Determinants of Primary Schooling in Kenya

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Abstract

Recent policy initiatives on education have focused on improving access to education and retaining pupils in schools through equity and quality enhancing policies such as the Free Primary Education (FPE). However, despite FPE, some parents are still keeping their children at home, while others have sought private schooling where they pay fees. This study applies a multinomial logit model on data obtained from the Kenya Integrated Household Budget Survey of 2005/06 to investigate how household characteristics such as the education of the household head, household expenditure, and school characteristics such as fees, test scores and pupil-teacher ratio (PTR) influence parents' choice of primary schooling for their children. The results indicate that the non-schooling option is highly influenced by household characteristics, which include child's age, number of siblings, schooling of the household head and area of residence, while the private school option is influenced by almost all household characteristics and school-level factors. Surprisingly, distance, pupil-teacher ratio and performance in examinations do not seem to affect the probability of enrolling children in private schools. Urban households are more likely not to enroll their children in school, but more likely to send them to private schools after deciding to enroll them. In general, the study finds that parents consider quality when making schooling decisions for their children. Therefore, policies addressing school quality are likely to be more effective in increasing school enrolment. To increase quality there is need to improve school infrastructure and address teacher shortages in some schools.

Abbreviations and Acronyms

ASALs	Arid and Semi Arid Lands
FPE	Free Primary Education
GDP	Gross Domestic Product
ICT	Information and Communication Technology
IIA	Independence from Irrelevant Alternative
KCPE	Kenya Certificate of Primary Education
KIE	Kenya Institute of Education
KIHBS	Kenya Integrated Household Budget Survey
MDG	Millennium Development Goals
NER	Net Enrolment Ratio
PCR	Pupil Classroom Ratio
PPP	Public Private Partnership
PTA	Parent Teacher Association
PTR	Pupil-Teacher Ratio
RAT	Rational Action Theory
TSC	Teachers Service Commission
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UPE	Universal Primary Education
USA	United States of America
WB	World Bank

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1. Introduction

Policy makers in developing countries have long been concerned with the undesirable but unavoidable choice between providing broad access to education and developing high quality schools. However, promoting high quality schools is more difficult because the traditional approach to providing quality[1] is frequently ineffective (Hanushek, 1995). Hanushek further notes that existing inefficiencies are likely to be alleviated only by the introduction of substantially stronger performance incentives in schools and by more extensive experimentation and evaluation of educational programmes and school organizations.

Investment in education is increasingly viewed as essential for economic growth in developing countries (World Bank, 1990). Therefore, expanding access to primary education by encouraging establishment of both public and private schools is vital in reducing poverty and the high illiteracy rates, which hamper economic growth. Given the two options (public or private schooling) parents decide on the options for their children having put the determining factors into consideration. Gertler and Glewwe (1990) argue that parents' decision regarding their children's education depends in part on the characteristics of local schools, most of which are public. Since primary education provides the foundation for secondary and tertiary education (Boissiere, 2004), parents are keen on choice of school to ensure academic progression.

School choice is likely to be influenced by school quality. Some of the indicators of school quality include: pupil-teacher ratio (PTR), class size, qualified and dedicated teachers, standards of discipline, regular tests and assessments, performance in national exams, and facilities such as computers, swimming pool, music and library facilities. Naturally, parents would want to enroll their children in a school they perceive as having trained teachers, which is demonstrated through performance in the Kenya Certificate of Primary Education (KCPE).

Choice of a primary school is critical because the children's long term education is affected by how well they settle in school in the early years. Also, the relationship between teachers, schools and parents has an impact on children's attitude and interest in learning. Therefore, it is important that the whole family feels part of the school community.

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[1] Providing quality simply requires more inputs.

Parents choice of either government, private, religious and community schools depend on factors such as size of classes, access to information and communication and technology (ICT), sports, theatre, language programme, facilities, values and policies on discipline and homework. Some parents further assess how the school will cater for the child's safety and social and emotional needs, curriculum, transition, literacy and numeracy programmes, and also school location (Cook, 2002).

In Kenya, primary education is the first cycle of the 8-4-4[2] system of education applicable in all public and some private schools. Primary school level of education caters for pupils aged 6 to 13 and lasts 8 years. In the final year, pupils sit for the Kenya Certificate of Primary Education (KCPE) examination. In 2007, there were 26,104 primary schools, where 18,063 were public and 8,041 private (Government of Kenya, 2009). The school curriculum is developed by the Kenya Institute of Education (KIE).

Recent policy reforms in Kenya's education system have direct linkages with the fiscal constraints that limit availability of government revenue to finance desired expansion in education. However, in spite of the constraints, the Government introduced Free Primary Education in 2003 with the aim of achieving the goal of Education for All and the Millennium Development Goal (MDG) on achievement of universal primary education by 2015. The effectiveness of the policy was characterized by an overwhelming enrolment in primary schools, from 5.9 million pupils in 2002 to 6.9 million in 2003 and 7.4 million pupils in 2007 (Government of Kenya, 2009a). Gross Enrolment Ratio (GER) rose from 88.2 per cent in 2002 to 102.8 per cent in 2003.

According to UNESCO (2005), enrolment in public schools increased relative to existing capacity. The study that covered 162 primary schools from 9 sampled districts and interviewed 10 pupils from class 4 to 6 and 8 teachers per school showed that some schools received class 1 pupils in excess of 300, yet they could not accommodate them in the available classrooms. Enrolment increased by 19.3 per cent while pupil-teacher ratio was as high as 1:58. Provision of instructional materials, including textbooks, was one of the major achievements of FPE. The implementation faced some challenges such as delay in disbursement of funds to schools and sharing of textbooks. The study also found that

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[2] 8-4-4 stands for 8 years of primary education, 4 years of secondary education and a minimum of 4 years university education.

some parents from urban areas transferred their children from private to public schools. Decline in enrolment was observed in 2004, which was attributed to factors such as poverty, unfriendly learning environment and transfer to private schools.

Participation by the private sector in education provision in Kenya is also encouraged and takes the form of purely private schools, informal schools, and religious supported and community schools, which may be day or boarding. Private schools handle 4 per cent of primary school enrolment, thus contributing to enhancing access to education. The steady increase in population coupled with the low construction of new public schools could partly explain the increase in the number of private schools (Figure 1.1).

