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Economic Uncertainties in Nigeria: An Empirical Investigation on the Non-Oil Sector

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Abstract
This study empirically determined the effects of economic uncertainties on non-oil sector in Nigeria from 1985 to 2023. To represent economic uncertainties, the study employed inflation rate, interest rate, exchange rate, and crude oil price while non-oil gross domestic product is employed to represent the non-oil sector in Nigeria. Annual time series data obtained from the Central Bank of Nigeria (CBN) statistical bulletin and the World Bank Development Indicators were utilized for the analysis. The applied data analysis techniques included the Dickey-Fuller's (ADs) Augmented diagnosis for unit root, bounds cointegration test, and Autoregressive Distributive Lag (ARDL) approach. The results of the unit root test indicated that the interest and exchange rates appeared integrated at levels [I(0)], whereas non-oil sector gross domestic product, inflation rate, and crude oil price were stationary at first difference [I(1)]. Results of the bounds cointegration test indicated that inflation rate, interest rate, exchange rate, crude oil price, and non-oil sector gross domestic product exhibited long-run correlation. The ARDL model estimation result indicated that the non-oil gross domestic product is substantially influenced by inflation rate and exchange rate, while interest rate had non-substantial negative effect. Conversely, the regressand is substantially influenced by crude oil price. The research subsequently determined that economic uncertainties had substantial impact on the performance of Nigeria's non-oil sector. The research suggested that the government should strive to decrease the rate of inflation in Nigeria in order to boost output of the non-oil sector to enhance inclusive non-oil economic stability in Nigeria.

Keywords: *Economic Uncertainties, Inflation rate, Exchange Rate, Interest Rate, Crude Oil Price, Non-Oil GDP, Nigeria*

INTRODUCTION

Since its inception as a nation, Nigeria has been primarily an agricultural nation, producing wide variety of cash commodities including palm kernels, cocoa beans, groundnuts, rubber and timber. Ignoring its enormous agricultural potential, the nation shifted its focus to oil production after its discovery and subsequent growth in the 1970s (Ideh, Okolo & Emengini, 2021). Anyaehie and Areji, (2015) asserted that; when Nigeria achieved self-ruling status in 1960, agriculture activities and solid minerals extraction were its principal economic sources. However, with the discovery of

oil, the nation lost sight of its roots and traditional means. Once a world leader in palm oil, rubber, cocoa, groundnuts (peanuts), coffee, and cotton, Nigeria's non-oil sector collapsed consequent upon her over dependence on black gold. With oil prices fluctuating all over the globe, Nigeria's near-total dependence on this industry has effects on sectors outside of oil production as well as the economy as a whole. Beyond this, there are economic uncertainties that severely hamper the expansion of Nigeria's non-oil industry. Since Keynes's 1936 paper on "The General Theory of Employment, Interest and Money," several theoretical and empirical research have examined the effects of shocks to economic outcomes. A key factor in the transmission and efficacy of monetary policy is uncertainty, which is in turn strongly related to concerns of stability, volatility, expectations, and likelihood (in terms of both financial and macroeconomic factors).

Uncertainty, says Montes (2010), is a part of life that affects how economic actors make decisions and makes monetary policy less effective. Therefore, economic uncertainty may sway policy moves or lack thereof, and policy uncertainty, defined as the inability to predict the actions of policymakers, can unsettle the financial markets and outcome of industries other than oil. Kydland and Prescott (2017) state that when people talk about economic uncertainty, they usually mean that financial and economic factors and situations are quite unpredictable. Predicting the result of monetary policy is difficult, as attested by economic theory, because of economic uncertainty. Central banks use scenarios to ground expectations of future events, which is one manner in which economic uncertainty outcome affect policy decisions. A possible explanation for the countercyclical nature of economic uncertainty is this (Bloom, 2013). As a result, consumers may cut down on spending (if only briefly) in the face of economic uncertainty in order to cushion themselves against any future income drops. More people tend to put money aside as a safety net when this happens. There may be a drop in output across the board if companies are scared off by the economy and decide to cut down on production, investment, and employee remuneration. Extreme economic uncertainty may have a disproportionately negative outcome on big, non-oil sector capital projects due to their high degree of irreversibility. As attested by Kalu and James (2012), investors confront a substantial kind of economic uncertainty due to the flawed credibility of policy innovations. For investors, the prospect of a reversal of investment-friendly policies may heighten uncertainty even as they boost projected profits. A crucial factor in the investment reaction is the investor's assessment of the likelihood of a policy reversal.

