Government expenditure and revenue: Implication for human development index, labour productivity, and unemployment rate in Nigeria

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Abstract
Governmental policies are better utilized to address economic and societal challenges. This paper aims to study the effects of disaggregated government expenditure and revenues on measures of individual prosperity, including the human development index, labour productivity, and unemployment rate in Nigeria. Secondary data covering the period 1992–2021 were collected and analysed using Johansen co-integration, error correction model, and coefficient of correlation techniques. The results suggest that both government expenditure and revenue have long-run effects on the human development index and unemployment rate, but only recurrent expenditure has a significant short-run effect on the human development index. Additionally, the study found that labour productivity growth is positively and significantly correlated with oil revenue but negatively correlated with non-oil revenue and government expenditures. The study calls for strategically driven fiscal policies to promote prosperity and labour productivity for sustainable and consistent economic development in Nigeria.

Keywords: Labour productivity, Unemployment, Government expenditure, Government revenue
Similarity Index: 6%

Introduction

Governance and national patriotism thrive on the belief that a nation's prosperity translates to individual welfare (Anomaly, 2015). Citizens are proud of their country when they perceive that their interests are protected or included in national plans. This explains why countries with high development indices, like Canada, Germany, and the United States, experience high immigration rates (World Population Review). Governments, therefore, adopt strategies aimed at promoting the common good and individual prosperity, especially through economic policies.

Individual prosperity refers to a consistent state of progress, welfare, safety, and wealth (Carraciolo, 2008), driven by the principle of equality within the economy. Carraciolo (2008) argues that economic growth is a powerful tool for human welfare, reducing poverty, and enhancing prosperity. Economic growth, as widely researched, is a means to an end—better living conditions for citizens—through social, political, and fiscal policies (Gonda & Rozborilova, 2013). Achieving individual prosperity involves maintaining a comfortable state for all, regardless of race, tribe, politics, or social standing.

Several indicators reflect individual prosperity, such as employment rates and labour productivity. The latter, which measures the labour hours required to produce a unit of output, influences real income and job availability (NBS, 2017). Increased labour productivity helps curb unemployment and leads to wage growth and prosperity. The Human Development Index (HDI), reported by the UNDP, assesses the quality of life by considering health, education, and economic factors. Collective economic growth should first impact job availability and per capita income.

Ngutsav and Ijirshar (2018) define economic growth as the collective capacity to produce goods and services, increasing gross national income and the ability to meet national needs. Growth must benefit the average citizen, as prosperity should center on human welfare, not just economic

ratings (Gonda & Rozborilova, 2013). The NBS (2017) attributed Nigeria's slow productivity growth to power shortages, poor infrastructure, and limited financial access. These issues now also include insecurity, insurgency, and tribal clashes. Improving labour productivity and living conditions is essential for sustainable development (Burda, 2018), and fiscal policy can raise employment and productivity levels (Scarth, 2005).

This study aims to shift the focus of growth research in Nigeria from collective economic growth to individual prosperity, using HDI, labour productivity, and employment rate as indicators. It will assess the effects of GDP growth, government revenue, and expenditure on these measures of individual prosperity, examining their relationships and impacts on employment.

Literature Review

Conceptual Review

Government Expenditure:
Government expenditure, a key part of fiscal policy, involves payments for goods and services and helps steer the economy towards fiscal goals. Between 2016 and 2020, Nigerian government spending grew by 86.63%, but unemployment also rose by over 30% (World Bank). Phiri and Mbaleki (2022) suggest that government spending can either crowd out private investment or stimulate growth by addressing market failures and inequality. In Nigeria, recurrent expenditure has consistently outpaced capital expenditure, surpassing it by over 300% in 2021. This spending imbalance raises concerns about the effectiveness of government efforts to meet welfare obligations.

Government Revenue:
Nigeria’s government revenue is split between oil and non-oil sources, with oil accounting for up to 70% of revenue in 2019. Despite recommendations to diversify, reliance on crude oil persists. However, non-oil revenue has increased, with a reported 15.7% above target in 2021.

