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INTERACTING THE EFFECT OF TAXATION AND UNEMPLOYMENT RATE ON NIGERIA'S ECONOMIC PERFORMANCE

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Abstract: This study makes a different contribution by investigating the effect of the interaction between taxation and unemployment on Nigeria's economic performance. Secondary data were collected from the World Bank development indicator, spanning 1989 to 2023. The application of the unit root test eliminated the presence of unit roots that could cause erroneous findings. The applied OLS regression model indicates that taxation has a positive significant influence on Nigeria's economic performance, whereas unemployment and the interaction effect of taxation and unemployment have a negative significant impact on the country's economic performance, suggesting that an increase in taxation contributes to the rise in Nigeria's economic performance, whereas the unemployment and interaction effect hurt the country's economic performance. Thus, the government should develop a sustainable policy that will drastically combat the menace of unemployment in Nigeria and also create a system that will automatically make tax-payers enjoy the proportional benefits of paying tax while ensuring that tax revenue is holistically used for infrastructural development that will enhance Nigeria's economic performance.

Keywords: Taxation, Unemployment, Economic Performance, Unit Root test, OLS Regression model.

Introduction

Currently, taxation is a compulsory levy typically enforced by a nation's government on all income, products, and services of individuals, enterprises, and corporations (Okon, 2024). The tax structure is designed to facilitate infrastructure development and create employment opportunities to enhance economic performance. However, the declining economic status of Nigeria and other emerging economies, coupled with a significant increase in unemployment, has severely hindered the effectiveness of taxation, as a substantial number of Nigerians struggle to fulfill their tax obligations due to a lack of productive employment. Statistics indicate that only 16.7% of Nigeria's economically engaged population fulfills tax obligations (SB Morgen, 2021). The tax structure is the principal instrument for efficiently and effectively mobilizing a nation's resources and, hence, promoting economic growth and development (Amah, 2021). Taxation is a financial levy enacted by the government on the earnings of its citizens, corporations, and other revenue-generating assets. It also pertains to the government's authority to mandate individuals and property owners to provide equitable payments for the financing of governmental operations and public necessities. Owing to its limited resources, the government must engage the

populace it administers. This implies that all taxable individuals, enterprises, and organizations must contribute taxes to finance the government's budget (Ajala & Afolabi, 2021).

The unemployment rate, defined as the proportion of jobless individuals within the overall labor force, is a crucial measure of a nation's labor market performance (Picardo, 2020). Two economic factors mostly define the observed unemployment rate in a country: the general level of economic activity (the cyclical or macroeconomic component) and the interaction between labor demand and supply, shaped by policies either directly or indirectly impacting the labor market (the structural or microeconomic component). The institutional and regulatory framework of a country determines these factors. One of the various policy tools available to legislators, tax policy has macroeconomic relevance (Deyun & Yiqing 2023; Kim et al., 2022). Structurally, tax instruments have several effects on unemployment (Chatri et al., 2021). For instance, initiatives that specifically target the labor market, as well as those that have relevance to other markets and the broader economy (Neog & Gaur, 2020).

Ironkwe and Agu (2019) examined how government tax collection affected unemployment. The study was conducted between 1986 and 2016. Emphasizing unemployment, the main goal of this research is to investigate the relationship between total tax income and economic development in Nigeria. The variables for this study were government tax income and unemployment. Multiple regression analysis—using Stata version 13 for data analysis—was the approach used. In Nigeria, the study found a strong positive link between unemployment and total tax income. The study reveals that unemployment is generally positively connected with tax income; hence, the government should direct its social welfare initiatives toward the benefit of the people.

Examining data from 1981 to 2018, Adeleke and Adejumo (2020) found a relationship between employment rates and economic growth in Nigeria. According to the research, the unemployment rate of Nigeria negatively and significantly affects economic development; therefore, a drop in unemployment will improve the general state of the country. Using data from 1986 to 2016, Okeke and Anowor (2019) investigated the effect of unemployment on GDP growth in Nigeria. This study shows that the unemployment rate in Nigeria greatly and negatively influences economic development; therefore, raised unemployment levels could impede the developmental potential of an economy.