The rate of establishment of public schools decreased between 2001 and 2005, before increasing in 2006, but the percentage increase still remains below one per cent. On the other hand, private schools realized a 30 per cent increase in 2003 when FPE was launched. After this period, the rate of establishment in private schools declined to 1.9 per cent, then rose by 17 per cent in 2006 and has since risen to over 100 per cent. However, a higher increment was recorded in 2003 and 2007, which tallies with the high enrolment as shown in Figure 1.2. Substantial increase in number of private schools recorded in 2007 can be attributed to improved data collection mainly through the school mapping exercise carried out in 2007 by the Ministry of Education. School mapping

Figure 1.1: Percentage growth in public and private primary schools

Year	2000	2001	2002	2003	2004	2005	2006	2007
Public		0.94	0.79	0.41	0.27	0.02	0.78	0.95
Private		9.79	6.19	30.40	1.60	1.94	17.32	249.89
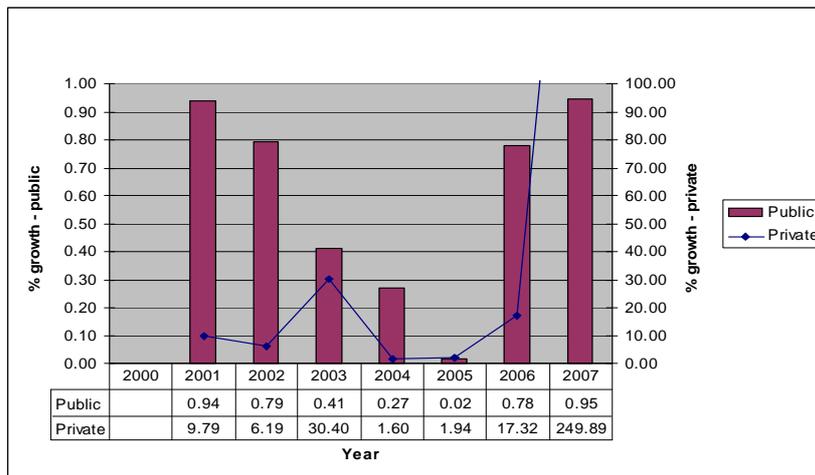
Source: Government of Kenya (2009a)

improved data collection method, which enabled the Ministry to capture more private schools than in the previous years (Government of Kenya, 2009). It is expected that consecutive school mappings will be able to generate consistent data with time. This aside, the high increase is also a sign of high demand for private schools, which calls for further investigation.

Karmokolias and Maas (1997) observed that the demand for private school education in Kenya has been increasing with unmet demand. This is evidenced by long waiting lists of students who have met the school's admission criteria but for whom there was no space in the school. Given the high establishment of private schools and the unmet demand for private schooling, it is apparent that parents in Kenya make choices before enrolling their children in school. The decline in enrolment in private schools in 2003 and in public schools in 2004 is an indication that parents look out for certain characteristics when making schooling decisions (Figure 1.2). The study seeks to find out what choices parents are likely to make given some of the possible characteristics that are likely to influence schooling choices.

From Figure 1.2, enrolment increased spontaneously in 2003 after the FPE policy, but the rate of enrolment in public schools started declining in 2004. The gap between the public and total enrolment curves describes the private enrolment. Though enrolment in private

Figure 1.2: Enrolment in public and private primary schools

	2000	2001	2002	2003	2004	2005	2006	2007
Public	5.69	5.75	5.75	6.91	7.13	7.23	7.26	7.42
Private	0.24	0.19	0.31	0.25	0.27	0.37	0.37	0.79
Total	5.93	5.94	6.06	7.16	7.40	7.60	7.63	8.21
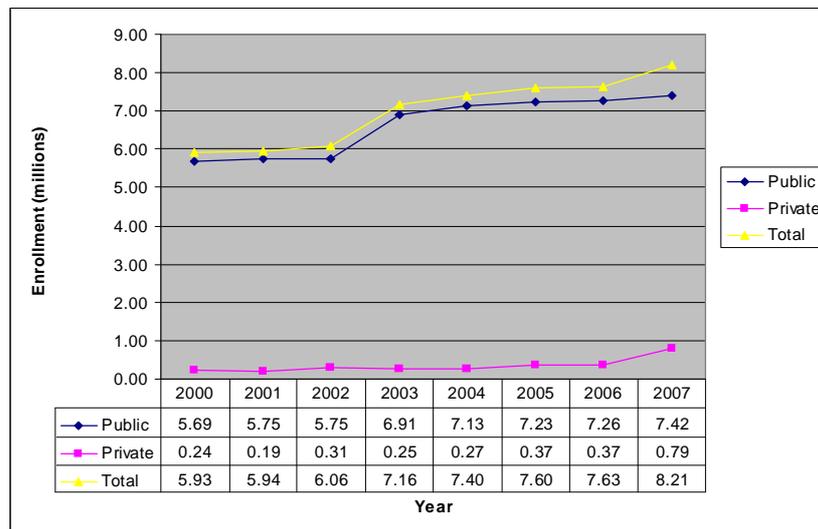
Source: Government of Kenya (2009a)

schools declined from 313,469 in 2002 to 253,169 in 2003, the trend changed with increased enrolment in private schools from 271,639 in 2004 and 790,413 in 2007. This could mean that in 2003, some parents removed their children from private schools to benefit from the FPE policy, but from 2004 may have been dissatisfied and transferred their children back to private schools. This could be due to overcrowding in public schools.

Figure 1.3 elaborates on the nature of enrolment in both public and private schools prior to and after the implementation of FPE. The decline in enrolment in private schools in 2002-2003 counteracts the high establishment of private schools in the same period as shown in Figure 1.1. This is attributed to the transfers from private to public schools, coupled with improvement in data collection capturing more private schools.

Given the dynamics illustrated in Figure 1.3 on enrollment, especially in private schools, it is important to find out why some parents still opt for private schools, and also establish how factors such as household and school characteristics, including family income, school environment and quality, level of parental education, school costs, among others, influence the choice of schooling.

Figure 1.3: Percentage change in enrolment in public and private primary schools

Source: Government of Kenya (2009a)

