NIGERIAN TAX SYSTEM AND ECONOMIC DEVELOPMENT

Abstract

Efficient taxation system is a necessity for economic growth and development of a country. While taxes such as personal income and sales taxes can have direct negative effect on the welfare of the people by reducing disposable income while it can increase revenue for the government. This study examined how revenue from six different tax types in Nigeria, namely, company income tax less (CINT), customs and excise duties (CUED), education tax (EDUT) personal income tax ,PITX, (apart from PAYE), petroleum profit tax (PPT) and value added taxes (VATR) affect the country's economic development from 1995 to 2023. Economic development was captured from two angles, GDP per capita and gross fixed capital formation (GFCF).

The study used some preliminary tests to determine the properties of the variables (descriptive statistics, Pearson's correlations, ADF test of stationarity, Johansen test of co-integration) and the Fully Modified Ordinary Least Squares (FMOLS) technique for inferential purpose. Two models were developed to address the two perspectives from which economic development were measured by the researcher.

On the effect of tax on GPDPPC, CINT, CUED, EDUT and PPT have positive and significant effect on GDP Per Capita (coefficients = 0.453196, 0.100308, 0.21304 and 0.265514, and p = 0.0306, 0.0237, 0.0341 and 0.0000 respectively). In contrast, PITX and VATR exhibited a negative but insignificant effect on GDP. Oh how taxation affected the GFCF, while PITX had a negative and significant effect (coefficient = -22.75400, p = 0.038), VATR had a positive and significant effect on GFCF (coefficient = 56.95707, p = 0.0041).

We recommend that the government should continue to improve the efficiency of corporate tax collection to maximize revenue, allocate corporate tax revenues towards infrastructure development, healthcare, and education, support and protect local industries by maintaining and strategically adjusting customs and excise duties and ensure that education tax revenues are efficiently used to enhance the quality of education at all levels. We also advocate increased efforts to improve personal income tax compliance and appraisal of the impact of VAT on different income groups and consider adjustments that can make the tax system more equitable without significantly harming consumption and economic growth.

Keywords: Inflation, Core, Headline, Economic Development, FMOLS

Introduction

The Nigerian tax system is pivotal to the nation's socio-economic development, functioning not only as a revenue source but also as a tool for social and economic policy. Taxes influence wealth distribution, infrastructure development, and overall economic stability (Omodero, 2020). A thorough understanding of the structure and management of taxes in Nigeria is crucial for evaluating their impact on various economic sectors and the general welfare of citizens (Agunbiade &Idebi, 2020). The country operates a federal system with three tiers of government—federal, state, and local—each with the authority to levy and collect taxes within

their jurisdictions. The tax system encompasses various types of taxes, including income taxes, value-added tax (VAT), customs, and excise duties. These taxes contribute significantly to government revenue, funding public services, infrastructure projects, and social programs aimed at improving living standards and promoting economic growth (Adefolake &Omodero, 2022).

Over the years, Nigeria's taxation policies have evolved in response to economic challenges and global trends (Okoye &Gbegi, 2013). The effectiveness and efficiency of tax administration and its contribution to economic growth and development have been subjects of consistent debate. Issues such as tax evasion and avoidance, administrative bottlenecks, and inadequate infrastructure for tax collection hinder the government's ability to maximize revenue and allocate resources effectively for sustainable development (Ewa, et al., 2020).

More specifically, as observed by Ayeni and Omodero (2022), despite the critical role of taxation in fostering socio-economic development, Nigeria faces several challenges in optimizing its tax system. First, **a** significant portion of economic activities occurs in the informal sector, escaping formal taxation. This reduces potential tax revenue and limits the government's ability to implement equitable and progressive tax policies. second, the persistently **w**eak enforcement mechanisms and inadequate regulatory frameworks exacerbate tax evasion and avoidance. High levels of corruption and inefficiencies within tax administration further undermine revenue collection, hindering the government's capacity to finance essential infrastructure projects and public services. Third, **t**he complexity of Nigeria's tax laws and regulations poses barriers to compliance, particularly for small and medium-sized enterprises (SMEs) and individual taxpayers. Inconsistent tax policies lead to confusion and disputes between taxpayers and authorities, creating a climate of uncertainty that discourages investment and economic growth (Etim, et al. 2020).

Fourth, **t**here is a need to assess the effectiveness of tax incentives and exemptions granted to specific industries or regions in promoting economic development and attracting foreign investment. Questions arise regarding the equity and efficiency of these incentives, and their overall contribution to tax revenue and socio-economic outcomes (Gbeke&Nkak, 2021).The effectiveness of any country’s tax system hinges on efficient and transparent tax administration. Good governance practices, including accountability, integrity, and professionalism within tax authorities, are essential for enhancing compliance and maximizing revenue collection. These are

clearly missing in the Nigeria's tax administration system. Strengthening institutional capacity, investing in technology, and reducing bureaucratic hurdles can streamline tax processes, improve taxpayer compliance, and foster public trust in the tax system (Ihenyen &Ogbise, 2022).

