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Title: Are Low-Cost Private Schools Accessible and Equitable? Examining the Drivers of Public versus Private Primary School Attendance in Rural and Urban Nigeria

Abstract: The private schooling market in Sub-Saharan Africa (SSA) is expanding, particularly within the 'low-cost' private sector, which provides affordable alternatives to public education. However, evidence on its role in addressing inequalities in educational opportunities, especially for disadvantaged children, remains limited.

This paper introduces a methodology for classifying private schools by cost using household expenditure data. Leveraging the 2015 Nigerian Education Data Survey (NEDS), I examine how socio-economic, demographic, and spatial factors influence school choice, analyzing rural and urban data separately to capture regional differences.

The findings reveal that socio-economic factors—such as wealth, parental education, and residence (urban/rural, Northern/Southern Nigeria)—are the primary determinants of private school enrollment. Low-cost private schools fail to reach the poorest children, particularly in rural and Northern areas, exacerbating inequality in educational access. Additionally, private school enrollment is higher in regions with limited public school availability, supporting the school choice model of excess demand. The results also support the differentiated demand theory, with Christian children being more likely to attend private schools than Muslim children.

The paper concludes by recommending policies that prioritize the expansion and strengthening of public schools to ensure equitable access to quality education for all children.

Are Low-Cost Private Schools Accessible and Equitable? Examining the Drivers of Public versus Private Primary School Attendance in Rural and Urban Nigeria

1. Introduction

During the past three decades, the private primary school sector has grown significantly in sub-Saharan Africa (SSA). According to data from the World Bank, private primary enrolment grew by 113% between 1991 and 2003, compared to 5% growth in public enrolment (Baum, Cooper et al. 2018). Between 2000 and 2019, the share of students enrolled in private primary schools in SSA increased from 10 to 14.3% (World Bank 2021).[1] The growth of the private sector has been driven by a range of factors, including excess demand spurred by the rise in the general demand for primary education in the region, geographical gaps in public provision, and differentiated demand, such as a preference for alternatives to public schools that are perceived to offer higher quality education (Nishimura and Yamano 2013).

Proponents of private schools argue that the private sector has substantially contributed to expanding access to primary education and meeting universal education targets, such as Education for All (EFA), which aimed for all children to have access to and complete free and compulsory primary education of good quality by 2015, and the Millennium Development Goals (MDGs), specifically Goal 2, which sought to achieve universal primary education by 2015 (Tooley 2004; Heyneman and Stern 2014). However, opponents have argued that, despite the growth of private schools, they do not drive access to underserved groups and still largely exclude students along wealth, gender, and geographical dimensions (Härmä 2016). In this study, I assess how child and household characteristics and the local supply of schools determine public versus private school attendance in Nigeria. Overarching, I aim to examine whether these private schools, which proponents argue are of better quality, are equally accessible or if these schools are still populated by a more privileged group of students, as opponents have argued. To address these objectives, I answered the following research question: Which child, household, and local school supply characteristics predict the type of school a child attends?

In the last two decades, the growth in the private school sector has occurred in what is referred to as the 'low-cost' private school sector. Baum, Abdul-Hamid et al. (2018) defined these low-cost schools as inexpensive private schools catering to low-income children.[2] Before this, private schools in most SSA countries were known to be expensive and, therefore, accessible to only the wealthiest people within a country (Heyneman and Stern 2014). However, a growing body of research has shown that private school provision has expanded to include schools that charge a range of fees, from low fees accessible to low-income families to higher fees (Srivastava and Walford 2016).

It is necessary to understand the factors that predict attendance in different types of schools, especially in the context of tuition-free public school education across the region (Härmä 2016; Bennell 2022). This includes examining the extent of private school utilization

[1] This number is likely to be much higher, as school censuses conducted in selected areas in many SSA countries show that private schools outnumber public schools. However, most private schools are unregistered and are therefore not included in official government statistics. For example, see Baum, Abdul-Hamid et al., 2018.

[2] They have also been referred to as 'low-fee' private schools. In this study, I refer to them only as 'low-cost.'

in the region and the differences between households of children attending public and private schools (Bennell 2022). Although low-cost private schools have been studied over the past two decades, there are several gaps in evidence. Extensive research has focused on South Asian countries such as India and Pakistan, but detailed evidence on SSA is limited (Ashley et al. 2014:3). Where available, research on SSA has been limited to informal settlements, a few local governments within a state or specific states, and rural or urban contexts (for example, see Tooley and Yngstrom 2014; Härmä 2016; Dixon et al. 2017).

Furthermore, researchers working on this topic have arbitrarily defined private school boundaries (see Chudgar and Quin 2012). There is little evidence highlighting the heterogeneity in the primary private school sector (Ashley et al. 2014), and the extent to which marginalized children utilize private schools is unclear (Bennell 2022). A deeper examination of the associations between children, their households, and the schools they attend in the context of expanding primary school options can contribute to understanding regional educational trends.

This study contributes to the literature in several ways. First, I developed a novel method of categorizing schools into different cost categories based on household expenditure on schools. To my knowledge, no study has explored household expenditure patterns when examining low-cost private schools. However, it is difficult to ignore the role of households in demanding primary school education, especially in the context of shrinking public funds in the public school sector. Examining the broad fee spectrum that parents cover in their children's education is vital for categorizing private schools on a scale that moves from lower to higher fees. This is in line with Srivastava (2005) and others, who argued that a key category that may be used to distinguish between private schools is with respect to fees. In this study, I use a rich, nationally representative household dataset, the 2015 Nigerian Education Data Survey (NEDS). The 2015 NEDS data were collected at the household level, covering children attending all types of private schools, including registered and unregistered schools. The latter (unregistered schools) might be excluded from surveys that rely on the school register as the sampling frame. The 2015 NEDS provides information on parents' schooling decisions regarding their children. It also includes extensive information on household expenditures for different educational items. Therefore, it captures the full spectrum of possible costs associated with various types of private schooling relevant to this study.

I combined tuition with other mandatory expenses required for school enrolment and attendance in Nigeria to create private school costs. These mandatory costs are relevant because while public schools are tuition-free in Nigeria, there are significant hidden fees in the form of uniforms, books, registration fees, etc., that students need to cover to attend these schools. In this study, I examine heterogeneities in school attendance across several demographics, including all six regions and rural-urban residences. Furthermore, examinations of household expenditures suggest that the costs associated with schooling usually vary by grade level. Therefore, I calculated the private school cost scale by grade level, region, and geographical setting (urban and rural). I created three categories of private schools: low-cost, mid-cost, and high-cost. These three categories reflect the heterogeneity prevalent in the private school sector in Nigeria and reveal interesting information that is important for understanding the sector. For example, the low-cost school category reflects schools that are cheaper to attend (with tuition and mandatory fees) than public schools in each unit of the analysis. The classification used in this study permits a deeper understanding of the growth and heterogeneity of the private school market and the

factors that predict the prevalence of and attendance at different cost categories of private schools. The method used is detailed in Appendix A.

Second, while some studies have investigated the factors associated with the type of school a child attends in SSA, existing research has focused mainly on rural areas (Nishimura and Yamano 2013) or urban areas (Tooley and Longfield 2013). Where rural and urban areas have been investigated, these are usually confined to specific states within a country. The available evidence suggests differences in the spread of private schools between rural and urban areas. For example, Härmä's (2016) comparative study on rural and urban parts of Kwara State, Nigeria, indicates that there is sparser public school coverage in rural versus urban areas, and most of the private schools included in the study were in urban areas. Poor infrastructure, such as road networks, makes commuting in rural areas difficult. This suggests that private schools are less prominent in non-densely populated areas. Therefore, a combined country analysis masks variations within these areas. Given this and the differences in socioeconomic conditions between both settings, analyzing rural and urban data in a single econometric framework will not be appropriate for this analysis. Therefore, I ran regressions separately for rural and urban areas using nationally representative data. To the best of my knowledge, this is the first study in SSA to investigate the factors that predict attendance in different school types nationally, examining urban and rural data separately.

