Economic growth in Nigeria: Effect of taxation and unemployment

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Abstract

This study seeks to examine the effect of taxation and unemployment on economic growth in Nigeria over the period 1994 to 2022 using time series data. The data for the variables used in the study were derived from secondary sources and the Autoregressive Distributed Lag model (ARDL) technique was used to examine the relationship among the variables. The empirical results from the study showed that customs and excise duty (LOGCED), petroleum profit tax (LOGPPT), companies' income tax (LOGCIT) have a positive significant impact on economic growth in Nigeria while value-added tax (LOGVAT), and unemployment rate (LOGUNP) both have a negative and insignificant relationship with economic growth in Nigeria (LOGRGDP). Drawing from the findings of this study, the Nigeria Government should encourage the petroleum sector to grow so that more revenue should accrue in support of other sectors of the economy like mining, agriculture, and many others, to create employment opportunities, enhance the level of income of the citizens to raise the consumption level of the people to accelerate value-added tax revenue which will in turn lead to economic growth.

Keywords: Autoregressive distributed lag model; real gross domestic product; tax; unemployment.

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1. Introduction

In most developing economies, while the pursuit of policies to foster economic growth on a sustainable basis has always been high on the agenda of country authorities, also important has been the need to expand gainful employment opportunities as well as design and implement a tax structure that gives attention to individuals' utility and minimizing the distortions caused by taxation towards optimizing the tax benefits. Taxation can be defined as the system of imposing a compulsory levy on all income, goods, services, and properties of individuals, partnerships, trustees, executorships, and companies by the government (Samuel and Simon, 2011; Yunusa, 2003). Specifically, taxes are normally used for the provision of public goods. Public goods include the maintenance of law and order, defense against external aggression, and regulation of trade and business to ensure social and economic justice. Appah (2004) defines tax as a compulsory levy imposed on a subject or his property by the government to provide security, and social amenities and create conditions for the economic well-being of the society.

However, the national unemployment rate is defined as the percentage of unemployed workers in the total labor force. It is widely recognized as a key indicator of the performance of a country's labor market (Picardo, 2020). As a closely watched economic indicator, the unemployment rate attracts a lot of media attention, especially during recessions and challenging economic times. This is because the unemployment rate doesn't just impact those individuals who are jobless–the level and persistence of the factors of unemployment have wide-ranging impacts across the broader economy.

Given a country's institutional and regulatory environment, observed unemployment at any given time is primarily determined by two economic factors: the overall level of economic activities (the cyclical or macroeconomic component) and the interplay between the demand for and supply of labor, which are influenced by policies directly or indirectly affecting the functioning of the labor market (the structural or microeconomic component). Tax policy, as one among many policy instruments available to policymakers, has a macroeconomic dimension (Deyun & Yiqing 2023; Kim et al., 2022). There are various ways in which tax instruments can impinge on unemployment at the structural level (Chatri et al., 2021). For instance, from those directly aimed at the labor market (e.g., payroll taxes) to those whose applicability extends to other markets (e.g., taxes on capital) and the economy as a whole (e.g., taxes on income and consumption) (Neog & Gaur, 2020). The aim of this paper therefore is to examine how taxation and unemployment issues affect the economy of a country. The focus is on developing countries because of their certain unique characteristics which raise some noteworthy issues of taxation and unemployment in these economies.

Some empirical studies dealing with tax and economic growth in Nigeria were reviewed which provided a lot of information to the present study: Eyisi et al., (2015); Akintoye and Tashie (2013); Adesina and Famous (2013); Igweonyia and Obiageli (2011); Afolayan and Okoli (2015); Adegbie and Fakile (2011); Worlu and Nkoro (2012); Abdul-Rahamoh et al., (2013); Animasaun (2016); Owolabi and Okwu (2011); Soetan (2017); Usman et al., (2015); Manukaji, (2018), Olatunji and Adegbite, (2014), and Abdullahi (2021). However, none of these tax-economic growth studies were specifically carried out recently to reflect the effect of the current unemployment situation in Nigeria.

1.1. Conceptual background

Taxation in the Nigerian economy is a significant system that helps in the generation and redistribution of revenue to provide public services and improve the economy. Taxes are established by law in Nigeria. By implication, such tax must have been passed into law through the enactment of relevant statutes (Act, By-law, decree among others). The tax law establishes the administrative body and specifies its tax jurisdiction. Tax laws impose tax at a predetermined rate on specified income, profit, gain, and value of transactions of taxable persons. These laws are amended from time to time given meet the present economic situation, complexity of financial transactions, welfare, and social needs (PML, 2020).

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The tax structure in Nigeria is tailored towards the Nigerian governance hierarchy (Federal, State, and Local Government). Nigeria operates a decentralized tax system where each level of government is independently responsible for the administration of taxes within its jurisdiction. Nigeria generates revenue to fund government expenditure through a pool of taxes from each tier of government. A body is established for taxes due to each tier of government. Federal Inland Revenue Service (FIRS) is the body that is responsible for the administration of taxes that are due to the federal government. The various state boards of internal revenue administer taxes that are due to state governments while the local government revenue committees administer taxes that are due to local governments. However, the joint tax board advises, harmonizes double taxation, and proposes amendments.

The major taxes administered by the Federal Inland Revenue Service are Companies Income Tax, Education Tax, Stamp Duties, Custom Duties, Excise Duties, Withholding Tax, and Value Added Tax. However, the State Board of Internal Revenue majorly administers Personal Income Tax and Withholding Tax, while the Local Government majorly administers levies (PML, 2020).

However, unemployment has a doomsday scenario in Nigeria, it developed a decade after Nigeria had her independence. Akintoye (2008) in Bassey and Atan (2012) opined that the rate of unemployment rose from 4.3% to 6.4% and further rose to 7.1% in 1987. Nigeria's unemployment rate increased to 23.9 percent in 2011 compared with 21.1 percent in 2010 and 19.7 percent in 2009, as revealed by the National Bureau of Statistics (NBS) (Akeju and Olanipekun, 2015). The "Nigerian Unemployment Report 2011" prepared by the NBS shows that the rate is higher in rural areas (25.6 percent) than in urban areas (17.1 percent) (Akeju and Olanipekun, 2015). The rise in the unemployment rate was largely attributed to the increased number of school graduates with no matching job opportunities and a freeze on employment in many public and private sector institutions.

