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Impact Of Non-Oil Exports On Economic Growth And Unemployment In Nigeria

[1] Uwazie, Iyke U. [1]Ogbonnaya, Chukwuemeka M., [2] Anyanwu, Kelechi C. & [1]Nkem Ogechukwu M.
[1]Department of Economics, Michael Okpara University of Agriculture, Umudike &
[2]Alex Ekwueme University, Ndufu Alike Ikwo
Corresponding author: ui.uwazie@yahoo.com

ABSTRACT:
This research investigated the impact of specific categories of non-oil exports, namely agricultural exports, commercial service exports, and manufacturing exports, on economic growth and unemployment in Nigeria between 1991 and 2022. The study used various statistical methods to analyze annual time series data, including the Augmented Dickey-Fuller (ADF) unit root test, the Johansen Co-integration Test, and the Seemingly Unrelated Regression method. The findings revealed that manufacturing exports positively influenced the economy, with a 1-unit increase in the manufacturing sector leading to a 2.32-unit rise in economic growth. Conversely, agricultural and commercial service exports hindered economic growth, causing a decline of 1.13 and 2.61 units, respectively, for every 1-unit increase in these sectors. Moreover, a 1-unit increase in manufacturing exports reduced unemployment by 0.11 units, whereas a similar increase in Agricultural Export and Commercial Service Exports raised the unemployment rate by 0.04 and 0.77 units, respectively. Based on these results, the study recommended that the government should actively pursue the implementation of economic programs focused on developing the non-oil sector. Additionally, effective management of exchange rates and inflation policies by monetary authorities is crucial, as a favourable exchange rate would enhance the competitiveness of Nigeria's export products in the international market.

KEYWORDS: *Non-Oil Exports, Unemployment, Economic Growth, Seemingly Unrelated Regression*

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Publication College of Management Sciences, Michael Okpara University of Agriculture, Umudike Nigeria

INTRODUCTION

Like many other nations, Nigeria is actively pursuing economic development. According to research by Isaiah, Henneberry, and Radmehr (2020), trade plays a vital role in economic development. Okuduwor, Amadi, and Udi (2023) have highlighted that non-oil commodity exports are particularly important for sustainable economic growth, providing enhanced foreign exchange earnings, reinforcing the balance of payments, fostering export-oriented industries in manufacturing, boosting firm profitability, generating employment, and increasing government revenue. This cumulative effect accelerates economic growth (Olojede & Michael, 2020).

As indicated by the literature, export serves as a key driver to initiate and sustain economic growth. It is intricately linked to the pulse of the Nigerian economy, playing a fundamental role in ensuring harmonious coexistence (Igwe et al., 2015). Export activities are pivotal for any economy's growth and development, bringing in foreign currencies through international trade transactions. Abou-Stait (2005) has emphasized that a robust export sector has the potential to drive economic development by creating job opportunities, thereby reducing unemployment rates and mitigating crime and deviance. Moreover, exports contribute significantly to boosting aggregate economic activities, producing quantities that surpass local demands (Usman& Salami, 2008).

A successful export drive has the potential to transform a struggling economy into a prosperous one. Importantly, the foreign exchange earned from exports bolsters demand within the economy. According to Seyed (2013), the structure of foreign trade plays a pivotal role in accelerating economic growth. Many nations maintain open economies due to the widely acclaimed benefits of foreign trade, as Moshen (2015) highlighted. Exportation not only supplies revenue for the state budget but also facilitates the transfer of technical knowledge. Valuable insights and expertise shared by international buyers enhance operational efficiency and elevate international competitiveness (Olowo et al., 2020). As cross-border trade intensifies, efficiency in utilizing production resources improves, driven by heightened international competition. Export activities promote economies of scale, drive industrialization, and provide access to foreign capital and intermediate goods through imports (Ogba et al., 2018). Ultimately, export activities lead to an influx of foreign exchange. Since trade forms the foundation for growth in most countries, every nation can only thrive by engaging in trade.

Export can be divided generally into the oil and non-oil sectors. The operations carried out outside the oil and gas sectors comprise the Nigerian economy's non-oil sector. This covers services in the travel and hospitality industries and banking, insurance, and other financial services (WDI, 2023). The Nigerian Export Promotion Council (NEPC) recognized National Strategic Export Products (NSEPs) as part of its effort to diversify the country's economy through programs including the Nigerian Industrial Revolution Plan (NIRP) and the Nigerian Enterprise Development Programme (NEDEP). Agro-industrial products (including palm oil, cocoa, cashews, sugar, and rice) are among the strategic export goods that are essential to Nigeria's commerce. Cement, iron ore, metals, auto parts/cars, aluminium, and oil and gas industrial products (petroleum products, fertilizer/urea, petrochemicals, and methanol), which are essential to Nigeria's export trade and support the country's economic growth and diversification initiatives.

A detailed examination of Nigeria's export patterns reveals significant shifts. Between 1960 and 1970, non-oil exports, primarily agricultural products, constituted over 80% of the total exports (CBN, 2003). However, after 1970, crude oil exports surged, surpassing 50% of total exports, especially after the 1973-1974 oil crisis. By 1980, oil exports constituted 96.1% of the total, a trend that persisted, never dropping below 70% from 1972 to 2021 (CBN, 2023). In 2022, non-oil exports experienced a notable growth of 39.91%, with semi-processed/manufactured products surpassing agriculture at 6.49%. Urea/fertilizer emerged as the leading single export product, comprising 32.87% of Nigeria's export basket 2022, a surge attributed to the Russia-Ukraine war (NEPC, 2023).