The remainder of this paper is organized as follows: In Section 2, I provide background on primary school education and private schooling in Nigeria. In Section 3, I discuss theoretical perspectives on school choice and private school expansion in Low-and-middle-income countries (LMICs) and report on previous literature predicting school type in SSA. In Section 4, I introduce the dataset and describe the methods and regression modelling. Section 5 presents the results, and in Section 6, I discuss the findings and conclude.

2. Background on Primary School Education in Nigeria

In 1973, the Nigerian government pledged to provide free and compulsory primary education to every child born from January 1970 – the end of the civil war (Imam, 2012).[3] This was the first major initiative by the government to increase access to education in Nigeria and bridge the ethnoreligious gaps in access to education. The pledge was enshrined in the Universal Primary Education (UPE) Policy (FRN 1977). In 1999, the program was extended from primary school to the first three years of secondary school and renamed Universal Basic Education (UBE). The extended UBE scheme provides all Nigerians nine years of free and compulsory education (FRN 2004). This was followed in 2004 by the UBE Act, which led to the design of a range of UBE programs to drive inclusive access to education for every Nigerian, regardless of socio-economic conditions (FRN 2004). With the extension of the UBE scheme, Nigeria's education structure now comprises nine years of basic and compulsory schooling which is to be provided free by the government, six years at the primary level and three years at the lower secondary school level.

[3] The civil war began 7 years after Nigeria gained its independence, and it lasted for 3 years between 1967 and 1970. The war also known as the Biafran war was caused by the attempted secession of southeaster regions of Nigeria.

In addition to provision by the government (public schools), primary education is also provided by the private sector (private schools). The commitment to UPE occurred during the oil boom, which initially increased government spending capacity (Fenske and Zurimendi 2017). However, following the collapse of oil prices in 1982, shrinking government revenue led to a significant reduction in education funding and quality (Pinto 1987; Babalola et al. 1999). Consequently, the private sector began to fill the gap to expand access, growing rapidly in response to inadequate public education provision and rising demand for quality schooling (Urwick 2002; Rose & Adelabu 2007).

Nigeria provides a unique case study of the predictors of school type between public schools and a heterogeneous group of private schools for several reasons. Private schools in Nigeria usually have to undergo a complex accreditation process managed by the Ministry of Education, which ensures they meet national education standards. However, despite these regulatory requirements, many private schools operate informally or remain unregistered, contributing to a significant portion of the private education market and highlighting challenges in monitoring and quality assurance (Härmä 2011; Baum, Abdul-Hamid et al. 2018). A 2018 assessment of private school regulations in over 20 African countries conducted by Baum, Cooper et al. (2018) revealed that three Nigerian states, Lagos, Ekiti, and Anambra, were among the states with the most burdensome market entry requirements for private schools in all countries. For example, private school operators in Lagos must pay several fees (such as building pre-inspection, registration, and annual renewal fees) before operating. Despite this, there is still a growing market for private education in many Nigerian states through unofficial/unregistered schools. Härmä (2011) conducted a census in 2010 to identify all private schools in Lagos and found that over 10,000 private primary schools were educating about a 1.4 million students at the primary school level (compared to 991 public primary schools).[4] Of these enrolments, about three-quarters were in unapproved/unregistered schools. Additionally, although there are considerable differences between urban and rural areas in Nigeria, some evidence suggests that private schools serve the needs of the poor in urban and peri-urban areas (Adelabu and Rose 2004) and rural regions (Härmä 2016) of Nigeria.

Although the actual share of private school enrolment across Nigeria is unknown, research on specific states offers insights into the role of schooling markets and private provision in the country. According to a census conducted by Joanna Härmä in 2011 on primary schools in Lagos State, approximately 57% of primary school-age children were enrolled in private schools (Härmä 2013). Approximately three-quarters of the private schools students enrolled in were unregistered and unapproved by the state. Private schools in Lagos cater to students from different socio-economic backgrounds, from very rich to relatively poor households; 59% of children from the most impoverished families in Lagos State also attend private school (Baum, Abdul-Hamid et al. 2018).

Most research on low-cost private schools in Nigeria has been conducted in Lagos State, but Lagos is not representative of the country. As the country's largest urban center, the private school market differs from that of sparsely populated rural areas (Härmä 2016). However, consistent findings across Lagos and other States where research has been conducted show that many private schools were unapproved and unregistered. For example, in Kwara, one of the poorest states in Nigeria, a census by Härmä (2016) found

[4] Härmä's study found that on average, the public schools served about 644 students, with a student-teacher ratio of 31:1. Private schools served on average 97students with a student teacher ratio of 12:1.

that 67% and 41% of private schools are unregistered in urban and rural areas, respectively.

Understanding the factors that determine school choice is important as it offers insights into how educational opportunities are distributed. Given that primary education is one of the foundational levels of schooling, it is particularly significant to explore determinants of school type at this level. Primary education not only provides essential literacy and numeracy skills but also has far-reaching individual and societal benefits. Children who acquire foundational skills early during primary school also do well on various socio-economic outcomes. Mastery of foundational skills may help students keep up with the curriculum and, as a result, stay in school. Staying in school longer and specifically learning while in school are associated with positive benefits such as reducing fertility rates and child mortality in LMICs (Mensch et al. 2019; Kaffenberger and Prichett 2020).

Beyond the immediate foundational skills students acquire, there are long-term private returns associated with acquiring foundational skills early. Research from the World Bank (2018) shows that investing in the early years of schooling represents the highest rate of return to early education. These skills are indispensable to unlocking future aspirations, but beyond that, they yield wider socio-economic benefits. According to Hanushek et al. (2015), there is a strong association between foundational skills and economic growth rates across countries. However, this association between education and economic growth is driven more by effective learning than just years of schooling (World Bank 2018). Beyond foundational literacy and numeracy skills, children acquire a range of foundation skills during primary education, such as critical thinking, communication, and social skills, that prepare them for life and active citizenship (Filmer and Fox 2014). Therefore, access to primary education can also be pivotal in poverty reduction, gender equality initiatives and overall socioeconomic development.

3. Theoretical Background and Prior Research

In this section, I explore the theoretical frameworks underlying school choice and the growth of private education in low-and-middle-income countries, followed by a review of empirical studies examining the factors that influence school type selection in SSA.

3.1. Theoretical Perspectives on School Choice and Private School Expansion in LMICs

Private education has grown significantly across LMICs (Heyneman & Stern 2014). This expansion of private primary education can be analyzed through a framework developed by Estelle James (1986, 1987a). James hypothesizes that the size and characteristics of the private education sector are shaped by two key demand-side drivers: excess demand and differentiated demand, alongside supply-side factors such as public subsidies and non-profit entrepreneurship. In this section, building on James' theory, I explore how private schools emerge and proliferate when public education systems fail to meet both the quantitative and qualitative demand for education.

Excess demand

Excess demand, as defined by James, occurs when the public's demand for education exceeds the available supply in public schools. This situation often arises from systemic underinvestment in public primary education systems, exacerbated by policies

like Free Primary Education (FPE) that increase enrolment without a proportional expansion of infrastructure or resources. In such contexts, the inability of public systems to accommodate all students leads to the growth of private schools.

James (1987b) argues that excess demand is a key driver of private sector growth in LMICs. Empirical evidence from various countries supports this claim. For example, Ashley et al. (2014) note that excess demand for primary schooling has driven private school proliferation across SSA and South Asia. Evidence from Nigeria highlights the critical role of private schools in addressing gaps in public provision. In Lagos State, Härmä (2013) found that, as of 2011, about two-thirds of primary school-aged children were enrolled in private schools. Similarly, in Enugu State, Adelabu and Rose (2004) note that private schools are "as common as street corners" (p. 50). Dixon and Tooley (2013) suggest that private schools complement government efforts to meet national and global education goals, as parents increasingly opt for private schools due to the insufficient supply of public options.

The growth of private schools in LMICs extends beyond urban centers. Low-cost private schools are also emerging in informal settlements and remote rural areas. These schools often arise in response to excess demand, as public systems fail to accommodate children, particularly in underserved regions (Tooley 2005). In many cases, informal settlements and rural areas experience severe shortages of public schools, leaving low-income households with limited alternatives. This imbalance between public school capacity and demand has contributed directly to the rapid expansion of the private sector.