KPMG International Limited has stated that the Nigerian unemployment rate had increased to 37.7 percent in 2022 and will further rise to 40.6 percent, due to the continuing inflow of job seekers into the job market. The multinational consulting firm, in a newly released report tagged 'KPMG Global Economy Outlook report, H1 2023,' said unemployment will continue to be a challenge due to the slower-than-required economic growth and the inability of the economy to absorb the 4-5 million new entrants into the Nigerian job market every year (Egole, 2023). The report also said that in 2024, the unemployment rate will grow to 43 percent while inflation will accelerate to 20.3 percent in 2023 and 20.0 percent in 2024 (Egole, 2023).

1.2. Purpose of study

Consequently, this study was designed to incorporate this issue which seemed to have been neglected by previous research studies. The rest of the study is hereby structured as follows: section two provides an overview of the unemployment situation and the system in Nigeria.

2. METHOD AND MATERIALS

Four major tax incomes were selected for this study and they include Value-added tax (VAT) (₦'m), petroleum profit tax (PPT) (₦'m), company income tax (CIT) (₦'m), and customs and excise duty (CED) (₦'m), while Real Gross Domestic Product(₦'b) (RGDP) was used as proxy for economic growth, and UNP stands for unemployment rate (%). A few control variables were introduced such as real exchange rate (REXR) (₦), and inflation rate (INFR) (%).

2.1. Data collection tool

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Data used in the study were collected from various secondary sources including the Centre Bank of Nigeria Statistical Bulletin (various issues); the National Bureau of Statistics (various issues); the Federal Inland Revenue Service, Nigeria; and Macrotrends.net.

2.2. Analysis

Autoregressive Distributed Lag model (ADRL) proposed by Pesaran et al., (2001) was adopted to analyse the data collected for the study. This method presents some significant advantages over the two alternatives commonly used in empirical literature: the single-equation procedure developed by Engle and Granger (1991) and the maximum likelihood method postulated by Johansen, 1995 and Juselius, 1995 which is based on a system of equations that require sample period to be very long and all variables to be integrated of order 1 or I (1).

First, the ARDL bounds testing method consents to the study of long-run relationships between variables, irrespective of whether they are stationary at levels (I (0)), first difference (I (1)), or fractionally integrated. This helps to circumvent some of the common problems encountered in time series empirical research, such as the absence of unit root test power and confusion about the stationarity properties of the study variables. Pesaran et al., (2001), further maintained that the dependent variable should be stationary at the first difference (I (1)) to ensure the significance of the co-integrating relationship whereas the independent variables can either be stationary at the first difference (I (1)) or levels (I (0)).

Second, the ARDL method allows for the simultaneous estimation of the short-run and long-run impact of public debt on economic growth, removing the problems associated with omitted variables and the occurrence of autocorrelation; as public debt has an impact on the relationship between tax and economy of a country (Adedeji et al., 2023). Third, although the results from the estimation process derived from the Engle & Granger (1991); Johansen (1995); and Juselius (1995) methods are not efficient and consistent for studies with small sample sizes, Pesaran and Shin (1999) specified that the short- and long-run parameters calculated using the ARDL technique are reliable and efficient for small sample analysis that can be compared to what we have in this study.

Furthermore, the ARDL model can accommodate a greater number of variables in comparison to vector autoregressive (VAR) models and is more flexible concerning lag structure since it can accommodate different optimal lag structures for different variables in the model, which is not applicable in the other co-integration methods.

The model used for this study is as follows:

Definitional form as:
RGDP = f (RGDP, VAT, CED, PPT, CIT, UNP, REXR, INF) ………………… (1)
Transforming the model into logarithm and stochastic form gives:

$$LNRGDP_t = \Psi_0 + \Psi_1 LNVAT_t + \Psi_2 LNCED_t + \Psi_3 LNPPT_t + \Psi_4 LNCIT_t + \Psi_5 LNUNP_t + \Psi_6 LNREXR_t + \Psi_7 LNINFR_t + \text{Ҝ}_t$$
……………………(2)

Where, RGDP = real gross domestic product (a proxy for economic growth); VAT = value-added tax; CED = customs and excise duty; PPT= petroleum profit tax; CIT = company income tax; UNP= unemployment rate; REXR = real exchange rate; INFR = inflation rate; Ψ_0 = constant intercept; Ψ_1 - Ψ_7 = slope of coefficients of the explanatory variables captured in the model, LN is the natural log, is period, and Ҝ = stochastic disturbance term.

3. RESULT
3.1. Pre-estimation analysis

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To get firsthand information on the behavior of the variables in the empirical model before proceeding to the regression analysis, descriptive statistics and correlation matrix were conducted. Furthermore, graphs were used to visualize the plotted data sets.

