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Fadayomi Akinwumi Festus
Department of Statistics,
Federal School of Statistics,
Ibadan, Oyo State, Nigeria

Audu Adejumo Tolulope
Department of Statistics,
Federal School of Statistics,
Ibadan, Oyo State, Nigeria

Akinyeke Francis
Department of Business
Management &
Administration, Department
of Statistics, Federal School of
Statistics, Ibadan, Oyo State,
Nigeria

Awoyemi Samson Oyebo
Department of Training
Technology, Agricultural and
Rural Management Training
Institute (ARMTI), Ilorin,
Kwara State, Nigeria

Corresponding Author:
Fadayomi Akinwumi Festus
Department of statistics,
Federal school of Statistics,
Ibadan, Oyo State, Nigeria

The macroeconomic fluctuations, taxation, and economic performance while controlling for public debt in Nigeria

Fadayomi Akinwumi Festus, Audu Adejumo Tolulope, Akinyeke Francis and Awoyemi Samson Oyebo

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Abstract

The macroeconomic fluctuations like the price of crude oil, inflation, and unemployment have been the main trending issues in Nigeria because they have an impact on everyone's well-being and also have an impact on the country's economic performance. This study's main goal is to use appropriate econometric models to investigate how macroeconomic fluctuations, taxation, and economic performance are related in Nigeria while adjusting for public debt. The results of the OLS regression model show that economic performance is significantly related to taxation and macroeconomic fluctuation while controlling for the public debt incurred in Nigeria and also show that the tax revenue has a positive significant impact on Nigeria's economic performance. The econometrics model such as OLS regression, unit root test, and the Johansen cointegration was applied. The results of the Johansen cointegration show that Nigeria's economic performance has a long-term relationship with taxation and macroeconomic fluctuation while controlling for public debt. The unit root test reveals that all the series are integrated into order 1 except the public debt, which is integrated into order 2. Therefore, the government should develop infrastructure and educate the populace on artificial intelligence, a new technological innovation that can support businesses in times of economic crisis, while also encouraging businesses and individuals to pay taxes by creating an enabling environment for businesses to thrive to increase national revenue and economic performance, which will ultimately effectively control or lower the public debt.

Keywords: Macroeconomic fluctuations, taxation, economic performance, econometric models

1. Introduction

The major macroeconomic indicators such as the crude oil price, inflation and unemployment have been the major trending issues in Nigeria because they affected the well-being of the entire citizen and also contributed to economic performance (proxy by the GDP) of the country's (World Bank, 2022) [18].

Nigeria and the world at large face a global economic crisis due to the effect of the covid-19 pandemic and the gross domestic product of Nigeria contracted leaving the country in recession due to government spending with little or no revenue generated due to lock down of economic activities during this period (Ugwueze, 2022.) [17]. When spending surpasses revenue, governments borrow (Ozgur, 2020) [14]. As a result, public debt is an essential tool for governments to use to finance public spending, especially when it is difficult to increase taxes and reduce spending (Yusuf & Mohd, 2021; Obaretin & Akhor, 2019) [12].

The increase in oil price has brought about a corresponding rise in the inflation rate which in turn caused the rise in the prices of goods and services, brought untold economic hardship in the Nigeria economy as of today and forced my companies including the small and medium enterprises out of business, contributing to a higher level of unemployment and increase in the national public debt (AFDB, 2022) [3]. Therefore, the government part of the decision of the constituted economic committee formed by President Bola Ahmed Tinubu to encourage every registered business to pay the tax that will increase the national revenue and also help in reducing the public debt while creating an enabling environment for all the businesses to thrive and improve infrastructure development with the income generated from the subsidy removal and taxation accordingly which is expected to improve the general wellbeing of the residents and add positively to the nation economic performance (Tinubu, 2023) [8].

Additionally, the tax revenue which is measured as a percentage of the GDP as indicated by the World Bank database publication will be channelled towards providing palatial infrastructures such as affordable electricity, accessible roads, and improved and affordable health care amongst others (Abomaye-Nimenibo *et al.*, 2018) ^[1]. According to Keynesian theory, the tax rate should be at a lower rate that will be convenient for taxpayers while creating an enabling environment for them to succeed and continue to pay effortlessly.

