Fiscal Policy Reforms and Economic Development in Nigeria

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https://doi.org/10.56201/ijefm.v11.no11.2026.pg121.134

Abstract
This study examined the relationship between fiscal policy reforms and human development in Nigeria from 1990 to 2024. Human development was measured using the Human Development Index (HDI), while fiscal policy reforms were proxied by changes in the tax-to-GDP ratio (TGDP), public debt-to-GDP ratio (PGDP), and capital expenditure-to-GDP ratio (CXGDP). Using secondary data, the study employed the Autoregressive Distributed Lag (ARDL) bounds testing approach to examine the short-run and long-run relationships among the variables. The bounds test confirmed the existence of a long-run relationship. The results showed that changes in TGDP, PGDP, and CXGDP had no significant long-run effects on HDI. However, changes in capital expenditure had significant positive short-run effects on human development. The study concludes that the developmental impact of fiscal policy depends largely on the effective implementation and targeting of fiscal interventions. It recommends improved tax administration, prudent debt management, and efficient capital expenditure to enhance human development in Nigeria.

Key words: *Human Development Index (HDI), tax-to-GDP ratio; public debt-to-GDP ratio, capital expenditure-to-GDP ratio*

Introduction

Fiscal policy remains one of the most effective tools for attaining macroeconomic stability and promoting economic development especially in emerging nations like Nigeria. Fiscal policy is envisaged to determine the direction and rate of growth through government revenue collection, spending distribution, and debt management. Nigeria has implemented a number of fiscal policy changes over the years with the goals of addressing structural imbalances, enhancing public financing, and promoting inclusive growth. However, issues including low revenue productivity, growing debt, and underinvestment in vital sectors continue to make these reforms less effective (Onyekwena & Olugboyega, 2019). This study looks at the relationship between economic development and three important fiscal reform indicators: the tax to GDP ratio, the public debt to GDP ratio, and the capital expenditure to GDP ratio and looks at how they relate to economic development as determined by the Human Development Index (HDI). Nigeria's low tax to GDP ratio continues to be a significant financial barrier. Nigeria's inadequate tax system restricts the

government's ability to make investments in socioeconomic infrastructure, according to Aregbeyen and Fasanya (2013). According to Joshua and Onuorah (2021), tax-based revenue improvements are crucial for promoting economic growth, but their efficacy varies depending on how taxes are administered and structured. If public debt is not allocated to profitable investments, it might impede growth, especially when it is enormous. Nigeria's debt to GDP ratio has increased, raising policy concerns. Ekpo and Udoh (2022) demonstrate that although fiscal policy, particularly public spending, has an impact on economic growth in Nigeria its effectiveness is eroded when revenue performance is poor and debt is not efficiently utilized. According to their conclusions, long-term economic results depend on budgetary sustainability.

Capital expenditure, which represents government investment in infrastructure, health, education, and other areas that promote growth, is another crucial factor. According to Onifade et al. (2020), recurrent spending is less successful at promoting development than productive capital spending. Additionally, Joshua and Onuorah (2021) note that well-managed capital spending has a statistically significant effect on output growth, highlighting its significance as a part of fiscal reform. The Human Development Index (HDI), which includes income, health, and education levels, is used in this study as a thorough indicator of economic development. According to Egbetunde and Fasanya (2013), economic policies are only significant when they result in observable gains in people's quality of life. Therefore, assessing fiscal reforms based on how they affect HDI offers a more inclusive and human-centered perspective.

In conclusion, this study examines the relationship between economic progress as determined by the Human progress Index and fiscal policy reforms as represented by tax to GDP, debt to GDP, and capital expenditure to GDP ratios. The study aims to evaluate the success of Nigeria's fiscal reforms and offer practical suggestions for boosting their developmental impact by utilizing both theoretical ideas and empirical data.