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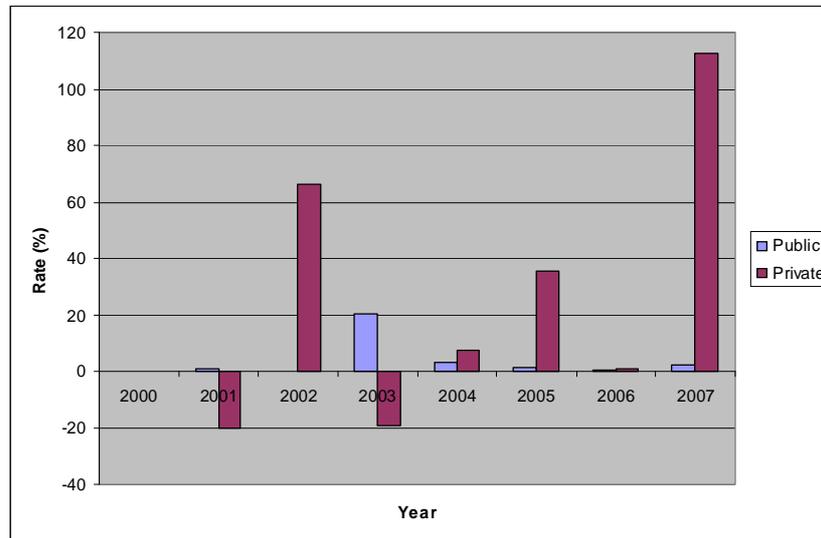
In the last two years, 2007 and 2008, the top pupils in the KCPE were from private primary schools. KCPE statistics show that private schools performed better than public schools, with 82.5 per cent of the top 100 positions and 15.5 per cent, respectively (Kenya National Examination Council, 2006). Comparison at provincial level confirms that out of the top 100 positions in KCPE performance, private schools were leading in 5 out of the 8 provinces. Further analysis of the top 50 public and private schools showed that most of the private schools had fewer pupils; 27 private schools had less than 39 pupils (approximately one class) compared to 10 public schools with less than 39 pupils as shown in Table 1.1. Whereas only 10 private schools had more than 70 registered candidates, public schools were twice as big. This may be an indication that PTR and class size have little influence on academic performance, which calls for empirical analysis.

Though the candidates registered in 2006 as per Table 1.1 may have been distributed into different classes, most public schools had over 40 pupils per class after the introduction of FPE (UNESCO, 2005).

When the FPE policy was launched in Kenya in 2003, payment of tuition fees and levies in public primary schools was abolished. Teaching and learning materials started to be provided free of charge, leaving parents with the responsibility of buying uniforms only. Past studies have found that school costs are the main hindrances to enrolment in schools. However, in spite of the implementation of free primary education in all public primary schools, there are children at home. Over 73 per cent

Table 1.1: Top 50 schools in KCPE 2006 and candidates registered

Registered candidates	Public schools	Cumulative	Private schools	Cumulative	Approximate no. of classrooms
20-29	8	8	16	16	1
30-39	9	17	11	27	1
40-49	10	27	6	33	1
50-59	2	29	6	39	2
60-69	2	31	1	40	2
70-99	6	37	4	44	2
100-149	7	44	6	50	3
150>=	6	50			**4**

Source: Kenya National Examinations Council (2006)

and 55 per cent of primary school age children in North Eastern and Nairobi provinces, respectively, are not enrolled in primary school. The two provinces recorded the least GER of 49.5 and 51.8 per cent, respectively, in 2007 (Government of Kenya, 2009a).

The Government largely relies on taxes to finance FPE. Despite the high taxes on earnings with the highest percentage channeled to the education sector (7% of GDP), some parents continue to send their children to private schools despite the high costs. Computations from the Kenya Integrated Household Budget Survey (KIHBS) 2005/2006 show that the average monthly private school fees paid among children aged 6-13 is Ksh 1,178, with a standard deviation of Ksh 3,755, while maximum fees is Ksh 53,500. The average fee in public schools is Ksh 81. It would have been expected that enrolment in private schools would have declined with FPE, but this is on the contrary. A decline was observed immediately in 2003 but the trend reversed. In spite of the high fees charged, enrolment and establishment of private schools continues to rise (Figures 1.1 and 1.2). It is of policy interest to find out what influences parents' choice of primary schools for their children. The study seeks to answer the following research questions:

(i)   What do parents consider when deciding whether to keep children at home or enrol them in a public school?

(ii)   What factors significantly influence choice between public and private schools?

The main objective of the study is to establish how household and school characteristics influence parents' choice of primary schooling for their children. The specific objectives are to:

(i)   Find out what influences non-schooling choice

(ii)   Find out how school quality characteristics influence choice between public and private schooling

(iii) Provide policy recommendations

The long term objective of the government has been to provide basic quality education and training. The key concerns of recent policy initiatives are on access, retention, equity, quality, relevance, and internal and external efficiencies within the education system (Government of Kenya, 2005b). The introduction of the FPE policy in 2003 was a relief to most parents, leading to massive enrolment in public primary schools. However, subsequent studies (UNESCO, 2005) found

that majority of the parents perceived quality of education in public schools to have declined, citing inadequate teachers who were not prepared, lack of tuition and delayed funds. Besides new enrolments, the overcrowding in schools was also caused by transfers from low cost private schools to public schools in order to take advantage of FPE.

Having some parents keep their children at home while others seek private schooling is evidence that parents consider certain factors when making schooling decisions. This study aims to find out what these factors are and how they influence parents' choices. It has also been argued that some private schools, especially those that cater for the poor, exploit low income parents who are often illiterate and not capable of assessing quality education (Alderman *et al.,* 2001). This study, therefore, also seeks to analyze schooling decisions by different income groups.

Few studies have analyzed the determinants of both school enrolment (quantity) and household schooling expenditure per pupil, including effects of school facilities (quality) and pupil-teacher ratio on school enrolment and household expenditure on schooling (Deolalikar, 1997). The study will attempt to address some of these important policy issues. Research on individual and collective decisions concerning how much and what kind of education to obtain is inadequate, given that literature on school choice is still scanty especially in sub-Saharan Africa.

2. Literature Review

2.1 Theoretical Literature

Rational choice theories argue that educational decisions are made with the objective of maximizing both economic and social returns. Jaeger (2007) observes that the total utility of educational choices is a combination of both economic and social returns to education. Economic returns may include expected earnings, while social returns include preservation of existing peer groups and social networks. Unlike other goods and services, the cost of education is immediate but the returns accrue in the long run.

Parents' behaviour when choosing the type of primary schooling for their children is best explained by the rational choice theory, which assumes that the parent faces a known set of alternative choices. For any pair of alternatives, the parent prefers one from the other or is indifferent about the two and will choose the most preferred alternative, leading to a utility function (Green, 2002). The rational choice behaviour of consumers is the purposeful choice directed systematically towards the achievement of objectives, given the alternatives and constraints of the situation.

In the Rational Action Theory (RAT), people behave according to their interests, attempting to maximize the utility of their decisions on education based on costs, benefits and probabilities of success of various options (Hatcher, 1998). Success in this case is defined in terms of subsequent economic returns. Economic returns to education are somewhat more important (Jaeger, 2007). Hitherto, the concept of human capital has been described as investing in skills in response to the expected returns to education (Fleischhauer, 2007).

Some theories on household schooling choices focus on cost of education borne by households and how they impact on enrolment within and across countries (Lavy, 1992 and Schultz 1999). Others emphasize on expected future returns as a major decision making factor, where the main concern in making enrolment decision is wealth maximization for the entire household. Costs of schooling and benefits that accrue in future are key factors that influence decision making process by households (Tan, 1984; and Buchmann, 2000). Other theories have established culture, traditional norms, community

characteristics and household and individual characteristics as determinants of educational decisions (Samarrai *et al.*, 1998). Yet, others have focused on resource constraints in the household and the willingness by families to pay for education, hypothesizing that family size and income determine educational decisions given the opportunity costs.