Nigeria's government expenditure is more than revenue and the public debt continues to rise due to low income (Odo, Igberi & Anoke, 2016) ^[13]. Nigeria's current public debt hit N49.85 trillion (\$108.30 billion) at the end of the first quarter (Q1) of 2023 and the reason why is trying everything possible to generate revenue to increase productivity and infrastructure that will contribute positively to the GDP which rose to 477 USD Billion at the end of 2022 (Idowu, 2023) ^[10].

Meanwhile, the ongoing Russia-Ukraine war creates oil supply shocks that affect the global crude oil price and this brings about global macroeconomic issues like inflation and unemployment that mostly affected emerging economies like Nigeria and other developing countries which contribute to hikes in the prices of foods, cost of living and makes life difficult for the average Nigerians (Justin-Damien, Philip, & Collette, 2022) ^[11]. Besides, the fuel subsidy removal by the new administration has contributed to the official exchange rate of about 770 Naira to a dollar and nearly crippled the livelihood of Nigerian citizens as many cannot even afford to fuel their cars and other average Nigerians now struggle to survive amid the economic hardship (Amadi, 2023) ^[4].

Therefore, the focus of this study is to adopt appropriate econometrics models to examine the link between macroeconomic fluctuations, taxation, and economic performance while controlling for public debt in Nigeria. This will contribute immensely to the existing body of knowledge in the field of economics and statistics.

2. Literature review

This section discusses theoretical review which includes the Keynesian and expediency theory as well as the other related literature works on macroeconomic indicators, taxation, public debt and economic growth.

2.1 Theoretical review

The greatest strategies to increase aggregate demand, according to Keynesian theory, are to increase government spending and reduce tax rates. According to Keynesians, this strategy can be used in recessions or other times of low economic activity as a vital tool for laying the groundwork for quick economic growth and achieving full employment.

The standard IS-LM model states that how private spending and money demand vary in response to changes in interest rates determines how fiscal policy will affect real production. The crowding-out effect of monetary policy has an inverse relationship with the sensitivity of capital to interest rates and an inverse relationship with the sensitivity of investment to interest rates. According to theory, the capital mobility assumptions and the exchange rate regime determine how successful fiscal policy is in an open economy. The theory contends that fiscal policy is ineffective when an increase in government expenditure just

causes the exchange rate to appreciate without having any impact on output in an environment with a flexible exchange rate system and perfect capital mobility. On the other hand, it is asserted that monetary policy is successful under a fixed exchange rate system with a weak capital mobility assumption. This hypothesis is pertinent to the investigation of how the Keynesian three-sector model's G-T fiscal balance affects economic growth.

Deficit financing, which can be thought of as a type of activity, is the practice of increasing government spending above sources of revenue to stimulate the economy (CBN, Loop 2020). As a result, "deficit finance" might be taken to mean the kind of financing a business or government utilises to make up for a lack of revenue. A government or business may choose to use deficit finance as an economic booster. The government may need to turn to deficit financing to make up for any budgetary shortfalls when its spending tends to outpace its revenue. Keynes' theory acknowledges the idea of deficit financing as a type of compensating spending meant to alleviate the problem of unemployment.

Furthermore, according to Bhartia (2009) ^[7], the basis for the expediency theory is the notion that taxes and economic activity are interconnected. It is predicated on the idea that society's members should pay for the services the economy provides. This offers a foundation for allocating the tax burden among society's members and supports the imposition of taxes to fund governmental operations. This viewpoint is reinforced by facts since it is worthless to impose a tax that cannot be successfully imposed and collected. According to the expediency theory, tax revenue is positively associated with the GDP-based economic performance indicator.

2.1.1 Hypothesis development

H1: GDP is associated with the macroeconomic fluctuation and tax revenue

H2: Tax revenue have a positive impact on the GDP

2.2 Empirical review

Ademola and Badiru (2016) ^[2] examine how the economy of Nigeria reacts to unemployment and inflation. The model was created utilizing the Ordinary Least Square (OLS) method along with several diagnostic tests. The discovery of two cointegrating equations leads to the conclusion that there is a long-term correlation between GDP, unemployment, and inflation. It demonstrated that inflation and unemployment had a favourable correlation with economic growth.

Asaolu *et al.* (2018) ^[6] examined the connection between tax receipts and economic growth in Nigeria between the years 1994 and 2015 using an ARDL regression along with a descriptive and historical research technique. The analysis revealed a significant positive, significant negative, and hardly significant link between CED and VAT and economic growth. Dladla and Khobai (2018) ^[9] examined the short- and long-term effects of taxation on economic growth in South Africa from 1981 to 2016 using the Autoregressive Distribution Lag (ARDL) research technique. According to the study's findings, taxes have a large and unfavourable long- and short-term influence on economic growth, but trade openness and economic growth have a positive long- and short-term association.