Despite this growth, the current performance of non-oil exports has declined significantly. Over 63 years later, the sector now contributes less than 30% to the GDP. Nigeria's export sector appears heavily skewed in favour of oil. The total value of oil exports escalated from ₦23.1 million in 1961 to ₦13,632.1 million in 1980 (CBN, 1990). However, in the 1980s, oil exports plummeted, reaching a low of ₦11,223.7 million in 1985, a decline attributed to economic depression in highly developed countries and increased energy efficiency reducing the oil demand, as noted by Igwe, Edeh, and Ukpere (2015). Subsequently, the quantity and value of oil exports regained dominance and trended upward in the 1990s. The value of oil exports surged from ₦106,623.5 billion in 1990 to ₦21,911.92 trillion in 2022, consistently surpassing non-oil exports in every period (CBN, 2016; NBS, 2023).

Nigeria's developmental progress could have been faster and more impressive, especially compared to the immense financial inflow from oil revenues. The current economic data presents a grim picture of the nation's state. In the mid-1960s, the average oil revenue per capita was US$33, while GDP per capita was estimated at US$245. Surprisingly, despite the rise in average oil revenue per capita to US$325 in the 2000s, GDP per capita has remained stagnant at the 1960s level of US$245. This indicates that the substantial oil wealth accumulated since the 1960s has not translated into significant economic development. Moreover, unemployment becomes a pressing issue in a mono-product oil-dependent economy like Nigeria, where oil

production involves sophisticated machinery and minimal direct human labour. As Usman (2010) pointed out, the non-oil export sector faces challenges due to the overshadowing effect of oil exports. The declining quantity, limited range of commodities, and shrinking market share in global non-oil trade have consistently eroded the competitiveness of the non-oil sector in Nigeria over the past three decades.

The dominance of the oil sector has stifled the performance of other sectors in Nigeria, like science and technology, manufacturing, agriculture, and services. This phenomenon is reminiscent of the Dutch Disease, as Onodugo (2013) explained. Dutch Disease refers to the coexistence of abundant mineral resources and bleak economic and political outcomes, leading to macroeconomic issues such as rising unemployment, high poverty rates, reduced manufacturing production, and inadequate infrastructural development despite substantial revenue from oil. Consequently, the delicate structure of the Nigerian economy has resulted in a situation where, despite overall economic growth, the nation has failed to create sufficient jobs and alleviate poverty (Onodugo, 2013).

Experts contend that the Nigerian economy has underperformed because there is no clear link between the oil and non-oil export sectors. The dominance of the oil sector has severely reduced the non-oil sector (Okuduwor et al., 2023). It is difficult to determine the trickle-down effect of the significant riches generated by the oil sector on the general economy because its impact on other economic sectors has yet to be effective. Despite government initiatives to expand Nigeria's non-oil export market, low non-oil export activity and exports, coupled with the country's reliance on oil exports and a negative balance of payments since 1970, have contributed to long-lasting problems like high unemployment and weak economic growth. Given these difficulties, it is imperative to look into how non-oil exports in Nigeria affect employment and economic growth. In the current literature, there is much discussion about the non-oil export factors contributing to low economic growth and high unemployment rates. This begs the question: Is the non-oil sector itself the problem? It is, therefore, necessary to conduct more research in this area because there is not enough solid data to identify the cause.

THEORETICAL FOUNDATIONS

Staple Theory of Growth

Harold Innis introduced the staple idea in 1963. The theory strongly emphasizes the role traditional goods or staples play in guiding a country with abundant natural resources toward economic progress. According to Udah (2012), one of the main tenets of the staple growth theory is that a country's comparative advantage in producing primary products will lead to specialization, increasing primary-based export commodities. As a result, there is an increase in per capita income, which causes growth to accelerate. This growth affected all areas of the economy by boosting domestic savings and investment, lowering unemployment and underdevelopment, growing the export sector due to the influx of factor inputs, and creating connections with other economic sectors (Watkins, 1963). These procedures boost the home economy's supply responses and the export sector's productivity. According to the idea, significant increases in primary commodity growth result in industrialization and diversification, which improves resource use, increases factor endowment and has implications on forward-backward linkages.

The Staple commerce theory posits that trade can mobilize previously dormant resources, generating surplus returns for productive factors. When a specific commodity becomes a core component of an economy, it reduces imports while increasing investments, consumption, and exports. Consequently, firms gain assured access to vital resources, and efforts are made to subsidize infrastructure to facilitate exports. Social infrastructure and housing near production sites are provided, and various labour market initiatives are implemented to support the resource industry. Export-driven development starts a chain of events that leads to industrialization by producing and exploiting natural resources. These exports generate foreign currency, which is invested in the domestic economy. Natural resources, including salmon, fur, lumber, gold, grain, coal, and oil, were exploited and exported by nations like Canada and the United States, causing them to go through this development cycle. However, this model also points out a potential "trap" in which the economy becomes overly dependent on outside markets, creating distortions and instability due to changes in the prices of staples (Matteo et al., 2008).

Endogenous Growth Theory

Romer (1986), Lucas (1988), Rebelo (1991), Grossman and Helpman (1991), and Barro and Sala-i-Martin (1995) are credited with developing the endogenous growth theory. The idea outlines how investments impact an economy's long-term growth rates. These investments rely on exports through technological

advancements, inventions, and active global learning. Therefore, the idea focused on how exports contribute to long-term growth.
Due to the country's theoretically limitless capacity for idea creation, endogenous growth models approach long-term growth as an endogenous variable, allowing output per capita growth to occur without boundaries. Government policy can have an impact on economic growth rates in an endogenous growth framework because actions like providing infrastructure, granting intellectual property rights, enforcing regulations and taxes, and upholding law and order all have the potential to incite and affect the rate of creative activity (Uwakaeme, 2015). Government, therefore, has a lot of potential in these models for both good and bad. Therefore, decisions about how to distribute investments and save money, such as adjusting long-term growth, may be influenced by a country's whole policy organization and its financial structures, regulatory regimes, markets, taxes, and macroeconomic distortions.

