pre-estimation tests were conducted in this study:

a. Unit Root Test: In economic theories, the relationship that is assumed to exist between two or more economic variables

presupposes that the series which the relationship is established are stationary. Howbeit, this assumption rarely holds true, as macroeconomic variables have been found not to have a constant mean or have a constant variance in their level form. Where this situation holds true, the relationship established when a particular model of interest is estimated will be spurious due to the fact that a non-stationary variable in the level form is regressed on another variable with identical integration property (Gujarati, Porter & Gunasekar, 2012). In order to prevent inaccurate estimates, it has been proposed in the literature that a pre-estimation test should be conducted to assess the integration features of the series that will be utilised in a model. Typically, the assessment of the overall characteristic of the series entails examining whether the series exhibits a unit root. Hence, this research utilised Dickey-Fuller (ADF) statistic for unit root test. The ADF test entails the estimation of the following regression:

$$\Delta X_t = c + (\delta - 1)X_{t-1} + \sum_{i=1}^{P} \delta_i \ \Delta X_{t-i} + \epsilon_t \quad (12)$$

The regression model of the enhanced Dickey Fuller (ADF) test includes a linear temporal trend;

$$\Delta X_t = c + \omega t + (\delta - 1)X_{t-1} + \sum_{i=1}^{P} \delta_i \ \Delta X_{t-i} + \epsilon_t \quad (13)$$

Where: X_t = underlying variables; t = time trend; δ_i, c and ω = coefficients to be estimated; p = lag length; Δ = First difference notation; ϵ_t = error term; If δ = 0, then the series is a non-stationary series.

b. Cointegration Test: The co-integration test which is considered a pre-estimation test is based on the concept that if two series say, Y_t and X_t, are combined in a way that the difference between the actual observation and the estimated value is stationary when a preferred stationary test or unit root test technique is applied, then they have a common stochastic trend, even when they deviate from equilibrium in the near term. This implies that, if the series Y_t and X_t are stationary only after first difference and the residual upon estimating the regression model is scientifically proven to be stationary, utilising a unit root approach, then the estimated model mirrors the long run equilibrium state of the two series (Engle & Granger, 1987; Baltagi, 2008). When doing a cointegration analysis, the selection of a method in a time series analysis is mostly determined by the result of the unit root test. Therefore, as the series exhibited a combination of I(0) and I(1) ordering according to the unit root test, the Pesaran, Shin and Smith (2001) bound test was used.

c. Lag Selection: Taking the effect of time into consideration, the study estimated a dynamic model to accommodate the slow changes of the conditional expected value of the response variable to variations in the regressors. To accomplish this, the study considered the number of lags to be factored into the model. The selection of the precise number of lag or how far in retrospect we go is imperative to avoid having a correlated error terms or loss of valuable information. To this end, the study followed a systematic process in ascertaining the number of lags to be considered in the dynamic model. Specifically, the study followed the recommendations provided by scientific selection process of either the Akaike information criterion (AIC), Schwarz information criterion (SC), Hannan-Quinn

information criterion (HQ) or Final prediction error (FPE) on the lag length.

Estimation Techniques

This research utilised the autoregressive distributed lag (ARDL) approach established by Pesaran, Shin and Smith (2001) to estimate the model. The autoregressive distributed lag (ARDL) approach was chosen due to the presence of a combination of I(0) and I(1) series in the variables. In this work also, many diagnostic tests were run after the estimate process. These tests included the normal distribution test, serial correlation test, stability test, heteroscedasticity test, and Ramsey RESET Test.