Manukaji (2018) explores how Nigeria's tax system affects economic growth. The time series data from 1994 to 2016 were used. The regression analysis revealed that Nigeria's economic growth was greatly influenced by every tax component examined: revenue from value-added taxes, personal income taxes, petroleum profit taxes, and business income taxes. Examining how taxes affect Nigeria’s economic development, Ajala and Afolabi (2021) used gross domestic product; as independent variables, they included Nigerian tax income, inflation rate, and unemployment rate. This research finds that taxes help promote economic development.

This study is grounded in the Theory of Benefit Received, which posits that tax obligations should correspond to the advantages derived from government services. This means that there is a direct link between the amount of taxes an economic entity pays and the benefits it receives. This means that the principle of equity in taxation states that people should pay taxes based on how much the government helps them (Amah, 2021). The income productivity theory, the second theoretical foundation for this research, posits that the importance of taxation in income generation is paramount for improving a country’s economic performance.

A lot of research has been done on taxation and economic growth (Abdullahi, 2021; Manukaji, 2018; Ironkwe & Agu, 2019; Osaretin et al., 2022; Amah, 2021), but none of them have looked at how taxation and unemployment affect Nigeria’s economy together. This study aims to fill this big gap. Simultaneously, the Nigerian government

has failed to: optimize tax collection mechanisms; implement effective and efficient tax administration; adopt tax technology; promote tax awareness and communication; simplify and repeal certain tax laws; refund excess taxes; ensure the autonomy of tax authorities; combat corruption among tax officials; enhance tax audits; create a specialized court for tax matters; or establish a dedicated court for tax evasion and related offences, as well as address the potential interplay between unemployment and taxation. This concern prompted the purpose of this study, which was to examine the influence of the interplay between taxation and unemployment rates on Nigeria's economic performance. Consequently, the following hypotheses were developed for investigation to fulfill the study's objective:

H1: Taxation has a significant impact on Nigeria's economic performance.

H2: Unemployment has a negative significant effect on Nigeria's economic performance.

H3: The interaction effect of taxation and unemployment has a negative significant effect on Nigeria's economic performance.

Research Methodology

Data description

This study collected a secondary dataset from 1989 to 2023 using the World Bank development indicators based on the availability of the data and to also maintain consistency within the period under investigation. The data reliability was validated using skewness and kurtosis statistics. The data variables include taxation, unemployment, interaction, and Nigeria's economic performance, which are described in Table 1 below as follows:

Table 1: Variable Description

Variables/Dataset	Definition	Measurement	Sources
Taxation	This refers to the compulsory levy typically enforced by a nation's government on all income, products, and services of individuals, enterprises, and corporations for enhancing the country's economic performance. Taxation is measured by the tax-to-GDP ratio.	Percentage	World Bank
Unemployment rate	This can be defined as a circumstance in which people who are within the employable age do not have gainful employment or job opportunities.	Percentage	World Bank
Interaction	This refers to the interplay between taxation and unemployment	Percentage	Author
Economic performance	This refers to the overall assessment of a country's economic performance or development. Measured or proxied by the gross domestic product (GDP).	Billions of US Dollars	World Bank

Methods

This study used a quantitative research methodology to examine the effect of the interplay between taxation and unemployment rates on Nigeria's economic performance. The quantitative methods employed include descriptive statistics for dataset summarization, a unit root test to assess the stationarity of data variables by eliminating unit root presence that may lead to erroneous conclusions, and the ordinary least squares (OLS) regression model to analyze the impact of independent variables on the dependent variable. The previously mentioned quantitative methods are appropriate due to the continuous scale measurement of the data variables. Additionally, diagnostic tests, including the multicollinearity test via the variance inflation factor (VIF), normality test, autocorrelation test, heteroscedasticity test, and cumulative sum (CUSUM) test for OLS model stability, were performed to establish the model's validity.

The functional model that illustrates the link between the data variables can be expressed empirically as follows:

Economic Performance = f (Taxation, Unemployment, Interaction) …… (1)

Then, this study can specify the OLS regression model, which was also adopted by Ironkwe and Agu (2019) as well as Adeleke and Adejumo (2020), which produces equation 2 as follows:

$$\text{Economic Performance}_t = \beta_0 + \beta_1\text{Taxation}_t + \beta_2\text{Unemploymen}_t + \beta_3\text{Interaction}_t + U_t \ldots\ldots\ldots \quad (2)$$

The regressors or independent variables are taxation, unemployment, and interaction effects, whereas the dependent variable is economic performance. Here, *U* is the stochastic error term, and t is the period in years.