Theoretically, taxation plays a pivotal role in shaping economic development through several mechanisms. This, it does, by affecting resource allocation, income distribution, and the overall economic environment. Barro (1990) posited that taxes provide essential revenue for governments to invest in public goods and services such as infrastructure, education, healthcare, and security. These investments create a conducive environment for economic activities, enhance productivity, and promote long-term economic growth. According to the author, **t**axation can be used as a tool for redistributing income and wealth within a society, reducing inequality, and promoting social cohesion. For example, progressive tax systems, where higher-income individuals are taxed at higher rates, can help achieve a more equitable distribution of resources (Sani & Ahmad, 2019). According to Piketty (2014), progressive taxation can reduce income inequality and provide resources for social welfare programs, enhancing social stability and economic performance..

Feldstein, (1976) stated that taxes can influence individual and business behaviours. For example, higher taxes on negative externalities like pollution can encourage more environmentally friendly practices. Conversely, tax incentives can stimulate investment in certain sectors, such as renewable energy or research and development. Tanzi and Zee (2000) argued that **t**axation is crucial for maintaining macro-economic stability. The authors believed that by generating revenue for government expenditure, taxes help avoid excessive public borrowing, which can lead to inflation and economic instability. Zee et al. (2002) posited that **a** well-structured tax system can create a favorable investment climate by providing clarity, stability, and incentives for both domestic and foreign investors. Lower corporate taxes, for example, can attract foreign direct investment, leading to job creation and economic growth.

Despite the identified positive influence of taxation on economic development, empirical evidence is continuously needed to validate (or otherwise) these claims in Nigeria. This study, therefore, assesses the effect of taxation types on economic development in Nigeria. Ample empirical studies on the relationship between taxation system and economic growth exist, however, most of these studies have concentrated on economic growth using real GDP. This

study differs from other previous ones in that it examines the effect of taxation on economic development from two perspectives: per capita income and gross fixed capital formation from 1995-2022

Literature Review

Taxation and Economic Development

Taxation serves as a vital mechanism for economic development, equipping governments with the resources required to fund public goods and services. In Nigeria, the relationship between taxation and economic progress is particularly significant due to the country's dependence on oil revenues and the imperative to diversify its economy. Efficient tax systems can drive sustainable development by alleviating poverty, encouraging investments in human capital and infrastructure, and maintaining economic stability (Barro, 1990).

Kiabel and Nwokah (2009) observed that tax policies in Nigeria have the potential to either aggravate or alleviate socio-economic disparities. Progressive taxation, which imposes higher rates on higher-income earners, can help redistribute wealth and diminish inequality by supporting social programs and services for the underprivileged. Conversely, regressive taxes or ineffective tax strategies may disproportionately impact low-income households, expanding the wealth gap and obstructing inclusive growth.

The taxation practices of individuals and businesses influence various economic activities, such as productivity, consumption, saving and investment tendencies, and government spending patterns (Osamor et al., 2023). This observation aligns with Etim et al. (2021), who emphasized the pivotal role of taxation in the economic growth of nations, noting that many developing countries have yet to fully harness these benefits. Government expenditures are intrinsically linked to revenues generated from taxes, including petroleum profit tax, corporate income tax, value-added tax, and customs and excise duties (Gbeke&Nkak, 2021).

In Nigeria, the government has not yet realized the projected tax revenues needed to enhance overall government income and boost the country's gross domestic product (Etim, et al., 2020). Issues like tax evasion and avoidance by taxpayers diminish government revenues, subsequently reducing public expenditure and stifling economic activity and growth.

According to Ajala and Adegbie (2020), Nigeria's tax system faces significant challenges, including inadequate data management, a complex array of taxes, outdated tax legislation,

ineffective tax reforms, and prevalent issues of tax evasion, avoidance, and corruption. While proponents of tax cuts argue that reducing tax rates can stimulate economic growth and prosperity, critics contend that such measures primarily benefit the wealthy, who already contribute a substantial portion of tax revenue.

Theoretical Literature

Theories relating to tax effectiveness and economic growth, or development are varied. Such theories include the expediency theory, benefits received theory and the socio-political theory of taxation.

i. The Theory of Expediency.

Introduced by Bhartia in 2009, this theory posits that the practicality of tax proposals should be the primary consideration for governments. As noted by Otu and Adejumo (2013), this theory holds that tax effectiveness and efficiency should be seen as very important in aligning the fundamental principles of taxation. In essence, the government's objectives (economic and social) ought not to impair the consideration of a tax system considerations, rather tax liability should agree with government-provided services and such services should be funded by the citizens through taxes (Kiabel&Nwokah; Edewusi& Ajayi, 2019). Furthermore, this theory highlights the importance of ease of administration and collection for a tax system to be effective. Critics of this theory have posited that while the focuses on the practical aspects of tax collection, it might overlook the equity and fairness of the tax burden on different societal groups. They argued that the theory could be enhanced by integrating considerations of social justice, ensuring that tax policies do not disproportionately burden lower-income populations. Additionally, addressing the dynamic interplay between tax policies and economic behavior could provide a more holistic approach to tax system efficiency ((Ihenyen &Ebipanipre, 2014).