Result and Discussion

Trend Analysis

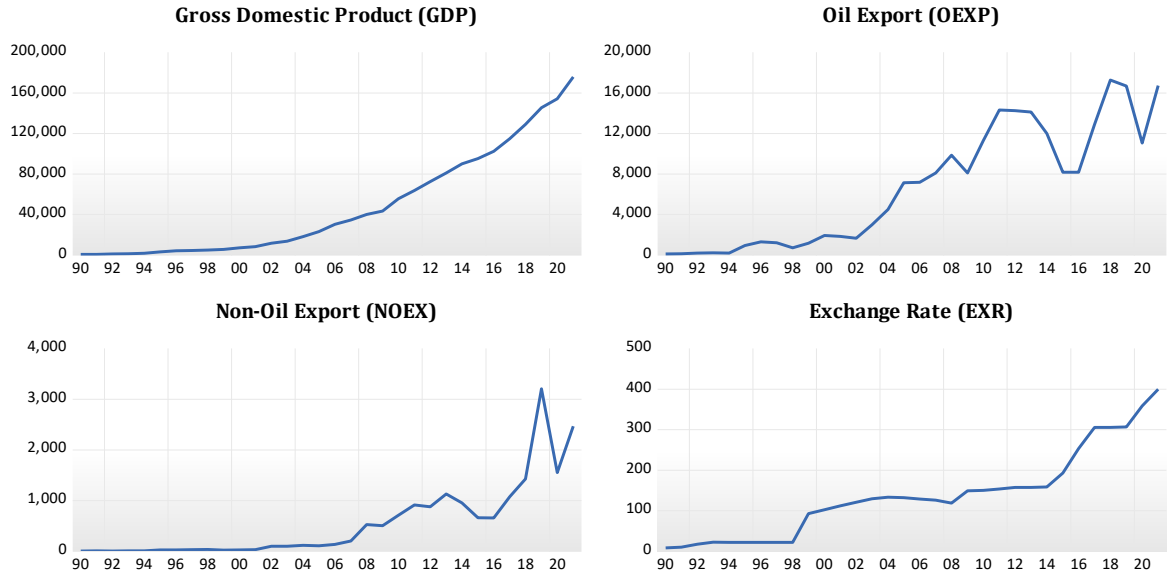

Figure 1: Trend of Gross Domestic Product), Gross Domestic Product (GDP), Oil Export (OEXP), Non-Oil Export (NOEX), Exchange Rate (EXR) from 1990 to 2022

Figure 1 presents in graphically form, the movement in economic growth (proxy by Gross Domestic Product), oil export (OEXP), non-oil export (NOEX), exchange rate (EXR) from 1990 to 2022. As it can observed from the figure, unlike Gross Domestic Product (GDP) that maintained a fairly consistent upward movement, there are inconsistencies in the movements (upward and downward) of the graphs representing Oil Export, NOEX, and EXR throughout the research period.

Table 1: Descriptive Statistics

	GDP	OEXP	NOEX	EXR
Mean	48050.41	6766.711	550.2563	137.9141
Median	26748.53	7165.835	123.4500	129.0050
Maximum	176075.5	17282.25	3207.020	399.9600
Minimum	494.6400	106.6300	3.260000	8.040000
Std. Dev.	52571.45	5880.319	763.8579	106.8883
Skewness	0.956937	0.350369	1.887982	0.785065
Kurtosis	2.706136	1.702681	6.488907	2.946869

Jarque-Bera	4.999024	2.898760	35.24050	3.290838
Probability	0.082125	0.234716	0.000000	0.192932
Sum	1537613.	216534.7	17608.20	4413.250
Sum Sq. Dev.	8.57E+10	1.07E+09	18087845	354178.3
Observations	33	33	33	33

Source: Authors' Computation, 2023.

According to Table 1, the mean value of GDP (a measure of economic growth) was 48050.41. The average value of OEXPs was 6766.711, while the average value of NOEXs was 550.26. Additionally, the average value of loans obtained from EXRs during the specified time was 137.91. The GDP ranged from a low value of 494.64 to a high value of 176075.5. Similarly, when applied to additional data sets, the statistical analysis revealed that the highest recorded OEXP was 17282.25, while the lowest was 106.63. The NOEX varied between 3207.02 and 3.26, whereas the EXR fluctuated between 399.96 and 8.04 over the period analysed in this research. The skewness of each series, which quantifies the asymmetry of the distribution around their respective mean, indicates that all four series exhibit positive skewness. The skewness values are 0.956937, 0.350369, 1.887982, and 0.785065, respectively. This indicates that the distributions have extended right tails. Moreover, the findings indicated that NOEX has leptokurtic characteristics, meaning it has a higher peak compared to a normal distribution. This is due to the fact that the computed kurtosis statistic above the value of 3, which is the threshold for a normal distribution.

Table 1 shows that the GDP, OEXP, and EXR series have a flat distribution when compared to the kurtosis value of a normal distribution. These findings indicate that each series (GDP, OEXP, and EXR) have a platykurtic distribution, since their values of 2.706136, 1.702681, and 2.946869 fall below the threshold of 3. The Jarque-Bera test was utilised to assess the normality of the series. The test assumes the null hypothesis that the series follows a normal distribution. Based on the study results, it can be concluded that the GDP, OEXP, and EXR follow a normal distribution. This is shown by the estimated probability values for the series, which are larger than 0.05. The skewness statistics for the series support these conclusions, since their values are not significantly different from zero (0). Conversely, the research demonstrated that the distribution of NOEX is not normal, as shown by a probability value below 0.05.