Statement of the Problem

Nigeria's continually low Human Development Index (HDI) ranking reflects the country's continued poor development outcomes despite multiple fiscal policy adjustments. Infrastructure, healthcare, education, and living standards have not significantly improved as a result of government initiatives to increase capital. The efficacy and developmental orientation of Nigeria's fiscal policy spending, reduce growing debt, and improve revenue mobilization framework are called into doubt by this conundrum. Nigeria continues to have one of the lowest taxes to GDP ratios among emerging countries, a sign of a poor revenue base and constrained fiscal room for growth. Reforms including tax digitization, VAT restructuring, and anti-evasion tactics have been implemented, however they have had little effect on long-term revenue growth, the government's growing reliance on borrowing, raising questions about debt sustainability and intergenerational justice. Furthermore, recurring spending frequently crowds out capital expenditures, which are crucial for promoting long-term growth and enhancing HDI outcomes. They are also vulnerable to fiscal leakages and poor budget execution. The developmental goal of fiscal policy is undermined as a result of the underfunding or incompleteness of numerous infrastructural and social development initiatives. The uneven influence of fiscal tools on Nigeria's growth trajectory has been brought to light by empirical studies like Ekpo and Udoh (2022) and Olisaji and Onuorah (2022). However, the knowledge on how these fiscal reforms affect more comprehensive development indicators like the HDI is severely lacking. which encompasses income, health, and

education dimensions. Addressing this gap is vital for determining whether Nigeria's fiscal policy reforms are not only growth inducing but also inclusive and human centered.

This study, therefore, seeks to investigate the extent to which fiscal policy reforms measured through changes in tax to GDP, debt to GDP, and capital expenditure to GDP have impacted economic development in Nigeria, using the HDI as the key indicator. Understanding this relationship is crucial for designing more effective fiscal policies that can foster inclusive development and improve the quality of life for Nigerians.

Literature Review

Conceptual Perspective

Fiscal Policy and Economic Development

Fiscal policy refers to government strategies relating to taxation, public spending, and borrowing, and it is a key tool for macroeconomic management. In developing economies like Nigeria, fiscal policy is not only used to stabilize inflation and growth but also to redistribute income, invest in infrastructure, and improve social outcomes (Aregbeyen & Akpan, 2013). Economic development, on the other hand, goes beyond GDP growth and encompasses improvements in human capital, living standards, and social infrastructure, as measured by the Human Development Index (HDI) (UNDP, 2020). The theoretical underpinning of fiscal policy's impact on development is rooted in Keynesian economics, which posits that government spending and taxation influence aggregate demand and overall economic activity. The endogenous growth theory also emphasizes the role of public investment particularly in health, education, and infrastructure in boosting long run productivity and human development (Barro, 1990).

Tax to GDP Ratio and Economic Development

Taxation is the primary source of non-oil revenue in Nigeria and a key determinant of fiscal sustainability. However, Nigeria's tax to GDP ratio has historically been below the global and African averages, indicating a narrow tax base and weak enforcement. Aregbeyen and Akpan (2013) found that improved tax revenue positively influences economic growth in Nigeria, but the structure and administration of taxes matter significantly.

Joshua and Onuorah (2022) emphasized that tax-based revenue sources, especially Companies Income Tax (CIT), have a significant impact on Nigeria's GDP growth. Their findings support the argument that enhancing tax efficiency and widening the base through reform measures can strengthen the fiscal space for human development. Similarly, Olisaji and Onuorah (2022) confirmed that CIT reforms can be an effective fiscal tool for growth if accompanied by efficient expenditure policies.

Public Debt to GDP Ratio and Economic Development

Public debt can support growth when invested in productive capital, but excessive debt can lead to macroeconomic instability. Nigeria's public debt profile has expanded in recent years, raising concerns over debt servicing and sustainability. Ekpo and Udoh (2022) examined the impact of fiscal policy on economic growth and found that while fiscal spending can positively affect growth, the rising debt burden if not linked to development spending dampens economic benefits.

