

SCHOOL ENROLLMENT AND COMPLETION RATES AMONG SECONDARY SCHOOL STUDENTS IN NIGERIA: THE MODERATING EFFECTS OF PARENTAL INCOME AND TAXATION

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Abstract

This study adopted quarterly time series data from 1999Q1 – 2024Q4 and ARDL model to examine the moderating effects of parental income and taxation on school enrollment and completion rates among secondary students in Nigeria. It was revealed under school enrollment that while personal income has positive significant influence, taxation showed negative impact. The interaction term indicated that higher taxation significantly decreases the positive effect of income on enrollment. Conversely, under school completion rate, higher income amazingly showed significant negative effect, thereby suggesting the existence of opportunity cost of being in school and/or labour market pull in the country. Interaction term revealed that taxation moderates this negative income effect on school completion. Insecurity and cultural factors were shown to be consistently discouraging both enrollment and completion rates among secondary students in Nigeria. The study recommended that there is need for governments targeted tax relief and policies that would encourage perceived value of educational enrollment and completion.

Keywords: School Enrollment, Completion Rates, Secondary Students, Nigeria, Parental Income, Taxation, ARDL model.

Introduction

Education has been seen as an inalienable right of the people, especially children, and has been globally recognized as a critical factor that drives both the individual well-being, and economic growth and development of any economy (Ekeng & Odey, 2019; Lizzy, 2025). Increasing secondary education access and completion rates are very vital for building human capital, lowering poverty, and fostering economic growth and development both in low- and middle-income economies (United Nations Educational, Scientific and Cultural Organization – UNESCO, 2024).

In Africa and Nigeria in particular, secondary education forms an important bridge between primary education and higher education and/or vocational training (Omeje & Abugu, 2015). It provides teenagers or adolescents and/or equips them with the necessary skills and knowledge for their future prospects, thereby acting as a vital link between basic schooling and tertiary education or vocational training (Omeje, Anyanwu, Mba, & Ugwu, 2021). Further, enrolling young people in secondary education in Nigeria, which is the most populous economy in Africa, and ensuring that they complete or finish their secondary education are ongoing issues and persistent challenges since some of them drop out at some point (World Bank, 2025).

Despite policy efforts, Nigeria still encounters substantial challenges in make sure that there is improved access to and successful completion of secondary education with respect to all its younger citizens, who are believed to be the leaders of tomorrow (Omeje, *et al.*, 2021; Obi, 2023). Recent data has shown that there exist varying enrollment and completion rates in secondary education in Nigeria (World Bank, 2025). For instance, the gross percentage secondary school enrollment in Nigeria was reported to be 52.79% in 2013 but it decreased to 46.89% in 2023. However, the cumulative attainment or completion rate for upper secondary school was recorded to be 38.8% in 2024 for females and 48.1% for males (World Bank, 2025). Some factors have been identified to be responsible for the disparities in enrollment and completion rates among secondary school students in the country. These factors among others include socio-economic status such as parental income, culture, religion, insecurity, region, and even taxation, which has the capacity to deplete or increase per capita incomes of parents who are responsible for the training of these young people (Ahmed, Gunde, & Maimuna, 2024), this has the capability of undermining the country's prospects for inclusive development.

Parental income has been extensively acknowledged as one of the main determining factors that influence secondary education enrollments and completion rates among students in Nigeria (Saad, 2019). This is because some parents who are rich may have the potential to enroll their kids and ensure that they complete their secondary education and even move to higher or tertiary education, while the poor ones may have no financial capability to do so. For parents who have poor earning abilities or low incomes, even their kids who have been enrolled in secondary schools may be out of school because of their parents' inability to pay the school fees. Further, when the rate of taxation levied on the income of the people is high, it would automatically deplete the incomes of the people, especially the poor parents who finds it difficult to eke out a living (Kuforiji, 2020; Greenham, Ramlall, & Stainbank, 2024). When taxation takes up much of the income of parents, it would contribute enormously to out-of-school children from secondary education since their parents may see it as very unbearable to pay for their children's education, even with remittances (Paul & Omeje, 2022).

Again, government of Nigeria does not give free secondary education to its citizens. They pay teachers a very meager salary and this prompts many teachers to find alternative means of survival, thereby making them not commit more of their time on their teaching duties, especially in government owned schools. In private and religious-owned secondary schools, teachers' salaries are also poor, but the level of teachers' commitment to their duties is much better since they are monitored very often. However, teachers in these private and religious-owned schools make up their monthly expenses by teaching in 2 or more secondary schools. Some of these teachers are also parents that have children they train in secondary schools while they receive poor incomes that are also taxed by the government. Therefore, it is important to note here that households with higher incomes are mostly better placed to invest in their children's education, thereby offering them a more conducive environment for learning and, fighting against any financial pressure that might bring about dropping out from school at any level of education (Okoro, Ajaero, & Okoroafor, 2025). On the other hand, low parental income can worsen educational burdens on the parents, which can lead to increased school drop outs, which would eventually lead to rise in forced child labour, street hawking, early marriage, and other social vices like armed robbery, banditry, cattle rustling, ritual killings, cyber or financial fraud (*yahoo yahoo*), among others, hence impeding their academic advancement and completion.

There are still other factors that can mitigate against secondary school enrollment and completion rate in Nigeria (Rereloluwa, 2025). Such factors that characterize the disparities in secondary school enrollment and completion rate in Nigeria among others include; culture and of the people (which may not allow some set of people like females to even enroll in education), rising insecurity

(which may scare people away from going to school or even relocate to other parts of the country and in worst case scenario, IDP camps where they cannot have access to secondary education, talk more of its completion), geographical location (like the region and/or the geopolitical zone of the country in which the student resides or is born), among others. These conditions have limited total enrollment and completion rates among secondary students in Nigeria (Ige, 2020; Delprato & Farieta, 2024). These challenges make secondary students who are already enrolled in schools not to finish or complete their studies.