Ajayi and Edewusi (2020) ^[20] investigated how public debt affected economic growth in Nigeria. The study looked at

secondary time series data from 1982 to 2018 that encompassed 37 years. The vector error correction model and the Johansen co-integration test were used to estimate the data. The study's findings demonstrate that domestic debt has a long-term beneficial impact on economic growth whereas overseas debt has a long-term negative impact. The report advised decision-makers to handle domestic debt appropriately and ensure that loan repayments went towards providing the basic commodities and services required for development.

Using the Vector Error Correction Model (VECM), Sri Lanka assessed its public debt, budget deficit, and tax system changes for fiscal consolidation according to Vinayagathan and Ranjith (2021) [15]. It was found that there is a long-term downward trend in the ratio of government debt to GDP, the amount of direct and indirect taxes collected by the government, and the consumer price index. Only income from direct taxes has a significant short-term effect. To investigate the effect of government debt on economic growth in Nigeria, Yusuf and Mohd (2021) [21] used data from 1980 to 2018 using the Autoregressive Distributed Lag technique. The results showed that while foreign debt temporarily increases GDP, over time it slows growth. Domestic debt boosts GDP over time, despite having a short-term negative impact. The impact of the debt overhang was exacerbated by the fact that debt service payments caused the GDP to fall over the long and short terms. The effect of domestic public debt on economic growth is examined in Nigeria between 1981 and 2018 by Victoria *et al.* (2021). The cointegration method and Ordinary Least Square Regression were used in the study to evaluate the statistical link between domestic public debt, the Human Development Index, and private sector investment. The results of the study revealed a link between state government domestic debt holdings and economic expansion. In addition, there is a significant link between debt held by the federal and state governments and private-sector investment.

The link between tax revenue from SMEs and Nigeria's economic growth from 1980 to 2015 was examined by Udofot and Etim (2017) [16]. Multiple Central Bank of Nigeria (CBN) statistical releases as well as annual reports from the Federal Inland Revenue Service (FIRS) served as the study's data sources. On the gathered data, regression and correlation analyses were run. The findings demonstrate a strong and favourable association between the variables, and to boost tax revenue collection, they advise reforming the entire tax administration system.

3. Data and Methodology

3.1 Data

Secondary data was used in this study which was collected from the World Bank development indicator as a reliable secondary source of data collection via the link data.worldbank.org from a period of 1990 to 2022 using a purposive sampling technique based on the data availability within the selected period.

3.2 Methodology

The quantitative research design was adopted for this study to model the link between macroeconomic fluctuations, taxation, and economic performance while controlling for public debt in Nigeria. The quantitative method applied for the analysis in this study includes descriptive statistics (such as mean and standard deviation), and econometric models

such as OLS regression, Unit root test and Johansen cointegration test.

Table 1: Variable measurement

Variables	Unit of Measurement
GDP	Billion USD
Tax revenue	% of GDP
Inflation	Percentage
Unemployment	Percentage
Crude oil Price	US dollar per Barrel
Public debt	Billion USD

Source: World Bank

3.2.1 Model specification

The empirical model for this study can be functionally specified as:

$$\text{Gross domestic product (GDP)} = f(\text{Tax revenue, Inflation rate, Unemployment, Crude oil price, Public debt}) \dots\dots\dots (1)$$

The key macroeconomic indices are crude oil price, inflation, unemployment and exchange rate where GDP is the dependent variable. This study contributes to the existing body of knowledge by applying appropriate econometrics models to examine the link between macroeconomic fluctuations, taxation, and economic performance while controlling for public debt in Nigeria.

3.3 OLS regression model

To examine the link between macroeconomic fluctuations, taxation, and economic performance while controlling for public debt in Nigeria. The OLS regression should satisfy the assumptions of the normality of the residual error, the constant variance of the error term, and the assumption that the error term should not be linked with explanatory variables which frequently lead to autocorrelation. More so, the fitted regression model shouldn't have the multicollinearity problem, which frequently results in misleading p-values and R-squared.