One of the factors parents consider when choosing schools is quality. Brunello and Rocco (2008) believe that a key factor affecting school quality though not ventured enough by the literature are students' incentives, including student time, ability and effort, which are important inputs in education, education standards notwithstanding.

When making schooling choices, one must pay attention to teachers (Hanushek and Rivkin, 2004). This is because teachers consume the largest portion of school budget, and it is also perceived that teachers are the most important determinant of school quality. However, Hanushek and Rivkin (2004) note that research does not find a systematic link between teacher characteristics and student outcomes.

Gibbons *et al.* (2006) observe that policy makers and academicians are now supporting choice and competition in education. Whereas the economic rationale for choice and competition is clear, existing literature rarely attempts to distinguish between the two. From both theoretical and policy viewpoints, there has been increasing interest in analysing the factors that affect educational outcomes and how to achieve quality in education. This has led to the concept of school choice in Chile, where there are 3 options: municipal schools, subsidized private, and fee paying private schools (Mizala and Romaguera, 2000).

In Africa, we find some literature on school choice in South Africa. During apartheid, there were separate schools for blacks and whites but from 1991, pressure from opposition groups led to desegregation of white schools into different models to accommodate black students. According to Pampallis (2005), there are four schooling choices in South Africa: private schools; state schools admitting up to 50 per cent blacks; schools admitting 50 per cent of blacks, receiving subsidy, but also charging fees; and those belonging to White Department of Education and Culture. Maile (2004) found that school choice in South Africa is not only driven by a complex phenomenon with many ambiguities and dilemmas but also lack of resources, hence explaining why children move from rural to sub-urban white schools.

In the United States of America (USA), school choice has improved and each year more students are enrolling in schools of choice rather than schools of residence (Pytel, 2007). Pytel argues that when there is no choice, the motivation to improve a school can be lax and if there are several schools in a city competing for students, the overall quality of schools often rise. Also, in the USA, public charter schools' projects are a realization of primary education choice where traditional public schools are feeling the strain of population growth. They are also found where public school education choices are sub-standard, for example in Washington DC. The Charter Schools are non-sectarian public schools of choice, mainly established to realize an educational vision, gain autonomy or serve a special population and operate with freedom from many regulations that apply to traditional public schools.

2.2   **Empirical Literature**

Most studies show empirically that both costs and benefits are important determinants of enrolment, while family resources determine the differential effects of costs and benefits on enrolment decision. This section reviews previous studies on education in Kenya, and discusses available empirical studies on schooling choice, which this study intends to build on.

Research in education in Kenya by for instance Deolalikar (1997), Karmokolias and Maas (1997), Appleton *et al.* (1999), Bedi *et al.* (2004), Mariara and Mwabu (2007) and Nafula *et al.* (2007) has mainly focused on demand for primary school,[3] returns to education and private sector participation. Results from some of the studies indicate that public provision of education in Kenya is inadequate, justifying the need for private involvement (Nafula *et al.,* 2007). According to these studies, common factors affecting demand for schooling are school fees, household income, population characteristics, religion, parental education and perceived quality of education. Enrolment for the lowest quintile is most responsive to cost of schooling and is also affected by the level of direct and indirect costs, urban/rural residence and other socio-cultural factors such as gender. Reducing the total cost of primary schooling by 50 per cent would increase enrolment for boys and girls

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[3] The studies on demand for primary school mainly focus on factors affecting enrolment: What influences choice between schooling and non-schooling?

by 1.5 and 1 per cent, respectively. This calls for an in-depth investigation on the additional costs parents have to pay besides what the Government caters for. These studies utilized the Welfare Monitoring Surveys II and III carried out in 1994 and 1997, respectively, and applied the probit, ordered probit and maximum likelihood logit estimation.

The social rate of return to education in Kenya has been estimated to be about 13 per cent for primary schools and 6 per cent for secondary schools, with private rate of returns higher at 25 and 7 per cent, respectively (Appleton *et al.,* 1999). These returns are lower than those of developing countries, which are 27 and 16 per cent, respectively (Psacharopoulos and Woodhall, 1985). Studies from developing countries have also shown that four years of primary education increase the productivity of farmers by approximately 8.7 per cent (Lockheed *et al.,* 1980) while a year of education is associated with 3 to 14 per cent increases in wages and productivity in sub-Saharan Africa (Appleton *et al.*, 2000).

Deolalikar (1997) highlights the dilemma of policy makers in developing countries on provision of quality universal primary education and proposes enlisting the private sector to increase primary school coverage, since the government is unlikely to establish new schools. Before policy advocacy on expansion of private delivery of education, one needs to know how school fees, quality and distance affect enrolment. Mariara and Mwabu (2007) address that issue while this study expands the choices by breaking down enrollment decision into public and private.

There have been attempts to study schooling decision in Kenya. Ngware *et al.* (2008a) sought to find out the relationship between household characteristics schooling decision following the implementation of FPE. The study considered urban households comparing two urban slums and two middle income formal settlements. Among children not enrolled in school, 99 per cent were from informal settlements, while 46 per cent of those in school attended private schools. Probit estimates showed that the child's gender did not influence decisions, the education level of the household head was important when deciding whether to enrol, while income influenced enrolment and school type. Ngware *et al.* (2008b) further examined the quality of primary education in urban schools relying on the same sample. Descriptive statistics show that public schools have high PTR, are well

endowed especially with text books attributable to FPE, but all schools generally face quality challenges.

In developing countries, literature on school choice is scarce unlike in developed countries. Most of the literature focuses on school choice, competition and pupil achievement. School quality is one of the major factors parents consider when choosing a primary school for their children. In USA, for example, the role of school quality in determining educational outcomes has received much research attention, where parents have four alternatives: public, private religious, private independent and home schooling (Belfield, 2004). Home schooling is the most noble and is highly influenced by the mother. According to Le and Miller (2003), Australian parents have three primary schooling options: government, catholic or independent schools with a stronger increase in enrolment in private schools than in government schools from 1970. Some of the factors that influence choice of school in Australia are class size, parents' occupation, gender and parents' educational attainments.

In rural Mozambique, policy simulations showed that improving school quality increases both mean grade attainment and efficiency while overall enrolment increased by approximately 4 per cent (Handa and Simler, 2006). However, pupil-teacher ratio did not influence enrolment.