Taxation, a significant non-oil revenue source, must be managed carefully to avoid negative impacts on disposable income and general prices.

Theoretical Framework

This study is grounded in **Welfare Economics** (Pigou), which advocates for efficient resource allocation to achieve socially desirable outcomes. Nigerian policymakers, however, often misallocate resources, as argued by Danladi et al. (2015). **Endogenous Growth Theory** also supports the idea that economic progress comes from within the system, suggesting that government spending and revenue can drive productivity growth (Romer, 1990). Government expenditure, particularly on education and research, can enhance labour skills and economic development.

Empirical Framework

Omodero (2019) found that Nigerian recurrent government spending positively affects human development, while capital expenditure and corruption negatively impact it. Abubakar (2016) noted that public expenditure shocks have a positive effect on output. Micallef (2016) found that technological advancements improve productivity, especially in labour-intensive industries. Research by Danladi et al. (2015) also showed that recurrent expenditure drives economic growth more than capital expenditure.

Studies by Ngutsav and Ijirshar (2018) indicate that labour productivity significantly influences economic growth in Nigeria's agricultural and service sectors but not in manufacturing or oil. Phiri and Mbaleki (2022) observed that government spending on education and health in South Africa positively impacts labour productivity, while taxes have short-term negative effects.

Johannes and Njong (2012) found that government expenditure on infrastructure and education increases labour productivity in Cameroon, while agricultural spending causes inequality. In Indonesia, Pahlevi (2017) showed that governance and education spending positively affect the Human Development Index, while Ehimare et al. (2014) highlighted the

inefficiency of education expenditure in Nigeria. Stepanyan and Leigh (2015) found that public employment creation distorts private-sector productivity without reducing unemployment in developing countries.

Dynan (2018) linked lower productivity to reduced tax revenue, emphasizing the need for automatic stabilizers in tax systems. Bova et al. (2015) demonstrated that fiscal consolidation positively impacts labour productivity in OECD countries. Paliova et al. (2019) found that public spending on education improves individual incomes, schooling, and life expectancy across 68 countries.

Gap in Literature:
There is a need for studies that explore the role of government expenditure in boosting labour productivity in Nigeria, particularly by considering the impact of non-oil revenue such as taxes (Phiri & Mbaleki, 2022).

Methodology

This study employs a quantitative ex-post facto design using secondary data to analyze government expenditure (disaggregated into recurrent and capital expenditures) and government revenue (split into tax and non-tax revenues). Data for these variables were sourced from the Central Bank of Nigeria's 2021 Statistical Bulletin. The human development index (HDI) data came from the United Nations Development Programme, while unemployment data were obtained from the World Bank. The study covers the period 1992-2021 for most variables, with HDI available from 1992-2019 and labour productivity growth data spanning 2010-2021.

Due to data limitations, the sample sizes for the models focused on labour productivity growth and HDI differ. Data were analyzed using co-integration tests and an error correction model, as the variables were non-stationary at level but became stationary after first differencing.

Correlation coefficients were used to analyze the second objective due to the shorter data span for labour productivity growth.

Model specifications are as follows:

i. Objective I

$$HDI = \beta_0 + \beta_1 CAPEXP + \beta_2 RECEXP + \beta_3 OREV + \beta_4 NOREV + \mu$$

ii. Objective II

$$LP\_GRWTH = \beta_0 + \beta_1 CAPEXP + \beta_2 RECEXP + \beta_3 OREV + \beta_4 NOREV + \mu$$

iii. Objective III

$$UNEMP\_RATE = \beta_0 + \beta_1 CAPEXP + \beta_2 RECEXP + \beta_3 OREV + \beta_4 NOREV + \mu$$

Where;
HDI = Human Development Index
LP_GRWTH = Labour Productivity Growth
UNEMP_RATE = Unemployment Rate
CAPEXP = Capital Expenditure
RECEXP = Recurrent Expenditure
OREV = Oil Revenue
NOREV = Non-oil Revenue

The prior expectation is that capital expenditure, recurrent expenditure and oil revenue will have positive effects on human development index, labour productivity growth whereas they will have negative effect on unemployment rate. On the other hand, it was expected that non-oil revenue will have negative effect on human development index and labour productivity growth while their effects on unemployment rate will be positive.