But the non-oil sector's performance during the last 30 years is dismal, despite the fact that many Nigerian administrations have worked to boost it. For example, in 2008, only 1% of the nation's export revenues came from non-oil exports, and that percentage has been very low. Therefore, diversifying the nation's export base away from oil has been a governmental priority for quite some time. There are critical reasons why Nigeria's economy must diversify. One reason to diversify exports is the instability of the global oil market, which affects government income. Furthermore, crude oil's finite supply renders it an untrustworthy asset for the long-term growth of Nigeria's economy. We must immediately reevaluate the goals, substance, and execution promise of our development programs in light of the persistently dismal performance of our non-oil sectors and the precarious position of our external sectors. To put it bluntly, if we want to steer the Nigerian

economy towards sustainable development and international viability, we must modify our industrialisation strategy and our emphasis as a government. However, there is a severe dearth of empirical research in Nigeria that aims to unravel the outcome of economic uncertainty on the non-oil sector, even though these uncertainties have repercussions for the performance of several sectors in the nation. Therefore, this study intends to fill a knowledge vacuum caused by the fact that earlier studies neglected this field of inquiry. Thus, this research aims to experimentally expose the sway of economic uncertainty on Nigeria's non-oil industry, in accordance with the mentioned challenges and gaps in knowledge. Examining the non-oil industry in Nigeria from 1985 to 2023, the research aimed to identify the implications of inflation, interest and exchange rates as well as crude oil price on the regressand.

In addition, the study's subsequent parts devoted attention to review of related literature on Nigeria's non-oil industry and economic uncertainty indicators. The third section discussed the approach. Section 4 focused on data analysis and discussion of results, whereas section five concluded and provided policy suggestions,

LITERATURE REVIEW

Conceptual Clarifications

Economic Uncertainties

The idea of economic uncertainty is still not well-defined in the academic literature. It is clear that several writers have offered varying definitions of the concept. When people talk about it, they usually mean that financial and economic factors and situations are quite unpredictable. Predicting monetary policy outcome is difficult due to economic uncertainty, as attested by economic theory (Kydland & Prescott, 2017). Still, several theoretical traditions in economics have sought to define economic uncertainty. A number of economists take close look at economic volatility and uncertainty via the lenses of production and inflation (Bredin & Fountas, 2015). Some have tried to understand it in terms of the business cycle and the counter-cyclical behaviour of economies (Bloom, 2013). The ever-changing nature of the banking industry as a whole gives the impression of economic instability. For example, a more stable macroeconomic situation is likely to lead banks to believe that borrowers will have stronger capacity to repay loans due to better revenue stream forecasting over the loan's duration. In economics, uncertainty is the fear that an investor may lose money in the future as an upshot of putting money into project that is not sure to succeed. What this means is that investors often face challenges when trying to forecast how their investments will perform. This could be due to lack of relevant data that could guide decision-making process, or it could be due to the unpredictability of market and macroeconomic indicators in the current economic climate, which creates atmosphere of uncertainty (Bekoe & Adom, 2013; Belke & Kronen, 2017). Most investors see economic uncertainty negatively and try to stay shielded from it because of the negative emotions it evokes (Tito & Filho, 2007).

Non-Oil Sector

The Nigerian economy's non-oil sector consists of several economic activities that are either unrelated to or completely separate from the nation's petroleum and gas industries. Among these

are: services related to telecommunications, banking, insurance, tourism, health, wholesale and retail trade, agriculture, minerals, power (both conventional and renewable), manufacturing, environmental services, research and development, information and communication technology, etc. (Onwualu, 2012). Those businesses that deal with commodities other than oil and gas make up what is known as the "non-oil" sector. The real sector is the meat and potatoes of the non-oil economy; it is where all the other production variables, including land, labour, and capital, come together to provide commodities and services. So, it is the engine that propels the growth of the economy and development and the primary force behind every economy. In this category, you will find activities i.e., farming, quarrying, manufacturing, building, trading, transportation, and providing services. The 'Services' subsector is not well-defined. It is an amalgam of several smaller industries, including banking, healthcare, education, real estate, and tourism, among others (Central Bank of Nigeria, 2020).