2. The Socio-Political Theory of Taxation

The socio-political theory (SPT), introduced by Adolph Wagner in 1835, asserts that tax policy should be guided by social and political objectives. Wagner argued against the individualist approach, advocating for the consideration of economic issues within their broader social and political contexts. Further, the theory posits that the welfare of society as a whole should be the primary goal of the tax system, providing a benchmark for evaluating the country's progress. However**, w**hile the SPT emphasizes the importance of addressing societal welfare through tax policy, it may risk overlooking individual burdens and economic incentives.

3. The Benefit Received Theory (BRT)

Proposed by Cooper in 1994, the BRT is premised on a transactional link between the government and the citizens. The governmentperformsher roles obligation by providing public goods and services, and in return, citizens pay taxes proportionate to the benefits they receive (Ayuba, 2014). This theory asserts that taxes should be justified by the tangible benefits and improvements in public amenities and societal development they facilitate, leading to economic growth. However, in practice, the theory faces challenges due to the difficulty in quantifying the benefits of government services, especially those with widespread impacts like national defense (Ahuja, 2012).The primary challenge of the BRT is its practical implementation, as not all public services can be directly linked to specific taxpayer benefits.

Empirical Literature

Several empirical studies have been carried out on the effect of tax revenue on economic growth and development in developing countries, including Nigeria. Osamor et al. (2023) conducted an empirical investigation into the impact of tax revenue on economic growth in Nigeria. The study used petroleum profit tax, company income tax, value added tax, and customs and excise duties as proxies for tax revenue, while gross domestic product served as the proxy for economic growth. an ex post facto research design was adopted, and quarterly time series data spanning from 2011 to 2020 were collected from the statistical bulletins of the Central Bank of Nigeria (CBN) and the Federal Inland Revenue Service (FIRS). The data were analyzed using descriptive statistics, unit root tests, bounds cointegration tests, and the Autoregressive Distributed Lag (ARDL) model. The results revealed that petroleum profit tax, company income tax, value added tax and custom and excise duties. The study concluded that tax revenue does not significantly influence Nigeria's economic growth and recommended continuous tax audits to minimize tax evasion and avoidance.

In a study, Adeyeye et al. (2023) focused on optimizing tax revenue for economic growth and development in Nigeria, using the Federal Inland Revenue Service (FIRS) as a case study. questionnaires were administered to 235 respondents made up of FIRS staff and secondary data of real GDP data from 2012 to 2021. The authors used the ANOVA technique and multiple regression. They found that a positive and significant relationship between PPT, non-oil tax revenue, and real GDP exists. Also, Anaeto et al. (2023) investigated the effect of federally collected tax revenue on economic growth in Nigeria using the VECM to estimate both short and

long-term effects. Their study found that revenue from CIT, PPT, and VAT significantly positively affects long-term economic growth in Nigeria. In the short term, however, only PPT revenue showed a significant positive effect on economic growth, while CIT and VAT had no significant impact.

A study by Olaoye et al. (2023) explored the influence of tax revenue on economic development. Using secondary data obtained from the National Bureau of Statistics and the CBN, from 2003 to 2020., they discovered that petroleum profits tax, corporate income tax,value added taxand education taxes significantly affect economic development. Earlier, Ayeni and Omodero (2022) analyzed how tax revenues affect Nigeria's economic growth from 2000 to 2021. They adopted the Vector Error Correction Model (VECM) to assess the influence of PPT, CIT, and VAT on GDP. Their results showed that VAT and PPT positively and significantly affect GDP, whereas CIT has a significant negative impact on GDP.

Agbo and Onuegbu (2022) evaluated the impact of tax income on Nigeria's economic growth using an ex post facto research design and annual time series data from 1994 to 2020 using a multiple regression model. Their findings indicated that VAT had a significant positive impact on Nigeria's economic growth, CIT had a significant negative impact, and PPT had a weak positive effect overall. Earlier Amah (2021) analyzed the effects of income taxes and corporate taxes on Egypt's economic development from 1980 to 2018. The study found a strong positive correlation between income and corporate taxes and economic growth in Egypt. Additionally, Okolo et al. (2021) explored how CIT impact total federal tax revenues and economic growth using data from the first quarter of 2015 to the first quarter of 2020. The results from the VAR model showed that CIT significantly and positively affected both the overall federal tax revenues collected and economic growth. Todorovic et al. (2020) investigated the effect of CIT on GDP in Serbia and found that CIT positively influenced the country's GDP. Etim et al. (2020) studied the impact of taxes on Nigeria's economic growth from 1985 to 2018. The findings revealed a significant negative relationship between Nigeria's Human Development Index and CIT