3.2. Descriptive statistics

The statistical measures used in the descriptive statistics include the measures of central tendency, measures of spread, measures of skewness, measures of kurtosis, and the Jarque-Bera test. Table 1 summarizes the results of descriptive statistics among the concern variables in the study. There are 29 observations. The measure of central tendency shows that RGDP, VAT, CED, PPT, CIT, REXR, INF, and UNP have mean values of 46766.35, 377325.5, 196838.7, 1574309., 586863.8, 122.3631, 16.37486, and 5.150345 correspondingly. The mean value ranged from as high as 1574309 to as low as 5.150345. UNP had the lowest mean value with its maximum and minimum at 10.60000 and 3.700000, respectively. The measures of variability as shown by the standard deviation reveal 20127.22, 293137.7, 107649.0, 1243178., 569580.2, 75.79758, 14.48477, and 2.245736 for RGDP, VAT, CED, PPT, CIT, REXR, INF, and UNP respectively. These high and low standard deviation indicates that data points are respectively above or below the mean.
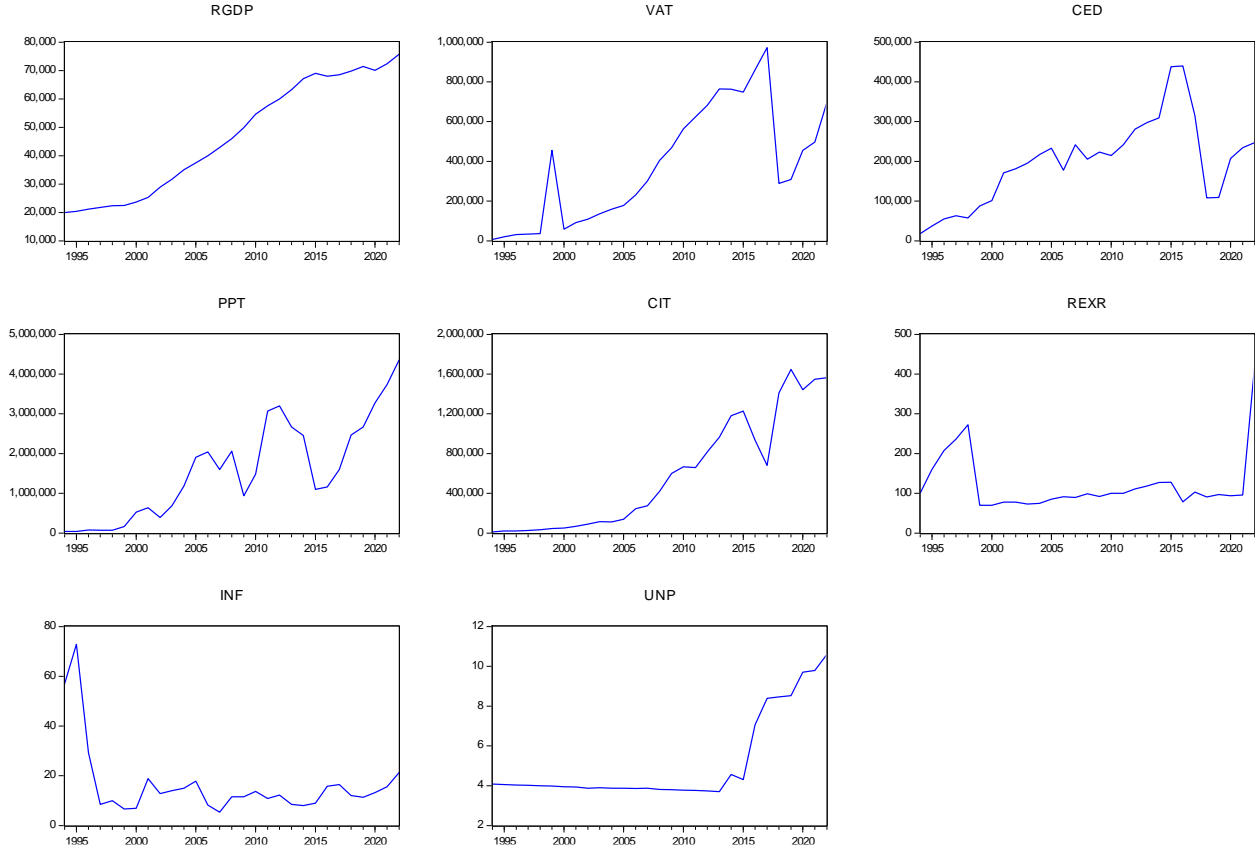
Table 1
Descriptive Statistics

	RGDP	VAT	CED	PPT	CIT	REXR	INF	UNP
Mean	46766.35	377325.5	196838.7	1574309.	586863.8	122.3631	16.37486	5.150345
Median	46012.52	308480.0	207452.0	1480360.	420600.0	97.23000	12.21700	3.990000
Maximum	75768.95	972300.0	439700.0	4353793.	1647412.	423.7200	72.83600	10.60000
Minimum	19979.12	7261.000	18095.00	42803.00	12275.00	69.87000	5.382000	3.700000
Std. Dev.	20127.22	293137.7	107649.0	1243178.	569580.2	75.79758	14.48477	2.245736
Skewness	-0.019485	0.352991	0.357180	0.441911	0.576588	2.656565	2.904560	1.384219
Kurtosis	1.407760	1.872144	2.897027	2.185396	1.871097	10.10903	10.90695	3.204688
Jarque-Bera	3.065236	2.139318	0.629438	1.745704	3.146788	95.17767	116.3211	9.311595
Probability	0.215969	0.343126	0.729994	0.417758	0.207340	0.000000	0.000000	0.009506
Sum	1356224.	10942440	5708323.	45654962	17019050	3548.530	474.8710	149.3600
Sum Sq. Dev.	1.13E+10	2.41E+12	3.24E+11	4.33E+13	9.08E+12	160867.6	5874.641	141.2133
Observations	29	29	29	29	29	29	29	29

The result in Table 1 shows that most of the distributions are positively skewed, indicating a greater number of smaller values in the distribution. However, RGDP showed a negatively skewed distribution, indicating a greater number of larger values. Furthermore, the positive values for the kurtosis of the data set indicate distributions more peaked than normal. Nevertheless, the Jarque-Bera test statistic is always positive, and since it is not close to zero, it shows that the datasets do not have a normal distribution. Figure 1 shows the line graphs of the historical performance of the variables used in this study. RGDP maintained a slow and steady upward trend while VAT, CED, PPT, CIT, and REXR depicted fluctuating upward trends. VAT variable shows sudden drop thereafter steady irregular linear movement. REXR depicts a relatively stable low-pace movement over a long period and then a sudden steady rising trend.

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The graphs show that there is so much evidence to suspect the presence of outliers in some of the variables used in the study.

Figure 1
Line graphs of the historical performance of the variables used in this study

3.3. Correlation analysis

In Table 2, each variable correlates perfectly with itself hence, the correlation coefficient of 1.000. Furthermore, RGDP showed a positive correlation with most of the explanatory variables in the model (except INF). However, RGDP vs VAT, RGDP vs CED, RGDP vs PPT, and RGDP vs UNP showed a highly positive relationship between the pairs of variables while RGDP vs REXR showed weak/zero coefficients (0.031) implying no correlation exists, i.e., each variable does not affect the other. Nevertheless, a negative linear relationship exists between RGDP and INF (-0.336).