Their findings align with those of Olayungbo and Olayemi (2018), who argued that debt sustainability is crucial and that the crowding out effect of debt servicing can reduce the resources

available for capital and social spending. Moreover, Okonjo Iweala (2021) has cautioned against unsustainable debt accumulation, especially when the fiscal multiplier of such borrowing is low.

Capital Expenditure to GDP and Economic Development

Capital expenditure plays a vital role in building the physical and institutional foundations for economic development. It encompasses government investments in infrastructure, education, and healthcare all of which directly affect HDI outcomes. Okeke, Umeghalu and Machi (2026) noted that Nigeria's fiscal structure remains constrained by excessive recurrent expenditure and debt servicing pressures Ekpo and Udoh (2022) highlighted that poor implementation of capital projects often leads to suboptimal outcomes. Their study recommends prioritizing capital over recurrent expenditure to ensure long term growth and human development. Olisaji and Onuorah (2022) similarly stressed that efficient capital investment has the potential to boost productivity and enhance economic inclusion if leakages and corruption are minimized.

Fiscal Policy and the Human Development Index (HDI)

Few studies have explicitly linked fiscal policy variables to the Human Development Index, yet the HDI provides a more inclusive measure of wellbeing than GDP alone. Egbetunde and Fasanya (2013) found that public spending on education and health correlates strongly with improvements in HDI components. Similarly, Ajakaiye et al. (2016) argued that fiscal reforms must prioritize human development goals such as improving access to education, healthcare, and basic infrastructure to reduce poverty and inequality. Fiscal policy reforms therefore refer to deliberate adjustments in the structure, composition, and administration of fiscal instruments with the aim of improving fiscal efficiency, macroeconomic stability, and development outcomes. These reforms typically involve broadening the tax base, strengthening tax administration, improving expenditure quality, reducing fiscal leakages, and ensuring sustainable debt management.

Gaps in the Literature

Considerable empirical work has examined the relationship between fiscal policy and economic growth, limited studies have analyzed the changes in fiscal policy (reforms) relationship and also through the lens of human development. Moreover, the combined effects of tax reform, public debt, and capital expenditure on HDI in the Nigerian context remain underexplored. This study fills this gap by examining how fiscal policy reforms influence inclusive development, using the Human Development Index as the outcome measure

Empirical Review

Numerous empirical studies have examined the nexus between fiscal policy and economic development in Nigeria, using varying indicators such as GDP, investment, inflation, and public debt. However, only a few have directly linked fiscal reforms to human development outcomes such as the Human Development Index (HDI). This section reviews selected empirical studies relevant to the key variables of this research.

Tax to GDP and Economic Development

Olisaji Chinonso and Onuorah J. K. Joshua (2022) investigated the impact of fiscal policy on the growth of the Nigerian economy using time series data and found that Companies Income Tax (CIT) and Value Added Tax (VAT) have a significant positive impact on GDP. The study

concluded that tax reforms aimed at increasing tax efficiency and broadening the tax base are essential for enhancing government revenue and promoting economic expansion.

Ekong, Orebiyi and Iriabije (2024) examined the effect of fiscal policy on inclusive growth in Nigeria using annual time-series data from 1985 to 2022. The study employed the Autoregressive Distributed Lag (ARDL) technique and used Human Development Index (HDI) as a proxy for inclusive growth. The findings showed that total government expenditure and tax revenue to GDP negatively affected HDI. Inequality had a significant negative effect on inclusive growth. The study concluded that fiscal policy can support inclusive growth when government spending is efficiently targeted and income inequality is reduced.

However, Akwe (2014) reported that despite increased tax efforts, the impact on social welfare indicators has been limited due to leakages, inefficiencies, and narrow coverage. This highlights the gap between revenue mobilization and its transmission to development outcomes.