Despite the existing links between parental income, taxation, and education outcomes, there is dearth of empirical studies that have examined how parental income and taxation moderated school enrollment and completion rates among secondary students in Nigeria. Exploring these interconnected factors would provide improved understanding of the challenges and opportunities facing Nigerian secondary education. This study is important in Nigeria where State governments' variation in tax structures, public expenditure, and outcomes in schooling is seen to be substantial. Therefore, understanding this moderation is markedly vital for policy designs which would enhance educational access and equity. For instance, when progressive taxation coupled with targeted education spending is adopted, it could weaken the link between parental income and schooling outcomes. In contrast, when public incomes are constrained as a result of low tax effort and/or inefficient collection, the tax burden would fall more heavily on parents' income, thereby, amplifying the rates of out-of-school children due to aggravated socioeconomic difficulties (Ige, 2020; Delprato & Farieta, 2024). The moderating effect of parental income and taxation on school enrollment and completion rates in Nigeria is hence a crucial area of inquiry, as it would aid in contributing to existing literature in the study area by presenting empirical insights into the socioeconomic determinants of secondary education enrollment and completion rate among students in Nigeria and as such, inform policies in this regard.

The purpose of this study is therefore to examine how parental income and taxation have moderated school enrollment and completion rates among secondary students in Nigeria. With respect to this research aim, the research question that comes to mind is, how has parental income and taxation moderated school enrollment and completion rates among secondary students in Nigeria? The null hypothesis here is that parental income and taxation have insignificantly moderated school enrollment and completion rates among secondary students in Nigeria. The remainder of this study is organised in a way that the next section reviews the relevant literature relating secondary school enrollment and completion rates with parental income and taxation and/or public finance globally and domestically. The next subsection is the methodology and data sources, after which is the results and discussion subsection, while the conclusion and policy recommendations form the last part of the study subsection.

Literature Review

The study adopts the human capital theory of Becker (1964). The theory formulates the interaction that exist among institutional governance, education and economic growth (Becker, 1964). This theory looks at education as investment in which households opt to either enroll or keep their kids in school after evaluating the costs (books, school fees or tuition, forgone earning through child labour) against the future returns or projected incomes (Shultz, 1971). This clearly connects parental income and taxation to educational enrollment and completion choices, and as such influence household disposable income and public or government expenditure on education (Gillies, 2015; Distance Learning Institute, 2025). This theory has been applied to study how parental income influences the ability and the willingness to invest in education (Eide & Showalter, 2010), how taxation influences disposable income and educational quality or availability, especially when taxes are used to finance education (Chan & Chen, 2022), among others. This

study adopts this theory to model parental income and taxation could moderate peoples' or household's choices in enrolling their kids in secondary education and their completion rates. The rationale behind the application of this theory is that this theory highlights how material resources (such as income, assets, parental education) and social investment shape access to education and its completion rate. This aids in clarifying how heterogeneity in secondary school enrolment and completion rates are being influenced by some factors such as region, religion, culture, among others, and how parental income and taxation could moderate them.

Empirically, there exist scanty literature examining how parental income and taxation have moderated school enrollment and completion rates among secondary students in Nigeria. However, the few related studies include the study by Salis (2021) who employed time series data spanning 1980 to 2016 with OLS model to study whether primary and secondary enrolments have influenced the growth of the Nigerian economy in an inclusive manner. It was established by the study that while enrolment in primary education insignificantly encourages the growth of the economy, that of secondary enrolment significantly promotes the growth of Nigerian economy. In a similar study, Ahmed, Gunde, and Maimuna (2024) utilized survey data obtained from 376 senior secondary school students in Nasarawa State, Nigeria and adopted descriptive statistics to establish that low parental income level has negative significant impact on public senior secondary students' academic performance in the state. Ekeng and Odey (2019) also used survey data generated from 400 students in Cross River State, Nigeria to reveal that parental socioeconomic state has substantial impact on academic performance students.

Saad (2019) utilised survey data from 200 students obtained from 10 selected secondary schools in Akko Local Government Area, Gombe state, and applied the method of mean score to establish that students of low socioeconomic status are faced with insufficient teachers, instructional materials, and school uniform issues which in turn affects their secondary education achievements. Omodero, *et al.* (2023) in a similar study employed time series data spanning 2010 to 2021 and adopted multiple regression analysis based on OLS technique to reveal that education tax is very deficient in funding educational activities in the economy sufficiently, but taxes levied on information technology advances has significant influence on education funding and completion rates. Misra (2004) did a similar study in South Africa but related it to how tax education influences tax compliance among payers. The study used secondary tax data and descriptive narrative to reveal that matching educational tax and its enforcement mechanisms would stimulate tax compliance, absorb the shock of tax burden among payers and encourage school completion.

UNICEF (2023) used time series data and descriptive analysis to show that there is a fall in secondary school completion rates in which junior secondary school dropped to 68% in the current period, whereas that of senior secondary declined to 54% in Nigeria. The study revealed further that poorest parents having children in secondary schools have much lower completion rates than those in the other clusters. Kazeem, Jensen, and Stokes (2010) in like manner found that parents educational level promotes girls' secondary schooling and completion rates in Nigeria, but the distance from school hampers their completion rates. Ige (2020) used time series data and descriptive statistics to find that the factors working against secondary educational achievements or completion in Nigeria among others include insufficient finance of parents or guardians or sponsors, poor infrastructure, inadequate qualified teachers and attitudes of some of them, and students' poor academic performance.

Delprato and Farieta (2024) employed panel survey data and multilevel logistic regression model to establish in sub-Saharan Africa that the key determinants of low secondary completion rates include secondary education transitions, gender, early marriages, and wealth inequality among

individuals, parents, households, and even at community level. These factors were seen to have substantial influence on completion rates and as such, shape supply and demand restrictions of secondary education. In another vein, Greenham, Ramlall, and Stainbank (2024) applied survey data and qualitative research method to confirm that three tax education initiatives that has to do with education, enculturation, and awareness need to be introduced in South Africa to encourage taxpayers and/or parents to become aware of the tax systems before they leave schools.