Theoretical Review

The Real Option theory of uncertainty-investment nexus is the primary theoretical framework of this research. In 1994, Dixit and Pindyck put out this notion. To evaluate investment possibilities and capital expenditure projects, real option theory provides a systematic and comprehensive method that integrates economic and financial theories, management science, statistics, and econometric modelling. Having the choice to make future capital investments is an example of a real option as it is a possibility, not a need, to make specific business choices. As a matter of fact, real option theory considers the importance of managers' ability to adjust to sudden changes in the market and the economy (Belke & Kronen, 2017; Leduc & Zheng, 2016). The option to continue with full-blown investment initiatives is accessible to enterprises, and they may exercise it if future events eliminate or substantially decrease the primary sources of uncertainty owing to the information we have. However, in the event that the uncertainty persists or is not sufficiently addressed, the option may be allowed to expire or its term of validity can be extended, therefore reducing the risk of future losses. Investors face a variety of choices when faced with uncertainty, including waiting, changing the size of the operation (i.e., expanding or contracting), abandoning the investment, and switching input/output (Belke & Kronen, 2017; Bekoe & Adom, 2013; Dixit & Pindyck, 1994). There is also the option of applying an option methodology. As long as businesses are unsure of how macroeconomic and market trends will play out, they will likely choose to wait, which means the investment choice will be available to them. Companies' ability to sit on their hands increases in value in relation to the degree of uncertainty. Due to this imbalance, it is feasible for underlying market and macroeconomic variables to reach high levels in an uncertain environment, increasing the net profit from waiting to act. The company stands to lose money if the underlying variables decline, but only up to the option price. Companies may choose to sit on their investments in the face of uncertainty, especially when it comes to fundamental market and macroeconomic factors. Still, the firm's decision to withdraw might alter the unfavourable outcome of the option to wait. The ability to back out of an investment or quit it altogether is a boon to investors and businesses alike, as it mitigates the outcome of market and macroeconomic downturns on investment projects. As a result, this choice promotes investments

in the here and now, albeit the outcome on investment is heavily dependent on how easily investment capital expenditure can be undone when faced with uncertainty.

Empirical Review

Aromí, Bermúdez, and Dabús (2022) investigated the outcome of unpredictability on Latin American economic development spanning 1960–2016. There was a substantial correlation between uncertainty and inflation as well as the instability of three basic economic fundamentals: 'real deflated rate of exchange, GDP, and inflation rate'. Especially at higher levels, the data shows that uncertainty stunts development. Consistent with previous research, the findings seem to indicate that the region's low economic performance is mostly attributable to macroeconomic instability.

In the area including the 'Economic Community of West African States', Chukwunonso (2022) studied the ever-changing outcome of economic instability on spending on public health. This research made use of the panel autoregressive distributed lag model. Overall, the results showed that population increase and economic instability are major long-term factors influencing health expenditure per capita. Economic uncertainty causes lower-middle income nations to spend more on health care in the near term, but less in the long term due to the persistence of uncertainty, whereas population growth has a negative effect on health expenditure in the long term.

Using real option theory, Ososuakpor (2021) investigated how market and macroeconomic uncertainty impacted the investment choices made by corporations. We employed the Generalised Autoregressive Conditional Heteroskedasticity (GARCH) estimation method applying data collected from 2005 to 2019. When comparing the impacts of market and macroeconomic uncertainty on company investment choices, the findings demonstrated a notable difference. Results showed a positive correlation between corporate investments and macroeconomic uncertainty of inflation, interest, and exchange rates uncertainty were also statistically substantial, but linear market uncertainty was negative and quadratic market uncertainty was not.

Using a fresh survey of European households, Olivier, Dimitris, Yuriy, Geoff, and Weber (2021) investigated the outcome of exogenous variance in consumers' perceptions of macroeconomic uncertainty on their spending choices. The research employed a randomised information treatment design. Households cut down on spending on non-durable products and services and bigger expenditures like package vacations or luxury goods in the months that follow when macroeconomic uncertainty is high, as attested by the report.

In their econometric study, Yalçinkaya and Çelik (2021) employed the extended Cobb-Douglas production function and linear and nonlinear time series analysis to look at the effects of recent EPG events on the US economy's growth and on the global economy as a whole. The study covered the years 1996: Q1–2018: Q4. Results from both linear and nonlinear time series analyses show that EPG uncertainties have a negative effect on US growth over the sample period, both in the short and long term, and that this effect is causally related to growth in only one dimension.

Moreover, the data shows that the EPG uncertainties had a dampening effect on US GDP growth throughout the study period.