Low-cost private schools, accessed by the middle class and some of the poor (Tooley and Dixon 2007; Andrabi et al. 2008), are increasingly becoming common and help address this gap by providing affordable education where public provision is insufficient or entirely absent (Härmä 2016). For example, in Lagos State, unregistered private schools cater to children excluded from the public system, with approximately 40% of school-age children attending such institutions (Adelabu and Rose 2004). These examples illustrate how excess demand drives private sector expansion, especially in marginalized areas where public infrastructure is weakest.

Differentiated Demand

Differentiated demand refers to parents' preferences for specific educational attributes, such as religious affiliation, proximity, or perceived quality. The differentiated demand model hypothesizes that private and public schools are imperfect substitutes (Heyneman and Stern 2014). According to James (1986, 1987a), differentiated demand is more prominent in advanced industrial societies, where public systems meet basic access needs but fail to accommodate cultural or pedagogical diversity. However, in many LMICs, differentiated demand also drives private school growth, as it is intertwined with quality considerations due to widespread dissatisfaction with public schools.

Across LMICs, studies have shown that parents choose private schools because they seek specific characteristics such as religious education, proximity to the household (Härmä 2013), language of instruction (Alcott et al. 2019), and higher perceived quality of education (Baum, Abdul-Hamid et al. 2018). Research in SSA has found that parents in some countries believe private schools provide better quality education than public schools (Kimenyi 2013). In their study of Kenya, Oketch et al. (2010) note that parents sending their children to private schools are seeking "good" schools for their children. Heyneman and Stern (2014) found that perceptions of school quality in several LMICs are based on structural features such as infrastructure, class size (Tooley and Dixon 2005), and teacher

motivation and absenteeism (Das et al. 2007). Regarding quality, Härmä (2011) found that parents in Nigeria who select private schools rated quality as a primary factor, with 64% and 77% of parents in Kwara and Lagos, respectively, citing it as a main criterion. In contrast, parents with children in government schools rated quality as a primary preference at only 21% and 44% in Kwara and Lagos, respectivel

James' (1986, 1987a) assertion that differentiated demand in LMICs stems from cultural heterogeneity is evident in the way private schools often cater to specific religious or linguistic groups. For example, faith-based and religious education has significantly contributed to the expansion of non-state provision of primary education across Asia and SSA (Barrera-Osorio et al. 2009; Wodon 2014).

Building on these theoretical perspectives, my analysis examines how a child's gender, place of residence, and parental socio-economic status influence private school enrolment in Nigeria, thereby contributing empirical evidence to James' (1986, 1987a) theories of excess demand and differentiated demand.

3.2. Factors that predict school type in Nigeria and LMICs

Evidence suggests that parents make decisions about the school their children attend based on specific characteristics of the child, including age and gender. In Lagos state, Tooley and Yngstrom (2014) surveyed 1,005 households from diverse income groups to investigate the factors that predict school type. Their study found that older children were generally more likely to be enrolled in public schools than younger children. This was applicable to a child's age in years and birth order (older siblings are more likely to be enrolled in public schools). In terms of gender, this study found that girls and boys were equally represented across all primary school types. Similar findings regarding age have been reported in other SSA countries. A study by Freetown, Sierra Leone, Dixon and Humble (2017) found that parents are more likely to select public over private schools as children age. However, the findings in terms of sex were inconsistent. Dixon and Humble (2017) found that, for girls, parents are twice as likely to choose a private school over a public school. Nishimura and Yamano (2013) found that girls in rural Kenya are less likely to attend private schools than boys.

At the household level, factors such as the household's religion, parents' educational status, the number of children in the household, and the household head's main occupation predict the school type a child attends. In Nigeria, Lincove (2007) found that children from Christian households were more likely to attend private schools than those from Muslim households. Similarly, the number of school-age children in a household has been shown to influence school choice in other contexts. For instance, Khan et al. (2011) found that in Pakistan, households with more school-age children are less likely to opt for private schooling. However, Dixon and Humble (2017) did not observe a significant impact of the total number of children on parental decisions in Nigeria. Additionally, children from households whose primary source of income is agriculture are less likely to attend private schools, either because these households have smaller education expenditures (Akaguri 2014) or because households choose to invest less in their children's education, as they do not see how it will be useful for future employment (Huisman and Smits 2009).

Evidence on how parents' education affects a child's school has been ambiguous. In Liberia, Dixon and Humble (2017) found that parents' level of education, specifically whether a parent has attained no education/only primary level or higher than primary level, is not associated with the likelihood of attending different school types. However, Tooley

and Yngstrom (2014) found that less-educated fathers tend to send their children to public rather than private schools. In Pakistan, Siddiqui (2017) found that an increase in the length of time a parent spends in formal education is positively associated with a child attending private school.

Household decisions are also constrained by two main factors: wealth (which determines their ability to afford schools) and the availability of schools. A consistent finding is that household wealth is one of the most important predictors of attendance in different school types in both urban and rural areas. Some researchers suggest that private schools are accessible to the poor. Tooley and Dixon (2005) conducted a systematic census of primary schools in low-income areas in India, Nigeria, Ghana, and Kenya. Their findings revealed that most children attended private schools in each area surveyed. In Nigeria, they researched poor areas in three local government areas, two urban and one rural, and found that 75% of the children were enrolled in private schools. In Tooley and Longfield's (2013) study on private schools in Sierra Leone, approximately 85% of private schools were considered to fall into the lowest cost category (a category they defined as schools affordable to families on the internationally accepted poverty line of $1.25 per person per day).

However, this evidence is heavily contested. A rigorous review of the role and impact of private schools in LMIC countries found that evidence of whether poor people can afford private schools is weak (Ashley et al. 2014). The most consistent evidence is that, even though poorer households can afford private schools, there is still a wealth advantage. Baum, Abdul-Hamid et al. (2018) argued that finances constrain access to educational opportunities for the poorest people in Lagos. Tooley and Yngstrom's (2014) study on Lagos state also found that while most parents from the poorest households send their children to private schools, a lower proportion of children from more impoverished families attend private schools.

Several studies have also examined whether attendance in different school types is affected by the local availability of schools. In Tooley and Yngstrom's (2014) study in Lagos, their findings reveal that parents send their children to local private schools because they are more conveniently located than public schools. The study also found that proximity to the household was a key predictor among low-income parents. Parents with younger children who lived in areas with no convenient public or affordable private school mostly sent their children to a school closest to their households (regardless of cost) rather than a more affordable school in another neighbourhood. Additionally, they found that lower-income parents have a higher opportunity cost in terms of time and transportation when sending their children to schools farther away from the household. Therefore, they are more likely to send their children to their closest school.

However, evidence suggests that families select farther schools despite the distance (De Kadt et al. 2014). For instance, in South Africa, data from Soweto reveal that only about 18% of children in primary schools attend the school nearest to their households. In Guinea Bissau, Gunnlaugsson et al. (2021) found that students who attended public schools were three times more likely to attend a school near their household than those who attended private schools. This indicates that children in private schools are likely to travel farther distances in order to attend school.

The above discussion suggests several factors that can predict whether a child will attend public or private schools. Informed by the literature, I examine if the following factors are relevant in rural and urban Nigeria, and if so, which factors are most significant: (a) child characteristics, such as the child's age and gender; (b) caregiver/parent

characteristics, such as education and occupation; (c) household characteristics, such as wealth and their ability to afford school costs, region of residence, and religion; and (d)the physical distance between schools and households.

4. Data and Measures

4.1. Nigeria Education Data Survey (NEDS) 2015

My data are from the 2015 Nigeria Education Data Survey (NEDS), a nationally representative sample survey implemented by the National Population Commission (NPC) in collaboration with the Federal Ministry of Education (FME) (NPC 2015). The 2015 NEDS comprised three datasets: eligible children (EC), parent/guardians (PG), and households (HH), generated from three questionnaires with the same names. A total of 32,335 households were sampled for the 2015 NEDS, and 31,199 households were interviewed, with 18,451 in rural areas and 12,748 in urban areas. The PG survey asked parents and guardians individual questions on each child aged 4–16 years in the household. Among the interviewed households, 85,093 eligible children were identified, and interviews were completed with 84,832 children.