According to the guiding principles of endogenous growth theory, economic activities that produce new technological knowledge ultimately drive economic growth. Therefore, internal factors inside the economic system influence the rate of long-term economic growth. These internal dynamics, in particular, determine the possibilities and incentives that foster technological expertise. Over the long term, the economy's growth rate, measured by the percentage increase in output per person, relies on the growth rate of total factor productivity (TFP), which is in turn determined by the pace of technological advancement (Afaha & Oluwatobi, 2012). Endogenous growth theory explores pathways to achieve technological progress, including innovations in new products, production techniques, and markets. Therefore, economic factors can significantly influence the rate of long-term economic growth.

Export Growth Led Hypothesis
The term "export-led growth" describes a situation in which a country's exports fuel its economic growth. According to this idea, an important external factor that boosts export activity drives economic expansion. When export productivity increases, other trends follow, including rapid economic expansion, accelerated export growth, and real exchange rate appreciation. This phenomenon emphasizes the importance of exports to the economy (Yelwa & Diyoke, 2013). This idea is rooted in mercantilism, which believed that trade was the main way to amass money and promote economic expansion. Later, economists like Adam Smith codified this concept.

When exports of a certain product significantly expand, growth is considered to be export-led. The underlying premise of the hypothesis is that increased exports are linked to favourable externalities like technological spillover, specialization, economies of scale, greater market access, and better resource allocation, which improve factor productivity, as previously discussed. In line with the aforementioned, Iyoha (1995) contends that export growth boosts the economy by encouraging investment and technical development or spreading demand to other industries. He goes on to say that the effectiveness of export-led growth is determined by the export commodities' ability to respond to changes in supply and demand. Thus, according to Yelwa and Diyoke (2013), increasing exports leads to specialization, which boosts productivity because new technologies and better management techniques are available. A country's limited resources are redistributed to the economy's most productive sectors due to higher productivity, which leads to GDP growth. In conclusion, the concept that exports drive growth is based on a chain of effects from specialization through higher production to economic expansion. The hypothesis's consequences are that for export development to result in GDP growth, specialization, factor input productivity, and accessibility to new and better technologies must all be facilitated.

Therefore, this study is grounded in the Export-led Growth Hypothesis. This hypothesis revolves around products not based on natural resources. Furthermore, it serves as a framework for fostering sustained growth in non-natural resource sectors of developing countries in the long term. Unlike natural resource exploitation, which is a short-term phenomenon due to its exhaustible nature, the export-led growth hypothesis is focused on long-term development. It has been demonstrated that proceeds from non-renewable natural resource exports can negatively impact long-term economic growth, especially through the mechanism known as "Dutch disease." This concept refers to the situation where increased revenues from natural resource exports lead to the appreciation of the real exchange rate, thereby undermining the competitiveness of the non-resource tradable sector of the economy and increasing demand for imports (Igwe et al., 2015).

Empirical Literature Review

In a study conducted by Akpa, Onuh, Kabuk, and Sanni (2022), the relationship between non-oil export earnings and economic growth in Nigeria was examined. The research employed an ex-post facto design and utilized the Ordinary Least Square (OLS) method on data spanning 31 years from 1990 to 2021. The model considered Gross Domestic Product (GDP) as the dependent variable and non-oil exports (NOEXP) as the independent variable. The findings revealed a positive and significant relationship between NOEXP and GDP in Nigeria.

In another study by Chukwu and Anyanwu (2022), the focus was on non-oil exports and economic growth in Nigeria from 2000 to 2020. This research explored the impact of disaggregated non-oil exports, including vegetable exports (VGT), textiles exports (TEX), animal exports (AN), agricultural raw materials exports (ARM), and solid minerals exports (SLM), on economic growth (GDP). The study employed Vector Autoregressive Estimates (VAR) to achieve its objectives. The results indicated that non-oil exports positively affected the Nigerian economy, although this effect was not statistically significant.

In their study spanning from 1981 to 2016, Ogba, Park, and Nakah (2018) investigated the impact of non-oil revenue on economic growth. They employed a regression model with gross domestic product (GDP) as the dependent variable and Agricultural Revenue Contribution, Manufacturing Revenue Contribution, Solid Mineral Revenue Contribution, Services Revenue Contribution, Company Income Tax, and Custom and Excise Duties Tax as explanatory variables. The aim was to understand the relationship between economic growth and non-oil revenue. The findings revealed a long-term relationship between agricultural revenue contribution, manufacturing revenue contribution, solid mineral revenue contribution, services revenue contribution, company income tax, custom and excise duties tax, and economic growth in Nigeria.

Among these variables, Agricultural Revenue Contribution, Manufacturing Revenue Contribution, Services Revenue Contribution, and Company Income Tax were found to have significantly contributed to the growth of the Nigerian economy during the study period. In contrast, Solid Mineral Revenue Contribution and Company Income Tax negatively correlated with GDP. Furthermore, Solid Mineral Revenue Contribution and Custom and Excise Duties Tax were deemed statistically insignificant. The results from the Error Correction Model indicated the correct direction, suggesting that the system would return to equilibrium at a speed of approximately 80% if subjected to external shocks in the long run.