Public Debt to GDP and Economic Development

Ekpo G. M. and Udoh U. N. (2022) conducted a study on the impact of fiscal policy on economic growth in Nigeria between 1980 and 2019. They employed error correction modeling and found that public debt had a negative but statistically insignificant effect on economic growth. They concluded that the developmental impact of debt is undermined by poor debt utilization and weak capital project implementation. In a related study, Olayungbo and Olayemi (2018) examined the dynamic relationship between public debt and human development in Nigeria using vector autoregressive (VAR) models. Their findings revealed that high debt servicing costs reduce the availability of funds for human capital investment, thereby negatively affecting HDI.

This is consistent with Iyoha (1999), who posited that excessive external debt creates a burden that limits fiscal space for growth enhancing expenditures, particularly in education and healthcare.

Capital Expenditure to GDP and Economic Development

Ariyo and Raheem (2016) assessed the effects of capital and recurrent expenditures on economic growth in Nigeria and found that capital expenditure has a more sustainable positive effect on long run growth than recurrent expenditure. They emphasized that targeted capital spending on education, health, and infrastructure is key to inclusive development.

Joshua and Onuorah (2022) provided additional evidence by showing that capital expenditure significantly contributes to GDP growth, especially when complemented by strong fiscal institutions. They argued that capital intensive investments are necessary for achieving structural transformation and improving social indicators.

Conversely, Nworji et al. (2012) noted that the developmental impact of capital expenditure in Nigeria has been limited by fiscal indiscipline and weak procurement processes. This suggests that the quantity of capital spending must be matched by its quality and effectiveness.

Fiscal Policy and Human Development Index (HDI)

Egbetunde and Fasanya (2013) examined the relationship between government expenditure and HDI in Nigeria and found that health and education spending had a significant positive impact on human development. They recommended redirecting fiscal efforts toward sectors that directly affect living standards.

Ajakaiye et al. (2016) used a social accounting matrix to analyze the redistributive impact of fiscal policy in Nigeria. Their results indicated that public spending had limited reach in improving HDI

due to leakages and inefficiencies. They advocated for human centered fiscal planning that explicitly targets HDI components such as literacy, life expectancy, and income equity.
Despite these findings, most existing studies focus on GDP growth as a proxy for development, leaving a gap in research that directly links fiscal reform variables such as tax to GDP, debt to GDP, and capital expenditure to GDP to the HDI. This research contributes to closing this gap by empirically analyzing how these variables influence Nigeria's human development outcomes.

Theoretical Framework

This study is anchored on a mix of macroeconomic theories that explain how fiscal policy can influence economic and human development outcomes. The framework draws primarily from four interrelated theories: Keynesian Theory, Endogenous Growth Theory, Ricardian Equivalence Theory, and Wagner's Law. These theories collectively provide a basis for examining the impact of fiscal reforms specifically taxation, public debt, and capital spending on development indicators such as the Human Development Index (HDI).

Keynesian Theory of Public Expenditure

Developed by John Maynard Keynes, this theory posits that active government intervention through fiscal policy particularly increased public spending can stimulate aggregate demand, employment, and output during economic downturns. In the context of Nigeria, this theory underpins the role of capital expenditure in boosting economic activities and reducing unemployment and poverty, which are critical components of the HDI.
Link: The theory justifies the use of capital expenditure as a policy tool for economic stabilization and development. It suggests that increased government investment in infrastructure, health, and education can raise human capital and improve the standard of living.

Endogenous Growth Theory

Proposed by Romer (1986) and Lucas (1988), this theory emphasizes that long run economic growth is driven by internal factors such as human capital development, innovation, and public investment. Unlike neoclassical models that view growth as exogenously determined, this theory allows for sustained growth through policies that enhance productivity and social infrastructure.
Link: The theory supports the view that government capital expenditure especially on education and healthcare can directly influence long term development by improving the HDI. It also links tax policy to innovation and productivity when taxes are used to finance development enhancing expenditures.