The ordinary least square (OLS) regression model can be represented mathematically as follow.

$$\text{GDP}_t = \beta_0 + \beta_1\text{Tax revenue}_t + \beta_2\text{Inflation}_t + \beta_3\text{Unemployment}_t + \beta_4\text{Crude oil} + \beta_5\text{Public debt} + \mu_t \dots\dots\dots (2)$$

Where GDP is the dependent variable which is a proxy to the economic performance while the independent variables are Tax revenue, Inflation rate, Unemployment, Exchange rate, Crude oil price while controlling for Public debt. The β_0 is the intercept or the constant term and β_1 to β_5 are the coefficient estimate of the independent variables. The μ is the error term that takes care of the all unaccounted factors in the model while t is the given period in years. The exchange rate was not included in the model because it cause a problem of multicollinearity.

3.4 Unit root test

If the unit root is not deleted, the series is not stationary, which could produce inaccurate results. The test is carried out to exclude the possibility of incorrect results. The unit root test is described as follows:

H_0 : there is an occurrence of a unit root vs H_a : there is no presence of unit root (the variable is stationary). The augmented dickey fuller (ADF) test can be presented mathematically as:

$$\Delta Y_t = \theta + \gamma Y_{t-1} + \sum_{i=1}^p \beta_i Y_{t-i} + \omega_t$$

Where, θ is a constant, γ is the coefficient of process root, β_i coefficient in time tendency, p is the lag order and ω_t is the disturbance (error) term.

3.5 Johansen cointegration

The Johansen cointegration test is a method for determining whether integrated variables of order 1 I (1) or zero level I (0) after initial difference exhibit cointegration. More than one cointegrating relationship is allowed by this test. The

trace and max eigenvalue Johansen tests are two varieties, and they serve as the foundation for drawing conclusions or making decisions. The outcomes of these tests can differ slightly from one another. The Johansen cointegration test will indicate the significance of one or more cointegrating equations when their corresponding p-values are less than the significance level which indicates the existence of cointegration among the series and this suggests a long-run relationship.

Third hypothesis can be develop from the Johansen cointegration.

H3: There is a significant long run association between GDP, the macroeconomic fluctuation and tax revenue.

4. Results and Discussion

4.1 Results

Table 2: Descriptive statistics

Statistics	GDP	Tax Revenue	Inflation	Unemployment	Crude Oil Price	Public Debt
Mean	245.8735	4.217600	18.16020	4.860722	49.58182	35.99333
Median	238.4550	3.727070	12.87660	3.999000	41.47000	32.41000
Maximum	574.1838	10.90000	72.83550	9.788000	109.4500	103.1100
Minimum	27.75220	2.001550	5.388000	3.630830	12.28000	12.96000
Std. Dev.	185.5602	1.855138	16.11743	1.894459	31.67658	18.77339
Observations	33	33	33	33	33	33

Source: Author’s computation using Eviews computer software

From table 2, the average GDP is approximately 246 billion dollars, with a range of approximately 186 billion dollars. The average tax revenue is approximately 4.2% of the GDP, with a range of approximately 1.86% of GDP. The average inflation rate is approximately 18.2%, with a range of

approximately 16.1%. The average unemployment rate is approximately 4.9%, with a range of approximately 1.9%. The average price of crude oil is approximately 49.6 US dollars per barrel, with a range of approximately 31.7 US dollars per barrel.

Table 3: OLS regression model

Dependent Variable: LNGDP					
Method: Least Squares					
Variable	Coefficient	Std. Error	t-Statistic	Prob.	VIF
C	3.598788	0.243347	14.78870	0.0000	NA
TAX REVENUE	0.098241	0.041566	-2.363502	0.0256	1.781439
INFLATION	-0.011176	0.003980	-2.808283	0.0091	1.232642
UNEMPLOYMENT	0.186463	0.045371	4.109772	0.0003	2.213419
CRUDE OIL PRICE	0.022369	0.002028	11.03062	0.0000	1.236314
PUBLIC DEBT	0.002706	0.005418	0.499405	0.6215	3.099338
R-squared	0.912064	Mean dependent var		5.094329	
Adjusted R-squared	0.895780	S.D. dependent var		1.012340	
Prob(F-statistic)	0.000000				

Source: Author’s computation using Eviews computer software

From table 3, we can write out the OLS regression model as follows.

$$\ln GDP = 3.5988 + 0.0982 \text{Tax revenue} - 0.0112 \text{Inflation} + 0.1864 \text{Unemployment} + 0.0224 \text{Crude oil price} + 0.0027 \text{Public debt.}$$

The above regression model indicates that for an additional 1% rise in tax revenue, the GDP which is a proxy to Nigeria's economic performance will rise by about 9.8 Billion USD which agrees with the situation on the ground in Nigeria as the president just inaugurated a tax committee improve Nigeria economic performance. Similar to this, the GDP will decrease by about 1.1 billion USD for every additional 1% increase in inflation, increase by about 18.6 billion USD for every 1% increase in unemployment, increase by about 2.2 billion USD for every additional USD

1 billion increase in Nigeria's public debt, and increase by about 0.27 billion USD for every additional USD 1 billion increase in crude oil price.