In a study conducted by Olawale (2018) spanning from 1980 to 2016, the impact of non-oil exports on economic growth in Nigeria was investigated. The study employed Ordinary Least Square Methods, including Error Correction Mechanism, Over-parameterization, and Parsimonious techniques, to estimate a model with RGDP as the dependent variable and non-oil export, Agricultural product income, and solid mineral income as independent variables. The Augmented Dickey-Fuller (ADF) test was used to examine the time series properties, indicating that most variables were stationary at the first difference (I(1)), while one variable was stationary at level I(2). Consequently, the Auto-regressive Distributive Lag Model (ARDL) was applied. The Johansen Co-integration test confirmed that the variables were cointegrated, and the Fully Modified OLS (FMOLS) technique, suitable for long-run cointegrating regression, was utilized. The findings revealed a positive long-term equilibrium relationship between non-oil exports and economic growth. It emphasized the urgent need for crucial policy formulation and execution to prevent the near extinction of non-oil sector revenue sources.

In another study by Kromtit, Kanadi, Ndangra, and Lado (2017) covering the period from 1985 to 2015, the contribution of non-oil exports to the growth of the Nigerian economy was examined. The study utilized the Augmented Dickey-Fuller test to assess unit roots and the stationarity of variables. Non-oil exports were found to be stationary at the level, while economic growth (proxied by Gross Domestic Product) and exchange rates were stationary at the first difference. The Auto-regressive Distributed Lag (ARDL) model established the relationship between non-oil exports and GDP. The Bound test confirmed co-integration among the variables, indicating a long-run relationship. The ARDL regression results demonstrated a positive and significant relationship between non-oil exports and GDP, signifying a substantial contribution of non-oil exports to economic growth in Nigeria. Additionally, the study revealed a negative, albeit not significant, relationship between exchange rates and GDP, aligning with economic theory.

In a study conducted by Aljebrin (2017) spanning from 1988 to 2014 in Saudi Arabia, the impact of non-oil exports on non-oil economic growth was empirically estimated. Ordinary Least Squares and Error Correction Model approaches were employed. The results indicated a positive and significant relationship

between non-oil economic growth and non-oil exports in the short and long run. Additionally, a positive and significant relationship existed between non-oil economic growth and capital in both time frames. In the long run, there was a positive and significant relationship between non-oil economic growth and labour, whereas, in the short run, the relationship was positive but not statistically significant. The error correction term was correctly negatively signed and highly significant (-0.537), suggesting a rapid adjustment process. If non-oil GDP is 1% out of equilibrium, a 53.7% adjustment towards equilibrium will occur within the first year.

In a study by Anthony-Orji, Orji, Ogbuabor, and Nwosu (2017) covering the period from 1980 to 2013 in Nigeria, the impact of non-oil exports on capital formation and economic growth was investigated. They used a classical linear macroeconomic model with aggregate time series data (including non-oil export, openness to trade, and money supply). The empirical results revealed a positive impact of non-oil exports on Nigeria's capital formation and economic growth. However, the level of statistical significance varied between capital formation and economic growth.

Fiiwe and Morrison (2017) analyzed crude and non-oil exports to Nigeria's economic growth from 1980 to 2015. They employed various analytical methods such as OLS, Augmented Dickey-Fuller, co-integration, and error correction models. The findings indicated that both the oil export sector and non-oil export sector positively influenced GDP. The analysis showed that all variables were stationary at the first order of difference, and two cointegrating variables were identified. The error correction model revealed a long-run relationship between oil and non-oil export sectors and Nigeria's GDP. The study concluded that non-oil exports had a greater impact on the economy than the oil export sector during the specified period.

Furthermore, Seyed and Tang (2015) analyzed the impact of variations in export values of oil and non-oil products on economic growth in Iran. They employed multivariate co-integration and Granger causality methods on annual time series data over 38 years. The results supported the unidirectional causality from oil and non-oil exports to economic growth, indicating a long-run association. This confirmed the effectiveness of the export-led growth hypothesis in Iran's economy. The estimated model included GDP as a function of non-oil export, oil export, total imports, capital investment, and labour force.

Mohsen's (2014) study explored the causal relationship between non-oil international trade (measured in terms of non-oil exports and imports to GDP) and GDP. A tri-variate model with oil revenues and GDP as explanatory variables and non-oil international trade as the explained variable was estimated across eleven selected oil-exporting countries. Panel tests were conducted, including unit root, causality, and co-integration analyses. The results showed a significant causality, indicating a shift from oil revenues and economic growth to trade in most oil-exporting countries under study. However, non-oil international trade did not significantly affect GDP in the long and short run. This suggests that oil resources and GDP drive non-oil trade in the selected countries.

In Seyed's (2014) investigation of the link between exports and economic growth in Iran from 1976 to 2010, ordinary least squares (OLS), stationarity tests, and the Johansen co-integration technique were employed. The study used 34 years of annual time series data, with GDP as the dependent variable and exports, inflation, and real exchange rate as explanatory variables. The results showed a positive and significant relationship between GDP and exports and between GDP and the regressors (inflation and real exchange rate). However, using OLS was deemed inappropriate due to the presence of unit roots at levels, leading to the loss of consistency, efficiency, and unbiasedness properties. Consequently, the outcomes of the analysis might be spurious and misleading.