Specific studies that are more related to this study are by Figlio and Stone (1997), Alderman *et al.* (2001) and Gibbons *et al.* (2006). Figlio and Stones (1997), who used the National Education Longitudinal Survey data from the United States Department of Education, which was well detailed, provided better findings than previous works that were contradicting due to use of weak instruments. They estimated a multi-sector model for school selection and student performance using multinomial logit with three options: public schools, religious and non-religious private schools assuming independence from irrelevant alternatives assumption (IIA). The null hypothesis of IIA was rejected at the 4.9 per cent level. Results showed that the more concentrated or high pupil-teacher ratio in public schools, the higher the likelihood for parents to send their children to private schools and vice versa. Parents with bachelors degree as well as those with high income were more likely to send their children to private schools.

Alderman *et al.* (2001) explored choice available to low income households in Pakistan and how fees charged affect the choices. The

model used was a weighted nested multinomial logit using three options: no school, public and private. Nested logit was preferred due to availability of school specific data, which provided the variation among alternatives. Conditional on choosing the schooling option, parents decide between government and private, in which case the study does not assume IIA since the two are close substitutes. A survey specifically for the study was carried out. Weighted averages of government and private school fees were generated for each neighbourhood to verify that operating costs of private schools were relatively low, despite relatively higher teacher-pupil ratios, due to lower salary structures. Alderman *et al.* (2001) found that schooling choices are sensitive to school fees, distance and school quality and that parents' education reduced the relative utility for non-schooling while instructional expenditure raised relative utility of both private and government schools. It concluded that parents increasingly respond to perceived inadequate public education by enrolling their children in private schools.

According to Gibbons *et al.* (2006), there exists a small positive association between competition and achievement and pupils tend to perform better if enrolled in schools that are in a more competitive environment. The study assessed whether choice affects academic outcomes in England where there are four schooling choices: community, foundation, voluntary aided and voluntary controlled. Ordinary Least Squares (OLS) and Instrumental Variable Strategy were used, since the choice and competition variables were likely to be endogenous. The data was sourced from National Pupil database and Annual School Census. Results indicated that school choice is not associated with higher pupil performance, while distance was a strong predictor of choice.

The question of whether private schools necessarily offer quality has also been addressed, though there is a perception that private schools cannot offer lower academic quality than public schools. Vandenberghe and Robin (2004) found that public schools can out-perform private schools as is the case in France and Austria. Private schools can also offer lower educational standards at a price because they attract students who may find the high standards of public schools too demanding (Brunello and Rocco, 2008).[4] Consequently, private schools can allow customers to obtain a certificate with little effort.

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[4] The study focused on secondary schools.

Areas of convergence by Figlio *et al.* (1997) and Alderman *et al.* (2001) were: high PCR in public schools, leading to a shift in private schools; parents with higher education were more likely to send children to private schools; and high PTR lowered utility in government schools but raised in private schools. However, Alderman *et al.* (2001) and Gibbons *et al.* (2006) did not agree on whether school choice was not associated with higher pupil performance. Figlio *et al.* (1997) did not present the full set of parameter estimates from the multinomial logit model while Gibbons *et al.* (2006) did not address parental preferences directly because of data challenges. There is still room for more research in this area, especially in Africa where literature is scarce.

Most researchers are in agreement that investment in human capital is core in development, especially in the third world countries (Mariara and Mwabu, 2007; and Hanushek and Kimko, 2000). Research on demand for schooling in Kenya has also received attention (Deolalikar, 1997; Bedi *et al.* , 2004; and Mariara and Mwabu, 2007). However, the literature reviewed for Kenya has only utilized Welfare Monitoring Surveys II and III carried out in 1994 and 1997, respectively. Studies utilizing the more recent KIHBS 2005/06 are scanty. Since most of the studies on demand for schooling considered only two choices: schooling or non-schooling, the methodologies applied were mostly probit, ordered probit and maximum likelihood logit estimation. Studies applying the multinomial logit regression analysis were not available. The public-private schooling options have also not been adequately addressed, except for Ngware (2008a) who focused on the demand side characteristics of urban households only. Though Mariara and Mwabu (2007) focused on determinants of enrolment and education, the study did not treat public and private choices separately and utilized WMS III. District mean school costs were used, whereas this study uses individual costs per pupil.

From the review, it is clear that school choice is well defined especially in developing countries where the greatest determinant is quality. In developing countries, literature on school choice is limited, especially in sub-Saharan Africa. Therefore, the study by Alderman *et al.* (2001) on rural households in Pakistan is not only an eye opener but also relevant.

3.   Methodology

3.1   Conceptual Framework

As general consumers, parents are assumed to derive utility from consumption of goods and services as well as the education human capital of their children. Given options to choose from, parents are expected to choose the option that will give them the highest utility. Initially, parents are faced with two options: to keep the child at home or to send the child to school. Once they have decided to send the child to school, they further make a choice between enrolling the child in a public school or in a private school. The choices involve different costs, hence different levels of consumption depending on the family's income, sex of the child, expected returns, school quality and price of schooling that includes direct costs such as fees, books, uniforms and indirect costs such as opportunity cost of children's time, among others. Whichever choice the parents decide on, it is assumed that the end result is a net gain. The study assumes the independence from irrelevant alternatives (IIA) property also applied by Figlio *et al.* (1997), which relaxes the nesting of public and private schooling choices on schooling choice, leading to three independent choices. Alderman *et al.* (2001) observed that parents are increasingly responding to perceived inadequacy of public education by enrolling their children in private

Figure 3.1: Schooling decision process flowchart
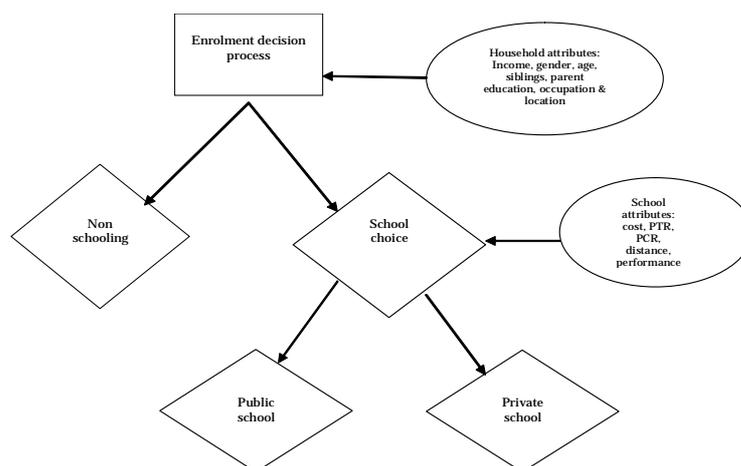
Source: Author's conceptualization

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schools. This study will analyze three schooling options, namely: no school, public school and private schooling. The decision process is demonstrated in the flowchart below.