Results

Table 2: Descriptive Statistics

Statistics	Economic Performance	Taxation	Unemployment	Interaction
Mean	265.7432	18.58257	4.932914	80.70257
Median	238.4550	20.72000	3.999000	81.28000
Maximum	574.1838	28.81000	9.788000	117.6000
Minimum	44.00306	5.120000	3.631000	31.25000
Std. Dev.	173.8533	8.649395	1.956266	27.83342
Skewness	0.136839	-0.150410	-1.536122	-0.039338
Kurtosis	1.503827	1.460943	1.671857	1.771283
Jarque-Bera	3.373755	3.586315	4.42302	2.210739
Probability	0.185097	0.166434	0.110738	0.331089
Observations	35	35	35	35

Table 2 shows that the average economic performance of Nigeria is approximately US$266 billion US dollars with a variability of US$174 billion during the period under review. The average taxation is approximately 19% of GDP, with a variation of approximately 9% during the period under review. The average unemployment rate is about 5% with a variability of about 2%, and the average interaction is about 81% with a variability of about 28%. The skewness of the data variables approaches zero, while the kurtosis statistics can be seen to fall between -2 and +2, with the corresponding probabilities exceeding the 0.05 significance level, indicating that the variables are normally distributed and validating the reliability of the dataset.

Table 3: Unit Root Test

Differenced Series	Test-Statistic	P-value	Order Level
Economic Performance	-4.62	0.0008	I (1)
Taxation	-5.63	0.0001	I (1)
Unemployment	-5.10	0.0003	I (1)
Interaction	-6.35	0.0000	I (1)

Table 3 demonstrates that following the first difference that removes the existence of the unit root capable of producing an erroneous conclusion, the variables or series are statistically significant at the 5% level. Further analysis of the series can thus be performed.

Table 4: OLS regression Model

Econ-Performance	Coefficient	Std. Error	t-Statistic	Prob.	VIF
C	1069.778	179.3238	5.965622	0.0000	NA
Taxation	68.02916	18.93095	3.593542	0.0011	1.673
Unemployment	-103.8444	37.73051	-2.752267	0.0098	1.569
Interaction	-12.04890	4.581505	-2.629900	0.0132	1.286
R-squared	0.797317	Mean dependent var		265.7432	
Adjusted R-squared	0.777702	S.D. dependent var		173.8533	
F-statistic	40.64934	Durbin-Watson stat		1.545959	
Prob(F-statistic)	0.000000				

Table 4 shows that the overall OLS regression model probability value is less than 0.05, implying that the model is statistically significant, suggesting that there is a significant linear relationship between Nigeria's economic performance, taxation, unemployment rate, and the interaction of taxation and unemployment. The coefficient estimate of taxation has a positive and significant effect on Nigeria's economic performance at the 5% level, indicating that an increase in taxation contributes to an increase in Nigeria's economic performance. This supported the first research hypothesis (H1). Moreover, the coefficient estimate of unemployment has a negative and significant effect on Nigeria's economic performance at a 5% level, indicating that an increase in the unemployment rate in Nigeria will contribute to the decline in the country's economic performance. This result aligns with the second research hypothesis (H2). The coefficient estimates of the interaction effect between taxation and unemployment are statistically significant at a 5% level and have a negative significant impact on Nigeria's economic performance, suggesting that an increase in the interaction between taxation and unemployment will contribute to the decline in Nigeria's economic performance, supporting the third research hypothesis (H3). The R-squared value of approximately 0.7973 indicates that 79.73% of the variation in Nigeria's

economic performance can be explained by taxation, unemployment, and the interaction. In comparison, the remaining 20.27% can be attributed to other factors that are not included in the model.

Meanwhile, the VIF of all independent variables is less than 5, indicating that the fitted OLS regression model does not suffer from multicollinearity. The Durbin-Watson Statistic of about 1.55 falls between the two critical values of 1.5 and 2.5, respectively, suggesting that the model does not have autocorrelation issues. Table 5 demonstrates that the probability value of 0.0768 for the heteroscedasticity test exceeds the threshold value of 0.05, suggesting that the model does not cause the heteroscedasticity problem. Figure 1 reveals that the OLS model residuals normality test with Jarque-Bera has a probability value of about 0.6359, exceeding the 0.05 significance level, suggesting that the fitted OLS model residuals are normally distributed, satisfying the OLS assumption. In addition, Figure 2 shows that the CUSUM test of the OLS model stability reveals that the model parameter falls between the two 95% confidence intervals, implying that the model parameters are stable.