Table 2
Correlation Matrix

	RGDP	VAT	CED	PPT	CIT	REXR	INF	UNP
RGDP	1							
VAT	0.818	1						
CED	0.688	0.819	1					
PPT	0.827	0.584	0.449	1				
CIT	0.942	0.655	0.483	0.805	1			
REXR	0.031	-0.003	-0.160	0.136	0.131	1		

INF	-0.336	-0.341	-0.411	-0.299	-0.249	0.150	1	
UNP	0.677	0.365	0.163	0.609	0.766	0.266	-0.023	1

3.4. Unit root test

To ascertain that the study is free from the problem of spurious regression, the study examines the time series properties of the variables. In economic literature, most time series variables are non-stationary and including non-stationary variables in the model can lead to spurious regression coefficient estimates. This is otherwise referred to as the unit root test and the test was carried out using the Augmented Dickey-Fuller (ADF) unit root test.

Table 3
ADF Unit Root Test Result

Variable	ADF test				Order of integration
	Levels		1st difference		
	I	T & I	I	T & I	
RGDP	-0.315190	-3.849508**	-2.724697***	-2.669488	I(0)
VAT	-1.774586	-2.730958	-6.257463*	-6.133273*	I(1)
UNP	1.457479	-0.378419	-4.186673*	-5.117035*	I(1)
REXR	-1.651735	-1.266516	-3.100097**	-3.116581	I(1)
PPT	-0.498403	-2.945859	-4.313353*	-4.294064**	I(1)
INF	-3.443987**	-2.930657	-5.183919*	-6.081700*	I(0)
CIT	-2.111387	-1.244576	-5.314808 *	-5.264917*	I(1)
CED	-2.478130	-2.970253	-4.204777*	-4.136217**	I(1)

Note: I= Intercept, T & I = trend and Intercept. ADF test was performed using the Schwarz information criterion and the automatic lag selection set as 6 lags.
Note: *, **, and *** imply statistical significance at 1%, 5%, and 10% levels respectively.

The Augmented Dickey-Fuller (ADF) unit root test result presented in Table 3 indicates that all the variables were stationary at first difference except RGDP (real GDP) and INF (inflation rate) which are stationary at level. Since there are mixtures of I (0) and I (1) variables, Johansen's cointegration methodology cannot be utilized. The method of the Autoregressive Distributed Lag model (ADRL) was rather adopted and a bound test was used to capture the presence of cointegration.

3.5. Determination of lags

Before estimating the ARDL model, it is necessary to select the optimal lag length because; the subsequent tests and the dynamic information needed will be based on the model selected for estimation. Estimation of too many parameters will lead to useful information losses and also, selection of too much lag will reduce the available data for estimation, and less degree of freedom will be available thereby making the result unstable. The Akaike information criterion was used to select the optimal lag for the estimated ARDL model which was based on six different selection criteria: Likelihood Ratio (LR), Final Prediction Error Criterion (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC) and Hannan-Quinn information criterion (HQ). From Table 4, the five criteria suggest an optimal lag length of two, and as a result, the study employed this lag length which gives the specification of the right order for the ARDL model.

Table 4
VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ

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0	-76.38618	NA	7.16e-08	6.250828	6.634780	6.364997
1	149.5868	301.2974	5.45e-13	-5.747173	-2.291608	-4.719652
2	285.1128	100.3896*	1.31e-14*	-11.04539*	-4.518214*	-9.104520*

Source: Author's computation using Eviews 10
* Indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

3.6. ARDL bounds test

The ARDL bounds test was conducted with maximum lag of 2, constant-specification, model selection method was Akaike info criterion (AIC), number of models evaluated was 4374, and the selected model is ARDL (1, 2, 2, 1, 1, 1, 2, 2). Figure 2 shows the top 20 models using the Akaike info criterion.

Figure 2
Akaike Information Criterion (top 20 models)
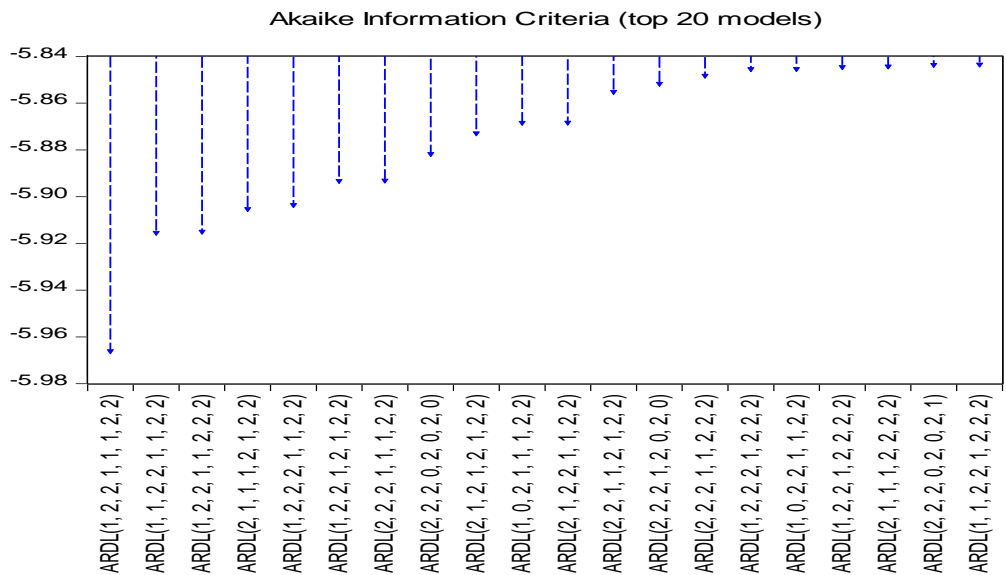
In applying the ARDL bound test, the null hypothesis of the absence of a long-run relationship is accepted provided the calculated F-statistic is less than the critical value of the lower bound 1(0), while the null hypothesis is rejected provided the calculated F-statistic is more than the critical value of the upper bound 1(1). In a situation when the calculated F-statistic falls between the critical value of the lower bound 1(0) and the upper bound 1(1), the result becomes inconclusive. From Table 5, the bounds test result shows that the computed F-statistic of 13.18183 is greater than the lower and upper bounds critical values of 2.96 and 4.26, respectively, at the 1% significance level. Therefore, the null hypothesis of no cointegration is discarded, meaning that there is evidence of a long-run relationship among RGDP, VAT, CED, PPT, CIT, REXR, INF, and UNP.