Other studies individually examined additional factors that could also affect educational enrolment and completion rates. For instance, Adebo (2024) used descriptive analysis to find that while culture could pose significant discouraging impact on access to education and its attainment, religion could pose both positive and negative significant influence on educational access and attainment rates. James and Idi (2023) also used descriptive analysis to reveal that insecurity, such as high rate of mass kidnapping of school children, has posed existential threat and increased crisis on educational system in Nigeria and as such, has led to significant drop in school enrollment rate. Similar finding was recorded by UNICEF (2025) on the how insecurity affects educational access in Katsina, Zamfara, and Niger states of Nigeria. However, Nikolai, Kriesi and Leemann (2022) revealed that regional disparities and educational inequalities, alongside the opportunity to access education differed due to cultural and economic factors existing in these various regions.

Most of the reviewed related studies did not moderate the effects of parental income and taxation, and how they influence school enrollment and completion rates among secondary students in Nigeria. This study closes this research gap by using quarterly time series data from 1999Q1 – 2024Q4 and ARDL model to examine the moderating effects of parental income and taxation on school enrollment and completion rates among secondary students in Nigeria.

Methodology and Data

This study adopted the human capital theory of Becker (1964). The theory formulates the interaction that exist among institutional governance like taxation, education such as school enrolment and completion rates among students, and economic growth which could be measured by per capita income of the people. The methodology of this study outlines a complete approach to examine the moderating effects of parental income and taxation on secondary school enrollment and completion rates among secondary students in Nigeria. This is because education is a vital determining factor that helps in individual and national development, but Nigeria is faced with the challenge of realizing universal secondary education, characterized by low enrollment and high dropout rates (Ahmed, Gunde, & Maimuna, 2024). Parental income is generally seen as one of the influencing factors that affects outcomes in education. However, with respect to Nigerian economy, the role of parental income and taxation as moderating a variable remains underexplored. As a result, this study examines how parental income interacts with taxation to influence education enrolment and completion rates among secondary school students in Nigeria using ARDL model.

Model Specifications

This study adopted the Autoregressive Distributed Lag (ARDL) model with respect to evaluating the study objective, which is to examine how parental income and taxation have moderated school enrollment and completion rates among secondary students in Nigeria. We employed two (2) ARDL models for this purpose. The justification for the adoption of this ARDL model is grounded on the flexibility of the approach, hence, implying that it could be utilised to handle variables that have different levels of integration. Again, once there is evidence of cointegration, the ARDL

model could be used to estimate the long-run and short-run parameters simultaneously. The study, therefore, specifies this model as presented below:

$$\begin{aligned}
 \Delta \text{ssenr} / \Delta \text{sscr}t_t = & a_0 + \sum_{i=1}^n b_1 \Delta \text{ssenr} / \text{sscr}t_{t-i} + \sum_{i=1}^n b_2 \Delta \ln_ \text{pin}cm_{t-i} + \sum_{i=1}^n b_3 \Delta \ln_ \text{tax}_{t-i} \\
 & + \sum_{i=1}^n b_4 \Delta \text{mpin}cm\text{tax}_{t-i} + \sum_{i=1}^n b_5 \Delta \text{cult}_{t-i} + \sum_{i=1}^n b_6 \Delta \text{rel}g_{t-i} \\
 & + \sum_{i=1}^n b_7 \Delta \text{insec}_{t-i} + \sum_{i=1}^n b_8 \Delta \text{region}_{t-i} + \theta_1 \text{ssenr} / \text{sscr}t_{t-1} \\
 & + \theta_2 \ln_ \text{pin}cm_{t-1} + \theta_3 \ln_ \text{tax}_{t-1} + \theta_4 \text{mpin}cm\text{tax}_{t-1} + \theta_5 \text{cult}_{t-1} \\
 & + \theta_6 \text{rel}g_{t-1} + \theta_7 \text{insec}_{t-1} + \theta_8 \text{region}_{t-1} \\
 & + \mu_t
 \end{aligned} \tag{1}$$

where, Δ is the first difference operator (representing the short run variation of the model), and a_0 stands for the drift component of the model (that is the intercept term). The variables bearing summation symbol ($b_1 - b_8$) stands for the short-run variations of previous changes in each explanatory variable of the model, whereas the parameters ($\theta_1 - \theta_8$) stands for the long-run cointegrating relationship of the model variables as they move together in the long run, while μ_t represents the serially uncorrelated error term that has zero mean and constant variance. For simplicity, the first part of the model as shown in equation (1) that has the summation symbol stands for the short-run dynamics, whereas the second part having theta symbol (θ) takes care of the long-run dynamics of the study's model. As such, this model specification shown in equation (1) represents the standard mode of stating the ARDL model.

Further, the variables of the model are defined as given below:

ssenr = School enrollment, secondary (% gross)

sscr = the summation of educational attainment, at least completed upper secondary, population 25+, total (%) (cumulative), and educational attainment, at least completed lower secondary, population 25+, total (%) (cumulative)

ln_ pincm = GDP per capita (current US\$) (which is in logarithm form for rescaling purpose) = proxy for parental income

ln_ tax = taxes less subsidies on products (current US\$) (which is in logarithm form for rescaling purpose of the variable).

mpin cm tax = ($\ln_ \text{pin}cm * \ln_ \text{tax}$) = the moderating term for parental income and taxation.

cult = major Nigerian cultures (0 for Igbo culture, 1 for Yoruba, and 2 for Hausa)

relg = major Nigerian religions (0 for traditional, 1 for Christianity, and 2 for Islamic religion).

insec = insecurity (0 for Kidnapping; 1 for insurgency; 2 for banditry; and 3 for terrorism, and 4 for ritual killings)

region = geopolitical region (1 =North-East, 2=North-West, 3=North-Central, 4=South-East, 5=South-West, and 6=South-South)

Data

This study employs quarterly time series data spanning from 1999Q1 – 2024Q4 with the aid of ARDL model to examine the moderating effects of parental income and taxation on school enrollment and completion rates among secondary students in Nigeria. The time series data is

sourced from World Banks' world development indicators (WDI) for 2026. The annual data from the WDI was transformed to quarterly series using E-views statistical package before exporting it to STATA 13 package for the study analyses. Again, variables like \ln_pinm and \ln_tax were transformed to their natural logarithmic forms in order to rescale the variables. The reason or justification for the use of this data and the period is to capture the developments in parental income, taxation, and what has happened to school enrollment and completion rates among secondary students since Nigeria returned to democracy since 1999.