Nwachukwu et al. (2022) examined the effect of various taxes on economic growth in Nigeria using secondary data analyzed with OLS and other inferential tools. Their results indicated that PPT, VAT, CIT, and Personal Income Tax (PIT) had a positive and significant impact on economic growth parameters.Nwobodo, et al. (2022) explored the relationship between indirect

taxes and economic growth in Nigeria. Using the ARDL model, they analyzed secondary data on VAT, Customs and Excise Duties (CED), and GDP, finding that VAT and CED positively influenced GDP.Ihenyen and Ogbise (2022) investigated the effect of tax revenue generation on economic growth in Nigeria. Analyzing secondary data with multiple linear regression, they found that PPT, CIT, and VAT positively impacted economic growth, whereas customs and excise duties negatively impacted it. CIT and CED had significant but negative effects on economic growth.Awa and Ibeanu (2020) studied the impact of tax revenue on Nigeria's economic expansion from 1997 to 2018, finding that CIT had a significant effect on economic expansion.

Adegbieand Fakile. (2011) investigated the relationship between CIT volatility and economic growth in Nigeria from 1981 to 2017. Their findings indicated that fluctuations in CIT positively and significantly impacted Nigeria's economic growth.Agunbiade and Idebi (2020) explored the relationship between tax revenues—focusing on CIT, VAT, PPT—and economic development in Nigeria from 1981 to 2019. Their analysis, using variance decomposition and impulse response functions, revealed that the impact of VAT, CIT, and PPT shocks on GDP growth remained consistent over the period studied. However, variance decomposition analysis showed that GDP growth is generally not significantly affected by shocks to CIT and PPT.Aliyu and Mustapha (2020) examined the impact of tax income on Nigeria's economic growth from 1981 to 2017.

Olushola et al. (2020) assessed the relationship between tax revenue and economic growth using an econometric approach. Secondary data were analyzed using a multiple regression model, and the results suggested a positive relationship between tax revenue and economic growth.Ewa et al. (2020) studied the impact of tax proceeds—including company profits, petroleum profit, and VAT—on Nigeria's economic development from 1994 to 2018. Using the Ordinary Least Squares (OLS) method, they found that CIT and VAT significantly affected GDP growth, while PPT had little to no impact.

Anisere-Hameed (2021) examined the effects of various taxes—PPT, capital gains tax (CGT), and CIT—on Nigeria's economic growth and development. Analyzing data with the OLS regression method, the study found that CGT and PPT were insignificant towards economic growth, whereas CIT had a significant positive effect.Yaro and Adeiza (2021) investigated the relationship between taxation and economic growth in Nigeria, using a simple percentage

method. Their results revealed a significant positive impact of both non-oil revenue and profit tax on Nigeria's economic growth.

Selecting a twenty-five-year period, Odunsi (2022) examined the effect of VAT on Nigeria's income generation and economic growth between 1994 and 2018. The authors used the Ordinary Least Squares (OLS) technique to establish that VAT had a significant and positive effect on tax revenue generation and economic growth in Nigeria during the period. Still in Nigeria, Bank-Ola (2021) assessed Nigeria's economic growth from 1999 to 2019 using time series data in an ARDL model. The analysis indicated that VAT has a positive long-term effect on economic growth but a significant negative effect during the short-term. In the same year, Amah (2021) investigated the impact of Nigeria's tax system on the economy from 1999 to 2017)using OLS regression. The study found that there was a negative correlation between GDP and VAT.

Mukuolu and Ogodor (2021) examined the impact of VAT on Nigeria's economic development from 1994 to 2018. Their empirical results indicated that VAT significantly and positively influenced the country's economic growth.Rahman and Sarkar (2021) investigated the contribution of VAT to the Bangladesh's economic growth. They found that VAT significantly propelled GDP growth indicators in Bangladesh.

Other studies that found significant relationship between tax revenue and economic growth and development include Adefolake and Omodero (2022), Okonkwo et al. (2022) and Peterson and Bair (2022) among several others.

3. Methodology

Research Design and Models

This study utilized secondary data obtained from the Central Bank of Nigeria (CBN) annual Statistical Bulletin in establishing the effect taxation variables on two measures of economic development: gross domestic product per capita and gross fixed capital formation. The taxation variables selected are company income tax, custom and excise duties, education tax, value added tax, personal income tax less pay as you earn (PAYE) and petroleum profit tax. Since economic development is viewed from two perspectives, two models are formulated, one for each measure of development.