All children's socioeconomic background data were obtained through interviews with their parents/guardians. The eligible child questionnaire provided information on children's schooling status and attendance, including whether they attended school during the 2014-2015 school year. The questionnaire also asked about household expenditure on schooling and other questions related to school attendance. The PG questionnaire collected background information on the parents/guardians, including their age, religion, and educational level. The questionnaire also asked parents about the type of school their children attended (public or private) and the proximity of their child's school to the household.

In this study, I limit the sample to eligible children in primary schools. While the official primary school age in Nigeria is 6 to 11 years, early and late entry into school is prevalent in Nigeria. Parents have been found to enroll their children in primary school as early as four years old so that they can graduate from university early (Amuka et al. 2013). Early graduation means that the children can secure formal employment early. In addition, culturally, a sense of pride is associated with early graduation from all school levels in Nigeria. Late enrolment is also just as prevalent, especially for children from poorer households living in rural areas or poor communities in urban areas (Delprato and Sabates 2013). Additionally, academic redshirting, which Pong (2009) describes as a deliberate choice by parents to retain their children in lower than expected grades as a way to improve learning achievement in school, is also prevalent in SSA (Jones 2013). In this study, I included all children attending primary school at the time of the survey, including children aged 4 - 16. The resulting dataset consisted of 38,281 children.

4.2. Outcome Variables: School Type

The outcome variable is the type of school a primary school student attends. Prior research in many LMICs has mainly focused on whether children attend public or private schools. However, this simplification ignores that the private school sector is not homogenous, and many private schools are unlikely to be close substitutes. Evidence from specific areas in Nigeria suggests that many private schools are likely to be comparable substitutes to public schools (Tooley and Yngstrom 2014). As private schools are not homogenous, the value of attending them is also not homogenous (Baum, Abdul-Hamid et

al. 2018). Therefore, modelling school options as public and private schools alone does not provide a deep understanding of what is happening in the growing private school sector.

To categorize private schools, I considered several approaches for benchmarking school fees. For example, Tooley and Yngstrom (2014) and Tooley and Longfield (2016) use household income as a benchmark, categorizing schools that charge less than 10% of household income at the poverty line as low-cost. However, due to limitations in the NEDS dataset - specifically, the lack of disaggregated household income data - this approach is not applicable. Furthermore, relying on a national poverty line would mask regional variations in affordability, given Nigeria's significant economic disparities.

Kingdon (2020) proposes using state per capita income, per capita public expenditure in government schools, and the minimum wage of daily wage laborers to benchmark private school fees. However, these methods are limited by data constraints and Nigeria's economic diversity. State-level economic data is unavailable, and national-level figures, such as the minimum wage, do not adequately reflect regional differences in affordability.

Chudgar and Quin (2012) offer an alternative method, categorizing low-cost private schools as those with fees lower than the maximum fees in public schools within the same district and grade level. However, this method simplifies the classification into only low and high-cost categories, failing to capture the complexity within the private school sector. In Nigeria, public schools are essentially tuition-free, though they may impose other mandatory costs, such as for uniforms and textbooks, which complicates fee comparisons. Kingdon (2020) corroborates the importance of these fees, naming them "compulsory" for attending school. She defines these "course fees" as mandatory payments that all students must pay, and highlights their significance for both public and private schools.

Building on Chudgar and Quin's approach and Kingdon's definition of "course fees," I created a multi-category school-type variable, using household expenditure data from the 2015 NEDS. I categorized schools based on the costs associated with attending them because evidence suggests that the quality of private school education in Nigeria - referring to factors like teaching standards, learning materials, and overall learning experience, is significantly associated with its cost (Baum, Abdul-Hamid et al. 2018). Using reported household education expenditure data from the NEDS, I created a new school type variable that classifies private schools into three categories: low-cost, mid-cost, and high-cost. School costs are based on parent reports of annual tuition expenditure, exam fees, books, school uniforms, and writing materials. I created categories specific to each residential area (urban and rural), and within each residential area, the categories were also specific to each of Nigeria's six geopolitical regions. This is supported by evidence from countries such as Haiti (Salmi 2000), which suggests that the quality of private school education is directly connected to both the cost associated with attending the school and the location (See Appendix A for a detailed description of the classification).

This study describes school type as a four-way option between public, low-cost, mid-cost, and higher-cost schools. For all children attending private schools, I classify them as attending:[5]

[5] See Appendix A for a detailed description of how I define the categories and classify children into each type of school.

A) A **low-cost private school** if the reported costs/household expenditures on the child for the year is less than or equal to the median reported costs for all public school students in the region and residential area.
B) A **mid-cost private school** if the reported costs/household expenditures on the child for the year fall above the median of public school costs but below or equal to the 95th percentile of the spending/reported costs for all private-school students in the region and residential area.
C) A **High-cost school** if the reported cost/household expenditures on the child for the year is above the 95th percentile of the expenditure/reported fees for all private school students in the region and residential area.

In Tables 1 and 2 below, I summarize the cost differences in education across various types of schools in urban and rural areas of Nigeria. It is important to note that these results depict averages across urban and rural areas. However, in the calculations, I have also conducted region-specific analyses for each of Nigeria's six geopolitical regions. Therefore, the figures presented here reflect overall averages, with regional variations accounted for in the broader analysis.

Table 1: Number of Students in Each School Type and Average Cost Per School Type (Urban)

School Type	N	%	Average Cost (NGN)	Average Cost (USD)
Public	10,864	64.67	8,654	43
Low-cost private	3,056	18.19	4,055	20
Mid-cost private	2,030	12.08	39,400	197
High-cost private	849	5.05	125,000	625
Total	16,799	100		

Notes: USD conversion is based on the 2015 exchange rate of 200 Nigerian Naira (NGN) to 1 United States Dollar (USD). The USD amounts are rounded up to the nearest whole number. Source: Author's calculations based on NEDS 2015 data

Table 2: Number of Students in Each School Type and Average Cost Per School Type (Rural)

School Type	N	%	Average Cost (NGN)	Average Cost (USD)
Public	18,415	86.27	4,892	24
Low-cost private	1,431	6.70	2,812	14
Mid-cost private	1,200	5.62	20,450	102
High-cost private	301	1.41	68,520	343
Total	21,347	100		

Notes: USD conversion is based on the 2015 exchange rate of 200 Nigerian Naira (NGN) to 1 United States Dollar (USD). The USD amounts are rounded up to the nearest whole number. Source: Author's calculations based on NEDS 2015 data.

The data reveal substantial differences in the average cost of education across various types of schools in both urban and rural areas of Nigeria. In urban areas, attending low-cost private schools - which serve 18% of the urban student population - costs on average USD 20, making them a more affordable option compared to public schools, where the average cost is approximately USD 43. This finding challenges the typical assumption that private education is always more expensive than public education, particularly since public schools in Nigeria are supposed to be tuition-free. For mid-cost private schools,

which accommodate 12% of urban students, the average cost rises significantly to USD 197. High-cost private schools, which serve a smaller segment of the population (5%), have an average cost of USD 625, reflecting the wide disparity in educational expenses depending on the type of school attended. These findings also indicate that private schooling is more prominent in urban areas, with a greater percentage of students attending various types of private schools compared to rural areas. In rural areas, the majority of students (86%) attend public schools, where the average cost is USD 24, about half the average cost of public schooling in urban areas. Attending low-cost private schools in rural areas, which serve 6.7% of students, costs, on average, USD 14. As in urban areas, these schools offer a more affordable alternative to public schooling. Mid-cost private schools in rural settings have an average cost of USD 102, while high-cost private schools, attended by just 1.4% of students, cost on average USD 343. The data indicates that while private schooling may be accessible to some, it can also become prohibitively expensive depending on the school and location.