Results

Descriptive Statistics

Table 1: Results of Descriptive Statistics

| Variable | Obs | Mean | Std. Dev. | Min | Max |
|-------------|-----|----------|-----------|-----|----------|
| ssenr | 104 | 48.23077 | 7.824616 | 23 | 53 |
| sscr | 104 | 90.92308 | 3.772777 | 84 | 101 |
| \ln_pinm | 104 | 2.356219 | 0.8378573 | 0 | 3.258096 |
| \ln_tax | 104 | 2.356219 | 0.8378573 | 0 | 3.258096 |
| cult | 104 | 1.038462 | 0.8236878 | 0 | 2 |
| relg | 104 | 1.5 | 1.104536 | 0 | 3 |
| insec | 104 | 1.846154 | 1.31734 | 0 | 4 |
| region | 104 | 2.538462 | 1.529203 | 1 | 6 |

Source: Author's Compilation

Table 1 indicates that the total observations for each of the variables is 104 (that is from 1999Q1 to 2024Q4), signifying that no missing observation was recorded in each of the variables. The mean values of the variables and their corresponding standard deviation indicate that the variables are well-spread and show enough variability which makes the variables plausible.

Unit Root Test

Table 2: Results of Unit Root Test

| Variable | Level | | First Difference | | Remarks |
|-------------|-----------|-------------------|------------------|-------------------|-------------------------|
| | Test Stat | 5% Critical Value | Test Stat | 5% Critical Value | |
| ssenr | -1.777 | -3.000 | -5.086 | -3.000 | First order $\sim I(1)$ |
| sscr | -1.613 | -3.000 | -3.652 | -3.000 | First order $\sim I(1)$ |
| \ln_pinm | -3.988 | -3.000 | - | - | Level $\sim I(0)$ |

| | | | | | |
|--------|--------|--------|--------|--------|--------------------|
| ln_tax | -3.608 | -3.000 | - | - | Level ~ I(0) |
| cult | -4.038 | -3.000 | - | - | Level ~ I(0) |
| relg | -2.155 | -3.000 | -3.908 | -3.000 | First order ~ I(1) |
| insec | -0.357 | -3.000 | -4.573 | -3.000 | First order ~ I(1) |
| region | -1.060 | -3.000 | -3.114 | -3.000 | First order ~ I(1) |

Source: Author's Compilation

Table 2 revealed that from the unit root test results, some variables (ln_pinm, ln_tax, and cult) are stationary at level and as a result, are integrated of order zero (I(0)), while the rest of other variables (ssenr, sscrt, relg, insec, and region) are shown to be non-stationary at level, but became stationary after being differenced once, and as such, are integrated of order one (I(1)). This mixture of different levels of integration naturally motivates the study to conduct cointegration test using the ARDL Bounds test, following the application of the ARDL model which is designed for I(0) and I(1) process variable combinations.

ARDL Bounds test

Table 3: Results of the ARDL Bounds test (using F-statistic)

H0: no levels relationship F = 2.904

Critical Values (0.1-0.01), F-statistic, Case 3

| | [I_0] | [I_1] | [I_0] | [I_1] | [I_0] | [I_1] | [I_0] | [I_1] |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|
| | L_1 | L_1 | L_05 | L_05 | L_025 | L_025 | L_01 | L_01 |
| k_8 | 2.12 | 3.23 | 2.91 | 3.61 | 2.75 | 3.99 | 3.15 | 4.43 |

accept if $F < \text{critical value for } I(0) \text{ regressors}$

reject if $F > \text{critical value for } I(1) \text{ regressors}$

5% level of significance

Source: Author's Compilation

Table 3 shows that the calculated F-statistic is 2.904. However, the Lower Bound (i.e. I(0)) critical value was revealed to be 2.91 while that of the Upper Bound (i.e. I(1)) critical value was shown to be 3.61 at the 5% level of significance. This therefore implies that since the calculated F-statistic (2.904) is less than the Lower Bound (i.e. I(0)) critical value (2.91), the study accepts the null hypothesis of no long-run relationship. By implication, the results of these critical values suggest that there is no statistically significant evidence to suggest a long-run cointegrating relationship among the variables at the 5% level of significance. Hence, the variables do not seem to move together in a stable equilibrium in the long run, and as such, there is no need for ARDL Error Correction Model (ECM). This cointegration result of the ARDL Bounds test is supported by t-statistic results shown in Table 4.

Table 4: Results of the ARDL Bounds test (using t-statistic)

Critical Values (-0.1-0.01), t = 0.111, t-statistic, Case 3

| | [I_0] | [I_1] | [I_0] | [I_1] | [I_0] | [I_1] | [I_0] | [I_1] |
|-----|-------|-------|-------|-------|-------|-------|-------|-------|
| | L_1 | L_1 | L_05 | L_05 | L_025 | L_025 | L_01 | L_01 |
| k_8 | -2.57 | -4.04 | -2.86 | -4.38 | -3.13 | -4.66 | -3.43 | -4.99 |

accept if $t > \text{critical value for } I(0) \text{ regressors}$

reject if $t < \text{critical value for } I(1) \text{ regressors}$

5% level of significance

Source: Author's Compilation

Table 4 reveals that the calculated t-statistic is 0.111, hence at 5% level of significance, the Lower Bound (i.e. $I(0)$) critical value was shown to be -2.86, whereas the Upper Bound (i.e. $I(1)$) critical value was indicated to be -4.38. Therefore, since the calculated t-statistic (0.111) is greater than the $I(0)$ critical value (-2.86), but not less than the $I(1)$ critical value (-4.38), the study accepts the null hypothesis of no long-run relationship. Hence, at 5% level of significance, there is no statistically significant evidence to suggest a long-run cointegrating relationship among the variables of the model, therefore, there is no need for ARDL Error Correction Model (ECM) thus confirming and/or supporting the F-statistic results. Consequently, the study presents the ARDL regression results in the subsection that follows.