Table 5: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	2.515489	Prob. F(3,31)	0.0765
Obs*R-squared	6.852155	Prob. Chi-Square(3)	0.0768
Scaled explained SS	3.446187	Prob. Chi-Square(3)	0.3278

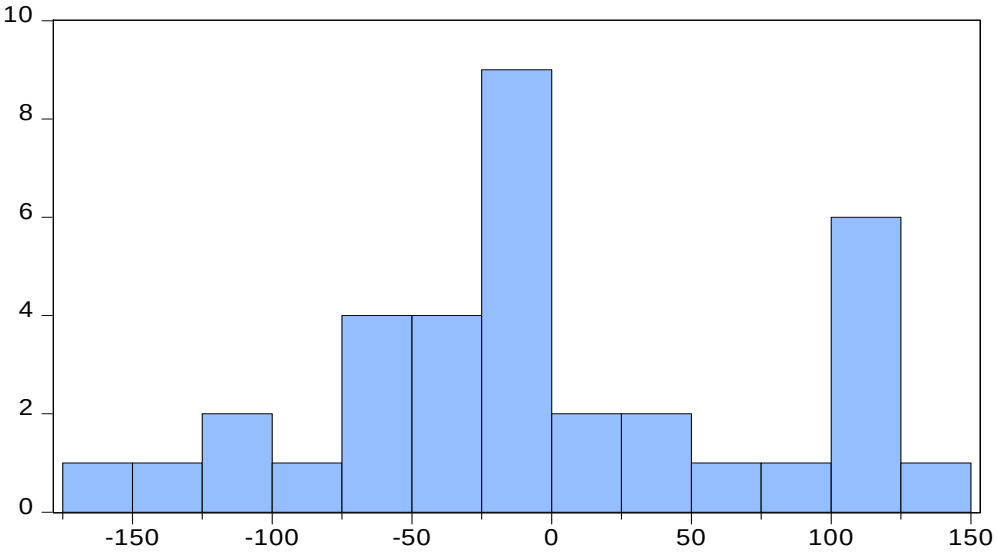

Table 1: Residuals Normality of the OLS Regression Model

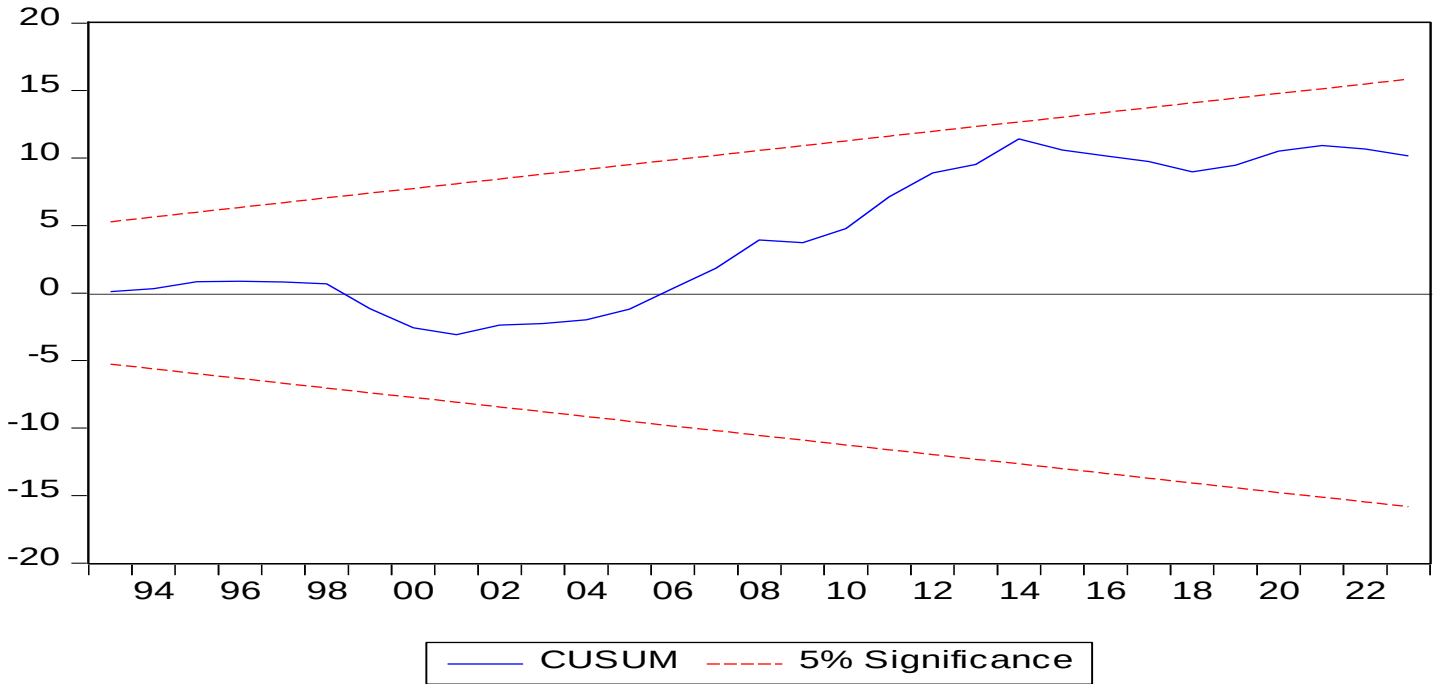

Table 2: CUSUM Test of the Stability of the OLS Model

Discussion

The purpose of this paper is to investigate how the combination of unemployment and taxes affects Nigeria's economic situation. According to the descriptive data, the average economic performance of Nigeria is approximately US$266 billion US dollars with a variance of US$174 billion for the time under analysis. With a variance of almost 9% across the period under analysis, the average taxation is approximately 19% of GDP. The average interaction is 81% with a variability of 28%; the average unemployment rate is 5%. While the kurtosis statistics may be shown to fall between -2 and +2, with the accompanying probabilities reaching the 0.05 significance level, demonstrating that the variables are normally distributed and hence verifying the validity of the dataset, the skewness of the data variables approaches zero.

The study also reveals that following the initial difference, the data variables are stationary, thereby eradicating the existence of unit roots capable of producing erroneous results. The fitted OLS model shows that the interplay of taxes and unemployment, together with Nigeria's economic performance, taxation, and unemployment rate, exhibits a notable linear correlation. Supporting the first research hypothesis (H1), the coefficient estimate of taxation shows a positive and substantial impact on Nigeria's economic performance at a 5% level, thereby showing that an increase in taxation helps explain the development of Nigeria's economy. This also helps Ironkwe and Agu (2019), who found that taxes have a notable positive effect on economic growth.