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Null Hypothesis: No levels of relationship

Table 5
F-*Bounds Test*

Test Statistic	Value	Signif.	I (0)	I (1)
F-statistic	13.18183	10%	2.03	3.13
K	7	5%	2.32	3.5
		2.5%	2.6	3.84
		1%	2.96	4.26

3.7. ARDL Estimates (Regression Results)

The ARDL regression results are depicted in Table 6. The result shows that in the long, customs and excise duty (LOGCED), petroleum profit tax (LOGPPT), companies' income tax (LOGCIT), real exchange rate (LOGREXR), and inflation rate (LOGINF) have a positive significant impact on economic growth in Nigeria while value-added tax (LOGVAT) and unemployment rate (LOGUNP) both have a negative and insignificant relationship with economic growth in Nigeria (LOGRGDP). Specifically, a unit change in customs and excise duty (LOGCED) will bring about a 0.054714 change in the real gross domestic product (LOGRGDP) (a proxy for economic growth). This result is statistically significant at a 10% significance level and conforms with apriori expectation.

In addition, the result revealed that petroleum profit tax (LOGPPT) has positively influenced real gross domestic product in the long run. Specifically, a percentage increase in petroleum profit tax will ceteris paribus generate an increase of approximately 0.070770% in long-run economic growth. Oil is the dominant source of government revenue, accounting for about 90 percent of total exports, and this approximates 80% of total government revenue (Ogbonna and Ebimobowei, 2012).

Similarly, companies' income tax (LOGCIT) has a positive coefficient. Accordingly, a unit increase in LOGCIT increases the real gross domestic product (economic growth) by 0.255831. Statistically, this result is significant at a 1% significance level. Moreover, the current value of companies' income tax (D(LOGCIT)) indicated positive effects on real gross domestic product (RGDP) in the short run under the evaluation period. Given the coefficients, a unit change in the current value of the company's income tax (D(LOGCIT)) would lead to 0.039182-unit changes in real gross domestic product (RGDP).

Surprisingly, value-added tax (LOGVAT) has a negative and insignificant coefficient. This result implies that a unit increase in value-added tax decreases real gross domestic product (economic growth) by 0.022983 units. This outcome could be attributed to the fact that VAT cost in Nigeria is considered too low compared to other countries at 5%, thereby limiting its influence on government revenue generation capacity which has a direct impact on economic growth. In addition, some VAT vendors are seemingly not truthful in remitting VAT payable to government coffers. Likewise, the cost of collection and remittances is still expensive; an expense that sometimes outweighs the benefit derived from such operations. All these may have a direct impact on the economic growth of the country. In the short-run, the estimates of the current value of value-added tax (D(LOGVAT)) are statistically significant at 1 percent and display an inverse relationship with real gross domestic product (RGDP) in the short-run under the evaluation period. The negative sign is consistent with the long-run estimate sign but the long-run estimate was statistically insignificant at any of the standard significance levels. Nevertheless, the one-year lag value of value-added tax (D (LOGVAT (-1))) maintained statistical significance at a 5% significance level but displayed a positive

relationship with economic growth (proxy by real gross domestic product (RGDP)) in the short-run. This sign is in line with the prior expectation.

The long-run result shows that customs and excise duty (LOGCED) have a positive significant influence on economic growth as expected. Statistically, it is significant at a 10% significance level. However, the current value of customs and excise duty (D(LOGCED)) and the one-year lag value of customs and excise duty (D (LOGCED (-1))) both exhibited a negative significant influence on economic growth in the short-run. The negative sign is contrary to the positive sign experienced in the long-run estimate.

Nevertheless, a real exchange rate (LOGREXR) and inflation rate (LOGINFR) on the other hand showed positive relationships with real GDP (economic growth) in the long run. This result indicates that a one percent increase in LOGREXR and LOGINFR increases real gross domestic product by 0.115147 and 0.098270 respectively in the long run. The result is in agreement with the findings of Ani and Udeh (2021), which revealed that the exchange rate has a significant positive influence on economic growth in Nigeria. Nevertheless, the result contradicts

Lastly, the coefficient of the unemployment rate (LOGUNP) indicates that in the long run, a one-unit increase in the unemployment rate reduces real gross domestic product (RGDP) by 0.033618. The estimated long-run coefficient of the unemployment rate was rightly signed. In the short-run of this study, the current value of the unemployment rate (D(LOGUNP)), and the one-year lag value of the unemployment rate (D (LOGUNP (-1))) indicated positive effects on the real gross domestic product (RGDP) in the short-run under the evaluation period. Given their coefficients, a unit change in the current value of the unemployment rate (D(LOGUNP)) and one-year lag value of the unemployment rate (D (LOGUNP (-1))) would lead to 0.018938- and 0.158509-unit changes in real gross domestic product (RGDP). However, the signs on the current value of the unemployment rate (D(LOGUNP)), and the one-year lag value of the unemployment rate (D (LOGUNP (-1))) are contrary to apriori expectation, and the influence of the current value of the unemployment rate (D(LOGUNP)) appeared to be statistically insignificant.

The results of the short-run estimates and the error correction mechanism that is used to eliminate the discrepancy that occurs in the short-run toward long-run equilibrium are summarized in Table 8. The estimated coefficient of the error correction term is significant at a 1% significance level with the expected sign. Its magnitude (-0.822282) indicates that if there is any deviation, the long-run equilibrium is adjusted slowly such that about 82% of the disequilibrium may be removed each period (that is each year). The estimated coefficient of multiple determinations (R^2) explains that the independent variables were found to jointly explain 97.17% of the movement in the dependent variable with the R^2-adjusted coefficient of 94.74%. The overall significance of the model is explained by the F-statistic of 40.04434.