Ricardian Equivalence Theory

Originating from David Ricardo and advanced by Robert Barro (1974), this theory suggests that government borrowing does not affect overall demand because rational consumers foresee future tax increases to repay the debt. As a result, they save more rather than spend, offsetting the impact of deficit-financed government spending.

Link: In Nigeria, this theory raises concerns about the effectiveness of deficit spending in stimulating economic growth. It emphasizes the importance of public trust and fiscal responsibility, as excessive borrowing without clear repayment strategies may fail to boost development or improve the HDI.

Wagner's Law

Proposed by Adolph Wagner, the law states that as an economy grows, public expenditure naturally rises due to increased demand for social services, infrastructure, and public goods.

Link: Wagner's Law supports the need for expanding government spending in Nigeria, particularly on health, education, and welfare. It justifies fiscal reforms aimed at scaling up public investment to meet the developmental needs of a growing population and improve human development outcomes. The study hypotheses is as follows;

H_{01}: Changes in Tax to Gross Domestic Product (TGDP) do not significantly affect the Human Development Index (HDI) in Nigeria.

H_{02}: Changes in Public Debt to Gross Domestic Product (PGDP) do not significantly affect the Human Development Index (HDI) in Nigeria.

H_{03}: Changes in Capital Expenditure to Gross Domestic Product (CXGDP) do not significantly affect the Human Development Index (HDI) in Nigeria.

Methodology

This study adopts a quantitative approach to examine the relationship between fiscal policy reforms and human development in Nigeria from 1990 to 2024. The analysis focuses on how fiscal policy variables, namely changes in tax-to-GDP ratio (TGDP), changes in public debt-to-GDP ratio (PGDP), and changes in capital expenditure-to-GDP ratio (CXGDP), influence the Human Development Index (HDI), which serves as the proxy for economic development. HDI captures the multidimensional aspects of human welfare, including education, health, and income levels. The independent variables reflect key fiscal policy reform measures: TGDP measures the government's revenue effort through taxation, PGDP indicates the relative debt burden on the economy, and CXGDP represents the proportion of government spending directed towards long-term development projects and services.

The data for the study was sourced from the Central Bank of Nigeria (CBN) Statistical Bulletins, Federal Inland Revenue Service (FIRS) Reports, National Bureau of Statistics (NBS) publications, and the World Bank's World Development Indicators (WDI).

For estimation, descriptive statistics and residual diagonistics were used to assess the normality, central tendency, dispersion, and overall trends of the variables over the study period. Stationarity tests were conducted using the Levin, Lin, and Chu (LLC) unit root test to determine the order of integration of each variable. The results indicated a mixed order of integration, with some variables stationary at level I(0) and others at first difference I(1).

Given the mixed integration order, the study employed the Autoregressive Distributed Lag (ARDL) bounds testing approach to cointegration to examine the long-run equilibrium relationship between HDI and the fiscal policy reform variables. The ARDL model is appropriate for analyzing relationships when variables are integrated at different orders, I(0) and I(1).

The general ARDL model for this study is specified as:

$$HDI_t = \alpha + \Sigma\beta_1(TGDP_{t-i}) + \Sigma\beta_2(PGDP_{t-i}) + \Sigma\beta_3(CXGDP_{t-i}) + \varepsilon_t$$

Where:

HDI_t = Human Development Index

$TGDP_t$ = Changes in Tax-to-GDP ratio

$PGDP_t$ = Changes in Public debt-to-GDP ratio

$CXGDP_t$ = Changes in Capital expenditure-to-GDP ratio

ε_t = Error term
i = lag length determined by Akaike Information Criterion (AIC)
The bounds test was conducted to determine the existence of cointegration, followed by estimation of both the long-run and short-run dynamics. The short-run model incorporates the Error Correction Term (ECT) to capture the speed of adjustment towards long-run equilibrium.