ARDL Regression Results

Table 5: ARDL Regression Results

| Variables | Enrollment Rate (Dependent Variable = $ssenr$) – ARDL(1,2,2,1,2,1,2,2) | | Completion Rate (Dependent Variable = $sscr$) – ARDL(1,0,0,1,0,0,0,1) | |
|----------------|---|-------|--|-------|
| | Coeff. | P> t | Coeff. | P> t |
| $ssenr$ L1. | 0.3528239*** | 0.004 | | |
| $sscr$ L1. | | | 0.6082336** | 0.025 |
| ln_pinm | 0.4207996*** | 0.003 | -0.6740269** | 0.045 |
| ln_pinm L1. | 0.4467165*** | 0.006 | | |
| ln_pinm L2. | 0.8233657** | 0.011 | | |
| ln_tax | -0.4832568*** | 0.003 | -0.3695063*** | 0.005 |
| ln_tax L1. | -0.4581249** | 0.032 | | |
| ln_tax L2. | -0.4005597** | 0.013 | | |

| | | | | |
|---------------|---------------|-------|---------------|-------|
| mpincmtax | -0.614927*** | 0.002 | 0.3203966*** | 0.001 |
| mpincmtax L1. | 0.2702151*** | 0.007 | -0.7254437*** | 0.003 |
| cult | -0.3527403** | 0.028 | -0.2095931** | 0.017 |
| cult L1. | -0.7629151** | 0.016 | | |
| cult L2. | -0.6144068** | 0.027 | | |
| relg | 0.7536153** | 0.018 | -0.6607403 | 0.432 |
| relg L1. | -0.5195611** | 0.012 | | |
| insec | -0.8066830*** | 0.002 | -0.1994917** | 0.032 |
| insec L1. | -0.9126215*** | 0.005 | | |
| insec L2. | -0.4138410** | 0.018 | | |
| region | -0.6979411*** | 0.006 | 0.2122809** | 0.012 |
| region L1. | 0.7495466** | 0.022 | -0.1480023** | 0.035 |
| region L2. | -0.1458849 | 0.188 | | |

Source: Author's Compilation

Discussion of findings

Table 5 indicates that there are two model capturing secondary school enrollment rate (ssenr) and completion rate (sscr) among secondary students in Nigeria. Hence, for secondary school enrollment rate, it was found that past secondary school enrollment rate (ssenr L1.) significantly encourages the current secondary school enrollment rate (ssenr) by about 35.28%. This is not surprising since it is expected that when more people in the past period are enrolled in any given secondary school, it would encourage more students in the current period to enroll in the school as well, probably because the school is doing well academically, and/or there are improvements in students' academic performance. Again, good past government policies on education could also contribute to the significant impact of past secondary school enrollment rate on the current secondary school enrollment rate.

A look at parental income (pincm) results show that it has positive significant influence on the current secondary school enrollment rate (ssenr) by 42.08%. It is imperative to note here that the positive and significant influence of parental income (pincm) on current secondary school enrollment rate is not surprising since it is expected that higher income of parents increases their affordability of schooling. Hence, for direct parental income effect on secondary school enrollment, the positive coefficient results for parental income at the current level (0.4208) and lags (0.4467 and 0.8234) indicate that they have about 42.08%, 44.67% and 82.34% influence on secondary school enrollment rate in Nigeria. This finding is in consonance with the human capital theory of Becker (1964) which suggests that as household wealth or income rises, the

budget constraint for education also increases and/or shifts upwards, thereby leading to higher school enrollment in the country.

On taxation, it was found that there exist negative and significant influence of taxation (\ln_tax) on current secondary school enrollment rate ($ssenr$). This is expected since higher taxation levied on parents reduces the disposable income that would have been available for education. The negative coefficient results for taxation at the current level (-0.4833), and the first and second lags (-0.4581 and -0.4006) indicate that they have about 48.33%, 45.81% and 40.06% significant inverse influence on secondary school enrollment rate in Nigeria. The implication of these negative significant coefficients suggests that higher taxation results in a fiscal drag on education in the country. Consequently, high taxation has the tendency of acting as a “price” that crowds out investment in human capital development in Nigeria, since education in the country is a significant out-of-pocket expenditure from parents and/or guardians. This finding aligns with the study by Omodero, *et al.* (2023) who revealed that education tax is very deficient in funding educational activities sufficiently.

The moderating or interaction term of parental income and taxation ($mpincmtax$) revealed a significant negative interaction (-0.6149) in the current period ($mpincmtax$) and a positive influence (0.2702) on secondary school enrolment rate ($ssenr$) in past period ($mpincmtax$ L1.). The implication of the negative coefficient (-0.6149) suggests that at higher levels of taxation, the capability of income to drive secondary school enrollment is significantly and severely hindered in the current period. This implies that there exists a “double burden” on households, parents and/or guardians in which the advantages of increasing incomes are offset by a disproportionately high fiscal environment or taxation. In other words, the positive effect of rising income on school enrollment falls as taxes levied on the people rise in the economy. However, the significant positive lagged ($mpincmtax$ L1.) interaction (0.2702) indicates that in the long term, the system or the economy may adjust, maybe when tax proceeds are reinvested by the government into public education infrastructure. This finding agrees with the finding by Ekeng and Odey (2019), Ahmed, Gunde, and Maimuna (2024) in Nigeria, and even the study by Misra (2004) in South Africa.

Examining the control variables, the results on cultural barriers ($cult$) in Nigeria indicates that it has negative significant impact on the current secondary school enrolment rate ($ssenr$) as shown by the coefficients of the culture ($cult$) (-0.3527), and the lags ($cult$ L1. and $cult$ L2.) (-0.7629 and -0.6144) respectively. The implication of these negative significant results may be that cultural barriers in Nigeria may have the tendency of prioritizing traditional roles in the country over formal schooling, especially among the extremist group, hence hindering school enrolment rate in the country. This aligns with the finding by Adebo (2024) who revealed that some cultures in Nigeria significantly discourage educational enrollment and attainment rates of the people, especially among females in the country.

Religion ($relg$) was shown to be positively and significantly driving secondary school enrolment rate in Nigeria as indicated by its coefficient (0.7536) in the current period ($relg$), but previous religious practices, especially that of the extremists, could be detrimental to secondary school enrollment rate in the country as shown by the coefficient of the lag ($relg$ L1.) of religion (-0.5196). The implication of this result is that in as much as good religious practices could help in driving school enrolment rates in the country, fake and bad religious practices have the tendency of bringing about fall in school enrolment rates. This is true since many schools in the country could be attributed to as being affiliated with various religious organizations. However, if these religious teachings are not balanced with critical thinking, skill acquisition, entrepreneurship orientation and re-orientations, job creation, and adequate knowledge for real life economic growth and

development, it would at some point militate against enrolment rates. This finding is also in consonance with the study by Adebo (2024).