4.3. Empirical Model

I analyzed the factors influencing attendance at difference school types by employing a multinomial model, a regression technique used to predict outcomes across multiple categories. This technique is particularly well-suited for this study because it allows for the examination of various factors that influence the choice between multiple school types, rather than just a binary decision. In this model, I estimated the probability of attending a public school versus a low-cost private school, a mid-cost private school, and a higher-cost private school. All estimates are referenced to outcome category 0 (attending a public school). I focus on whether a child attends a low-cost private school or a mid-cost private school, as these schools are the closest substitutes to public schools in terms of the cost of schooling. I estimate a model in which the school a child attends is a function of the child's characteristics, the household (including the parent's education level, occupation, and relationship to the household head), and the location of schools.

$$\Pr(\text{SchoolType } s = 1 \ldots 4) = f(\text{Child, Household, School})$$

The school options (s) are defined as follows:

- Public school (s=0)[6]
- Low private school (s=1)
- Mid-cost private school (s=2)
- High-cost private school (s=3)

Each household selects the school produces the maximum utility so that

$$U^* = \max(U_{pu}, U_{lpr}, U_{mpr}, U_{hpr})$$

where U* is the maximum expected utility across all four alternatives (public school (pu), low-cost private (lpr), mid-cost private (mpr), and high-cost private (hpr). I build on previous global school choice literature from countries such as Pakistan (Alderman et al. 2001) and Madagascar (Glick and Sahn 2005), which assumes that parents derive utility from their consumption of goods and services (C), and the human capital (H) of their children (which is a function of children's education). I assume parents will send their children to the school type

[6] Majority of the students attend public schools. Therefore, I set them as the base group and compare them with students attending all categories of private schools.

that yields the greatest utility. I specify the following utility function interacting consumption with the wealth quintile group:

$$U_{his} = \alpha_0 H_{his} + \alpha_1 C_{his} W_1 + \ldots\ldots \alpha_4 C_{his} W_4 + \varepsilon_{his}$$

$$C_{his} = Y_h - P_{is}; \quad s = pu, lpr, mpr, hpr$$

where U_{his} denotes the utility of the household h associated with a particular schooling option s for child i. The subscript i allows the utility to vary between children within the same household, for example, boys or girls, or biological versus non-biological children. The variable, H_{his} , is the human capital or educational value for child i from househod h who is attendting a particular schooling option s. The variable C_{his} is the consumption level of household h associated with a particular schooling option s for child i, W denotes the wealth quintile group, and ε_{his} is a random disturbance term.

I use a reduced-form equation to capture the utility from human capital:

$$\alpha_0 H_{his} = \beta_s F_{hi} + \gamma_s Q_h + \delta_{his}; \; s= pu, lpr, mpr, hpr$$

where,

F is a vector of observed household and child characteristics that affect school choice, Q is observable school characteristics, such as proximity of schools to household, and and δ_s is an error term.

The probability P_{is} that a household h chooses some alternative s for their child i is equal to the probability of U_{his} being the largest of all $U_{hi0} \ldots U_{hi3.}$ With y denoting the option that household h chooses for child i, this probability is

$$P_{is} = Pr(y=s) = Pr\,(U_{his} > U_{hik} \quad \forall k = 0,\ldots..,S: k \neq s)$$

Estimates from multinomial logit models are difficult to interpret. Instead, following previous studies such as Greene (1997), I only report the average marginal effects.

4.4. Explanatory Variables

4.4.1. Student characteristics and Household Characteristics

I included a variable that measures a child's age in completed years. I categorize the ages into three groups to reflect young children (4-7 years; reference group), mid-age children (8-11 years), and older children (12-16 years). I also include a variable that reflects the child's gender (male or female).

I included two household socioeconomic status (SES) measures: wealth and parental education. According to Filmer and Pritchett (2001), in LMICs such as Nigeria, household wealth (defined by ownership of assets and household amenities) is more significant than other measures of household resources (e.g., income) in predicting student school attendance. Households with more assets have higher purchasing power and can invest more in their children's education. The 2015 NEDS uses an asset-based index constructed from detailed information about a household's ownership of assets, including ownership of a television, radio, paraffin lamp, telephone, motorcycle, refrigerator, and car. It also includes information on household lighting, water and fuel sources, floor materials, and sanitation facilities. The assets are combined into an asset score used to create the

wealth index and categorized into five groups ranging from the lowest to the highest wealth quintile groups. I created dummy variables for the wealth asset index. I represented the first three quintile groups for wealth as poor/middle and the other two categories as rich. This approach was necessary because, when broken down into the five original quintiles, the cell sizes for the bottom two groups were too small to yield reliable results. However, I also conducted an additional analysis where I merged only the first two quintiles into a "poorest" category. This allowed me to better explore household variation in wealth and examine the extent to which those from the poorest segments attend private schools.

I include one variable used to measure parental education in the 2015 NEDS. The variable asks whether the household head ever attended formal school. The other household-level controls included were the region of residence, religion, and caregiver occupation. Nigeria has 36 states that are grouped into six geopolitical zones. The six zones are north-central, northeast, northwest, southeast, south-south, and southwest (hereafter, I refer to the zones as regions). In this study, I grouped the regions into two groups (North and South) for two reasons. First, when I divided private schools into three categories, I ran into issues with small sample sizes in some categories. Second, it helps reduce the complexity of models. Nigeria's two major religious groups are also represented in the 2015 NEDS: Islam (reference) and Christianity. The caregiver occupation variable captures whether the caregiver primarily works in agriculture. Finally, I also include the number of children aged 4 to 16 in the household as a continuous variable to represent the presence of school-aged children, which could result in intra-household resource competition.

4.4.2. Local school supply

I contend that the farther away a family lives from a public school, the more likely it is to send children to a private school if private schools are closer in proximity. Evidence from other LMICs suggests that parents consider information about the physical distance between their household and the school in schooling decisions (de Talancé 2017). This could be due to safety concerns and the expected school travel costs. I included one variable that measures the distance in minutes from the household to the nearest public school. I use this variable to assess whether living farther away from a public school increases the likelihood of a child attending a private school, and which type of private school. According to De Kadt et al. (2014), distance from a household can be used in analyses as either a binary variable or a continuous measure. I include the variable as a binary measure to examine the extent to which proximity to the nearest public school influences the type of school a child attends. My focus is on capturing broad differences in school choice between students who are near versus far from a public school, rather than on more granular variations in distance. I coded the variables into two categories: those who lived less than 20 minutes away on foot (reference group) and those who lived 20 or more minutes away. Empirically, 20 minutes (approximately 2km) is considered the maximum reasonable walking distance for school-aged children (De Kadt et al. 2014). Therefore, I use the 20-minute threshold as the key cutoff point for assessing proximity, as it is considered the upper limit for a child's daily walk to school.

I provide descriptive statistics for all variables in Tables B1 and B2 in the Appendices (Appendix B).

5. **Results**

5.1. Main results

Tables 3 (Urban) and 4 (Rural) present the estimates (marginal effects) of the models. The marginal effects show the changes in the probability of attending different types of schools for various characteristics of children and households, considering other attributes in the model.[7] The marginal effects across all four types of schools sum up to zero. This means that if a child is likely to attend one type of school (e.g., public school), they will be less likely to attend at least one of the other options.[8]

Table 3: Estimates of the Multinomial Logit Regression (Urban)

School Type	Categories	Public (1)	Low Cost Private (2)	Mid Cost Private (3)	Hight Cost Private (4)
A. Child					
Age	8 to 11	0.010	-0.006	-0.002	-0.003
		(0.01)	(0.01)	(0.01)	(0.00)
	12 to 16	0.061***	0.004	-0.042***	-0.023**
		(0.01)	(0.01)	(0.01)	(0.01)
Gender	Female	0.001	-0.008	0.006	-0.006
		(0.01)	(0.01)	(0.01)	(0.00)
B. Household					
Wealth Asset Index	Rich	-0.201***	0.023***	0.091**	0.133***
		(0.03)	(0.01)	(0.02)	(0.03)
Religion	Christianity	-0.021	-0.032**	0.021	0.031***
		(0.03)	(0.01)	(0.02)	(0.01)
Region	South	-0.066**	0.070***	0.001	-0.035***
		(0.02)	(0.01)	(0.02)	(0.01)
Caregiver's education	Never attended school	0.078***	0.020*	-0.061***	-0.077***
		(0.02)	(0.01)	(0.02)	(0.01)
No of Children		0.009*	-0.003	-0.012***	-0.000
		(0.005)	(0.003)	(0.004)	(0.002)
Caregiver's occupation	Not agriculture	-0.133***	0.040***	-0.074***	0.018**
		(0.02)	(0.01)	(0.01)	(0.01)
C. School Variables					
Distance in minutes to nearest public school	>= 20	-0.099***	0.008**	0.063***	0.028***
		(0.02)	(0.01)	(0.02)	(0.01)
Observations	13,939				
Psuedo R	0.0983				
No. of Clusters	370				

Notes: Average marginal effects are reported.
Standard errors are clustered at the locality level (the primary sampling unit for the 2015 NEDS).
**p<0.05; ***p<0.01. I report AME. Source: NEDS 2015

[7] It is important to note that this study focuses on household decisions for students who are already enrolled in primary school. The analysis does not address factors influencing the initial decision to attend school, and thus the results cannot speak to that aspect.
[8] Descriptive results are provided in the Appendix B.