3.2 Theoretical Model

This study is rooted on the utility theory, which provides a methodological framework of alternative choices made by individuals. The theory assumes that any decision is made on the basis of utility maximization principle, according to which the best choice is the one that provides the highest utility to the decision maker. The theory is often used to explain the behaviour of individual consumers, who are also the decision makers. In this context, parents are the decision makers, hence will choose the schooling option from which they will derive the highest utility. The choice for non-schooling may, therefore, be an indication that the advantages of sending the child to school are outweighed by the disadvantages (Gertler and Glewwe, 1990). In addition, a parent will enroll a child in school for another year if the expected benefits are greater than associated costs.

The econometric model applied stems from a utility maximization function adapted from Gertler and Glewwe (1990) and Alderman *et al.* (2001), since the choices made by parents are pegged on expected future gains. The gains are the education human capital development of the child and utility derived from their own consumption of goods. The utility function thereof may be represented as:

$U = U(C, H[A])$, where

U is the utility derived by a parent from consumption of goods and education of human capital of the child,

C is the consumption of all other goods and services,

H is the education human capital of the child, and

A indicates household and school attributes.

From the conceptual framework, a parent chooses one of the three options: non-schooling, public or private schooling. Therefore, the unconditional utility maximization problem becomes:

$$U^* = max(U_o, U_g, U_p); j = o, g \text{ or } p \tag{1}$$

where U^* is the maximum expected utility between the three possible choices and j represents the schooling alternatives: o = non-schooling, g = public and p=private schooling. Each household selects the option from which it will derive the highest utility.

The utility specification, which assures that at equal levels of consumption, marginal utility of consumption is equal across alternatives is given as:

$$U_{ij}=\alpha_0 H_{ij}+\alpha_1 C_{ij}+\alpha_2 C_{ij}^2+\varepsilon_{ij} \qquad (2)$$

where $C_{ij}=Y_i-P_j$ and $j=0, g$ or p

Y_i is income for the ith household,

C_{ij} is consumption of goods by i^{th} household given school choice j,

P_j is cost of jth schooling alternative, and

ε_j is a random test shock that is uncorrelated across alternatives.

We assume a general form for the education human capital production function embedded in the model:

$$\alpha_0 H_{ij} = \gamma_j S_j + \beta_j F_i \,; j = o, g \, or \, p \qquad (3)$$

where S_j is a vector of jth school attributes available to the household and F_i is a vector of family attributes that contribute to learning in school.

Assuming child human capital raises parent utility ($\alpha>0$ in (3), this implies a sign in agreement between the parameters of the human capital production process and the corresponding effects of F_i and S_j on school choice. If $\alpha = 0$, then the parent will not derive any utility.

3.3   Model Specification

The study applied the multinomial logit model with three discreet dependent random variables, which were adopted from Aldermen *et al.* (2001). The model requires the assumption of Independence from Irrelevant Alternatives (IIA) property. In this case, a parent is faced with three options: 1) to take the child to a public school; 2) to take the child to a private school; and 3) to keep the child at home. The three

options form three discreet dependent random variables contained in the model. The IIA property assumes that the three alternatives are independent of each other. The Hausman test was conducted obtaining a $X^2(18)$ of 1,188.16 and the null hypothesis of independence of irrelevant alternatives rejected at 1 per cent level. This supports the use of the model with three choices. By allowing the coefficients to vary by alternative, we allow schooling inputs to have different productivities (qualities) in different school types. This is of particular importance in assessing parental choices between public and private school. The schooling choices were analyzed within the framework of a weighted multinomial logit specification given below.

$$\Pr(U^* = U_j) = \pi_j = \frac{\exp[(U_j - \varepsilon_j)/\sigma]}{\{\exp[(U_0 - \varepsilon_0)/\sigma] + \exp[(U_g - \varepsilon_g)/\sigma] + \exp[(U_p - \varepsilon_p)/\sigma]\}^\sigma} \qquad (4)$$

where σ is equal to one minus the correlations among $\mathring{a}_0$, $\mathring{a}_g$ and $\mathring{a}_p$; (ó $=1-p_j$) and is interpreted as the dissimilarity, which in present application is assumed to be equal to unity.

Estimation involves inserting equations (2) and (3) into (4) and then specifying the empirical counterparts to the vectors P_j, S_j and F_i.

P_j, the price of attending a school of type j, include the school fees and other material expenditures (tuition, books, uniforms, boarding, maintenance, transportation, examination and pocket money) required by type *j* schooling alternative. Since we assumed the IIA property, the error terms between schooling alternatives are not correlated. Therefore, the probabilities of choosing each of the schooling options are:

$$\pi_0 = \frac{\exp[(\beta_0 F_i + \delta_0 + \alpha_1 C_{i0} + \alpha_2 C_{i0}^2 + \varepsilon_{i0} - \varepsilon_0)/\sigma]}{\{\exp[(U_0 - \varepsilon_0)/\sigma] + \exp[(U_g - \varepsilon_g)/\sigma] + \exp[(U_p - \varepsilon_p)/\sigma]\}^\sigma} \qquad (5)$$

$$\pi_g = \frac{\exp[(\gamma_g S_g + \beta_g F_i + \delta_0 + \alpha_1 C_{ig} + \alpha_2 C_{ig}^2 + \varepsilon_{ig} - \varepsilon_g)/\sigma]}{\{\exp[(U_0 - \varepsilon_0)/\sigma] + \exp[(U_g - \varepsilon_g)/\sigma] + \exp[(U_p - \varepsilon_p)/\sigma]\}^\sigma} \qquad (6)$$

$$\pi_p = \frac{\exp[\gamma_p S_p + \beta_p F_i + \delta_0 + \alpha_1 C_{ip} + \alpha_2 C_{ip}^2 + \varepsilon_{ip} - \varepsilon_p)/\sigma]}{\{\exp[(U_0 - \varepsilon_0)/\sigma] + \exp[(U_g - \varepsilon_g)/\sigma] + \exp[(U_p - \varepsilon_p)/\sigma]\}^\sigma} \qquad (7)$$

The parameters in the model are estimated using maximum likelihood technique. This is derived by substituting each of the above three choice probabilities into the log-likelihood function, which gives an explicit function of the model parameters. The values of the parameters that maximize this function are, under fairly general conditions, consistent and efficient (Brownstone and Small, 1989). The log-likelihood function is given as:

$$\ln(\ \beta X\ ) = \sum_{i}^{N} \ \sum_{j} \ Q_{ij} \ln(\ \pi_{ij}\ )$$

$$where \quad ; L = \prod_{i=1}^{n} \ \prod_{j} \ \pi_{ij}^{Q_{ij}} \quad and \quad , Q_{ij} = 1 \quad \text{if } i \text{ chooses } j$$

N = total number of households

The full equation becomes:

$$\ln(L) = \Lambda = \sum_{i}^{N}\sum_{j} Q_{ij} \ln\left(\frac{\exp[\gamma_{j} S_{j} + \beta_{j} F_{i} + \delta_{0} + \alpha_{1} C_{ij} + \alpha_{2} C_{ij} + \varepsilon_{ij} - \varepsilon_{j}]/\sigma]}{\{\exp[U_{0} - \varepsilon_{0})/\sigma] + \exp[U_{g} - \varepsilon_{g})/\sigma] + \exp[U_{p} - \varepsilon_{p})/\sigma]\}^{F}}\right) \quad (8)$$

The solutions will be found by substituting each of the probabilities, π_{j} in Λ and solving the parameters α, β and δ so that $d\Lambda/d\alpha=0$, $d\Lambda/d\beta$ and $d\Lambda/d\delta$.