Unit Root Test

The unit root result is conducted by utilising Augmented Dickey-Fuller (1979) technique as summarized in Table 2:

Table 2: Unit Root Result

	Test Method: Augmented Dickey-Fuller (1979				
	Level		**1st Difference**		
Variables	**ADF Test Statistic**	**5% critical Value**	**ADF Test Statistic**	**5% critical Value**	**Order of Integration**
$lnGDP_t$	-2.674119	-2.971853	-2.443519**	-1.952910	I(1)
$lnOEXP_t$	-5.071941**	-2.960411	-	-	I(0)
$lnNOEX_t$	-1.091606	-2.960411	-6.545123**	-2.963972	I(1)
$lnEXR_t$	-1.858373	-2.960411	-5.162167**	-2.963972	I(1)

Source: Authors' Computation, 2023.

Table 2 displayed the test statistics and critical values for the Augmented Dickey-Fuller (1979) unit root test. The findings indicate that only the export of oil exhibits stationarity at the level. Formally, this series is classified as having zeroth-order integration, denoted as I(0). However, stationarity was attained in GDP, NOEX, and EXR after being subjected to first-order differencing. These series are technically referred to as being integrated of order one, denoted as I(1). Thus, it can be deduced that the series utilised in this work exhibit a combination of zeroth-order integration I(0) and first-order integration I(1). These findings provide validation for utilising the Pesaran, Shin, and Smith (2001) bound test to ascertain the presence of a long-term equilibrium connection in the series.

Table 3: Cointegration/Bound Test

Dependent Variable		**F-statistics**
$F_{LOG(GDP)}LOG(GDP/OEXP, NOEX, EXR)$		31.91654***
K = 3		
Critical Value	I(0)	I(1)
1%	2.37	3.2
5%	2.79	3.67
2.5%	3.15	4.08
10%	3.65	4.66

Note: Null hypothesis: No level relationship; *K* = number of regressors; *, ** and *** denote significance at 10%, 5% and 1% level, respectively.

Source: Authors' Computation, 2023.

The results of the ARDL bound test technique to Co-integration are shown in Table 3. The findings indicate the presence of co-integration among the variables, namely GDP, OEXP, NOEX, and EXR. The F-statistics value of 31.91654 exceeds the bottom and upper limit values at a 5% level of significance. Therefore, there is enough statistical evidence to support the presence of a stable and enduring link between oil and NOEXs, as well as economic development, in Nigeria from 1990 to 2022. The findings indicate that both oil and non-oil exports had a significant long-term effect on economic development in Nigeria over the studied period.

Table 4: Lag Length for the VAR Model

Lag	**LogL**	**LR**	**FPE**	**AIC**	**SC**	**HQ**
0	-1011.490	NA	2.96e+24	67.69934	67.88616	67.75910
1	-853.9768	262.5220	2.40e+20	58.26512	59.19925*	58.56396
2	-832.3995	30.20827*	1.76e+20*	57.89330*	59.57474	58.43121*

Note: * lag order selected by criterion

Source: Authors' Computation, 2023.

Based on the lag selection results shown in Table 4, all of the selection criteria (LR, FPE, AIC, and HQ) indicated that the model should have a maximum lag length of 2. Consequently, the research utilised a VAR(2) model for estimation.

Table 5: ARDL Long-Run Results

Dependent Variable: GDP				
$Variable$	$Coefficient$	$Std.Error$	$t-Stat.$	$Prob.$
$lnOEXP_t$	0.125161***	0.070314	12.45542	0.0051
$lnNOEX_t$	0.131753***	0.045797	2.876888	0.0083
$lnEXR_t$	0.121479**	0.054217	2.240599	0.0346

Note: *, ** and *** denote rejection of the null hypothesis at Significant of 10%, 5% and 1% level, respectively.

Source: Authors' Computation, 2023.