Table 6
ARDL Estimates (Long and Short-Run)

	Long- Run ARDL Results			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOGVAT	-0.022983	0.029164	-0.788069	0.4565
LOGCED	0.054714	0.026832	2.039111	0.0808***
LOGPPT	0.070770	0.018137	3.901951	0.0059*
LOGCIT	0.255831	0.020850	12.27010	0.0000*
LOGREXR	0.115147	0.041850	2.751438	0.0284**
LOGINF	0.098270	0.024541	4.004322	0.0052**
LOGUNP	-0.033618	0.026769	-1.255818	0.2495
	Short- Run ARDL Results			
Variable	Coefficient	Std. Error	t-Statistic	Prob.

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D(LOGVAT)	-0.017790	0.003555	-5.004391	0.0016*
D (LOGVAT (-1))	0.009176	0.003696	2.482645	0.0420**
D(LOGCED)	-0.041460	0.010241	-4.048595	0.0049*
D (LOGCED (-1))	-0.032731	0.006942	-4.714961	0.0022*
D(LOGPPT)	0.026695	0.004986	5.353993	0.0011*
D(LOGCIT)	0.039182	0.016285	2.405937	0.0471**
D(LOGREXR)	-0.002188	0.004959	-0.441094	0.6724
D(LOGINF)	0.041662	0.004559	9.139275	0.0000*
D (LOGINF (-1))	-0.021674	0.004850	-4.468578	0.0029*
D(LOGUNP)	0.018938	0.029737	0.636860	0.5445
D (LOGUNP (-1))	0.158509	0.032051	4.945562	0.0017*
ECM (-1)	-0.822282	0.056620	-14.52271	0.0000*
R-squared	0.971690			
Adjusted R-squared	0.947425			
F-statistic	40.04434			
Prob(F-statistic)	0.000000			
Durbin-Watson stat	2.525872			

Note: *, **, and *** imply statistical significance at 1%, 5%, and 10% levels respectively.

3.8. Post-estimation diagnosis

Some diagnostic tests were conducted to assess the validity of the model used in the study. Firstly, Correlograms Q-Statistics was deployed to conduct the residual test for serial correlation in the model. From the Correlogram in Table 7, the Q-statistics are significant at some lags and insignificant at some lag length as depicted by their probability value, indicating inconclusiveness concerning the presence of serial correlation in the residuals of the model for the given sample period. However, an additional test was conducted deploying the Breusch–Godfrey test for autocorrelation in the errors in the regression model. The result in Table 8 shows the computed F-statistic of 2.771416 and an insignificant probability value of 0.1549, meaning no serial correlation but the Obs*R-squared (14.19509) has Prob. Chi-Square (2) (0.0008) which is significant, showing the presence of serial correlation, thus the hypothesis of no serial correlation is rejected.

Table 8 further shows that the null hypothesis of no heteroskedasticity exists cannot be rejected. This is because of the high and insignificant probability value of 0.2658 for the computed F-statistic (1.616314). Also, Obs*R-squared (21.98806) with Prob. Chi-Square (19)   (0.2849) was insignificant. Figure 3 presents the residual normality test. The Jacque Bera's statistics value of 0.167422   and probability value of 0.919697, greater than 0.05 levels, the study accepts the null hypothesis, which specified that the residual is normally distributed.

Figures 4 and 5 present the model stability test using the cumulative sum of recursive residuals (CUSUM) and CUSUM of square tests. Both graphs are fitted inside the 5% significance strip, defined by the upper and lower lines. This means that the recursive estimates are statistically significant at p<0.05 levels, which is an indication of stability. That is the short-run and long-run coefficients are stable.

Table 7
Correlograms Q-Statistics

Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob*
.**| . |	.**| . |	1	-0.263	-0.263	2.0845	0.149

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***| . |	***| . |	2	-0.359	-0.460	6.1135	0.047
. |*. |	.*| . |	3	0.203	-0.076	7.4598	0.059
.*| . |	***| . |	4	-0.169	-0.383	8.4360	0.077
. |*. |	. |*. |	5	0.179	0.088	9.5725	0.088
. |*. |	. | . |	6	0.128	0.043	10.180	0.117
***| . |	.*| . |	7	-0.350	-0.159	14.986	0.036
. | . |	.*| . |	8	0.014	-0.200	14.994	0.059
. | . |	.**| . |	9	0.071	-0.273	15.213	0.085
. | . |	. | . |	10	0.071	-0.059	15.446	0.117
. | . |	.**| . |	11	0.012	-0.205	15.453	0.163
.*| . |	.*| . |	12	-0.098	-0.085	15.950	0.194

*Source:* Author's computation using Eviews 10

Table 8

Other diagnostic tests

Breusch-Godfrey Serial	F-statistic	2.771416	Prob. F (2,5)	0.1549
Correlation LM Test	Obs*R-squared	14.19509	Prob. Chi-Square (2)	0.0008
Heteroskedasticity Test:	F-statistic	1.616314	Prob. F (19,7)	0.2658
Breusch-Pagan-Godfrey	Obs*R-squared	21.98806	Prob. Chi-Square (19)	0.2849