From 2000 to 2019, Ideh, Okolo, and Emengini (2021) analysed how the rise of Nigeria's non-oil industry affected the nation's sustainable economic growth. They employed the study variables to build an economic growth model. Then, they employed vector auto-regression (VAR) techniques to estimate the model. To make sure the model estimates were reliable, we ran diagnostic tests like the 'Roots of Characteristic Polynomial for VAR model stability measurement', time series' stationarity Augmented Dickey-Fuller analysis, and granger variant of causality diagnosis. Findings from the variance decomposition and VAR analyses indicate that; RGDP exhibited weak long-run endogenous character, but showed substantial short-run endogenous behaviour, and the study also demonstrates that the estimated model is stable.

Ubi, Ebi, and Udah (2021) examined how a budget deficit affects GDP and inflation in a volatile economic climate. Inflation and RGDP are indicators of economic health at the macro level. Fiscal deficit, capital and recurrent spending, credit to the financial sector (a surrogate for growth in the financial sector), and other explanatory factors are also included. Applying the Auto-Regressive Distributed Lag (ARDL) limits approach and the Exchange Rate Volatility (GARCH) model, the research assessed economic uncertainty. Applying this method, we may separate the variables into those with predictable and unpredictable variances, and then estimate the former applying VAR. By making people wait for things to happen, the findings shown that economic uncertainty hurts economic performance.

In their assessment of the outcome of oil price volatility on economic activity in Nigeria from 1981 to 2018, Ogege and Boloupremo (2020) considered the nation's progress towards human development. In order to determine the strength of the correlation between the variables of interest, the secondary data employed the least squares method of data analysis. As attested by the results, the price of crude oil has a small but positive effect on life expectancy, a large but negative effect on physical quality of life and the education index, and a negligible but noticeable effect on consumption per capital.

To find out how macroeconomic uncertainty affects the amount of loan that Chinese commercial banks are willing to provide, Yanga and Zhou (2018) conducted study. The research employed a panel data model to examine how macroeconomic uncertainty affected commercial banks' loan supply applying a GARCH model to quantify the degree of uncertainty in China's macroeconomic forecasts. Research found that commercial banks in China, both listed and unlisted, feel the pinch of macroeconomic uncertainty more acutely when it comes to their ability to provide loans.

Using panel data analysis on a sample of companies listed on the Borsa Istanbul Non-Metallic Mineral Products sector from 2003:Q1 to 2016:Q4, Bayar and Ceylan (2017) examined how macroeconomic uncertainty affected ROA and ROAF. For starters, we employed Generalised Autoregressive Conditional Heteroscedasticity (GARCH) models to find out how volatile the

currency rate, inflation rate, interest rate, and growth rate were. There was a negative correlation between growth, exchange rate, and interest volatility and ROA and ROAF, as attested by the results.

When it comes to investing, Menzie and Laurent (2017) looked at how macroeconomic uncertainty affected things. They looked at interest rates, currency exchange rates, and capital flows as aspects of macroeconomic uncertainty. Their results showed that the examined characteristics of macroeconomic uncertainty had a negative effect on investment applying the capital asset pricing model. Capital flow volatility has a more negative outcome on countries with less developed financial systems and longer time-to-build gaps in sectors.

Using the AR(k)-EGARCH(p,q) model and the LA-VAR Granger Causality test, Tamarauntari and Diseye (2013) investigated the outcome of information asymmetries on the volatility of Nigerian macroeconomic and FPI variables, as well as the link between the two. The data employed in this study comes from the CBN Statistical Bulletin, 2011, which covers the years 1986Q1–2011Q4. Every single one of the included variables exhibited extreme volatility and an uneven reaction to information shocks, as attested by the research. The findings also demonstrated that consistent foreign direct investment (FDI) flows need a stable macroeconomic climate, and vice versa.

Literature Gap

This research has conducted a thorough literature analysis on economic uncertainty and the non-oil industry in Nigeria, covering theoretical, conceptual, and empirical ground. Research on the outcome of economic uncertainty on Nigeria's non-oil industry is very lacking, as attested by the evaluated empirical research. Therefore, this study intends to fill a knowledge vacuum caused by the fact that earlier studies neglected this field of inquiry. This research aimed to fill a gap in the literature by conducting an empirical analysis of the outcome of economic uncertainty on Nigeria's non-oil sector.

METHODOLOGY

Research Design

Due to the non-experimental nature of the study and its goal of examining how the non-oil sector is affected by economic uncertainties applying pre-existing data that cannot be altered, an *ex-post-facto* research design is considered suitable. In other words, the researcher employed time series data collected annually. The statistics bulletin of the CBN and the World Bank Development Indicators were the sources of these data. The research employed thirty-nine (39) years of sample observations, spanning from 1985 to 2023 for analysis.