In a study by Christopher et al. (2014), the impact of non-oil exports on Nigeria's economic development was investigated. The researchers used per capita income as a proxy for economic development. They modelled it as a function of non-oil export volume, trade openness, exchange rate, inflation rate, and capital formation. Ordinary least square estimation revealed a significant positive relationship between non-oil exports and income per capita. Increasing non-oil export volume could significantly advance Nigeria's economic development. Although individual variables had insignificant impacts, their collective effect was notable. However, the study also indicated that Nigeria might need to benefit more from external trade, given the negative coefficient of trade openness.

Another study by Alodadi and Benhin (2014) explored the determinants of economic growth in the non-oil export sector of the Saudi economy. The research examined the effects of non-oil exports, private

investment, public investment, and tourism (along with labour and capital) on economic growth, with GDP as the dependent variable. Utilizing a Restricted Vector Error Correction Model and Johansen's co-integration approach, the study found that non-oil exports, although significant, had a negative impact on economic growth. Conversely, private and public investments and international tourist arrivals positively influenced economic growth in the Saudi economy

The common understanding in the literature is that, in addition to its effect on economies of scale, exports may increase total factor productivity through externalities such as the transfer of technology, improvements in worker and managerial skills, and increased production capacity. This information was presented in numerous studies that offered a helpful and significant framework for examining the relationship between exports and economic growth. Chukwu and Anyanwu (2022) and Alodadi and Benhim (2014) are two such studies.

Some exposures became part of the investigations due to the results of the examined empirical literature. Studies that used OLS and those that used VAR as estimation tools both had considerably different results. Among the studies examined, Chukwu and Anyanwu's (2022) breakdown of non-oil export into its many components was optimal for capturing the variations in how these non-oil export components affected growth. However, productivity has been touted as a solution to the enduring challenge of unemployment. Export equals productivity, in other words. Therefore, it is clear that few publications analyze the effect of non-oil exports on Nigeria's unemployment rate; using a regression model that appears to be unconnected will set this study apart from others.

METHODOLOGY

Ex-post facto research design is the one used in this study. This is the type of research design in which a researcher cannot manipulate data but rather uses it as it is. These studies' data covered 32 years, from 1991 to 2022, and were sourced from the World Development Indicators, the National Bureau of Statistics, and the CBN statistics bulletin.

Model Specification

The model of estimation of the contributions of non-oil export to economic growth and employment in Nigeria is strictly fastened to the endogenous growth theory. The general cob-Douglas production function is depicted as follows:

$$Y_t = A_t(K_t L_t) \quad 1$$

Y (output) is a positive function of K (capital), L (labour) and A (total factor productivity). The factor productivity captures growth in output in the model not accounted for by an increase in physical input (K). Since total factor productivity can be determined endogenously, it is one of the routes through which non-oil export affects economic growth. For simplicity, the same level of capital and labour is employed in the economy. Therefore, economic growth is assumed to be a function of total factor productivity. Thus,

$$Y_t = f(A_t) \quad 2$$

Large numbers of potential factors that can affect total factor productivity abound. However, this study identifies the following factors as very instrumental to efficiency and productivity:

$$A = (AE, CE, ME) \quad 3$$

The theoretical model defining the effect of total factor productivity on economic growth is:

$$RGDP = AE, CE, ME \quad 4$$

Econometrically, the relationship can be expressed as:

$$GDPG_t = \delta_0 + \alpha_1 AE_t + \varphi_2 CE_t + \theta_3 ME_t + \beta_4 INF_t + \lambda_5 REXCH_t + \mu_t \quad 5$$

Therefore, equation 5 forms the theoretically specified model for the study. Taking the Log form of the model, the specified relation is estimated thus:

$$GDPG_t = \delta_0 + \alpha_1 LAE_t + \varphi_2 LCE_t + \theta_3 LME_t + \beta_4 INF_t + \lambda_5 REXCH_t + \mu_t \quad 6$$

Where GDPG is a proxy for economic growth interpreted as "GDP growth", LME represents the Log of export of manufactures, LAE is the Log of Agricultural export, LCE stands for the Log of export of commercial services, INF is the inflation rate, REXCH is the real exchange rate, δ_0 is the constant term, $\alpha_1, \varphi_2, \theta_3$ are coefficients of the explanatory variables. In contrast, u_t stands for the error term.

Equation 6 is modified to capture the interest of the impact of non-oil export on employment in Nigeria. Thus, the relation is specified as follows:

$$UNEMP_t = \delta_0 + \alpha_1 LAE_t + \varphi_2 LCE_t + \theta_3 LME_t + \beta_4 INF_t + \lambda_5 REXCH_t + \mu_t \quad 7$$

Where UNEMP represent the unemployment rate in Nigeria.

Method of Data Analysis
The specified economic models in this study will be estimated based on the following steps:

Descriptive Statistics
Furthermore, the study conducted descriptive pre-estimation tests to assess the effect of non-oil exports on economic growth and unemployment in Nigeria. The researcher gives a better knowledge of the data used in each model and an overall picture of each variable employed by outlining the fundamental variables used in each study (Gujarati & Porter, 2009).

Unit Root
This was done to check whether the time series used in this investigation were stationary. The enhanced Dickey-Fuller (ADF) test was utilized in the investigation.

Co-Integration Test
This test aimed to determine the long-term characteristics of the variables under investigation. At this point, the Johansen Co-integration test was conducted to determine the long-term characteristics of the estimation model's variables.