The general linear functional equation for the model is expressed as:

ECODEV= f(TAXR) …….. (i)

ECODEV = (GDPPC, GFCF)……. (ii)

TAXR = CINT, CUED, EDUT, VATR, PITX, PPRT ….. (iii)

Where ECODEV = Economic development; TAXR = Tax revenues, GDPPC = Gross domestic product per capita ratio to GDP, GFCF = Gross fixed capital formation, CINT = Company income tax, CUED = Customs and excise duties, EDUT = Education tax, VATR = Value added tax revenue, PITX = Personal income tax, PPRT = Petroleum profit tax

The model for the effect of tax revenues on economic development (GDPPC) is expressed as:

$ln\text{GDPPC} = \mho + \beta_1 ln\text{CINT} + \beta_2 ln\text{CUED} + \beta_3 ln\text{EDUT} + \beta_4 ln\text{VATR} + \beta_5 ln\text{PITX}_t + \beta_6 ln\text{PPRT} + \varepsilon$ …… (iv)

While the model for the effect of TAXR on gross fixed capital formation is expressed as:

$\text{GFCF}_t = \mho + \beta_1 ln\text{CINT} + \beta_2 ln\text{CUED} + \beta_3 ln\text{EDUT} + \beta_4 ln\text{VATR} + \beta_5 ln\text{PITX}_t + \beta_6 ln\text{PPT} + \varepsilon$ …… (v)

Where:

$\mho$ = Regression intercept

ln = Natural logarithm

β_1 …… β_6 = Regression coefficients

ε = Stochastic error term

Analytical Techniques

A number of preliminary diagnoses were carried out on the research variables, including descriptive statistics, Pearson's correlation coefficients, Augmented Dickey Fuller (ADF) stationarity test and Johansen co-integration (Trace and Max-Eigen) test. Results of these diagnoses favour the use of the Fully Modified Ordinary Least Squares (FMOLS) technique. Phillips and Hansen (1990) stated that the FMOLS expunges problems that are associated with long-run co-integrating equations and the model's stochastic errors. In addition, the FMOLS is adjudged to be asymptotically unbiased and efficient." A typical FMOLS model can be expressed as:

$$\Omega = \beta \Big|_{t=1t=1} = \sum \left[\sum_{0}^{T} Z_t Z'_t \sum_{1}^{T} Z_t y_t^{+} \right] - T \left[\lambda^{+'}_{12} \right] \quad \ldots\ldots \text{(vi)}$$

Where:

β = Co-integrating equation estimate

$Z_t = (X_t', D_t')^1$ …….. (vii)

$\dot{y}_t^+$ = Modified variable data

$X_t^{'}$ = Stochastic regressors

$D_t^{'}$ = Deterministic trend regressors

T = Sample size

To test the normality of the residuals of our research model, we employed the Jarque-Bera (J-B) residual normality test.

4. Results and Discussions

In this section we analyze the data for the two regression models comparatively. Starting from the analyses of statistical properties, we estimated the correlations and carried out the twin-important determining pre-estimation tests: stationarity and co-integration. Thereafter, the FMOLS regression estimates for the two models, which show the relationship between Nigerian external sector and stock market development were estimated.

4.1 Preliminary Tests and Diagnostics

Descriptive statistics

Table 1 contains the summary of the statistical properties of the variables used in the two models.

Table 1: Statistical Properties (Models 1 & 2).

Table 1: Abridged Statistical Properties of Research variables

	LOGGDPPC	GFCF	LOCINT	LOGCUED	LOGEDUT	LOGPITX	LOGPPT	LOGVATR
Mean	3.146791	25.32503	5.487589	6.040142	4.658064	4.068669	5.716604	5.480815
Skewness	-0.600859	0.304049	-0.460031	0.241008	-0.475041	-0.518325	-0.624051	-0.421538
Kurtosis	1.747002	1.784395	1.765572	1.580788	1.737901	1.843830	1.828228	1.885193
Jarque-Bera	3.265310	2.001435	2.567855	2.433711	2.703513	2.612318	3.175043	2.116368
Probability	0.195410	0.367616	0.276947	0.296160	0.258785	0.270858	0.204432	0.347085
Obs	26	26	26	26	26	26	26	26

Source: Authors' Computation (2024)

The means of LOGGDPPC, GFCF, LOCINT, LOGCUED, LOGEDUT, LOGPITX, LPGPPTand LOGVAT are 3.146791, 25.32503, 5.487589, 6.040142, 4.658064, 4.068669, 5.716604 and 5.480815 respectively. Furthermore, LOGGDPPC, LOCINT, LOGEDUT, LOGPITX, LOPPT and LOGVATR are all skewed negatively to the left but around the mean with coefficients of skewness -0.600859, -0.460031, -0.475041, -0.518325, -0.624051 and -0.421538 respectively, GFCF and LOGCUEDare skewed positively to the right of the mean with skewness coefficients 0.304049 and 0.241008 respectively. Furthermore, all the variables are platykurtic, steeping below the peak of the mean as their kurtoses are all less than 3 (mesokurtic level).The Jarque-

Bera statistics and probabilities reveal that all our research variables are normally distributed (p>0.05).

Pearson's correlations coefficients

Table 2 contains the degree of correlations between the two dependent and the independent variables.