3.4   Data and Measurement of Variables

The study utilized data from the Kenya Integrated Household Budget Survey (KIHBS) conducted in 2005/2006 by the Kenya National Bureau of Statistics as well as district level data obtained from the Ministry of Education for the year 2006. The KIHBS survey was carried out countrywide, covering over 13,000 households comprising about 66,694 individuals. The data is quite comprehensive on all aspects, especially education and expenditure on education, employment, household expenditures and income, health, housing among other household and individual characteristics. The survey was conducted about one and half years after the implementation of the FPE, and therefore captures the massive enrolment experienced in 2003 and, by this time, the situation may have stabilized and parents become decisive on schooling choices. The KIHBS data provided information on the demand side characteristics, which comprise the family attributes; that is per capita expenditure, family size, age, gender, parents' education and location. It also provides details on schooling choices, i.e. government, private and non-schooling, reasons for non-schooling and schools costs.

Data from the Ministry of Education comprised information on districts, number of private and public schools, distance to the nearest public and private school in kilometers, enrolment, number of classrooms and teachers, and was used to complement the KIHBS data. Data on gross enrolment, number of classes and teachers per district was used to compute the class size/PCR and PTR, thus providing the supply side characteristics of choice of schooling. KCPE scores for the year 2006 were also used and obtained from the Kenya National Examination Council. The PTR, PCR and KCPE scores are school characteristics and indicators of school quality. They were all in the form of district means, hence not school-specific to give a variation between schools. Total distance to school (distance to public and distance to private school) was used since the results were not different when average distance was used. The distance was measured in kilometers (that is the shortest distance from home to the school).

The dependent variables are the enrollment choices made by parents. The variables are generated such that all those pupils who are not schooling are represented by a zero (0), those enrolled in public schools by one (1) and those in private schools by two (2). In total, there are three independent discreet random variables. A standard set of variables was adopted for inclusion in the regression, which are roughly comparable to the sets used in other studies on school choice. The independent variables consist of both demand and supply sides factors.

Demand side comprise the household/family characteristics represented by F_i in the model. These include: child age and gender, gender of household's head; age and years of schooling; number of age mates and elder siblings in the household, per capita expenditure computed as total monthly food and non-food expenditure, and finally, the area of residence represented as location.

The supply-side consists of school characteristics are represented by S_j in the model. They include school costs, pupil-teacher ratio, KCPE mean scores for 2006 and school distance. District average PTR, KCPE scores and distance were used. Distance was measured in kilometers in terms of the shortest distance from home to the school but was distinct for private schools and public schools. Total distance to school, the sum of distance to nearest public and private schools, was used since the results were not different when average distance was used.

The hypothesized expected signs for the variables and their measurements are shown in Table 3.1.

Table 3.1: Expected sign for the variables

Demand side				
Variable	Full name	Expected sign		Measurement
		No. school	Private	
Lnchildage	Child age	-	-	No. of years
Malechild	Child gender	-	-	Male = 1 and Female = 0
Lnhhhage	Household head age	+	+	No. of years
Headmale	Household head gender	-	+	Male = 1 and Female = 0
Educyrs	Household head education	-	+	Total no. of years of schooling
Sibs1	No. of age mate siblings	-	-	No. of siblings aged 6-13 years
Sibs2	No. of elder siblings	-	-	No. of siblings aged above 13 years
Quintile 2-5	Per capita expenditure	-	+	Total monthly food and non food expenditure
Location	Location	-	+	Rural=1 and Urban=2
Supply Side				
Lnmonfees	School costs	+	+	Sum of monthly tuition and instructional fees per pupil in Ksh
Ptr	Pupil Teacher Ratio	+	-	District mean
Lnkcpemean	KCPE mean scores	-	+	District mean
Lndistance	School distance	+	-	District mean from home to nearest school in kilometres

4.   Results and Discussion

4.1   Descriptive Statistics

The analysis focuses on primary school age going children between 6 and 13 years,[5] totaling 13,297. The summary statistics are provided in Annex 1-6. Annex 1 tabulates the children into public and private schools and those not in schools. 84 per cent of the children are in public schools, 14 per cent in private schools while only 1 per cent are not in school. Enrolment across both genders is the same, depicting that both genders have an equal chance of attending school. However, despite the introduction of FPE, it is clear that there are still some children who are not in school, 54 per cent of whom are girls.

The KIHBS survey probed the reasons why some children are not in school (Annex 2). Majority (37%) cited lack of money while 18 per cent were not interested. This indicates a likelihood that some parents let their school age children decide whether to go to school or not. From Annex 5, 31 per cent of school age children are in the lowest (1st) quintile are not enrolled in school, while only one per cent in the richest (5th) quintile are not enrolled. Though private schools are said to be for the rich, the statistics show that 10 per cent of children in the poorest quintile are in private schools. In spite of the free education, the descriptive analysis shows that some children are still not in school, 37 per cent of whom cited lack of money, 18 per cent lacked interest while 12 per cent either worked to help at home or their parents did not let them enroll.

4.2   Multinomial Logit Results

This section discusses estimates of multinomial logit equations, which involved analysis of three alternatives, the public school option being the reference. The signs of the estimates indicate the relative utility from selecting: a) the public school option versus the non-schooling; and b) the public school option versus the private school. The natural logarithms for variables such as age, school fees, distance and KCPE score were used for linearization purposes. The robust estimates are

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[5] This is the official school age for primary school children. Similar studies have shown that results are not substantially different when the age bracket is adjusted slightly (Bedi *et al.*, 2004).

presented in Annex 4. The Wald statistic at the bottom of the table shows the goodness of fit, confirming that the model adequately describes the data. The Pseudo R^2 shows that the model explains 21 per cent of the variability, which is fine given that the model is a discrete choice model estimated with cross-section data. The table shows results for choice between public schooling and non-schooling in the first column of estimates and choice between public and private schooling in the last column. The results were therefore interpreted relative to joining public school. Some factors considered important were found to be insignificant and were not included in the final analysis. They included household size, province and employment status. Some of the variables such as household size were left out as they would introduce endogeneity in the model. The pupil-classroom ratio (PCR) and pupil-teacher ratio (PTR) were highly positively correlated with a correlation of 0.783 hence the PCR was dropped. The results are presented according to the model variables.