Analytical Model and Techniques

In this part, we laid out the framework for the model that we employed to empirically assess how economic uncertainty affected Nigeria's non-oil economy. The purpose and particular aims of this

research informed the use of a multiple regression model, which is adapted to a model by Bayar and Ceylan (2017) with minor adjustments to account for all of the study's variables.
Here is how the model is defined in terms of its functionality:

$$NGDP = f(IFR, INT, EXR, COP) \quad (3.1)$$

Equation (3.1) is transformed into an explicit form as follows:

$$NGDP_t = \delta_0 + \delta_1 IFR_t + \delta_2 INT_t + \delta_3 EXR_t + \delta_4 COP_t + \mu_t \quad (3.2)$$

A Priori Expectations: $\delta_1 < 0$, $\delta_2 < 0$, $\delta_3 < 0$, $\delta_4 > 0$.

To empirically test the specified model, the summary statistics analysis for checking the variables for normality was conducted relying on the Jarque-Bera statistics. Following this in principle is the unit root test of the individual variables, which is for ascertaining their orders of integration by applying the ADF test at 5% (Dickey & Fuller, 1981). The general ADF model for unit root estimation is specified as follows:

$$\Delta Y_t = \lambda_0 + \lambda_1 + \delta Y_{t-1} + \sum_{i=1}^{n} \lambda_1 \Delta Y_{t-i} + \mu_t \quad (3.3)$$

Where Y represents the time series variables under consideration, t denotes the linear time trend, Δ is the first difference operator, λ_0 is the constant term, n indicates the optimum number of lags on the dependent variables, μ_t represents the stochastic error term.

Pesaran, Shin, and Smith (2001) also noted that the ARDL Bounds cointegration test is utilised to determine whether the variables in question are cointegrating. Use it when you find a mixed order of integration employing *I(0)* and *I(1)* from the unit root analysis. When the computed F-statistic value is above the upper limit *I(1),* below the lower bound *I(0),* or in between the *lower I(0)* and the higher *I(1)* bounds, three possible outcomes are considered by this method: the presence of cointegrating relationships, the absence of cointegrating connections, and inconclusive relationships. Modelling the ARDL Bounds cointegration often entails:

$$Y_t = \Delta_t Y_{t-1} + \ldots \Delta_p Y_{t-p} + \delta R_t + U_t \quad (3.4)$$

Where the time series variables under consideration in time t is denoted by Y_t, the cointegrating equations estimates *i*s represented as Y_{t-1} and Y_{t-p} , the First difference operator is denoted by Δ denotes and U_t stands for the stochastic error term.

Following the ARDL specification for cointegration, the long-run and short-run dynamic model is expressed to examine the statistical and theoretical significance of the relationship between the dependent and independent variables in the model. Hence, Equation 3.5 below is the specification of the ARDL model's short-run and long-run forms;

$$\begin{aligned}\Delta \ln(NGDP_t) = {} & \delta_0 + \delta_{1i}\Delta \ln(NGDP_{t-1}) + \delta_{2i}\Delta(IFR_{t-1}) + \delta_{3i}\Delta(INT_{t-1}) + \delta_{4i}\Delta(EXR_{t-1}) \\ & + \delta_{5i}\Delta \mathrm{In}(COP_{t-1}) + \sum_{t=1}^{p} \alpha_{1i}\Delta 1n(NGDP_{t-1}) + \sum_{t=1}^{q} \alpha_{2i}\Delta(IFR_{t-1}) \\ & + \sum_{t=1}^{q} \alpha_{3i}\Delta(INT_{t-1}) + \sum_{t=1}^{P} \alpha_{4i}\Delta(EXR_{t-1}) + \sum_{t=1}^{P} \alpha_{5i}\Delta In(COP_{t-1}) + \lambda ECM_{t-1} \\ & + \mu t \end{aligned} \quad (3.5)$$

Where: NGDP = non-oil sector gross domestic product, IFR = inflation rate, INT = interest rate EXR = exchange rate, COP = crude oil price, δ_0 = regression intercept, $\delta_1 - \delta_5$ = long-run elasticities or coefficients of independent variables, $\alpha_1 - \alpha_5$ = short-run elasticities or coefficients of independent variables, Δ = operator's difference, $_t$ = time subscript, λ = speed of adjustment (< 0), μ_t = error term, ECM = Lagged error correction term.