Table 3 shows that the coefficient of tax revenue and two macroeconomic indicators like unemployment and crude oil prices have a positive significant impact on the GDP at a 5% level while the other macroeconomic indicator like inflation has a negative significant impact on the GDP which is a proxy for the economic performance. This suggests that the increase in tax revenue will contribute to a corresponding increase in Nigeria's economic performance while the rise in some macroeconomic fluctuation like unemployment and crude oil price also increase economic performance while the rise in the inflation rate causes a decline in economic performance. Meanwhile, the overall regression model ($p < 0.01$) indicates that we reject the null hypothesis and

conclude that the OLS regression model is statistically significant at a 1% level and this indicates that there is a significant relationship between the economic performance, taxation (proxy by the tax revenue) and macroeconomic fluctuation such as the inflation, unemployment and crude oil price while controlling for the public debt. According to the R-squared value of 0.912, taxes, inflation, unemployment, the price of crude oil, and public debt account for 91.2% of the variation in GDP, with other factors not included in the model accounting for the remaining 8.8%. A model can be regarded to be appropriate

and a good fit for the data if the overall regression model is significant and the R-squared is relatively high. This model can then be used to predict Nigeria's economic performance in the future.

Furthermore, the variance inflation factor (VIF) for all the independent variables is less than 5 which means that the model does not occur the problem of multicollinearity and this suggests that the results of the model are reliable and not misleading. Additionally, the assumptions of normality, autocorrelation and heteroscedasticity are met (see appendix).

Table 4: Unit root test

Differenced Variables	Test statistic	P-value	Order
Δ^1 GDP	-3.81	0.0069	I(1)
Δ^1 Tax revenue	-5.98	0.0000	I(1)
Δ^1 Inflation	-4.57	0.0010	I(1)
Δ^1 Unemployment	-2.70	0.0088	I(1)
Δ^1 Crude oil Price	-4.60	0.0009	I(1)
Δ^2 Public debt	-5.75	0.0000	I(2)

Source: Author's computation using Eviews computer software. Where Δ indicate the differencing operator.

Table 4 shows that series such as the GDP, tax revenue, inflation, unemployment and crude oil price are statistically significant at a 1% level and become stationary after the first difference without the occurrence of the unit root that

can give deceptive results while the public debt become stationary after the second difference or can be said to be integrated of order 2. Therefore, further econometric models can be adopted to explore the link between the series.

Table 5: Johansen Cointegration

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized	Eigenvalue	Trace	0.05	
No. of CE(s)		Statistic	Critical Value	Prob.**
None *	0.885726	145.2236	95.75366	0.0000
At most 1 *	0.619312	77.97986	69.81889	0.0097
At most 2 *	0.498212	48.04081	47.85613	0.0480
At most 3	0.355589	26.66393	29.79707	0.1101
At most 4	0.289431	13.04197	15.49471	0.1133
At most 5	0.075978	2.449616	3.841466	0.1176

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level. Source: Author's computation using Eviews computer software

Table 5 shows $p < 0.05$ for three cointegrating equations which implies that we reject the null hypothesis at a 5% level and this implies that there is an occurrence of cointegration among the series which suggests a long-term

relationship between the economic performance, tax revenue and the macroeconomic fluctuation while controlling for the Nigeria Public debt.