Seemingly Unrelated Regression Model
We adopted a seemingly unrelated regression equations (SURE) model. SURE is proposed by Zellner. In this study, each equation models a different dependent variable, but the regressors are the same. The two equations are

$$GDPG_t = \delta_0 + \alpha_1 LAE_t + \varphi_2 LCE_t + \theta_3 LME_t + \beta_4 INF_t + \lambda_5 REXCH_t + \mu_t \quad 6$$

$$UNEMP_t = \delta_0 + \alpha_1 LAE_t + \varphi_2 LCE_t + \theta_3 LME_t + \beta_4 INF_t + \lambda_5 REXCH_t + \mu_t \quad 7$$

According to Zellner (1962), where contemporaneous correlation is present, jointly estimated equation models, such as the SURE method, are more effective than independent equation solution methods because simultaneous bias will be present in the independent equation solution methods, such as multiple regression models. The SURE approach calculates the system parameters while considering contemporaneous correlation in the errors across equations and heteroskedasticity. The complete model that estimates the relationship between non-oil export and economic growth on the one hand and non-oil export and employment rate in Nigeria on the other hand consists of two single equations as follows:

$$\begin{bmatrix} GDPG_t = \delta_0 + & \alpha_1 LAE_t + \varphi_2 LCE_t + \theta_3 LME_t + \beta_4 INF_t + \lambda_5 REXCH_t + \mu_t \\ UNEMP_t = \delta_0 + & \alpha_1 LAE_t + \varphi_2 LCE_t + \theta_3 LME_t + \beta_4 INF_t + \lambda_5 REXCH_t + \mu_t \end{bmatrix} \quad 8$$

The SUR system consists of several individual relationships linked by the reason their disturbances are correlated (Zellner, 1962).

Estimation Techniques

The investigation employed a combination of descriptive and inferential statistical methods. Descriptive statistics utilized tables, graphs, and charts to present the data visually. Inferential statistics, on the other hand, employed relevant econometric techniques such as the Augmented Dickey Fuller Unit Root test, Johansen Co-integration, and other methods for in-depth analysis. Seemingly, the Unrelated Regression Method is used as well as post-diagnostic tests.

Discussion of Results

Descriptive Statistics

Table 1: Descriptive Statistics of Time-Series Variables Employed

	GDPG	INF	LAE	LCE	LME	REXCH	UNEMP
Mean	4.079573	18.40588	19.75630	21.13339	20.24693	109.7810	4.124774
Median	4.230061	12.87658	19.73709	21.32924	20.48247	100.5040	3.898000
Maximum	15.32916	72.83550	23.53086	22.23816	22.61818	273.0094	5.999000
Minimum	-2.035119	5.388008	15.20180	19.05759	17.84086	49.77631	3.700000
Std. Dev.	3.842207	16.51685	2.088680	0.922152	1.659218	49.74334	0.611441
Skewness	0.458013	2.127796	-0.233231	-1.008740	-0.128620	1.819339	2.075499
Kurtosis	3.666225	6.423366	2.358777	3.027262	1.559483	6.194417	6.244019
Jarque-Bera	1.657153	38.52976	0.812139	5.258332	2.765795	30.28219	35.84950
Probability	0.436670	0.000000	0.666264	0.072139	0.250851	0.000000	0.000000

Source: Researcher's Compilation from E-view 7

The skewness test statistic reveals that the Logs of Agricultural Export (LAE), Manufacture Export (LME), and GDP growth (GDPG) exhibit skewness values falling within the range of -0.5 to +0.5, indicating approximate symmetry. In contrast, INF, REXCH, and UNEMP are positively skewed, with skewness values of 2.12, 1.81, and 2.07, respectively, indicating a right-skewed distribution. The only exception is commercial service export, which shows a left-skewed distribution with a skewness value of -1.00.

Considering the kurtosis test statistic, only commercial service exports display a mesokurtic shape with a value close to 3. However, GDPG, INF, REXCH, and UNEMP exhibit kurtosis values of 3.66, 6.42, 6.19, and 6.24, respectively, indicating a leptokurtic shape as their kurtosis values surpass 3. Additionally, LAE and LME have kurtosis values of 2.35 and 1.55, respectively, classifying them as platykurtic in shape.

The Jarque-Bera test statistic determines whether a given distribution is asymptotic, uni-modal, and symmetrical around the mean. Examining the results in Table 1, it is evident that GDPG, LAE, LCE, and LME rejected the null hypothesis of normal distribution, indicating a bell-shaped distribution as their probability values exceeded 0.05. In contrast, INF, UNEMP, and REXCH accepted the null hypothesis, signifying a non-normal distribution. Furthermore, the standard deviation analysis revealed that the real exchange rate (REXCH) is the most volatile variable, with a value of 49.74, whereas unemployment (UNEMP) is the least volatile, having a standard deviation of 0.61.

Unit Root Test

The ADF test was employed to validate the presence of a unit root, and the results are summarized in Table 2 below. According to the ADF test statistics, estimated with trend and intercept at conventional levels of significance, the variables exhibited indications of first-order integration.

Table 2: Augmented Dickey Fuller Tests

Variable	ADF TEST (At levels)			ADF Test (1st difference)			
	t Statistic	**TCV 5%**	**Remark**	**t Statistic**	**TCV 5%**	**Prob. Value**	**Remark**
LAE	-1.548487	-3.574244	NS	-8.614190	-3.574244	0.0000	I(1)
LCE	-2.249190	-3.568379	NS	-4.692531	-3.574244	0.0041	I(1)
LME	-2.987540	-3.568379	NS	-6.071110	-3.574244	0.0001	I(1)
UNEMP	2.502240	-3.574244	NS	-4.920984	-3.574244	0.0024	I(1)
INF	-2.592948	-3.568379	NS	-5.103937	-3.603202	0.0020	I(1)
REXCH	-2.572060	-3.568379	NS	-5.096383	-3.574244	0.0015	I(1)
GDPG	-2.809890	-3.568379	NS	-7.434742	-3.574244	0.0000	I(1)

TCV means test critical value
Source: Researcher's compilation, 2023 from Eviews10

The order of integration of the variables based on the ADF unit root test indicates the need for a co-integration test using the Johansen co-integration technique.