Furthermore, post diagnostic tests i.e.: the Ramsey RESET test shall be conducted on the model for correctness of the specified model, the Jarque-Bera normality statistic test to ascertain if all variables are jointly normally distributed, the serial correlation **test** to know whether the residuals are serially independent, the heteroscedasticity test to check for homoscedasticity and the CUSUM stability test to test whether the estimated regression result is stable.

ANALYSES RESULTS AND DISCUSSIONS

Descriptive Statistic Analysis

Table 4.1 presents the descriptive statistics of the data for this study as follows:

Table 4.1: Descriptive Statistic Results

	NGDP	IFR	INT	EXR	COP
Mean	29666.27	19.57949	17.89359	141.1169	45.89872
Median	23048.51	12.20000	17.56000	125.8300	36.05000
Maximum	65848.67	76.80000	29.80000	645.1900	109.4500
Minimum	8401.780	0.200000	10.50000	0.890000	12.28000
Std. Dev.	19383.76	17.66206	4.082511	143.6582	31.21136
Skewness	0.419357	1.825301	0.722370	1.475941	0.691268
Kurtosis	1.569832	5.365335	4.015301	5.335976	2.134903
Jarque-Bera	4.466835	30.74776	5.066929	23.02689	4.322168
Probability	0.107162	0.000000	0.079384	0.000010	0.115200
Sum	1156984.	763.6000	697.8500	5503.560	1790.050
Sum Sq. Dev.	1.43E+10	11854.04	633.3421	784231.5	37017.66
Observations	39	39	39	39	39

Source: ***Authors' Computation, 2024.***

The average GDP of the non-oil industry from 1985 to 2023 is ₦29666.27 billion, as shown in Table 4.1. The range of non-oil sector GDP values is from ₦8401.78 billion at the lowest end to ₦65848.67 billion at the highest. Moreover, the typical rate of inflation is 19.58%. Inflation rates may go as high as 76.8%. Whereas the inflation rate cannot be lower than 0.2%. In addition, the interest rate ranges from a low of 10.5% to a high of 29.8%, with a mean value of 17.89%. There is a range of 645.19% to 0.89% for the exchange rate, with an average of 141.12%. Finally, a barrel of crude oil costs $45.9. The average price of crude oil proves this. Crude oil prices range from $12.28 per barrel at the low end to $109.45 per barrel at the high end.

Pre-Estimation Tests

The pre-estimation tests carried out include: unit root test, lag selection criteria and bounds cointegration test:

Table 4.2: Unit Root Test Results

Variables	Levels	5% Critical Value	1st Difference	5% Critical Value	I(d)	Stationarity Decision
InNGDP	-0.620196	-2.945842	-3.266803	-2.945842	I(1)	1st Difference
IFR	-2.998890	-2.941145	-5.487143	-2.951125	I(1)	1st Difference
INT	-3.814571	-2.941145	-	-	I(0)	Level Stationary
EXR	3.820788	-2.941145	-	-	I(0)	Level Stationary
InCOP	-1.268522	-2.941145	-6.150567	-2.945842	I(1)	1st Difference

Source: ***Authors' Computation, 2024.***

After running the ADF unit root test on all selected variables, Table 4.2 displays the summary findings. The unit root test demonstrated that both the interest rate (INT) and the exchange rate (EXR) were stationary at their respective current levels, denoted as I(0). After first differencing, or I(1), however, non-oil sector GDP, inflation rate, and crude oil price were all stationary. Thus, research employed ARDL to estimate the long run connection among the variables and the error correction model because mixed stationarity in the unit root test were achieved, which means adopted model quantities were stationary at levels and stationary at first difference.

Table 4.3: Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1002.829	NA	1.43e+18	55.99047	56.21041	56.06724
1	-839.3144	272.5236	6.59e+14*	48.29524	49.61484	48.75582*
2	-818.1563	29.38623*	8.88e+14	48.50868	50.92795	49.35307
3	-798.9517	21.33845	1.55e+15	48.83065*	52.34958*	50.05885

Source: ***Authors' Computation, 2024.***

Owing to the findings shown in Table 4.3, it can be concluded that the ideal lag length suitable for substantial cointegration result as attested by the Akaike Info Criterion (AIC) is lag three. As a consequence of this, subsequent studies were conducted applying the optimal lag length three.

As tabulated in Table 4.4, the bounds cointegration test result for ascertaining long-term link between the performance of the non-oil sector indicator (non-oil sector GDP) and economic uncertainty indicators (inflation rate, interest rate, exchange rate, and crude oil price) is palpable. It was also necessary to estimate the extent of association between the dependent and independent variables applying the Autoregressive Distributed Lag (ARDL) model in order to establish long term dynamics among the variables.