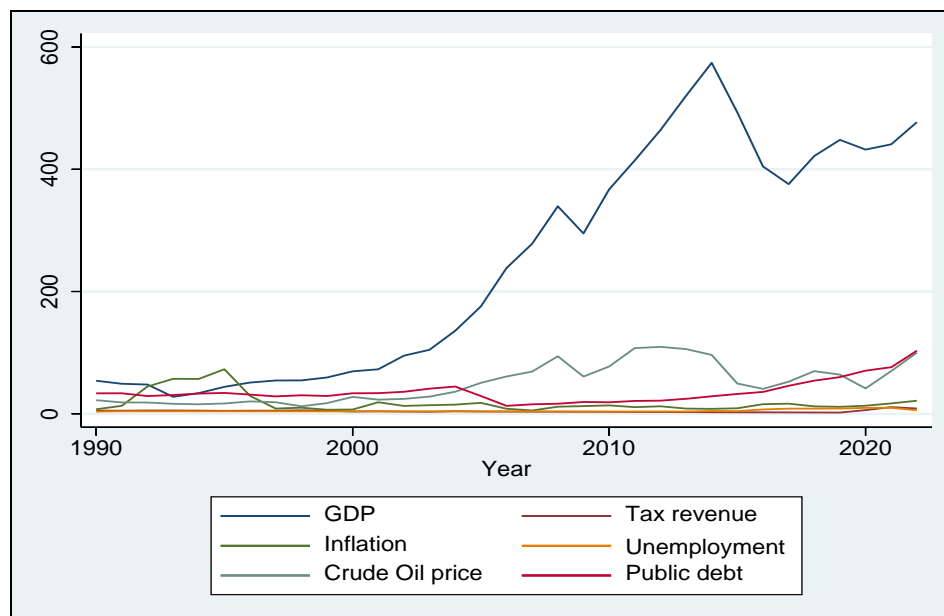


Fig 1: The graph of macroeconomic fluctuations, taxation, Public debt and GDP (Proxy by the economic performance).

The Nigerian GDP contracted in 2020, which can be attributed to the COVID-19 pandemic, the surge in the crude oil price which can be attributed to the Russia-Ukraine war and the subsidy removal and an unusual increase in inflation starting in 2020, as well as fluctuations in tax revenue and public debt during the period under review, as shown in Figure 1's illustration of macroeconomic fluctuations, taxation, public debt, and GDP pattern.

4.2 Discussion of findings

According to Table 2, the average GDP is about 246 billion dollars with a range of about 186 billion dollars, the average tax revenue is about 4.2% of the GDP with a range of about 1.86% of GDP, the average inflation rate is about 18.2% with a range of about 16.1%, the average unemployment rate is about 4.9% with a range of about 1.9%, and the average price of crude oil is about \$42 per barrel.

From table 3, regression model indicates that for an additional 1% rise in tax revenue, the GDP which is a proxy to Nigeria's economic performance will rise by about 9.8 Billion USD which agrees with the situation on the ground in Nigeria as the president just inaugurated a tax committee improve Nigeria economic performance. Similar to this, the GDP will decrease by about 1.1 billion USD for every additional 1% increase in inflation, increase by about 18.6 billion USD for every 1% increase in unemployment, increase by about 2.2 billion USD for every additional USD 1 billion increase in Nigeria's public debt, and increase by about 0.27 billion USD for every additional USD 1 billion increase in crude oil price.

Table 3 also show that the coefficient of tax revenue and two macroeconomic indicators like unemployment and crude oil prices have a positive significant impact on the GDP while the other macroeconomic indicator like inflation has a negative significant impact on the GDP which is a proxy for the economic performance which satisfy hypothesis 2 and is also consistent with the work of Udofot and Etim (2017) ^[16] that find out that tax revenue have positive impact on the GDP while opposing the work of Vinayagathan and Ranjith (2021) ^[15] that concluded that tax revenue negatively impact the GDP and support the work of Ademola and Badiru (2016) ^[2] that discover that inflation and unemployment have positive impact on GDP. This suggests that the increase in tax revenue will contribute to a corresponding increase in Nigeria's economic performance while the rise in some macroeconomic fluctuation like unemployment and crude oil price also increase economic performance while the rise in the inflation rate causes a decline in economic performance. Meanwhile, the overall regression model is statistically significant and this indicates that there is a significant relationship between the economic performance, taxation (proxy by the tax revenue) and macroeconomic fluctuation such as the inflation, unemployment and crude oil price while controlling for the public debt which satisfy the hypothesis 1. According to the R-squared value, taxes, inflation, unemployment, the price of crude oil, and public debt account for 91.2% of the variation in GDP, with other factors not included in the model accounting for the remaining 8.8%. A model can be regarded to be appropriate and a good fit for the data if the overall regression model is significant and the R-squared is relatively high. This model can then be used to predict Nigeria's economic performance in the future.