Table 2: Abridged Pearson's Correlation Coefficients

	LOGGDPPC	GFCF	LOCINT	LOGCUED	LOGEDUT	LOGPITX	LOGPPT	LOGVATR
LOGGDPPC	1							
GFCF	NA	1						
LOCINT	0.955501	-0.733574	1					
LOGCUED	-0.017475	0.154418	-0.029136	1				
LOGEDUT	0.955312	-0.765913	0.983988	-0.045102	1			
LOGPITX	0.944598	-0.766264	0.989223	-0.040697	0.979155	1		
LOGPPT	0.962861	-0.775086	0.940362	-0.055921	0.929478	0.940546	1	
LOGVATR	0.940839	-0.690902	0.992827	0.009021	0.975782	0.983408	0.931788	1

Source: Author's Computation (2024).

From Table2, LOCINT, LOGEDUT, LOGPITX, LOGPPT and LOGVATR all have very high positive correlations with LOGGDPPC with coefficients 0.955501, 0.955312, 0.944598, 0.962861 and 0.940839 respectively. LOGCUED has a very low negative correlation with LOGGDPPC (-0.017475). Secondly, LOCINT, LOGEDUT, LOGPITX, LOGPPT and LOGVATR all have high negative correlations with GCFC with coefficients -0.733574, -0.765913, -0.766264, -0.775086 and -0.690902 respectively. LOGCUED has a low positive correlation with GFCF (0.154418). These findings presuppose that the variables have the tendency of high serial correlation between the dependent and independent variables.

Stationarity test

Table 3 contains the results of the ADF unit root (stationarity) test for all the research variables. For a variable to be stationary, the estimated p-value of ADF statistics should be less than the selected level of significance, LOS, (5% in this case). This implies that p<0.05 implies that the variable in question has no unit root (or is stationary).

Table 3: Stationarity Test Results

Variable	Stationarity Test at Level		Stationarity Test at First Diff		Stationarity Order
	ADF Stat	Prob.	ADF Stat	Prob.	
LOGGDPPC	-1.951263	0.3054	-3.589674	0.0129	1(1)
GFCF	-1.194402	0.6624	-3.319231	0.0239	1(1)
LOCINT	-0.368307	0.9017	-3.847659	0.0070	1(1)
LOGCUED	-2.169514	0.2213	-5.093006	0.0004	1(1)
LOGEDUT	-1.493086	0.5205	-5.724948	0.0001	1(1)
LOGPITX	-2.324293	0.1723	-5.209026	0.0003	1(1)
LOGPPT	-1.295295	0.6146	-5.073379	0.0004	1(1)

LOGVATR	-0.074392	0.9428	-4.112236	0.0037	1(1)

Source: Author Computation (2024).

Table 3 shows that all our study variables are not stationary until differenced, that is they became stationary at first difference or that their unit root dissolves at the first difference. This feature supports the use of the FMOLS technique to determine the effect of the independent on the dependent variables.

Test of Co-integration

Two types of confirmatory tests embedded in the Johansen co-integration test were used to validate the existence of long run relationship between the dependent and independent variables for the two research models. These are the Trace and Max-eigen co-integration tests. The results of the Johansen co-integration tests for models 1 and 2 are contained in Table 4.

Table 4: Co-integration Test Results

Cointegration Rank Test (Trace and Max-Eigenvalue)								
Model 1. Dependent variable = LOGGDPPC					Model 2. Dependent variable = GFCF			
Hypothesized No of CE(s)	Trace test	Prob.	Max-eigen test	Prob.	Trace test	Prob.	Max-eigen test	Prob.
None	305.8067	0.0000*	0.995353	0.0000*	226.3525	0.0000*	0.984729	0.0000*
At most 1	176.8899	0.0000*	0.932656	0.0000*	125.9891	0.0001*	0.884039	0.0016*
At most 2	112.1395	0.0000*	0.870243	0.0004*	74.28102	0.0211*	0.766025	0.0381*
At most 3	63.12918	0.0010*	0.739614	0.0115*	39.42006	0.2439	0.522738	0.5158
At most 4	30.83503	0.0378*	0.543110	0.1028	21.66749	0.3174	0.355851	0.6913
At most 5	12.03554	0.1552	0.312845	0.2858	11.11169	0.2047	0.249141	0.5038
At most 6	3.030851	0.0817	0.118637	0.0817	4.234777	0.0396*	0.161759	0.0396*
Trace Test = 5 co-integratingeqs; Max-Eigen =4 co-integrating eqs					4 co-integrating eqs (Trace and Max-Eigen)			

*Co-integration exists

Source: Author Computation (2024).

From Table 4, the Trace test reveals that five (5) co-integrating equations (long run relationship exist between LOGDPPC and the regressors while the Max-Eigen test reveals 4 co-integrating equations as inferred from all $P<0.05$ LOS (model 1). However, for model 2, both the Trace and

Max-Eigen tests reveal that four (4) co-integrating equations exist between GFCF and the regressors.