Table 4.4: Bounds Cointegration Test Results

Substantial Level	Critical Value Bound		F-Statistics	K
	I(0) Bound	I(1) Bound		
10 Percent	2.2	3.09	4.661132	4
5 Percent	2.56	3.49		
2.5 Percent	2.88	3.87		
1 Percent	3.29	4.37		

Source: ***Authors' Computation, 2024.***

Estimates of Autoregressive Distributive Lag (ARDL) Model

The results of long run and short run Autoregressive Distributive Lag (ARDL) Model estimation are presented in Table 4.5 below. Both the long-term and short-term results of the ARDL model indicate that inflation has a negative outcome on Nigeria's non-oil sector GDP. In the long-term, the outcome is negative (-0.004208) and substantial (0.0160 < 0.05), as shown in Table 4.5. Similarly, in the short-term, the outcome is negative (-0.000942) and substantial (0.0132 < 0.05), as shown in Table 5. This means that in the long and near term, for every one percent rise in the inflation rate, the non-oil sector's GDP is undermined marginally, and vice versa. Additionally, rate of interest had short-term negative implication on Nigeria's non-oil sector GDP at -0.000534 and a long-term negative effect of -0.000327, both of which are not statistically substantial (0.9713 and 0.7584 > 0.05). So, in the long term, a unit rise in interest rates led to non-oil sector GDP decline, as the short run portrayed similar outcome. In addition, the long-term outcome of the exchange rate on Nigeria's non-oil sector GDP is negative (-0.003123) and statistically substantial (0.0000 < 0.05). In the short-term, the outcome is negative (-0.000418) and statistically substantial (0.0065 < 0.05). The long-term and short-term implications are that the non-oil sector's GDP falls for every Naira appreciation in the Naira exchange rate to the US Dollar, and the reverse is also true. More so, the long-term outcome of crude oil price on Nigeria's non-oil sector GDP is positive (0.521188) and statistically substantial (0.0000 < 0.05). with similar outcome, the 'short-term outcome of crude oil price' on this sector's GDP is positive (0.001321) as well and statistically substantial (0.0020 < 0.05). This means that in the long and near terms, for every one Dollar rise in the price of crude oil per barrel, the non-oil sector's GDP will go up, and the reverse is also true.

The error term is negative and statistically substantial (significant), as attested by the findings of the error correction model (Table 4.5). In particular, the fact that the error term's coefficient of -0.214504 indicates that there has been noticeable speed of adjustment towards long-run equilibrium (i.e., that changes in non-oil sector GDP corrects around 21% of the disequilibrium each year). That means the long-run equilibrium may simply recover from shocks and go back to its steady state right policy steps are taken. Furthermore, the error term's small coefficient value suggests that restoring the steady-state relation after a system distortion would require long period policy effect.

Table 4.5: ARDL Long-Run and Short-Run Estimation Results

Dependent Variable = *InNGDP*

ARDL Long-Run Results				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.***
IFR	-0.004208	0.001629	-2.583446	0.0160
INT	-0.000327	0.009007	-0.036298	0.9713
EXR	-0.003123	0.000458	-6.822451	0.0000
InCOP	0.521188	0.067299	7.744341	0.0000
C	8.031149	0.288063	27.87980	0.0000
ARDL Short-Run Results				
DIn(NGDP(-1))	-0.073795	0.130414	-0.565852	0.5819
D(IFR)	-0.000942	0.000324	-2.904407	0.0132
D(IFR(-1))	0.000630	0.000320	1.968156	0.0726
D(INT)	-0.000534	0.001696	-0.314647	0.7584
D(EXR)	-0.000418	0.000127	-3.285915	0.0065
D(EXR(-1))	0.000729	0.000298	2.444499	0.0309
DIn(OIP)	0.001321	0.000336	3.933117	0.0020
DIn(OIP(-1))	-0.105798	0.036029	-2.936498	0.0125
*CointEq(-1)**	-0.214504	0.049953	-4.294091	0.0010
Adjusted R^2	0.764978			
Durbin-Watson stat	2.075117			

Source: ***Authors' Computation, 2024.***

As attested by Table 4.5, which displays the ARDL's short-run model's estimates, the outcome is well-fitting with an Adjusted R-squared value of 0.764978. This means that the model adequately explains variations in non-oil sector GDP, with the explanatory variable quantities such as 'inflation rate, interest rate, exchange rate, and crude oil price' as adopted accounting for around seventy-six percent and other variables exogenous of the model accounting for the remaining twenty-four percent.