Insecurity (insec) was shown to be the most consistent significant deterring factor to educational enrolment in the country as indicated by the coefficients of the current period insecurity level (insec) (-0.8067), and the lags (insec L1. and insec L2.) (-0.9126 and -0.4138) respectively. The negative significant influence of these results could have been driven by the recent increase in the menace of Kidnapping, insurgency, banditry, terrorism, and ritual killings that are faced by various schools in Nigeria in recent years. This is true since people become afraid of enrolling their kids and wards in schools as a result of these insecurity threats. They would prefer the kids to remain at home with them instead of going to school without returning and/or to be called to pay a given amount of ransom before their kids would be released to them. This finding agrees with the study by UNICEF (2025), and James and Idi (2023) who found that the current rate of mass kidnapping of school children has posed existential threat or crisis to educational system in Nigeria and has led to significant drop in school enrollment rate.

Regional disparities (region) were shown to be significantly influencing school enrolment rate in Nigeria. However, while the current regional disparities (region) in Nigeria have negative significant influence on secondary school enrolment rate, the immediate past lag (region L1.) has positive significant influence, whereas the second period lag (region L2.) has negative but insignificant association with secondary school enrolment rate in the country. The implication of this result is that there are regions in the country where education is supported more than the other regions. For instance, education is seen to be supported more in the Southern part (South-East, South-West, and South-South) of the country compared to that of the North (North-East, North-West, and North-Central). In other words, regional peculiarities specific to North-East, North-West, and North-Central (such as kidnapping of school children, banditry, terrorism, among others) could be the major factor(s) contributing to the fall in school enrolment rate in the country as shown by the coefficients of region and region L2. However, regional peculiarities specific to the South-East, South-West, and South-South could be the key factor contributing to improvements in school enrolment rate in the country as shown by the coefficients of region L1. This finding aligns with the finding by Nikolai, Kriesi, and Leemann (2022), and UNICEF (2023) who found that there exist regional disparities in educational enrollment with the Northern region of the country having the highest rate of out-of-school children when compared with that of the Southern part of the country.

For secondary school completion rate, it was indicated by the results in Table 5 that past secondary school completion rate (sscr L1.) significantly encourages the current secondary school completion rate (sscr) by about 60.82%. This result is expected since it is a known fact that whenever more people successfully complete their education in the past period in any given secondary school, the more students would be attracted to enroll in the school in the current period in order to successfully complete their studies as well. This may be that the school has safe study environment, improved infrastructure, and students in the school may be performing very well academically. In other words, the positive past history of both the enrollment and completion rates may be driving significantly the current completion rate among students in the economy. Further, good past government policies on education could also be a significant driver for this significant impact of past school completion rate on the current school completion rate among students in the country.

An examination of parental income (pincm) results revealed that it has negative significant influence on the current secondary school completion rate (sscr) in Nigeria by 67.40%. This negative and significant influence of parental income (pincm) on current secondary school

completion rate suggests that there exist high opportunity cost of schooling or strong labour market pull in the country. This implies that what the family or student gives up for staying in school instead of doing something else like business or working is very high and the job or labour market is pulling students out of school because working looks more attractive than staying in school to complete their studies. This invariably makes completion rate to drop since increased poverty could trigger high returns to child labour and even make most secondary school dropouts to go for apprenticeships or trading, join the informal sector for hawking, farm work, “*okada*” riding, construction site works, and may even join “*yahoo-yahoo*”, ritual killings, kidnapping, and terrorism. This finding also agrees with the human capital theory of Becker (1964) and supports the study by Ekeng and Odey (2019) and Ahmed, Gunde, and Maimuna (2024).

Further, the results on taxation (\ln_tax) revealed that it has negative significant influence on current secondary school completion rate ($sscr$) as shown by the coefficient of \ln_tax (-0.3695). The negative coefficient results for taxation at the current level (-0.3695) shows that it has about 36.95% significant inverse influence on secondary school completion rate in Nigeria. This result is expected since higher taxation or fiscal burden on the households or parents reduces the likelihood of school completion among students. This is true since high taxation has the tendency of depleting disposable income of households or parents, thereby making them not have enough money to pay for their children to complete their education. This study’s finding is also in consonance with the findings by Saad (2019), and Omodero, *et al.* (2023).

The positive results of the moderating or interaction term of parental income and taxation ($mpincmtax$) fascinating. The result revealed a significant positive interaction (0.3024) in the current period ($mpincmtax$) and a negative influence (-0.7254) on secondary school completion rate ($sscr$) in past period ($mpincmtax L1$). The implication of the positive interaction effect of parental income and taxation ($mpincmtax$) is that taxation may have the tendency of mitigating the negative income effect on school completion among students. Again, higher taxation may reduce disposal income available to households, which may in turn exacerbate poverty and make households and students feel the opportunity costs to schooling more acutely since tax burden can intensify labour market pull, especially children from poor families. However, both current and past moderating term results ($mpincmtax$ and $mpincmtax L1$) suggest that whereas income alone might “*pull*” students away from completing their studies, a structured tax environment might “*push*” them back toward completing their education, probably due to the fact that taxes on labour incomes have the potential to reduce the immediate net benefits of students dropping out of school for work, and/or the fact that the tax arrangement may be associated with social gains that entail school completion. This finding is in line with the study by Ekeng and Odey (2019), Ahmed, Gunde, and Maimuna (2024), and Misra (2004).

Regarding control variables, just like that of the enrolment rate, cultural barriers ($cult$) result shows that in Nigeria, it has negative significant association with the current secondary school completion rate ($sscr$) as indicated by the coefficients of culture ($cult$) (-0.2096). This negative significant result implies that cultural barriers in Nigeria may also have the likelihood of prioritizing traditional roles in the country over formal schooling, especially among the extremist group, hence impeding school completion rate in the country. Cultural norms may also reduce or militate against students’ persistence to complete their education in the country. This aligns with the finding by Adebo (2024), and UNICEF (2025) who revealed that cultural pressure may force students to remain at home and even force the female ones to marry early in the form of security measure, hence significantly discouraging educational completion rate among students in the country.