Johansen Co-integration Test
The Johansen co-integration test was conducted to determine whether the calculated model parameters demonstrate a long-term mutual relationship. The test was conducted in two stages: the Trace and the Maximum Eigenvalue tests.

Table 3: Johansen Multivariate Co-integration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.892600	184.2776	125.6154	0.0000	64.70466	46.23142	0.0002
At most 1 *	0.849462	119.5729	95.75366	0.0005	54.91266	40.07757	0.0006
At most 2	0.644124	64.66027	69.81889	0.1204	29.96201	33.87687	0.1368
At most 3	0.513319	34.69826	47.85613	0.4640	20.88423	27.58434	0.2833
At most 4	0.229125	13.81402	29.79707	0.8509	7.546637	21.13162	0.9292
At most 5	0.193780	6.267386	15.49471	0.6639	6.246567	14.26460	0.5818
At most 6	0.000718	0.020819	3.841466	0.8852	0.020819	3.841466	0.8852

Trace test indicates 2 co-integrating eqn(s) at the 0.05 level
Max-eigenvalue test indicates 2 cointegratingeqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Source: Researcher's compilation, 2023 from Eviews10

The results from the Johansen multivariate co-integration test presented in Table 3 indicate the presence of two co-integration equations among the variables. Both the trace statistic and maximum eigenvalue statistic surpassed the critical values at the 5% significance level, affirming the existence of co-integration among the variables. This suggests that the variables share a common long-term path. With this confirmation of co-integration, a long-run relationship is established among GDP growth, Agricultural export, Commercial service export, manufacturing export, inflation, real exchange rate, and unemployment. This long-run relationship implies that all the explanatory variables are interlinked, and their fluctuations will lead to more than proportionate changes in GDP growth and unemployment levels.

The regression estimates in Table 4 illustrate the impact of non-oil exports on economic growth and unemployment in Nigeria. The results reveal significant effects of non-oil exports on economic growth in the country. Specifically, the analysis demonstrates a significant but negative relationship between Agricultural Exports, Commercial Service Exports, and economic growth. A one-unit increase in agricultural and commercial service exports is associated with a decrease in economic growth by 1.13 and 2.61 units, respectively. Inflation and real exchange rates also negatively influence economic growth in Nigeria during the investigated period. A one-unit increase in inflation and real exchange rate results in a decline of economic growth by 0.07 and 0.04 units, respectively. Interestingly, only manufacturing Exports

significantly and positively influence economic growth in Nigeria, with a one-unit increase leading to a 2.32-unit rise in economic growth.

Seemingly Unrelated Regression

The table below shows the excerpts from the seemingly unrelated regression estimation.

Table 4: Result of Seemingly Unrelated Regression Estimation for Unemployment and Economic Growth

	Economic Growth (GDPG)		Unemployment (UNEMP)	
Coefficient	**Estimate**	**Prob**	**Estimate**	**Prob**
Intercept	41.11215	0.0616[b]	-12.13537	0.0005[a]
C(2)*LAE	-1.133560	0.0123[a]	0.042033	0.5298
C(3)*LCE	-2.610895	0.0297[a]	0.777482	0.0001[a]
C(4)*LME	2.327682	0.0032[a]	-0.115113	0.3185
C(5)*INF	-0.074444	0.0895[b]	0.014762	0.0284[a]
C(6)*REXCH	-0.047538	0.0085[a]	0.009636	0.0006[a]

[a] significance at $\alpha = 0.05$ [b] significance at $\alpha = 0.10$

Source: Researcher's compilation, 2023 from Eviews10

The relationship between non-oil exports and the unemployment rate in Nigeria reveals that Agricultural exports and manufacturing exports have had an insignificant impact on the unemployment rate, indicating that positive changes in these sectors have not significantly influenced the level of unemployment in Nigeria over the years. On the other hand, it was observed that inflation (INF) and real exchange rate (REXCH) have significantly positive impacts on Nigeria's unemployment rate. Specifically, a one-unit increase in the real exchange and inflation rates is expected to increase the unemployment rate by 0.009 and 0.014 units, respectively. Interestingly, only Commercial Service Exports exhibited a significant and positive impact on unemployment in Nigeria. The analysis indicates that at a 5% significance level, a one-unit increase in the unemployment rate results in a 0.77-unit increase in Commercial Service exports.

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Post Estimation Tests

Residual Diagnostic Test: Normality Test

The normality test compares the third and fourth moments of the residuals to those from the normal distribution, reporting the multivariate extensions of the Jarque-Bera residual normality test.