Post-Estimation Tests

The results of the post-estimation tests are presented in Table 4.6. As scheduled, the outcome of the Jarque Bera (Normality) test, which indicates that the model follows a normal distribution. The model is free of serial correlation issues, as attested by the Breusch-Godfrey Serial Correlation LM test. Furthermore, the outcome of the Breusch-Pagan-Godfrey heteroskedasticity test suggests that pertinent factors were not absent. Last but not least, the model is defined appropriately as palpable by the Ramsey RESET test. This proves the model's functional form is accurate. Therefore, the estimated results are stable and suitable for policy application.

Table 4.6: Post-Estimation Test Results

Test	Test Type	X^2 Value	X^2 Prob	Decision
Normality Test	Jarque-Bera Test	1.442507	0.4861	Do not Reject H_0
Serial Correlation Test	Breusch-Godfrey LM Test	0.765066	0.4907	Do not Reject H_0
Heteroscedasticity Test	Breusch-Pagan-Godfrey	1.454026	0.2542	Do not Reject H_0
Functional Form Test	Ramsey RESET	14.23760	0.0031	Do not Reject H_0

Source: ***Authors' Computation, 2024.***

Discussion of Findings

The outcome of economic uncertainty on Nigeria's non-oil economy is the focus of this research. It looked at yearly data series from '1985 to 2023', a total of thirty-nine (39) years. This research found that the inflation rate and non-oil sector GDP in Nigeria are substantially and negatively related. Therefore, throughout the study period, inflation rate had a negative and substantial influence on the performance of Nigeria's non-oil economy. This empirical outcome agrees with those of Yalçinkaya and Çelik (2021), who discovered that the global economy is negatively and substantially correlated with inflation rate, which is a measure of economic uncertainty. While GDP generated inflation, it was not the other way around, as attested by Bakare, Kareem, and Oyelekan (2015). This means that inflation slows down the growth of the economy. Additionally, the research found that interest rates and non-oil sector GDP in Nigeria had a negative but substantial association. Furthermore, this proves that interest rate has a negative but substantially influenced Nigeria's 'non-oil' sector's performance based on the considered sample. These findings are associated with those of Adekunle, Adodo, and Akindutire (2018), who found that interest rates negatively impacted the growth of the economy in the short and long terms. Also, the study's findings indicate that the Naira rate of exchange to the Dollar and non-oil sector GDP in Nigeria are substantially and negatively associated. This further proves that, during the study period, the exchange rate had a substantially negative consequence on the performance of Nigeria's non-oil industry. This finding is in line with that of Ososuakpor (2021), who also discovered that uncertainty of the exchange rate substantially affected non-oil sector's investment choices made by corporations. Finally, the study's results demonstrated that crude oil price positively and substantially affected Nigeria's non-oil sector GDP in the short and long term, when considering the outcome of crude oil price on this sector. In same vein, Ogege and Boloupremo (2020) found that the price of crude oil had favourable but negligible effect on life expectancy, a measure of the Nigerian economy, but a large outcome on consumption per capital.

CONCLUDING REMARK AND RECOMMENDATIONS

Concluding Remark

Taking 1985–2023, this research empirically looked at how selected economic uncertainty indicators affected Nigeria's non-oil industry's performance. While interest rates demonstrated inverse but only marginal influence on Nigeria's non-oil economy over the sampled period, the research found that inflation, currency rates, and crude oil prices more relatively influenced the regressand. Founded on these outcomes, it is evidential to conclude that economic uncertainties significantly undermine projected economic performance, particularly the Nigeria's non-oil sector's domestic performance.

Recommendations

The subsequent recommendations are predicated upon the results:

i. Considering 'global financial crisis', the Nigerian government should strive to lower inflation so as to boost production level in the non-oil related sector, as inflation rate declines as non-oil sector GDP rises.
ii. In order to achieve sustainable growth and boost the non-oil sector's performance, the government should address the negative outcome of interest rates on non-oil sector GDP and develop and implement financial policies that encourage market friendly interest rate to drive non-oil investment.
iii. Achieving a stable and sustainable exchange rate policy is crucial, as it will lead to improved terms of trade, more economic openness, and a decrease in the negative outcome of the exchange rate on non-oil sector GDP.
iv. Since the price of crude oil has a positive and substantial outcome on the GDP of the non-oil sector, the government should use efficient revenue management to shield the non-oil related part of the economy's sectors from oil price unpredictability.

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