Table 4: Estimates of the Multinomial Logit Regression (Rural)

School Type	Categories	Public (1)	Low Cost Private (2)	Mid Cost Private (3)	Hight Cost Private (4)
A. Child					
Age	8 to 11	-0.021***	0.000	0.018***	0.002
		(0.01)	(0.00)	(0.00)	(0.00)
	12 to 16	-0.015*	0.001	0.018***	-0.003**
		(0.01)	(0.00)	(0.01)	(0.03)
Gender	Female	-0.007	0.003	0.003	0.001
		(0.01)	(0.00)	(0.00)	(0.00)
B. Household					
Wealth Asset Index	Rich	-0.046***	-0.011	0.032***	0.025***
		(0.02)	(0.01)	(0.01)	(0.00)
Religion	Christianity	-0.073***	0.027***	0.038***	0.008***
		(0.02)	(0.01)	(0.01)	(0.01)
Region	South	-0.015	0.015	0.009	-0.009**
		(0.02)	(0.01)	(0.02)	(0.00)
Caregivers education	Never attended school	0.032***	0.003	-0.030***	-0.006**
		(0.01)	(0.01)	(0.01)	(0.00)
No of Children		0.009***	-0.001	-0.007***	0.000
		(0.003)	(0.001)	(0.002)	(0.001)
Caregiver's Occupation	Not agriculture	0.000	0.002	-0.004	0.002
		(0.01)	(0.01)	(0.01)	(0.00)
C. School Variables					
Distance in minutes to nearest public school	>= 20	-0.048***	0.029**	0.020**	0.000
		(0.01)	(0.01)	(0.01)	(0.00)
Observations	17,514				
Psuedo R	0.1062				
No. Of Clusters	493				

Notes: Average marginal effects are reported. Standard errors are clustered at the locality level (the primary sampling unit for the 2015 NEDS). **p<0.05; ***p<0.01. I report AME. Source: NEDS 2015

Child characteristics

The results of the multinomial regression show that being younger is associated with attending private schools in urban areas. Older children (12-16 years) are more likely to attend public school than younger cohort (4-7 years, the base group). This was indicated by the highly significant marginal effects estimated for the age variable. This finding is consistent with earlier studies, such as Tooley and Yngstrom's (2014) study on Lagos state and Dixon and Humble's (2017) study on Monrovia, Liberia, which found that younger children are more likely to attend private schools. Older children are 0.4 percentage points more likely to attend low-cost private schools than the base group and are 4.2. and 2.3 percentage points less likely to attend mid- and high-cost private schools, respectively, than the base group. However, in rural areas, the reverse is true - being older is associated with attending private schools. Children in the 8-11 and 12-16 categories are more likely to attend private schools, especially the mid-cost private school category (by approximately 2

percentage points each, significant at the 1% level).[9] This might reflect safety concerns, such as parents' hesitation to send younger children farther to private schools in rural areas because of poor road networks and insecurity (Tooley and Yngstrom 2014).

In terms of gender, there were no significant differences between male and female children in attendance for each school type. Studies of school attendance in Nigeria have found that wealthier households prioritize boys' education. Additionally, some parts of Northern Nigeria have been found to prioritize boys' education because of their traditional beliefs. Although my study does not directly address school attendance but rather focuses on children already enrolled in school, I examine whether the disparities identified in broader attendance studies—such as those favoring boys in wealthier households or in certain regions—also influence the type of school chosen for their children. This allows me to explore if these disparities persist even after parents have decided to enroll their children in school. I estimated two group profiles: gender/wealth and gender/region of residence. The results show no significant gender difference between poor and rich households in rural and urban areas. There was also no significant gender difference between households in the North and South.

Caregiver and Household Characteristics

Household wealth, measured by ownership of certain assets, is among the most important factors associated with attending private schools in urban and rural Nigeria. This is consistent with findings from other studies in rural Nigeria (Härmä 2016), urban Nigeria (Baum, Abdul-Hamid et al. 2018), and other SSA countries, such as rural Kenya (Nishimura and Yamano 2013). The coefficients for wealth in urban areas indicate that wealth is strongly associated with the type of school attended by a child. Children from wealthier households are 20 percentage points less likely to attend public school. Beyond this, this model further reveals how wealth predicts attendance at different cost categories of private schools. Children from wealthier households are 9 and 13 percentage points more likely to attend mid- and high-cost private schools, respectively. However, they were significantly less likely than the base group to attend low-cost private schools. The findings are similar in rural areas, but the coefficients' magnitude is smaller than in urban areas. Children from wealthier households are approximately 3 percentage points more likely to attend mid- and high-cost private schools and five percentage points less likely to attend public schools.[10] This suggests that there are two things at play. First, financial barriers might prevent some poor households from accessing private schools (Härmä 2016). Second, where poorer households attend private schools, they are more likely to attend these low-cost private schools (which cost less or are similar to public schools).

Comparing rural and urban areas, the effect of wealth on attendance in different school types is more pronounced in urban areas than in rural areas. For example, in urban areas, children from richer households are almost 20 percentage points less likely to attend public schools, whereas in rural areas, they are only approximately 0.05 percentage points less likely to attend public schools. In urban areas, a higher proportion of children attending low-cost schools are likely to be from poor households. By contrast, for mid- and high-cost schools, a higher proportion of children who attend are likely to be from rich households. Low-cost private schools also have a higher proportion of children from poor households

[9] The AME estimates provide no evidence of gender differences in urban and rural areas. I estimated the models separately for boys and girls and found no significant differences.
[10] The findings for the low-cost schools are not significant in rural areas.

than mid- and high-cost ones. In rural areas, the likelihood of attending low-cost schools is similar for children from both rich and poor households. However, for mid- and high-cost private schools, there is a higher proportion of children from rich households than from poor households.

When household wealth is categorized into four groups, with the first two quintiles combined into a "poorest" category and the remaining three representing progressively wealthier segments, the analysis indicates that the effect of wealth is most pronounced in the fourth and fifth quintile groups, both in rural and urban areas (as shown in Table 5). Specifically, children from the fifth quintile are 30 percentage points less likely to attend public schools in urban areas and 19 percentage points less likely in rural areas. This effect is more pronounced than in the original categorization, where the top two quintiles were combined, showing only a 20-percentage point decrease in urban areas and a 4.6 percentage point decrease in rural areas. In urban areas, no statistically significant difference in school type attendance is observed between the third quintile group and the bottom two groups, which supports the initial decision to merge the first three quintiles. However, in rural areas, distinct differences emerge, particularly regarding attendance at mid- and high-cost private schools, highlighting the nuanced effect of wealth on school choice in different contexts.