The table above presents illustrates the impact of explanatory variables (such as OEXP, NOEX, and EXR) on the indicator of economic growth (GDP). The calculated model findings indicate a poasiiti correlation between oil export (OEXP) and the degree of economic development in Nigeria. The impact of OEXP is characterised by an inelastic relationship, wherein a one percent increase in OEXP results in a 12.5 percent increase in GDP over an extended period of time. This positive association corresponds with the expected outcome. The observed relationship between OEXP and GDP is statistically significant, as shown by the probability value of 0.0051, which is below the 5% significance threshold. Similarly, a direct relationship was found between NOEX and GDP. The findings indicate that a one percent increase in NOEX would lead to a 13.2 percent rise in long-term economic growth, as measured by GDP. The discovered relationship is consistent with the anticipated positive relationship. Furthermore, the observed relationship between OEXP and GDP is statistically significant, as shown by its probability value of 0.0083, which is lower than the 5% threshold of significance. Finally, in contrast to the other variables, the EXR has a negative relationship with GDP over a long period of time. Therefore, a one percent rise in the exchange rate would result in a substantial 12.1 percent decrease in economic growth. The exchange rate probability value of 0.0346 is statistically significant at a level below 5%.

Table 6: Parsimonious Error Correction Model (ECM) Short-Run Results

Dependent Variable: $lnGDP_t$				
$Variable$	$Coeff$	$Std.Error$	$t-Stat.$	$Prob.$
C	0.054025	0.028614	1.888083	0.0729
$D(lnGDP_t)$	0.600766	0.139475	4.307338	0.0003
$D(lnOEXP_t)$	0.825333	0.320270	2.576987	0.0176
$D(lnOEXP_{t-1})$	-0.042719	0.040004	-1.067867	0.2977
$D(lnNOEX_t)$	0.097650	0.037941	2.573720	0.0177
$D(lnNOEX_{t-1})$	0.088687	0.034114	2.599701	0.0167
$D(lnEXR_t)$	-0.091016	0.012524	-7.267327	0.0000
ECM_{t-1}	-0.261918	0.115677	-2.264220	0.0340
Model Criteria				
R^2 = 0.743838	F-statistic = 8.711325		AIC = -2.342829	
Adjusted R^2 = 0.65845	Prob. (F-stat) = 0.000050		SIC = -1.965644	
	Durbin-Watson stat = 2.103065			

Source: Authors' Computation, 2023.

The ARDL-Parsimonious ECM analysis in Table 6 yielded a coefficient of determination of 0.743838. The coefficient indicates that 74 percent of the fluctuations in GDP may be accounted for by the factors of OEXP, NOEX, and EXR. The remaining component of variance, at 26 percent, is accounted for by other variables that impact economic growth but were not included into our model. The impact of these factors is accounted for by the error term. The adjusted R-squared value of 0.65845 (65 percent) demonstrates the significance of these factors in predicting the indicator of economic growth (GDP) in Nigeria. The F-statistic of 8.711325 is statistically significant at a 5 percent level, indicating that the variables of OEXP, NOEX, and EXR together have a significant impact on the GDP in Nigeria.

The export of oil has a positive and relationship effect on the initial level of GDP. The GDP is projected to rise by 82.5 percent as a result of a 1 percent increase in OEXP over the present year. However, the delayed export of oil had a negligible and non-significant negative impact on the GDP in the near term. We have seen that both present and historical NOEX have a positive and significant impact on the GDP. Therefore, the influence of NOEX on GDP is significant at a 5 percent significance level, with respective impacts of 0.0177 and 0.0167. Finally, in the near term, the exchange rate has a large negative influence on GDP. Therefore, a 1 percent rise in the present period exchange rate would result in a 9.1 percent drop in the current GDP.

The error correction term coefficient (-0.261918) shown in Table 6 is both negative and statistically significant at the 5 percent level, as indicated by its associated probability value of 0.0340. This suggests that any short-term fluctuations caused by the explanatory variables (OEXP, NOEX, and EXR) are adjusted at a rate of 26 percent in order to reach long-term equilibrium. In other words, the model's rate of adjustment to long-term equilibrium after short-term fluctuations or changes in OEXP, NOEX, and EXR is 26 percent.

Diagnostic/Post-Estimation Tests

The outcomes of diagnostic or post-estimation tests conducted on the chosen autoregressive distributed lag model (ARDL) model, determined utilising the Alkaike information criteria, are shown in Table 7. The objective of these tests is to verify the appropriateness or effectiveness of the ARDL model in predicting or projecting future values or changes in the dependent variable (Gross Domestic Product) based on fluctuations in any of the explanatory variables (oil export, non-oil export, and exchange rate).

Table 7: Diagnostic/Post-Estimation Tests Results

Test	Null Hypothesis	Test Type	Test Stat.	Prob.
Normality Test	Normally Distributed Residuals	Jarque-Bera	0.7185	0.6982
Autocorrelation Test	Serial Correlation does not exist	Breusch-Godfrey LM Test	0.1940	0.8250
Heteroscedasticity	Homoscedasticity exists	Breusch-Pagan-Godfrey	1.7740	0.1472
Stability	Model is stable	Ramsey RESET	0.0426	0.8383

Source: Authors' Computation, 2023.