Discussion of Results

A preliminary test was conducted to understand the order of integration of the data obtained using the Augmented Dicker Fuller method. The outcomes of various series were summarised on table 1.

Table 1

Unit root results at first differencing

Variables	ADF t-statistics	Probability
HDI	-7.365880	0.0000
LOG_N_OILREV	-7.667272	0.0000
LOGCAPEXP	-6.485047	0.0001
LOGRECEXP	-10.27169	0.0000
LP_GROWTH	-5.752520	0.0078
UNEMP	-3.414561	0.0190
LOG_OILREV	-5.277487	0.0011

Note. ADF = Augmented Dickey-Fuller test statistic. Source: Authors' computations using Eviews 10.
Source: Authors' Computations Eviews10

Given that the variables were integrated at the first order, it was appropriate to conduct co-integration analyses for each of the measures of human prosperity against selected measures of fiscal policies which are the independent variables to determine the possible long run relationship. Also, the error correction model was taken in the same order to assess the short-run effects of the variables and make conclusions on acceptability of hypothesis at each stage.

Test of Hypotheses

The study made hypothetical statements that agree with the specific objectives. The analyses were made in the same order.

Statement of Hypotheses 1-4

Ho1: Recurrent expenditure has no significant effect on human development index

Ho2: Capital expenditure has no significant effect on human development index

Ho3: Oil revenue has no significant effect on human development index

Ho4: Non-oil revenue has no significant effect on human development index

Table 2

Error Model of Human Development Index, Government Expenditure and Revenue

Variables	*Beta Coefficient*	*Probability*	*Decision*	*Speed of Adjustment*
Recurrent Expenditure	0.036199	0.0180	Reject $H_0$1	-0.417134
Capital Expenditure	0.000268	0.9826	Accept $H_0$2	
Oil Revenue	-0.008145	0.4613	Accept $H_0$3	
Non-oil Revenue	-0.006318	0.6816	Accept $H_0$4	

Source: Authors' Computations Eviews10

The long-run analysis, based on co-integration tests, reveals two co-integrating equations at a 5% significance level, indicating a long-term relationship between the explanatory variables and the human development index (HDI). This underscores the importance for Nigeria to align fiscal policies with human development goals.

Short-run interactions analyzed through the error correction model show a 48% adjustment speed from disequilibrium to equilibrium. Only recurrent expenditure has a significant positive effect on HDI, with a beta coefficient of 0.036 and a probability value below 5%. Thus, hypothesis 1 is supported, aligning with previous studies by Omodero (2019) and Kairo et al. (2017). This suggests that recurrent expenditure significantly impacts human development, while capital expenditure does not show a significant effect, indicating a need for a more balanced approach favoring capital investments.

Hypothesis 2, which posits that capital expenditure significantly influences HDI, is rejected based on the analysis showing a non-significant effect. This is consistent with Edeme and Nkalu (2019), who

argued that capital expenditure's impact is often overshadowed by recurrent expenditure.

Hypothesis 3, suggesting a significant relationship between oil revenue and HDI, is also rejected. Contrary to Ezekwe et al. (2022), who found a positive effect of oil revenue on HDI, the study found no significant association between oil revenue and HDI.

For hypothesis 4, non-oil revenue was found to have an inverse and non-significant effect on HDI. This aligns with Ita (2020), who highlighted Nigeria's low HDI and its relation to low disposable income. Despite efforts to improve taxation and non-oil revenue, the relationship with HDI remains weak. Ofoegbu et al. (2016) noted that tax revenue's impact on HDI is weaker compared to GDP, suggesting a need for improved policy strategies.

Statement of Hypotheses 5-8

Ho5: Recurrent expenditure has no significant correlation on labour productivity growth.

Ho6: Capital expenditure has no significant relationship on labour productivity growth.