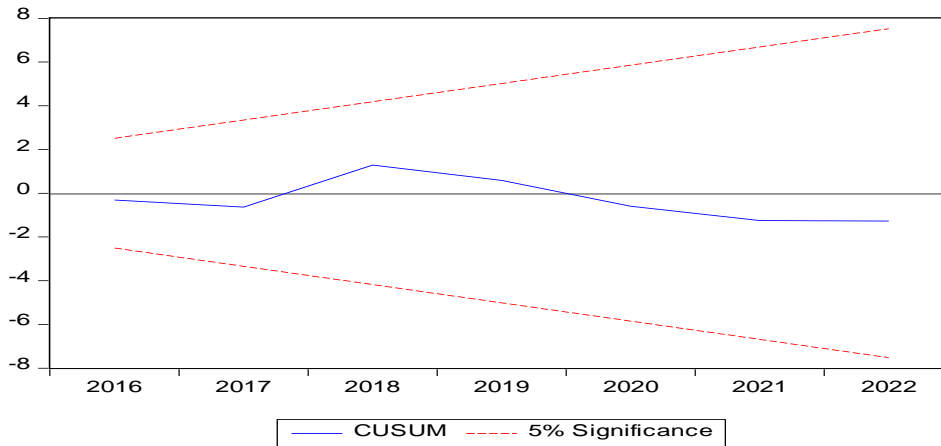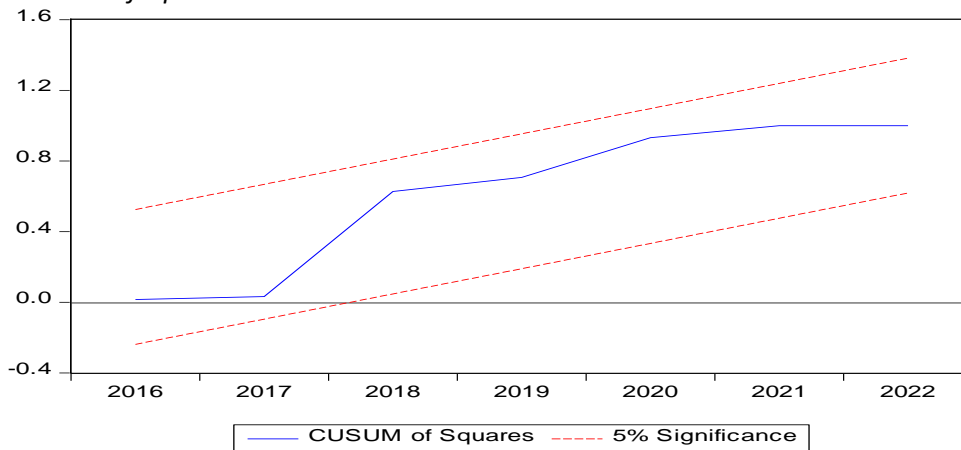*Source:* Author's computation using Eviews 10

Figure 3

Normality test
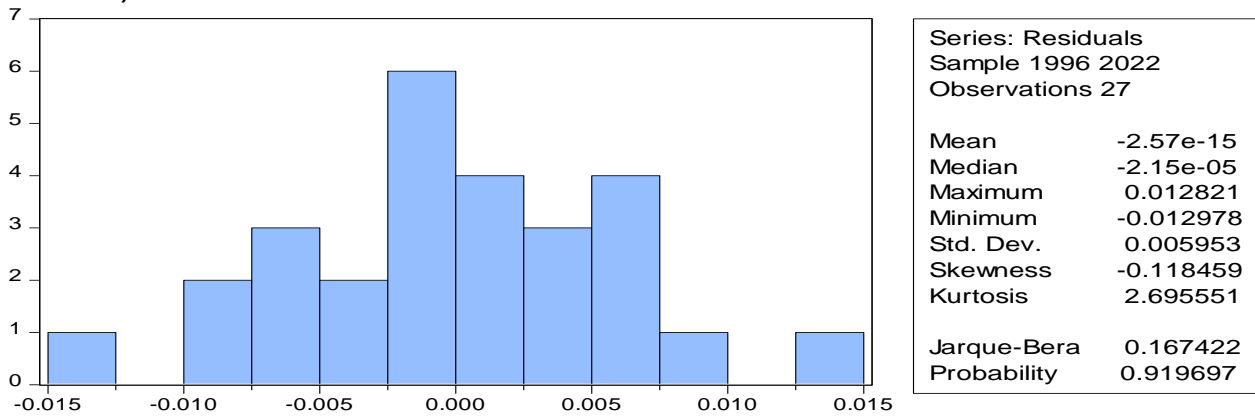
Source: Extracted from Eviews 10

Figure 4
CUSUM Test

Source: Extracted from Eviews 10

Figure 5
CUSUM of squares Test

Source: Extracted from Eviews 10

4. DISCUSSION

The result shows that in the long, customs and excise duty (LOGCED), petroleum profit tax (LOGPPT), companies' income tax (LOGCIT), real exchange rate (LOGREXR), and inflation rate (LOGINF) have a positive significant impact on economic growth in Nigeria while value-added tax (LOGVAT) and unemployment rate (LOGUNP) both have a negative and insignificant relationship with economic growth in Nigeria (LOGRGDP). This result aligns with Inimino et al., (2018), Emmanuel and Charles (2015), and Adegbie and Fakile's (2011) findings that custom and excise duties exhibit a positive relationship with economic growth in Nigeria.

The importance of taxation on petroleum profits cannot be overemphasized as tax revenue derived from taxing petroleum profits contributes largely to the total tax revenue available to the Nigerian government. The result of this study is consistent with the findings of Yahaya and Bakare (2018), Afolabi (2017), Onakoya and Afintinni (2016), Usman et al., (2015), Afuberoh and Okoye (2014), and Jibrin et al., (2012) whose studies revealed that petroleum profit tax (PPT) has a positive significant impact on gross domestic product (GDP) in Nigeria. However, the result of this study contradicts the findings of Inimino et al., (2018) who reported that petroleum profit tax impacted economic growth in Nigeria but not significantly.

The current value of companies' income tax (D(LOGCIT)) indicated positive effects on real gross domestic product (RGDP) in the short run under the evaluation period. Given the coefficients, a unit change in the current value of the company's income tax (D(LOGCIT)) would lead to 0.039182-unit changes in real gross domestic product (RGDP). This result agrees with the findings of Inimino et al., (2018), Yahaya and Bakare (2018), Afolabi (2017), Onakoya and Afintinni (2016), and Emmanuel and Charles (2015) whose studies revealed that companies' income tax has a positive significant impact on gross domestic product (GDP) in Nigeria. Even at that, collection of tax from companies is difficult due to fraudulent declaration of income and making of incorrect returns by companies coupled with collusion of officials of the department.