Results and Discussion

Table 1 Descriptive statistics

Descriptive analysis of raw data

	HDI	TGDP	PGDP	CXGDP
Mean	0.466412	0.369365	0.040981	0.132882
Median	0.471500	0.020438	0.023587	0.037584
Maximum	0.548000	6.923551	0.247777	1.674175
Minimum	0.379000	-0.100398	-0.086711	-0.173322
Std. Dev.	0.052407	1.255196	0.069409	0.347068
Skewness	-0.126150	4.562183	0.842854	3.215991
Kurtosis	1.768572	23.60081	3.773697	13.65910
Jarque-Bera	2.238434	719.1669	4.873642	219.5645
Probability	0.326535	0.000000	0.087438	0.000000
Sum	15.85800	12.55840	1.393351	4.517973
Sum Sq. Dev.	0.090634	51.99207	0.158982	3.975050
Observations	35	35	35	35

From the descriptive statistics result, the mean values of HDI, TGDP, PGDP, and CXGDP were 0.466412, 0.369365, 0.040981, and 0.132882 respectively. These mean values reflect the average levels of each variable over the observed period (1990–2024), based on a sample size of 35 observations. To understand the spread or dispersion of the dataset, this study considered the minimum, maximum, and standard deviation values. The maximum values observed were 0.548000 for HDI, 6.923551 for TGDP, 0.247777 for PGDP, and 1.674175 for CXGDP. Similarly, the standard deviations were 0.052407, 1.255196, 0.069409, and 0.347068 for HDI, TGDP, PGDP, and CXGDP respectively. These values indicate the extent to which the individual data points deviate from their respective mean values, with TGDP and CXGDP showing higher variability.
This study also considered skewness and kurtosis measures. Skewness indicates the degree of asymmetry in the data distribution. The skewness values were -0.126150 for HDI, 4.562183 for TGDP, 0.842854 for PGDP, and 3.215991 for CXGDP. HDI had a slight negative skew, indicating a small left tail, whereas TGDP and CXGDP exhibited strong positive skewness, indicating longer right tails. PGDP also showed moderate positive skewness.
Kurtosis measures the "tailedness" of the distribution. The kurtosis values were 1.768572 for HDI, 23.60081 for TGDP, 3.773697 for PGDP, and 13.65910 for CXGDP. Except for PGDP, all variables had kurtosis values either significantly below or above the normal distribution

benchmark of 3, indicating deviations from normality. In particular, TGDP and CXGDP exhibited extreme leptokurtic behavior, suggesting the presence of outliers or heavy tails.

The Jarque-Bera (JB) test was conducted to assess the normality of each series based on their skewness and kurtosis. The JB values were 2.238434, 719.1669, 4.873642, and 219.5645 for HDI, TGDP, PGDP, and CXGDP respectively, with associated p-values of 0.326535, 0.000000, 0.087438, and 0.000000. Based on these results, HDI had a p-value greater than 0.05, implying that it follows a normal distribution. PGDP had a marginally acceptable p-value (0.087), suggesting near normality, while TGDP and CXGDP had p-values of 0.000000, which are far below the 0.05 threshold, indicating significant departures from normality.

To further assess the adequacy of the regression model, residual diagnostic was conducted using the Jarque-Bera test and histogram analysis. The residual series (RESID01) had the Jarque-Bera statistic for the residuals of 1.796491 with a p-value of 0.407284, which is greater than the 0.05 significance level. This implies that the residuals are normally distributed, thereby validating the assumption of normality and confirming the statistical adequacy of the regression model.

Table 2: LLC Unit Root Test Result

Variable	Stationarity	Statistic	Prob	Order
HDI	1st Difference	-7.664419	0.0000	1(1)
TGDP	Level	-3.16806	0.0342	1(0)
PGDP	Level	-5.652834	0.0000	1(0)
CXGDP	1st Difference	-5.852758	0.0001	1(1)

Source: E-views Output

The results from Table 2 show that two variables (HDI & CXGDP) are stationary at 1st Difference and TGDP and PGDP at level. Since the unit root test results for the series have mixed order. The study went ahead with ARDL.