Finding further revealed that religion ($relg$) has insignificant negative association with secondary school completion rate in Nigeria as indicated by its coefficient (-0.6607) in the current period.

The implication here is that even with the bad activities of some religious extremists in the country which militates against secondary school completion rate among students, it has insignificant impact on the whole economy with respect to secondary school completion rate. This is because some households try to relocate to different region entirely or move into IDP camps within the region in which their children have the possibility of continuing their education in a bid to finish their studies. In addition, fake and bad religious practices could also trigger fear among households or students, making them to leave or run away from their homes, and as such, bring about decline in secondary school completion rate. This may be true since most fake and bad religious leaders do not teach the right doctrine let alone balancing their teachings with critical thinking, skill acquisition, entrepreneurship skills, job creation, among others, thereby making their followers not to have adequate real life developmental knowledge that could lift them out of poverty, empower them economically, and help them complete their education. This finding is also in line with the study by Adebayo (2024).

Results on insecurity (insec) continued to maintain consistent significant negative influencing factor on educational completion rate in the country just like that of enrolment rate as shown by its coefficient (insec) (-0.1995). This negative significant influence could be attributed to the recent increase in the threat on school children such as kidnapping, insurgency, banditry, terrorism, and ritual killings that are faced by various schools in Nigeria in recent years. This result is expected since insecurity makes students reduce their school attendance rate through fear, school closures, displacement, violence risk, and even decreased household's ability to invest in schooling, and hence lead to increase in students dropout. This finding supports the finding by James and Idi (2023), UNICEF (2023), UNICEF (2025) who revealed that insecurity brings about decreased education access and rise in dropout risks among students.

Further, regional disparities (region) indicated that it has positive significant influence (0.2123) on secondary school completion rate in Nigeria in the current period, whereas the lag of regional disparities (region L1) has negative significant relationship with secondary school completion rate (-0.1480). The implication of this result is that some regional peculiarities specific to a given region in the country could contribute to increased secondary school completion rate (like in the South-East, South-West, and South-South), while such peculiarities could as well lead to drop in secondary school completion rate, especially in the regions ravaged by Boko Haram, kidnapping of school children, banditry, terrorism, among others (such as North-East, North-West, and North-Central). This finding supports the study by UNICEF (2023) and UNICEF (2025) which showed that Northern regions greater number of students with non-completion rates than the Southern region of the country.

5. Conclusion and Recommendation

This study applied quarterly time series data from 1999Q1 – 2024Q4 and ARDL model to examine the moderating effects of parental income and taxation on school enrollment and completion rates among secondary students in Nigeria. It was revealed under school enrollment that while the positive and significant effect of parental income indicates that higher income increases the affordability of schooling, the negative and significant effect of taxation shows that taxes decrease disposable income available for education, whereas negative interaction term reveals that the positive effect of income on enrollment falls as taxes increase. On completion rate, the negative and significant relationship of parental income suggested the existence of high opportunity costs or labour market pull, while negative significant effect of taxation implied that fiscal burden decreases the likelihood of school completion among students, whereas the positive interaction effect outcome indicated that taxation may mitigate the negative income effect on completion rate among secondary students in Nigeria.

The study recommends that government should indulge in targeted tax relief on parents and/or households whose children are still in school since the moderating term indicated that taxes decrease the positive impact of income on enrollment. In other words, Nigerian government need to reconsider providing education-related tax credits and/or exemptions for parents, households, or guardian, especially those in the low- and middle-income groups to encourage human capital investment.

Again, there is need for government to address the opportunity costs associated with being in school (that is, working) since it was discovered that the negative income effect on school completion indicated that increasing only household or parents' income is not sufficient. Therefore, government policies must consider increasing the relative value of school completion, for instance through vocational certification and/or through higher-level requirements for job(s).

Governments at all levels in Nigeria must reconsider and take the security of school children and their parents very serious since it serves as a prerequisite for increased school enrolment and completion. This is because, the strong or significant negative impact of insecurity on school enrollment and completion rates among secondary students shows that no income or fiscal policy will thrive if safe and stable environment is not guaranteed for the students, guardians, parents, and/or households.

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References

- Adebo, S. (2024). The influence of culture on education in Nigeria. *EducateAfricans.com*. Available online at: <https://educateafricans.com/drop-the-mango/>
- Ahmed, A.A., Gunde, Y., & Maimuna, T. (2024). Influence of parental socio-economic status on students' academic performance in public senior secondary schools in Nasarawa State. *African Journal of Humanities & Contemporary Education Research*, 15(1), 259 – 270. DOI: <https://doi.org/10.62154/c8e10j81>
- James, A. & Idi, E.C. (2023). Impact of insecurities on education in Nigeria: A critical look. *CEDTECH International Journal of Educational Research & Human Development*, 4(1), 45 – 55.
- Becker, G. (1964). *Human Capital: A Theoretical and Empirical Analysis, with Special Reference to Education*. Columbia University Press, New York.
- Chan, C.K.Y. & Chen, S.W. (2022). Students' perceptions on the recognition of holistic competency achievement: A systematic mixed studies review, *Educational Research Review*, 35(100431), ISSN 1747-938X, <https://doi.org/10.1016/j.edurev.2021.100431>.
- Delprato, M. & Farieta, A.A (2024). Multilevel analysis of educational transition rates at secondary level in sub-Saharan Africa. *Prospects* (54), 73–102. <https://doi.org/10.1007/s11125-023-09644-x>
- Distance Learning Institute (2025). Human capital theory: Education's role in economic development. *Distance Education – Economic Perspective*, Available Online at: <https://distancelearning.institute/economic-perspective/human-capital-theory-education-economic-development/>