4.2 Effect of Tax System on Economic Development in Nigeria

The long-run relationship between the Nigerian tax system and economic development suggests that the former has effect on the latter, though the effect may not necessarily be significant suggests that the latter will most probably be affected by the former. This effect is estimated using the FMOLS models earlier specified. Table 5 is an abridged result of the FMOLS models. We explain the effects on a model-by-model basis.

Table 5: Abridged FMOLS Results for Models 1 and 2.

Method: FMOLS						
Variable	Model 1: Dependent Variable = LOGGDPPC			Model 2: Dependent Variable = GFCF		
	Cointegrating equation deterministics: C			Cointegrating equation deterministics: C		
	Coefficient	t-Statistics	Prob	Coefficient	t-Statistics	Prob
LOCINT	0.453196	2.335955	0.0306**	-14.02043	-0.705777	0.4894
LOGCUED	0.100308	2.458791	0.0237**	-3.138162	-0.682446	0.5036
LOGEDUT	0.213014	2.283658	0.0341**	-11.45921	-1.270899	0.2199
LOGPITX	-0.177625	-2.058186	0.0536	-22.75400	-2.235399	0.0383*
LOGPPT	0.265514	5.529102	0.0000**	-5.548529	-1.186639	0.2508
LOGVATR	-0.316501	-1.764478	0.0937	56.95707	3.285757	0.0041**
R^2	0.755576			0.756865		
Adj R^2	0.743886			0.675820		

*Significant

Source: Author's Computation (2024)

Effect of Tax Variables on LOGGDPC in Nigeria

LOCINT, LOGCUED and LOGEDUT exert a positive and significant effect on LOGGDPPC such that a unit change in these variables led to about 0.453196 (45%), 0.100308 (10%) and 0.213014 (21%) increase in the LOGGDPPC. The effect is significant given the *p* values of the variables (0.03060<0.05, 0.0237<0.05 and 0.0341<0.05). LOGPITX and LOGVATR have negative but insignificant effect on LOGGDPPC such that a percentage increase in these variables had insignificant percentage decrease of 0.177625 (17.77%) and 0.316501 (31.65%) in LOGGDPPC respectively. Finally, LOGPPT had a positive but insignificant effect on LOGDPPC such that a percentage rise in LOGPPT significantly improved the LOGGDPPC by 0.265514. The adjusted coefficient of determination (R-squared) of 0.743886 means that about 75% of variations in LOGGDPPC are explained by the tax types in our regressors. We conclude here

that in Nigeria, the tax system significantly affected and led to increased per capita income during the years under study.

Effect of Tax Variables on GFCF in Nigeria

With respect to GFCF, the effect LOCINT, LOGCUED, LOGEDUT, LOGPITXand LOGPPT are all negative such that a percentage change in each of these variables led to a reduction of 14.02043, 3.138162, 11.45921, 22.75400 and 5.548529 respectively in GFCF respectively. However, only the negative effect of LOGPITX on GFCF is significant (0.0383<0.05). LOGVATR had a positive and significant effect on GFCF such that a percentage rise in LOGVATR significantly enhanced the GFCF by 3.285757 (p = 0.0041<0.05 LOS). The adjusted R^2 of 0.67580 means that approximately68% of variations in GFCF are explained by the tax types in our regressors in the second model. We conclude here that in Nigeria, especially PITX and VAT significantly affected GFCF negatively and positively respectively.

4.3 Discussion of Findings

Here, we discuss the findings from two perspectives based on the research models, that is the effect of Nigerian tax system on the gross domestic product per capita, on one hand, and gross fixed capital formation on the other.

Effect of Tax System on GDPPC – Model 1

The effect of company income tax (CIT) on the GDDPC is positive and significant. Generally, CIT affects the economy funding public goods and services, which enhance economic productivity. Higher tax revenues enable the government to invest in infrastructure, education, and healthcare, leading to improved business conditions and human capital development. This boosts overall economic activity and per capita income. Adegboye et al, (2021) found that effective CIT collection contributes significantly to GDP growth by ensuring the availability of essential public services and infrastructure, thereby fostering a conducive environment for economic activities.

Secondly, revenue from custom and excise duties have positive and significant effect on GDP Per Capita in Nigeria. This is expected because it positively impacts GDP per capita by protecting local industries and generating revenue for the government. These duties help reduce competition from foreign goods, enabling local businesses to thrive and contribute to economic growth. Additionally, the revenue collected can be used to improve infrastructure and public services, which further stimulates economic activities. Evidence from Nigeria indicates that well-

managed custom and excise duties play a crucial role in economic development by supporting domestic industries and funding public investments (Ezeoha & Cattaneo, 2011).

On its part, education tax can positively influence GDP per capita by funding educational initiatives, thereby improving human capital. Improved education systems lead to a more skilled workforce, which enhances productivity and innovation, driving economic growth. As discovered by Okoli and Afolabi (2017), in Nigeria, the education tax has been instrumental in financing educational projects, resulting in better educational outcomes and, consequently, a more competent workforce that contributes significantly to the economy.