Table 3: ARDL Long-Run and Short-Run Estimates with Bounds Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Long-Run Equation				
TGDP	−4.510266	10.10164	−0.446485	0.6621
PGDP	5.524507	12.14064	0.455020	0.6561
CXGDP	1.995883	5.313502	0.375519	0.7129
C	1.052248	1.204544	0.873927	0.3636
Short-Run Dynamics				

D(CXGDP(-2))	0.015552	0.006805	2.293609	0.0110
D(CXGDP(-3))	0.018699	0.004507	3.640871	0.0027
CointEq(-1)	−0.012140	0.001884	−6.442744	0.0000
Model Statistics				
R-squared	0.811291	Adj. R-squared	0.695696	
F-statistic	6.4565	Durbin–Watson stat	1.415771	
Bounds Test	Value	I(0)	I(1)	Decision
F-statistic	6.4565	2.79 (5%)	3.67 (5%)	Cointegration confirmed

Source: E-views Output

The ARDL bounds test result (F-statistic = 6.4565) exceeds the 5% upper bound critical value (I(1) = 3.67) for , indicating the rejection of the null hypothesis of no cointegration. This confirms the existence of a stable long-run equilibrium relationship between HDI and its fiscal determinants: changes in TGDP, PGDP, and CXGDP.

In the long-run equation, TGDP displays a negative coefficient (−4.51), while PGDP (5.52) and CXGDP (1.99) show positive signs, suggesting that higher public debt and capital expenditure may enhance human development, whereas higher taxation relative to GDP could suppress it. However, none of these long-run coefficients are statistically significant, implying that their individual long-term effects on HDI are weak when considered separately.

The short-run dynamics highlight the importance of capital expenditure changes, with D(CXGDP(-2)) and D(CXGDP(-3)) being positive and significant, indicating that increases in capital spending have immediate beneficial effects on HDI. The error correction term, CointEq(-1) = −0.01214 ($p < 0.001$), is negative and highly significant, confirming convergence towards long-run equilibrium at an adjustment rate of approximately 1.21% per year. This slow speed of adjustment reflects the gradual nature of human development improvements.

The model explains a substantial portion of HDI variation (Adj. $R^2 = 0.6957$) and is statistically significant overall. However, the Durbin–Watson statistic (1.416) suggests mild positive autocorrelation. These results collectively indicate that fiscal policy variables are important in influencing human development in Nigeria, but sustained and well-targeted interventions are needed to accelerate progress.

Test of Hypotheses

H_{01}: Changes in Tax to Gross Domestic Product (TGDP) do not significantly affect the Human Development Index (HDI) in Nigeria.

The t-statistic value for TGDP is −0.4465 with a p-value of 0.6621. Since the p-value is greater than the 5% significance level, TGDP is not statistically significant. The research accepts the null hypothesis and concludes that changes in Tax to GDP have no significant long-run effect on HDI in Nigeria.

H_{02}: Changes in Public Debt to Gross Domestic Product (PGDP) do not significantly affect the Human Development Index (HDI) in Nigeria.
The t-statistic value for PGDP is 0.4550 with a p-value of 0.6561. Since the p-value is greater than the 5% significance level, PGDP is not statistically significant. The research accepts the null hypothesis and concludes that changes in Public Debt to GDP have no significant long-run effect on HDI in Nigeria.