Ho7: Oil revenue has no significant correlation on labour productivity growth.

Ho8: Non-oil revenue has no significant relationship on labour productivity growth.

Table 3

Statistical Correlations between Labour Productivity Growth and Government Expenditure and Revenue

Variables	*Correlation Coefficient*	*Probability*	*Decision*	*Number of Observation*
Recurrent Expenditure	-0.662576	0.0189	Reject $H_0$5	12
Capital Expenditure	-0.405094	0.1914	Accept $H_0$6	
Oil Revenue	0.674970	0.0160	Reject $H_0$7	
Non-oil Revenue	-0.576311	0.0498	Reject $H_0$8	

Source: Authors' Computations Eviews10

Table 3 and Appendix IV summarize the relationship between government fiscal measures and labor productivity growth:

Hypothesis 5: Recurrent expenditure shows a negative and significant relationship with labor productivity (coefficient: -66%, significance level < 5%), leading to the rejection of the hypothesis. Capital expenditure also exhibits a negative but insignificant relationship with labor productivity (coefficient: -41%). Unlike Phiri and Mbaleki (2022) for South Africa, both expenditures negatively impact productivity in this study. This suggests the need for policy adjustments to improve labor productivity, with potential issues such as corruption hindering effective outcomes (Omodero, 2019).

Hypothesis 7: Oil revenue has a positive and significant relationship with labor productivity (coefficient: 67%, significance level = 5%), leading to the rejection of the null hypothesis.

Hypothesis 8: Tax revenue shows a negative relationship with labour productivity (coefficient: negative, probability < 0.05), indicating adverse effects on productivity (Ajakaiye, 1999). This results in the rejection of the null hypothesis.

Statement of Hypotheses 9-12

Ho9: Recurrent expenditure has no significant correlation on unemployment rate in Nigeria.

Ho10: Capital expenditure has no significant relationship on unemployment rate in Nigeria.

Ho11: Oil revenue has no significant correlation on unemployment rate in Nigeria.

Ho12: Non-oil revenue has no significant relationship on unemployment rate in Nigeria.

Table 4

Error Model of Unemployment Rate, Government Expenditure and Revenue

Variables	*Beta Coefficient*	*Probability*	*Decision*	*Speed of Adjustment*
Recurrent Expenditure	0.655117	0.6908	Accept $H_0$9	-0.414036
Capital Expenditure	-1.038344	0.2334	Accept $H_0$10	
Oil Revenue	-1.259081	0.1107	Accept $H_0$11	
Non-oil Revenue	-0.577778	0.6950	Accept $H_0$12	

Source: Authors' Computations Eviews10

The analysis in Table 4 and Appendix V identifies 2 co-integrating equations at a 5% significance level, indicating a long-term relationship between unemployment rates and fiscal policy measures. This finding is consistent with studies by Manasseh et al. (2019), Maijama'a & Musa (2020), and Onakoya & Agunbiade (2020), which also demonstrate a long-run impact of oil prices and revenue on unemployment.

According to the error correction model in Appendix VI, the unemployment rate adjusts towards equilibrium at a rate of 41%. Recurrent expenditure has a positive but statistically insignificant effect on unemployment, contrary to initial expectations. Capital expenditure shows a negative but also statistically insignificant effect on unemployment.

Both oil and non-oil revenues do not significantly affect unemployment rates, leading to the acceptance of null hypotheses 11 and 12. This indicates that the impact of government revenue on unemployment is not statistically significant, aligning with findings from Rafiu et al. (2020) and Enueshike et al. (2021), which show varying but generally non-significant effects.

Conclusion and Recommendations:

Effective fiscal policies are essential for fostering organic economic growth in Nigeria, influencing individual prosperity and overall economic stability. The study recommends strategic capital investments in education, healthcare, and security to tackle under-employment and rising unemployment.

The research links labour productivity growth with government spending and highlights challenges such as brain drain affecting Nigeria's human capital. It stresses the need for improved policies to address labor issues and enhance output quality, especially in light of a 4% annual GDP growth decline as of 2020.

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