Besides, Table 5 shows that three cointegrating equations is statistically significant and this implies that there is an occurrence of cointegration among the series which suggests a long-term relationship between the economic performance, tax revenue and the macroeconomic fluctuation while controlling for the Nigeria Public debt which satisfy the third hypothesis.

5. Conclusion and policy implications

The sole aim of this study is to apply appropriate econometrics models to examine the link between macroeconomic fluctuations, taxation, and economic performance while controlling for public debt in Nigeria which will contribute greatly to the existing body of knowledge in the field of economics and statistics.

The findings deduced from the results of the analysis show that tax revenue has a positive significant impact on Nigeria's economic performance. The findings also reveal that economic performance is significantly associated with taxation and macroeconomic fluctuation while adjusting for the public debt incurred in Nigeria.

Additionally, according to the R-squared value of 0.912, taxes, inflation, unemployment, the price of crude oil, and public debt account for 91.2% of the variation in GDP, with other factors not included in the model accounting for the remaining 8.8%. A model can be regarded to be appropriate and a good fit for the data if the overall regression model is significant and the R-squared is relatively high. This model can then be used to predict Nigeria's economic performance in the future.

The results of the analysis also show that Nigeria's economic performance has a long-term relationship with taxation and macroeconomic fluctuation while controlling for public debt.

Consequently, the government should create enabling and sustainable environment through infrastructural development and sensitization of the public to the new technological innovation of artificial intelligence that can help businesses to thrive amid economic crisis while encouraging businesses and individuals to pay taxes to improve national revenue and economic performance will effectively control or reduce the public debt in the long-run.

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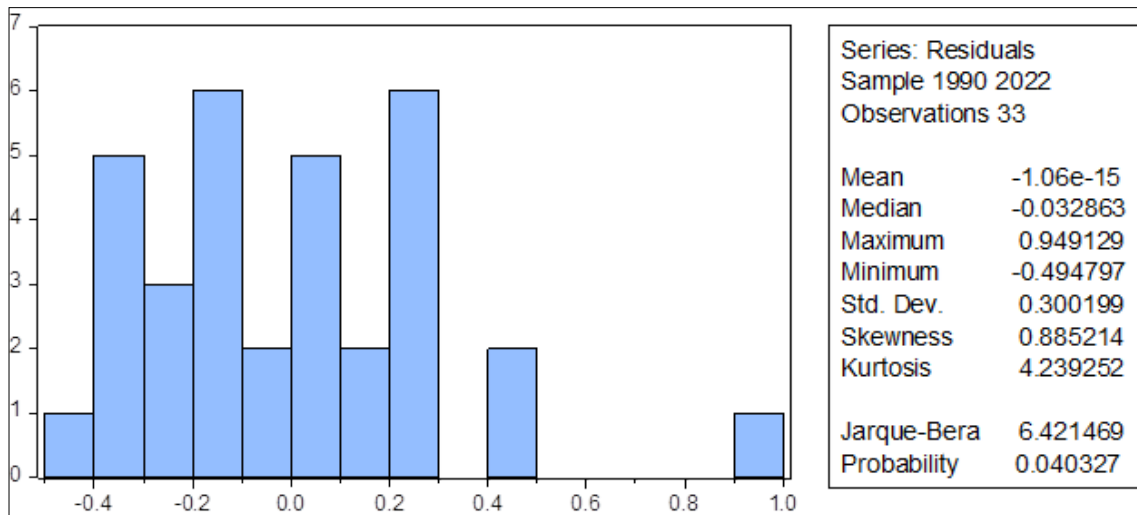
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Appendix
Normality test



$p > 0.01$ which indicate that we do not reject the null hypothesis at 1% level and this implies that the residual is approximately normally distributed.

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	4.484322	Prob. F(2,25)	0.0217
Obs*R-squared	8.712896	Prob. Chi-Square(2)	0.0128

H_0 : No autocorrelation

$p > 0.01$ which implies we do not reject the null hypothesis and this indicate that the fitted regression model does not suffer from the problem of autocorrelation

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.738248	Prob. F(5,27)	0.6014
Obs*R-squared	3.968917	Prob. Chi-Square(5)	0.5539
Scaled explained SS	4.303149	Prob. Chi-Square(5)	0.5066

$P = 0.5539 > 0.05$ which implies that we do not reject the null hypothesis at 5% level and this means that the regression model does not occur the problem of heteroscedasticity.