Table 5: System Residual Normality Tests

Orthogonalization: Cholesky (Lutkepohl)				
Null hypothesis: Residuals are multivariate normal				
Component	Skewness	Chi-sq	df	Prob.
1	0.565236	1.650705	1	0.1989
2	1.388505	9.961054	1	0.0016
Joint		11.61176	2	0.0030
Component	Kurtosis	Chi-sq	df	Prob.
1	4.049493	1.422689	1	0.2330
2	5.331400	7.020757	1	0.0081
Joint		8.443446	2	0.0147
Component	Jarque-Bera	df	Prob.	
1	3.073393	2	0.2151	
2	16.98181	2	0.0002	
Joint	20.05520	4	0.0005	

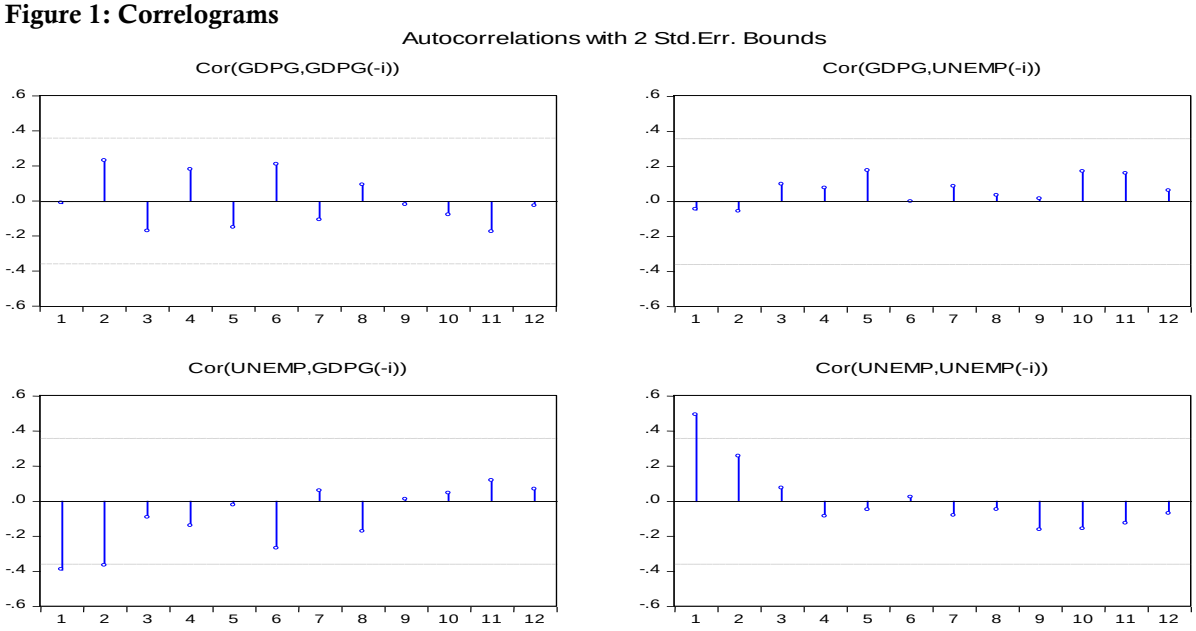
Source: Researcher's compilation, 2023 from Eviews10

As a result, it can be shown from the result estimates in Table 5 above that the residuals in equation 1 (i.e., component 1) of the estimated model tend to have a normal distribution. Together nevertheless, the model deviates from the normal distribution.

Correlograms

A graphical depiction known as a correlogram is used to identify autocorrelation in the calculated relationships' residuals. The graphs are, therefore, inside the range of no autocorrelation.

Figure 1: Correlograms



Portmanteau Autocorrelation Test

Table 6 below shows the results of the Portmanteau test; it shows autocorrelation for lags 1 and 2 but no autocorrelation for lags 3 to 12 among the residuals because all probability values are over 0.05.

Table 6: System Residual Portmanteau Tests for Autocorrelations

Lags	Q-Stat	Prob.	Adj Q-Stat	Prob.	df
1	11.31247	0.0233	11.68955	0.0198	4
2	16.30016	0.0383	17.02122	0.0299	8
3	18.95938	0.0895	19.96535	0.0677	12
4	21.80862	0.1495	23.23671	0.1076	16
5	23.45538	0.2670	25.20015	0.1939	20
6	26.82142	0.3128	29.37404	0.2064	24
7	27.30750	0.5016	30.00190	0.3631	28
8	29.30699	0.6035	32.69686	0.4326	32
9	31.08994	0.7011	35.20920	0.5060	36
10	32.27377	0.8026	36.95676	0.6080	40
11	33.43841	0.8767	38.76195	0.6951	44
12	33.67325	0.9418	39.14511	0.8151	48

Null hypothesis: no residual autocorrelations up to lag h

*The test is valid only for lags larger than the System lag order.

df is the degrees of freedom for the (approximate) chi-square distribution

Source: Researcher's compilation, 2023 from Eviews10

CONCLUSION AND RECOMMENDATIONS

This study delved into the impact of non-oil exports on economic growth and unemployment in Nigeria, specifically examining the effects of disaggregated non-oil exports such as agricultural exports, commercial service exports, and manufacturing exports. As such, the study employed various methods, including the ADF unit root test, Johansen Co-integration test, Seemingly Unrelated Regression method, and additional residual diagnostic tests. The results revealed a long-term relationship among the disaggregated non-oil export variables, economic growth, and unemployment during the study period. Notably, agricultural exports, commercial service exports, inflation, and real exchange rates negatively affected economic growth in Nigeria. Conversely, manufacturing exports exhibited a significant positive influence on economic growth

in the country. Similarly, the study revealed a negative correlation between manufacturing exports and unemployment in Nigeria. In other words, expanding the manufacturing export sector corresponds to reduced unemployment. Conversely, agricultural exports, commercial service exports, inflation, and real exchange rates contributed to higher unemployment rates. The findings highlight the interconnectedness between economic growth and unemployment in Nigeria. Factors that hinder economic growth exacerbate the unemployment situation in the country. The study underscores the importance of effectively implementing national policies, especially in the agricultural sector, to stimulate economic growth and expand Nigeria's export portfolio. A meticulous execution of these policies can enhance foreign exchange earnings, thereby stabilizing the exchange rate and fostering economic growth while reducing unemployment in Nigeria.

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