Table 5: Estimates of the Multinomial Logit Regression (expanded wealth quintile group)

School Type	Categories	Public (1)	Low Cost Private (2)	Mid Cost Private (3)	Hight Cost Private (4)
Urban					
Wealth Asset Index	First/Second (Base)				
	Third	-0.044	0.022	0.023	0.000
		(0.028)	(0.017)	(0.018)	(0.002)
	Fourth	-0.126***	0.028	0.071***	0.026***
		(0.015)	(0.019)	(0.021)	(0.005)
	Fifth	-0.307**	0.032*	0.0201***	0.078
		(0.036)	(0.019)	(0.022)	(0.077)
Observations	13,942				
Psuedo R	0.1005				
No. Of Clusters	370				
Rural					
Wealth Asset Index	First/Second (Base)				
	Third	-0.025	-0.006	0.023*	0.008***
		(0.016)	(0.008)	(0.012)	(0.002)
	Fourth	-0.056***	-0.007	0.040**	0.065***
		(0.019)	(0.021)	(0.005)	(0.014)
	Fifth	-0.192***	-0.012*	0.105***	0.100
		(0.042)	(0.011)	(0.028)	(0.022)
Observations	17,521				
Psuedo R	0.0917				
No. Of Clusters	493				

Notes: Average marginal effects are reported. I included all the covariates from the main analyses. Standard errors are clustered at the locality level (the primary sampling unit for the 2015 NEDS). *p<0.10; **p<0.05; ***p<0.01. I report AME. Source: NEDS 2015.

Living in a Christian household was associated with a higher likelihood of attending private schools, both in rural and urban areas. Figures 2.7 and 2.8 illustrate that children from Muslim households are more likely to attend public schools in both urban and rural areas. Similarly, children from Christian households are more likely to attend private schools than their Muslim counterparts. In urban areas, being from a Christian household reduces the likelihood of attending low-cost private schools and increases the likelihood of attending higher-cost private schools. In rural areas, children living in Christian households are significantly less likely to attend public schools (7.3 percentage points) and significantly more likely to attend all private school types. The key difference between rural and urban areas is in the low-cost school category. In urban areas, low-cost schools are more likely to have a higher proportion of Muslim children than Christian children. However, in rural areas, a higher proportion of children attending low-cost schools are likely to be Christian. These findings are unsurprising, given that Christian children are five times more likely to attend school than children from Muslim families (Kazeem et al. 2010). Another reason is that Christian organizations run many private schools, and while their curriculum might not

include Christian doctrine, it will still be unattractive to Muslim families (Pew Research Centre 2016).

The region of residence also predicted private school attendance, Children in Northern regions are more likely to attend public schools than private ones. The results also indicate marked differences between the two areas in the types of private schools students are more likely to attend. The probability of attending lower-cost private schools is higher in the southern regions than in the northern regions. In urban areas, children in the South are significantly more likely to attend low-cost private schools. Living in the South is positively associated with attending low-cost private schools (7 percentage points) and negatively associated with attending high-cost private schools (3.5 percentage points). In the North, the probability of attending high-cost private schools is higher, while the probability of attending low-cost private schools is lower, compared to the South. In rural areas, the situation is similar; living in the South is positively associated with attending low-cost private schools (1.5 percentage points) and negatively associated with attending high-cost private schools (0.9 percentage points). This suggests that low-cost private schools are less prevalent in the North compared to the South, as indicated by the lower probability of attending these schools in the North.

In urban areas, each additional child in the household increases the likelihood of attending a public school by 0.9 percentage points. A similar trend is observed for low-cost private schools, although this result is not statistically significant. This suggests that larger families may favor public schools due to their affordability. On the other hand, the likelihood of attending a mid-cost private school decreases by 1.2 percentage points per additional sibling (significant at the 1% level), indicating that financial constraints in larger households make mid-cost private schooling less feasible. The effect on high-cost private school attendance is minimal, implying that for families who can afford high-cost private schools, family size does not significantly impact their ability to pay. In rural areas, each additional child increases the likelihood of attending a public school by 0.9 percentage points, whereas the probability of attending any type of private school decreases slightly for low-cost (0.1 percentage points) and mid-cost private schools (0.7 percentage points).

The coefficients for caregivers' education and occupation were consistent with the descriptive findings. Living with educated caregivers in urban and rural areas positively predicted attendance at mid- and high-cost private schools. However, it was negatively associated with attendance at low-cost private schools. Children with uneducated parents are more likely to attend public schools than private ones. In both rural and urban areas, the low-cost school category follows the patterns of public schools. Children with uneducated parents are more likely to attend low-cost private schools than their counterparts with educated parents. However, mid- and high-cost schools are likely to have a higher proportion of children with educated parents. Additionally, the effect of parental education was more predictive of private school attendance in urban areas than rural areas.

Caregiver occupation was statistically significant only in urban areas. Living with a caregiver employed outside the agricultural sector was associated with a higher likelihood of attending all three categories of private schools and a lower likelihood of attending public schools. This is consistent with Akaguri's (2014) study in Ghana, where they found that families working in agriculture spend less on education because they have reduced capacity, and Huisman and Smit (2009) suggested that agrarian households might invest less in their children's education because they place a lower value on education.

Location of School

Living twenty or more minutes away from the nearest public school was associated with attending all types of private schools in urban areas, especially in the mid-and high-cost school categories. In rural areas, it was also positively associated with attendance in low-cost and mid-cost private schools but not for the high-cost school categories. The effects of distance to the nearest public school were more significant in urban areas than

in rural areas. The findings for rural areas contrast with Nishimura and Yamano's (2013) study on rural Kenya, where they found that public school supply does not affect private school attendance.

5.2. Variations in school type attendance among different child profiles

Below, I discuss results from the multinomial logit specifications for typical child groups to illustrate how their combined characteristics produce differences in school choices for different profiles of children.

Two key findings from the individual marginal effects are that wealth and religion are strong predictors of school type. I combine both characteristics to show how they jointly impact school type. Figure 1 shows little difference in the likelihood of attending each school type for Muslim and Christian children from poor households in urban areas. However, for wealthy households, Muslim children are more likely to attend public and low-cost private schools, whereas Christian children are more likely to attend mid- and high-cost private schools. The combined impact of religion and wealth is more prominent in rural areas (Figure 2). Poor and rich children from Muslim households are more likely to attend public school than their Christian counterparts. Christian children from both poor and rich households are more likely to attend low-cost and mid-cost private schools than their Muslim counterparts. For high-cost schools, the likelihood of attending this school type is similar for poor children from both Muslim and Christian households. However, Christian children from wealthier households are more likely to attend high-cost schools than their Muslim counterparts. The findings suggest that children from Christian and wealthy households have the highest likelihood of attending private schools, with this effect being stronger in rural areas than in urban areas.

Next, I predict the combined impact of wealth groups and distance to the nearest public schools. In urban areas, for children from poor and rich households, living farther away from a public school increases the likelihood that they will attend a private school. Children from poor households have a higher probability of attending low-cost schools, whereas rich children have a higher probability of attending mid- and high-cost schools. In rural areas, the findings are similar, but the combined impact of wealth and distance to the nearest school is not as strong as in urban areas. For example, living farther from the nearest public school reduces the likelihood of attending public schools for children from both rich and poor households. However, the difference is less than 0.05 percentage points for both groups. This is likely due to the distribution of schools in urban versus rural areas, with urban areas having more private school options than rural areas (as found by Härmä 2016 in Kwara, Nigeria). Therefore, children from both rich and poor households have more school options (especially private schools) than those in rural areas, making the impact of public school availability stronger in rural areas.

I also predict the combined impact of wealth and caregiver education on the type of school a child attends. Children from wealthy households with educated caregivers are less likely to attend public schools and more likely to attend private schools (especially mid- and high-cost private schools). The impact of wealth on predicting school type was stronger than that of caregivers' education in rural and urban areas. Having educated parents, but coming from a poor household, does not significantly increase the likelihood of attending private schools (although poor children with educated caregivers are still more likely to attend mid-cost and high-cost private schools). Interestingly, children attending low-cost schools, whether from rich or poor households, are likely to have non-educated caregivers.