According to Table 7, the Normality Test indicates that the stochastic terms or disturbance terms follow a normal distribution. The diagnostic test mentioned above indicated the lack of serial correlation and provided evidence of homoscedasticity, indicating the absence of heteroscedasticity. Finally, the Regression Specification Error Test (RESET) indicated that the model is not affected by misspecification and that the ARDL model is stable. The CUSUM test was performed to determine the stability of the parameters of the ARDL model, in addition to the other tests completed.

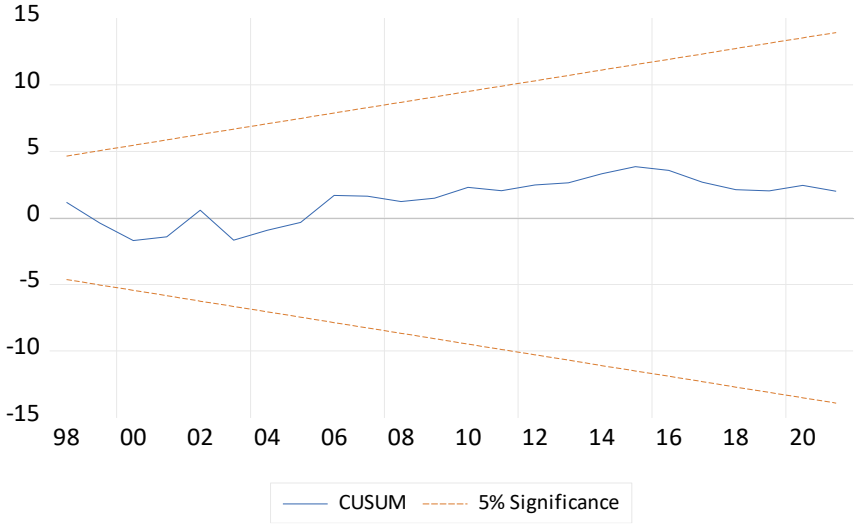

Figure 2: CUSUM Stability Teses

From what we can see in the Figure 2, the blue line representing the CUSUM model or plot trend is inside the range of the two red lines that indicate the 5 percent crucial bounds. Accordingly, it indicates that there has been no major structural disturbance to the ARDL model and that it is generally stable.

Discussion of Findings

The study evaluated the influence of both oil and non-oil exports on the economic growth in Nigeria. The results demonstrate a robust and statistically significant association between the exportation of oil and the GDP of Nigeria, both in the short run and long run periods. This discovery is consistent with the conclusions of Ugwo, Umeh, and Ochuba (2019), who discovered that the exportation of crude oil had a positive and significant impact on Nigeria's economic performance. Moreover, there is a positive and significant association between exportation of non-oil products and GDP in Nigeria, both in the short term and the long term. This discovery is consistent with the conclusions of Aremu (2016), which stated that non-oil exports had a favourable and significant link with economic growth. In essence, there is a negative and significant relationship between the exchange rate and GDP in Nigeria, which holds true in both the short and long run. This discovery is consistent with the research carried out by Ernest and Isaac (2016), which stated that the exchange rate had a significant negative effect on Nigeria's GDP.

Conclusion

This study examines the influence of Nigeria's mono-cultural economy, which mostly depends on the export of crude oil, on the country's economic progress. It particularly analyses the contributions of

both petroleum and non-petroleum exports. The study's findings suggest that both oil and non-oil exports provide a significant and advantageous contribution to the growth of the Nigerian economy during the research period (1990 to 2022).

Recommendations

The following suggestions are proposed in light of the discoveries made in this investigation:

1. To mitigate the impact of oil price fluctuations on the Nigerian economy and enhance the quality, productivity, and competitiveness of Nigerian products in global markets, the Nigerian government should focus on diversifying exports, streamlining export procedures, improving the domestic industry, and increasing the proportion of non-oil exports in the total export volume.
2. There has to be an enhancement in the local production. Hence, it is essential to enhance the domestic production in order to meet the requirements from both domestic and international sources.
3. The real sector of the economy should undergo development. Enhancing the production sector may be achieved by establishing a conducive climate for industries to flourish inside the nation. This may be achieved by ensuring the provision of sufficient infrastructural facilities, particularly a reliable and abundant energy supply for the industry.

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