H_{03}: Changes in Capital Expenditure to Gross Domestic Product (CXGDP) do not significantly the human development index in Nigeria.
The t-statistic value for CXGDP is 0.3755 with a p-value of 0.7129. Since the p-value is greater than the 5% significance level, CXGDP is not statistically significant. The research accepts the null hypothesis and concludes that changes in Capital Expenditure to GDP have no significant long-run effect on HDI in Nigeria.
However, in the short run, the t-statistic value for D (CXGDP (-3)) is 3.6409 with a p-value of 0.0027. Since the p-value is less than the 5% significance level, D (CXGDP (-3)) is statistically significant

Discussion of findings
Results reported the t-statistic for changes in Tax to Gross Domestic Product (TGDP) as −0.4465, with a p-value of 0.6621, indicating that it is not significant at the 5% level. This finding does not align with the a priori expectation that higher tax to GDP ratios would have a meaningful effect positive or negative on the Human Development Index (HDI) in Nigeria. The result implies that changes in tax revenue relative to GDP have not significantly translated into improvements in human development outcomes, possibly due to weak tax administration, low coverage, and poor linkage between tax revenue and productive spending. This contrasts with Aregbeyen and Akpan (2013) who found that improved tax revenue positively influences economic growth but supports Akwe (2014) who observed that revenue efforts often fail to impact welfare indicators due to leakages and inefficiencies. Nonetheless, the present study's merit lies in its use of a long time series dataset (1990–2024) and the adoption of a robust ARDL methodology that accounts for both short run and long run dynamics. The t-statistic for changes in Public Debt to Gross Domestic Product (PGDP) was 0.4550, with a p-value of 0.6561, showing that it is not significant at the 5% level. Although the coefficient is positive suggesting that debt might be associated with higher HDI the insignificance implies that public borrowing has not yielded meaningful improvements in human development. This finding accords with the a priori expectation that excessive or poorly utilized debt fails to generate sustained welfare gains. It contrasts with Keynesian perspectives on debt financed investment but aligns with Ekpo and Udoh (2022) who reported that poor debt utilization and weak capital project implementation undermine developmental outcomes. The present study's extended dataset and updated econometric approach give additional weight to these conclusions.

For changes in Capital Expenditure to Gross Domestic Product (CXGDP), the t-statistic was 0.3755 with a p-value of 0.7129, showing that the variable is not statistically significant in the long run. This contradicts the a priori expectation that higher capital spending would significantly improve HDI, suggesting instead that structural bottlenecks such as poor budget execution, fiscal leakages, and corruption may have weakened the impact of capital expenditure. However, in the short run dynamics, D(CXGDP (-2)) and D(CXGDP(-3)) were positive and statistically significant ($p = 0.0110$ and $p = 0.0027$ respectively), indicating that increases in capital spending have immediate beneficial effects on HDI. This finding aligns with Ariyo and Raheem (2016) and Joshua and Onuorah (2022) who emphasized that well targeted capital investment can stimulate rapid improvements in social and economic conditions.

Conclusion

This study examined the relationship between fiscal policy reforms and human development in Nigeria from 1990 to 2024. The findings revealed that changes in tax-to-GDP ratio, public debt-to-GDP ratio, and capital expenditure-to-GDP ratio had no significant long-run effects on the Human Development Index. However, changes in capital expenditure had significant positive short-run effects on human development. The study therefore concludes that the effectiveness of fiscal policy in improving human development depends not only on the level of fiscal spending and revenue but also on the efficiency and implementation of fiscal interventions. Sustained and well-targeted capital expenditure, improved tax administration, and prudent debt management are therefore essential for achieving better human development outcomes in Nigeria.

Recommendations

1. The government should focus on broadening the tax base, improving compliance, and ensuring that tax revenues are transparently linked to education, healthcare, and infrastructure projects that directly improve human development outcomes.
2. Borrowing should be strategically directed toward high impact and productive investments rather than recurrent expenses. Strong monitoring frameworks should be put in place to ensure that debt-funded projects deliver measurable human development benefits.
3. The government should prioritize and sustain capital expenditure allocations, improve project execution efficiency, and minimize fiscal leakages so that short-term gains can translate into long-term improvements in HDI.

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