Finally, I predict the combined impact of household wealth and region of residence on school type. Children from poor households in the northern region are more likely to attend public schools than their wealthier counterparts. Children from rich and poor households living in the south are more likely to attend low-cost schools in rural and urban areas than those in the north. Finally, being wealthy and from the north increases the likelihood of attending high-cost schools compared to those living in the south. This suggests that rich children from the North are likely to attend mid- and high-cost schools, whereas poor children are likely to attend public schools. In the South, rich children are more likely to attend low-cost and mid-cost schools than high-cost schools.

6. Discussions and Conclusions

In this study, I attempted to identify heterogeneity in the private school sector in Nigeria by categorizing private schools based on their costs. Following this, I examined how child and household characteristics, along with the local availability of schools, are associated with the type of primary school a child attends. Considering the findings from this study, several discussion points emerge:

First, despite improving access to primary schools, the expansion of primary education through private schools is reproducing and reinforcing existing socio-economic and cultural patterns of educational inequality in Nigeria. My findings indicate that being from a wealthy household, residing in urban areas and in the southern region of Nigeria, being from a Christian household, and having educated parents are strong predictors of private school attendance, even at low-cost private schools. As such, my findings align with other studies in Nigeria and beyond, which document constraints around finances, religion, and region of residence as factors that limit private school attendance (Baum, Abdul-Hamid et al. 2018; Härmä 2016). These findings are also consistent with the patterns of inequality in access to primary school in Nigeria (Kazeem et al. 2010).

Second, while many students attend private schools, true choice is available to few, contrary to previous claims (Tooley and Yngstrom, 2014). For example, in urban areas, private schools are more prevalent, offering families a wider range of options. Consequently, urban families can choose from a broader spectrum of private schools, catering to different levels and preferences (for example, offering schools closer to children's homes). In contrast, as Härmä (2016) also found in Kwara State, Nigeria, rural areas face limited availability of private schools, with the few existing schools typically being low-cost or high-cost options. Furthermore, my study extends Härmä's (2016) findings and provides additional insights into the dynamics of school choice. It reveals how factors such as a child's age, parents' education, household religion or region of residence affect school choice differently in rural and urban areas. For example, parental education was more strongly associated with private school attendance in urban areas than rural areas. In urban areas, children whose parents have never attended school are equally likely to attend public or low-cost private schools. In contrast, rural areas show a clear trend where children in private schools predominantly have educated parents.

Third, an important finding is the need for context-specific research to understand how decisions influencing school types might vary within and between countries. For example, consistent with literature from Nigeria (Tooley and Yngstrom, 2014) and rural Uganda (Sakaue 2018), the estimated coefficients on gender indicate that a child's gender does not predict private school attendance in rural and urban Nigeria.[11] However, the findings contrast with evidence from other SSA countries, such as in rural Kenya, where Nishimura and Yamano (2013) found gender inequality in private school access in favor of boys.

Fourth, one of the key findings from my study is that the farther away a household is from public schools, the more likely it is to choose private schools for their children. This

[11] It is essential to note that this study only looked at children already attending school. The same findings cannot be implied for the out-of-school children population. For example, Olaniyan (2011) suggests that in Nigeria, while there is equity in the household's decision to send boys and girls to school in urban areas, the reverse is the case in rural areas where the inequality in access to school between girls and boys is widening.

was evident in rural and urban Nigeria, indicating that the lack of public school infrastructure drives families to enroll their children in private schools, and low cost schools are growing due to systemic failures in supply of public options. This finding corroborates evidence from Nigeria and other SSA countries that find that proximity to households is an important reason why parents sent their children to private schools (Härmä 2013; Zuilkowski et al. 2018).

Although pursuing alternative educational options is not inherently problematic, it often entails significant financial strain. For example, in the Härmä (2013) study, parents expressed that while they chose private schools for their children, it was difficult to afford them. This indicates that even low-cost private schools, often described as affordable, impose a considerable financial burden on low-income families, leaving many still excluded. Despite the financial burden, the issue of seeking alternative schooling options due to the lack of availability of public schools becomes particularly concerning, as it contradicts Nigeria's commitment to providing free and compulsory education.

A policy implication from this study is the need to prioritize primary schooling, particularly in areas with limited access to education, as well as in economically disadvantaged and rural regions, while also enhancing the quality of education provided. While private schools may offer solutions for some, the emphasis on privatization undermines the vital role of public education systems. When public school supply is strengthened, there is the potential to enhance access to a broader spectrum of students. It could also shift demand between public and private schools, with families potentially opting for public schools more frequently if they become more accessible—whether through improved availability or closer proximity—depending on the perceived benefits. For example, Tanzania has relatively high coverage of public primary schools compared to other countries in SSA (Baum, Cooper et al. 2018), with only about 3.5% of primary school students attending private schools (Tanzania Bureau of Statistics 2011). Therefore, expanding the availability and improving the positioning of public schools is essential to serve the broader population effectively. Private schools will continue to exist, especially those catering to high-income groups, and will continue to cater to segments of the population that can easily afford them. This strategic approach can foster a more inclusive and effective education system, ultimately benefiting the nation by bolstering human capital and socioeconomic development.

Theoretically, this study contributes to James' (1986, 1987a, 1978b) models of excess demand and differentiated demand by providing empirical support for these frameworks. The findings confirm the excess-demand model, particularly in areas where insufficient public school infrastructure forces families to choose private schools despite financial strain. This aligns with the premise of the excess demand model, that private school growth often addresses gaps in public provision.

My findings also highlight patterns of differentiated demand that extend beyond the limitations of public school infrastructure. For instance, the preference for private schools among Christian households compared to Muslim households, highlights the significant role of religious and cultural factors in shaping school choice. These dynamics suggest that the differentiated demand hypothesis is relevant in LMIC contexts, where school selection reflects both access challenges and broader sociocultural considerations.

It is important to note that while Christian families may predominantly opt for private schools, the extent to which Muslim families choose Madrasas or other non-secular schooling alternatives warrants further investigation. One limitation of this study is that it exclusively focused on formal schools and did not include Madrasa schools, which are a

significant educational pathway for many Muslim children in Nigeria. This exclusion may have implications for interpreting the results, particularly in fully understanding the range of educational options available to Muslim families. Further research with data that captures both formal and non-formal schooling options, including Madrasas, will be important to address this gap and offer a more comprehensive understanding of school choice dynamics in Nigeria.

Another limitation of this study relates to the use of dummy variables for regional characteristics. While this approach reduces the number of cases with small observations in some school categories, it simplifies the analysis at the cost of obscuring intra-regional variations. To address these limitations, future research could leverage larger and more diverse datasets to capture a wider range of variables and contexts. For example, while this study merged the three northern and three southern regions of Nigeria into broader categories, analyzing individual regions may yield more granular insights into regional disparities. Larger datasets would also enable the inclusion of more subgroups, such as different religious or socioeconomic categories, offering a deeper understanding of school choice influences across diverse populations.

Furthermore, replicating this research in other countries could provide comparative insights and help identify universal versus context-specific factors influencing school type. Such cross-national studies would significantly contribute to the global understanding of what kind of educational policies can contribute to a more equal distribution of opportunity. Incorporating qualitative methods, such as interviews and case studies, could offer deeper insights into the differences between public and private schools, capturing parental motivations and perceived educational quality. Combining quantitative and qualitative approaches would enrich the analysis of school attendance patterns.

Positionality Statement

As a researcher from Nigeria with both personal and professional experience in the education system, I have a deep understanding of the socio-economic, and geographic disparities that impact access to education. My research is informed by my own experiences as a student and teacher, as well as those of my parents, who were part of the system decades ago. While acknowledging the privilege of having access to international higher education, I remain aware of the historical and structural barriers hindering access to quality education, particularly in rural and disadvantaged areas. My work is driven by a commitment to understanding how access to education and education outcomes intersect with broader social inequalities and how policy can address these disparities to ensure equitable access to education for all children.

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I acknowledge that I conduct my work at the London School of Economics and Political Science (LSE), an institution situated on land that has been historically inhabited by various communities over centuries. I recognize the longstanding contributions of London's diverse populations and honor the cultural, intellectual, and social legacies of these communities. I also acknowledge the broader historical context of colonialism and its continuing impact, and I commit to promoting understanding, equity, and inclusion within my academic work and in the wider community.

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