The result from this study is not in tandem with the findings of Sowole and Adekoyejo (2019), Afolabi (2017), Emmanuel and Charles (2015), and Ihenyen and Mieseigha (2014) whose studies showed that VAT has significantly influenced the economic growth of Nigeria. Adaramola & Dada's (2020) study indicated that the exchange rate significantly negatively impacts economic growth in Nigeria. Also, the result in this study is contrary to Adaramola & Dada (2020), and Idris & Bakar (2017) studies which indicated that the inflation rate significantly negatively impacts economic growth in Nigeria. In the short-run of this study, contrary negative signs were displayed by the current value of exchange rate D(LOGREXR) and the one-year lag value of inflation rate (D (LOGINF (-1))). These variables maintained statistical significance just as in the long run. Nevertheless, the current value of the inflation rate (D(LOGINF)) showed a positive relationship with economic growth. The magnitude of the coefficient of inflation rate (0.041662) in the short run is close to the magnitude observed in the long run (0.098270).

However, Nigeria's economy operates a tightly controlled official exchange rate, but it is in the parallel market that the exchange rate of the local currency is largely determined by the level of demand for the dollar. The International Centre for Investigative Reporting (ICIR) findings have shown that the naira (exchange rate) volatility is the single largest contributor to the surge in inflation, which is ravaging the economy, taking prices of everything spiraling to the top (Edeh, 2022). However, O'Neill (2023) noted that Nigeria's inflation has been higher than the average for African and Sub-Saharan countries for years now, and even exceeded 16 percent in 2017 – and a real, significant decrease is nowhere in sight. The bigger problem is its unsteadiness, however: An inflation rate that is bouncing all over the place, like this one, is usually a sign of a struggling economy, causing prices to fluctuate, and unemployment and poverty to increase (Gnangnon, 2024).

The estimated long-run coefficient of the unemployment rate was rightly signed. One plausible reason for the rising unemployment in Nigeria is that the economy of the country in number has remained unattractive because both local and foreign investors are incapable of putting a price on the level of uncertainty in policy directions. Uncertain policy direction, plus indecisive economic projections forced investors to stay away from making significant investments, the unemployment level continues soaring unabated (Alagbe, 2019). The finding of this study conforms to that of Yusuf and Mohd (2023), and Muhammad et al., (2011), whose study revealed that a high unemployment rate retarded economic growth (gross domestic product) in Nigeria. However, the finding is not in line with the study of

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Onwanchukwu (2015) whose findings revealed that unemployment does not have a significant impact on the economic growth of Nigeria.

5. CONCLUSION

This study investigates the impact of taxation and unemployment on economic growth in Nigeria. The data utilized for this study are secondary and it spans from 1994 to 2022. They were sourced from the Centre Bank of Nigeria Statistical Bulletin (various issues); the National Bureau of Statistics (various issues); the Federal Inland Revenue Service, Nigeria; and Macrotrends.net. The variables include value-added tax; companies income tax; real exchange rate; inflation rate; unemployment rate; petroleum profit tax; customs and excise duty; and real gross domestic product. A bound test was conducted and the model was estimated within the ARDL framework supported by the relevant post-estimation diagnostic tests. The bound test showed that there was a long-run relationship among the study variables. ARDL model estimation revealed that in the long, customs and excise duty (LOGCED), petroleum profit tax (LOGPPT), companies' income tax (LOGCIT), real exchange rate (LOGREXR), and inflation rate (LOGINF) have positive significant impact on economic growth in Nigeria while value-added tax (LOGVAT) and unemployment rate (LOGUNP) both have negative and insignificant relationship with economic growth in Nigeria (LOGRGDP) in the long-run.

In the short run, the estimates of the current value of value-added tax (D(LOGVAT)) are statistically significant and display an inverse relationship with real gross domestic product (RGDP). The current value of customs and excise duty (D(LOGCED)) and the one-year lag value of customs and excise duty (D (LOGCED (-1))) both exhibited a negative significant influence on economic growth. Other contrary negative signs were displayed by the current value of exchange rate D(LOGREXR) and the one-year lag value of inflation rate (D (LOGINF (-1))). Furthermore, **the** current value of petroleum profit tax ((D(LOGPPT))), companies' income tax (D(LOGCIT)), the current value of the unemployment rate (D(LOGUNP)), and one-year lag value of the unemployment rate (D (LOGUNP (-1))**)** indicated positive effects on the real gross domestic product (RGDP) in the short-run.

Conclusively, the empirical results from the study showed that customs and excise duty (LOGCED), petroleum profit tax (LOGPPT), companies' income tax (LOGCIT) have a positive significant impact on economic growth in Nigeria while value-added tax (LOGVAT), and unemployment rate (LOGUNP) both have a negative and insignificant relationship with economic growth in Nigeria (LOGRGDP). Nevertheless, the preoccupation of most countries in the world is to strive to achieve rapid overall development through optimum tax collection and expanded revenue base. To see that the objective is accomplished, many countries in the world selectively introduce new forms of tax to boost their revenue capacity to improve the socio-economic conditions of their citizens (including employment opportunities) and achieve rapid economic growth. Taxation is one of the most important sources of government revenue in Nigeria to meet its statutory obligations of ensuring economic development in the country and its importance cannot be measured. Drawing from the findings of this study, the following recommendations are put forward:

The Nigerian government should encourage the petroleum sector to grow so that more revenue can accrue in support of another sector. This can be done by making more incentives available to investors in the petroleum industry. For instance, oil and gas companies desirous to reduce their tax burden and grow profitability should consider increasing investments in research and development (R&D), to take advantage of the incentives provided in existing fiscal laws.

Also, measures should be taken to ensure that proper assessment is carried out on tax administration in companies to ascertain the actual tax that ought to be payable by companies in the country. More so, the government should try to improve on administration of customs and excise duties by blocking

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loopholes and leakages in the collection and remitting of this tax to the appropriate authorities in the country. Furthermore, the government should through its appropriate authorities monitor the activities of companies properly to achieve optimum collection of taxes payable. In this regard, it should create an effective and reliable database for companies to minimize (if not eliminate) the incidence of tax evasion. In the same manner, government should provide an enabling environment for companies to thrive. Lastly, the government should reduce the unemployment rate by judiciously using the revenue accrued from petroleum profit tax (PPT) to develop other sectors of the economy like mining, agriculture, etc., to create employment opportunities, enhance the level of income of the citizens to raise the consumption level of the people to accelerate value-added tax revenue which will in turn lead to economic growth.

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