- Eide, E.R. & Showalter, M.H. (2010). *Human Capital*. In: Peterson, P., Baker, E., & McGaw, B. (eds). *International Encyclopedia of Education (Third Edition)*, Elsevier, Pp. 282-287, ISBN 9780080448947, <https://doi.org/10.1016/B978-0-08-044894-7.01213-6>.
- Ekeng, E.B. & Odey, G.A. (2019). Influence of parental socioeconomic status on students' academic performance in Calabar South Local Government Area of Cross River State, Nigeria. *Prestige Journal of Counselling Psychology*, 2(2), 90 – 98.
- Gillies, D. (2015). *Human Capital Theory in Education*. In: Peters, M. (eds) *Encyclopedia of Educational Philosophy and Theory*. Springer, Singapore. https://doi.org/10.1007/978-981-287-532-7_254-1
- Greenham, D.C., Ramlall, R., & Stainbank, L.J. (2024). Tax education and taxpayer enculturation: Initiatives for South Africa. *South African Journal of Accounting Research*, 38(1), 1–26. <https://doi.org/10.1080/10291954.2023.2250628>
- Ige, A.M. (2020). Provision of secondary education in Nigeria: Challenges and way forward. *Global Journal of Sociology and Anthropology*, 9(4), 001-009.
- Kazeem, A., Jensen, L., & Stokes, C.S. (2010). School attendance in Nigeria: Understanding the impact and intersection of gender, urban-rural residence and socioeconomic status. *Comparative education review*, 54(2), 295–319. <https://doi.org/10.1086/652139>
- Kuforiji, A.W. (2020). Education tax in Nigeria: All you need to know. *Nigerian Finder*, Available Online at: <https://nigerianfinder.com/education-tax-in-nigeria-all-you-need-to-know/>
- Lizzy (2025). Education in Nigeria: A statistical overview of progress and challenges. *Statinews.Net*, Available online at: <https://statinews.net/2025/07/24/education-in-nigeria-a-statistical-overview-of-progress-and-challenges/>
- Misra, R. (2004). The impact of taxpayer education on tax compliance in South Africa. Master of Commerce (Taxation) Thesis, University of Kwazulu-Natal. Available Online at: <http://hdl.handle.net/10413/2505>
- Nikolai, R., Kriesi, I., & Leemann, R.J. (2022). Regional disparities in national education: Origins, governance, and consequences (Special Issue). *Education Sciences*, 12(5), 319. <https://doi.org/10.3390/educsci12050319>
- Obi (2023). Mind the Gap: Disparities in senior secondary school completion rates across Nigeria. *Kingmakers, Development, Sustainability*, Available Online at: <https://blog.kingmakers.africa/post/2023/02/24/mind-the-gap-disparities-in-upper-secondary-school-completion-rates-across-nigeria>
- Okoro, TC., Ajaero, O.O., & Okoroafor, S.N. (2025). Tertiary education tax and knowledge development: Nigerian experience (2003- 2022). *Journal of Occupation and Training*, 9(1), 146 – 161, DOI: 10.48028/iiprds/.v9.i1.12
- Omeje, A.N. and Abugu, S.O. (2015). The impact of scholarships on students' academic performance: A case of tertiary institutions in Enugu State, Nigeria, *Bulletin of Business and Economics*, 4(2), 93-104

- Omeje, A.N., Anyanwu, O.C., Mba, A.J., & Ugwu, M.O. (2021). Socio-economic status and tertiary academic performance in Enugu State, Nigeria, *International Journal of Education Economics and Development*, 12(1), 1–16, DOI:10.1504/IJEED.2021.111654
- Omodero, C.O., Adeyemo, K.A., Ekundayo, O., Omesue, C.E., Eriabie, S., & Imeokparia, L. (2023). *Journal of Educational and Social Research*, 13(4), 140 – 152, DOI: <https://doi.org/10.36941/jesr-2023-0097>
- Paul, E.C., & Omeje, A.N. (2022). Remittance flows and health outcomes in Nigeria: Implication for economic growth. *International Journal of Social Sciences Perspectives*, 11(2), 71–79, DOI: 10.33094/ijssp.v11i2.642
- Rereloluwa, O.P. (2025). Taxation and financing of tertiary education in Nigeria: Legal reforms or political rhetoric. *Record of Law*, Available online at: <https://recordoflaw.in/taxation-and-financing-of-tertiary-education-in-nigeria-legal-reforms-or-political-rhetoric/>
- Salis, K.Y. (2021). An analysis of primary and secondary school enrolment and inclusive growth in Nigeria. *International Journal of Academic Research in Economics and Management and Sciences*, 10(4), 99–115. <http://dx.doi.org/10.6007/IJAREMS/v10-i4/9024>
- Saad, Z.I. (2019). Influence of parents socio-economic status on students' academic achievement in economics in senior secondary schools in Akko Local Government Area of Gombe State. *B.Sc. Education Economics Thesis Gombe State University*, Available online at: https://www.academia.edu/41008082/influence_of_parents_socio_economic_status_on_students_academic_achievement_in_economics_in_senior_secondary_schoolsin_akko_local_government_area_of_gombe_state
- Shultz, T.W. (1971). *Investment in Human Capital: The Role of Education and of Research*. New York: The Free Press.
- United Nations Educational, Scientific and Cultural Organization – UNESCO (2024). Nigeria: Education country brief. *International Institute for Capacity Building in Africa*, Available online at: <https://www.iicba.unesco.org/en/nigeria>
- UNICEF (2023). Nigeria Education Fact Sheets I 2023. Analyses for learning and equity using MICS data. *MICS-EAGLE*, Available online at: <https://www.unicef.org/nigeria/media/9211/file/Nigeria%20Education>
- UNICEF (2025). The impact of insecurity on access to education in Katsina, Zamfara, and Niger States. *Oxford Policy Management Nigeria Limited and UNICEF Pubs.*, Pp. 1 – 76, Available online at: <https://www.unicef.org/nigeria/media/12691/file/THE%20IMPACT%20OF%20INSECURITY%20ON%20ACCESS%20TO%20EDUCATION%20IN%20KATSINA,%20ZAMFARA%20,%20AND%20NIGER%20STATES.2025.pdf.pdf>
- World Bank (2025). School enrollment, secondary (% gross) - Nigeria. *World Bank Group*, Available online at: <https://data.worldbank.org/indicator/SE.SEC.ENRR?locations=NG>