In the case of petroleum profit tax (PPT), the effect on GDP per capita is positive and significant. This is also expected because PPT generates substantial revenue from the petroleum sector, which can be reinvested into the economy. The revenue from PPT can be used to develop infrastructure, healthcare, and education, fostering a more productive economic environment. In Nigeria, the petroleum sector is a significant contributor to the economy, and effective taxation ensures that the wealth generated from this sector benefits the broader economy, thereby increasing GDP per capita. This agrees with the discovery by Nwete(2004).

Personal income tax and VAT have negative and insignificant effect on GDPPC. This may be due to the relatively low tax compliance and collection efficiency in Nigeria. High tax rates canalso reduce disposable income and consumption, which dampens economic growth. However, the effect is insignificant, possibly because the tax base is narrow, and the overall tax burden is not sufficient to significantly impact GDP per capita (Ogbonna & Appah, 2012).

Effect of Tax System on GCFC – Model 2

The effect of tax system on GCFC in Nigeria is clearly different from how the former affects the GDPPC. First, we found that company income tax, custom and excise duties, education tax, and petroleum profit tax on GCFC are all negative. This may stem from the perception that high tax rates discourage investment by reducing the profits available for reinvestment. However, the effect is insignificant, indicating that other factors, such as the overall business environment and access to finance, play a more crucial role in investment decisions in Nigeria as found by Olaoye et al., (2023). Secondly, we discovered that personal income tax has a significant negative effect on gross fixed capital formation. This may be because high personal taxes reduce disposable income, limiting individuals' ability to save and invest. In Nigeria, where personal income levels are relatively low, high personal income taxes can significantly deter savings and investment,

thus negatively impacting capital formation. This was confirmed by Adeyemi and Babington-Ashaye(2013).

Furthermore, VAT has a significant positive effect on GCFC most probably because it is a consumption-based tax that does not directly reduce business profits or personal savings. Instead, it generates revenue that can be used for public investments in infrastructure and other capital projects. In Nigeria, effective VAT collection has been shown to provide the government with resources necessary to support capital formation and economic development (Ibikunle et al., 2019).

5. Conclusion and Recommendations

Our study examined the effect of the Nigerian tax system on two critical economic indicators: gross domestic product (GDP) per capita and gross fixed capital formation (GFCF). it provides empirical evidence on how various forms of taxation, including company income tax, customs and excise duties, education tax, petroleum profit tax, personal income tax, and value added tax (VAT), influence economic development and investment in Nigeria. given the country's reliance on tax revenues to fund public expenditures and development projects. To achieve its objectives, the study utilized pre-estimation diagnostics (descriptive statistics, correlations, stationarity tests and co-integration test) and the Fully Modified Ordinary Least Squares (FMOLS) technique. The FMOLS method was chosen for its ability to provide consistent estimates in the presence of endogeneity and serial correlation, which are common issues in time-series data.

The analysis revealed that,using the first research model, company income tax has a positive and significant effect on GDP per Capita, customs and excise duties were found to have a positive and significant impact on GDP per capita. Education tax has a positive and significant relationship on GDP per capita, and petroleum profit tax positively and significantly affected the GDP Per Capita. In contrast, personal income tax and VAT exhibited a negative but insignificant effect on GDP

Analysis of the second research model shows that company income tax, customs and excise duties, education tax, and petroleum profit tax have a negative but insignificant effect on gross fixed capital formation. Furthermore, we found that personal income tax has a significant negative effect on gross fixed capital formation and VAT had a significant positive effect on gross fixed capital formation.

The findings suggest that while certain taxes positively contribute to GDP per capita, their impact on capital formation varies, highlighting the complexity of tax policy's role in economic development.

Based on these findings, we recommend as follows:

i. The government should continue to improve the efficiency of corporate tax collection to maximize revenue. This can be achieved through better enforcement mechanisms, reduced tax evasion, and enhanced transparency in corporate financial reporting. There is need to allocate corporate tax revenues towards infrastructure development, healthcare, and education to further stimulate economic growth and improve GDP per capita.
ii. There is also need for government to support local industries by maintaining and strategically adjusting customs and excise duties to protect emerging local industries from international competition while avoiding excessive protectionism that could lead to inefficiencies. Revenues from these duties should be used to fund critical public services and infrastructure projects that can spur further economic growth.
iii. The government should also ensure that education tax revenues are efficiently used to enhance the quality of education at all levels. Investments should be made in improving educational infrastructure, teacher training, and curriculum development.
iv. That the petroleum profit tax system remains robust and transparent to maximize revenue without discouraging investment in the sector.
v. Increased efforts to improve personal income tax compliance through public awareness campaigns, simplification of tax processes, and stricter enforcement of tax laws should be done. Also, authorities should carefully assess the impact of VAT on different income groups and consider adjustments that can make the tax system more equitable without significantly harming consumption and economic growth.

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