More importantly, the coefficient estimate of unemployment has a negative and significant impact on Nigeria's economic performance at a 5% level, which is in line with the second research hypothesis (H2) and denotes that a rise in the unemployment rate in Nigeria will help to explain the country's declining economic performance. This supports the efforts of Adeleke and Adejumo (2020) and Okeke and Anowor (2019), who discovered that unemployment stunts economic development.

Nevertheless, the coefficient estimates of the interaction effect between taxation and unemployment are statistically significant at a 5% level and have a negative significant impact on Nigeria's economic performance,

thus supporting the third research hypothesis (H3) and implying that an increase in the interaction between taxation and unemployment will help to contribute to the decline in Nigeria's economic performance. This paper closes the identified gap by exposing the negative and significant impact of the interaction between taxation and unemployment in Nigeria.

Conclusion and policy implications

This study makes a different contribution by investigating the effect of the interaction between taxation and unemployment on Nigeria's economic performance. The findings indicate that taxation has a positive significant influence on Nigeria's economic performance, while unemployment and the interaction effect of taxation and unemployment have a negative significant effect on the country's economic performance, suggesting that an increase in taxation contributes to the rise in Nigeria's economic performance, while the unemployment and interaction effect hurt the country's economic performance. Therefore, the government should develop a sustainable policy that will drastically combat the menace of unemployment in Nigeria and also create a system that will automatically make tax-payers enjoy the proportional benefits of paying tax while ensuring that tax revenue is holistically used for infrastructural development that will enhance Nigeria's economic performance.

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