4.2.1   Individual characteristics

Child age and gender

The estimate for the log of the child's age is negatively related to schooling choice. The inverse relationship between the child's age and schooling decision was as expected and shows that an increase in child's age reduces the chances of not joining school and enrolling in private school. An increase in a child's age by 100 per cent reduces the probability of not enrolling in school by 2 per cent, and at the same time reduces the chance of enrolling in a private school by 36 per cent. Age is thus a key determinant for private school choice, since increase in age reduces the probability by a higher margin. Age, therefore, does not deter a child from joining school as was evidenced after introduction of FPE. However, the estimates for age squared have a positive sign, depicting a positive relationship between age and schooling choice. This indicates that there exists a limit at which the probability of enrolling starts to decline as age increases, leading to a non-linear relationship.[6]

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[6] This finding corresponds to Bedi *et al.* (2004) where the probability of enrollment starts declining at age 13, having considered age group 6 − 15yrs.

Therefore, in spite of the fact that age does not hinder enrollment, delay in joining school would reduce the expected marginal benefits from the human capital development of the child, which is also likely to interfere with completion rates. Completion rates are higher if children join school timely (Grogan, 2009). Computations using the coefficients for log of age and age squared show that among age group 6 to 13, the maximum age at which the expected utility starts declining is 9 years, which is also the mean age for this cohort.

The results indicate that the non-schooling choice is not influenced by the child's gender as was the case with Ngware *et al.* (2008a). In the recent past, policy measures have been implemented to close the gender gap by giving both boys and girls an equal chance of enrolling in school. However, the gender estimate has a positive sign depicting a positive relationship between gender and private schooling choice against the expected negative sign indicating that girls would have a higher chance of joining private schools than boys. This shows that a male child has a higher probability of being enrolled in a private school than a female child. If the proportion of boys increases by 1 per cent, then the probability of enrolling in a private school increases by one per cent relative to girls. These results tally with the descriptive statistics, which show a lower mean age and higher percentage of number of boys than girls in private schools compared to public schools.

Household head age and education

The age of the household head influences the choice between public and private schooling, with a positive relationship. As the household head advances in age, the probability of enrolling the child in a private school increases relative to enrolling in a public school. One per cent increase in the age raises the probability of enrolling in a private school by 0.03 per cent, or if the age increases by 100 per cent (age doubled), the probability of choosing private school increases by 3 per cent.

The number of years of education of the household head is also a major factor, especially when choosing between public and private schooling. For the non-schooling choice, the relationship is negative while for the private school choice it is positive. An additional year of education reduces the utility a parent would derive from the non-schooling option, i.e. one per cent increase in the years of schooling of the head reduces the probability of a parent not enrolling the child in

school by 0.04 per cent. On the other hand, an additional year of schooling increases the chance of enrolling the child in a private school, where one per cent increase in years of schooling increases the probability of private schooling choice by 0.93 per cent. The effect of education on private schooling choice is not only highly significant but also larger compared to non-schooling choice.

Therefore, as a parent acquires higher education, there is a higher likelihood that they will enroll the child in school and are also more likely to opt for private school, probably because of the perceived education delivery. Educated household heads are also likely to be advanced in age, having spent some considerable time learning and earning meaningfully, hence can afford to put their children in private schools. These results both concur with the descriptive statistics and findings by Figlio *et al.* (1997) and Alderman *et al.* (2001) that graduate parents have a high probability of enrolling children in school.

Number of siblings

Siblings in the same age group are likely to affect schooling decisions by parents. The estimates indicate an inverse relationship with both private and non-schooling decisions. Any extra siblings in the household, who is in the primary school age (6-13), reduces both the chances of another sibling in the same age group not attending school and joining private school. Parents, therefore, will opt to send all the children in the same age group to school to avoid discrimination. Choosing a private school would mean paying more, especially if the children are more than one, hence a parent may opt for a public school where currently the tuition is free.

The presence of elder siblings in the house is also likely to influence schooling decisions for younger siblings. The estimates are not significant for the private schooling choice. With regard to the non-schooling choice, the estimate has a negative sign, indicating an inverse relationship. Therefore, an additional elder sibling in the house reduces the probability of non-schooling by 0.2 per cent. The presence of elder siblings implies there are more hands to share household or other work either before going to school or after. Elder siblings also assist in family businesses, thus releasing the young ones to enrol in school. Furthermore, if an elder sibling has already been enrolled in school,

probably because of the expected future benefits, there is a higher likelihood of enrolling the younger ones. Elder siblings pass smaller uniforms and textbooks to the younger siblings, hence resources are utilized efficiently.

Household consumption

The expenditure quintiles were used as a proxy for household income. This implies that households in higher expenditure quintiles have a higher income. The first quintile is the base and the estimates have a positive sign. Results show that households in higher expenditure quintiles are more likely to enroll their children in private schools. Those households in the 5th quintile (richest) have a 17 per cent higher chance of choosing private schools while those in the 4th quintile are 4.5 per cent more likely to enrol in private schools. This is in tandem with the descriptive statistics, which show that of those in private schools, 45 per cent are in the 5th quintile while those in public schools are 11 per cent. Household expenditure neither influences the non-schooling option nor choices made by households in the 3rd and 2nd quintiles. This could be explained by the implementation of FPE, since parents can direct their earnings to other household expenditures other than school fees. Therefore, the probability of choosing private schooling increases as household consumption increases, which increases as income increases. From the descriptive statistics, the average monthly consumption among households choosing public schools is less than half that of households choosing private schools. Income is therefore important when choosing private schooling. Private schooling choice increases with increased income, as also observed by Alderman *et al.* (2001).

Area of residence

School choice is influenced by area of choice, especially private schooling. The positive sign is an indication that urban households are not likely to send their children to school and are more likely to enrol them in private schools compared to rural households. This is against the expectation that urban households are more informed than rural households, hence should send their children to school. Urban households have a higher chance of choosing the non-schooling option because of poor environmental conditions especially in the informal

settlements where majority of the urban population live. Urban households are also more likely to send their children to private schools, since there are more private schools in urban centres, compared to rural settings as Ngware *et al.* (2008) also observes.

4.2.2   School characteristics

Pupil-teacher ratio

The PTR is a major indicator of school quality. Theoretically, it is perceived that small class sizes are synonymous with higher quality, hence parents would prefer schools where PTR is low, since the teacher will not be too overwhelmed by work and can offer more individual attention to each child. In this study, the PTR is highly significant when choosing between non-schooling and public schooling. The PTR has a positive sign, implying that an increase in the PTR would lead to a higher probability of non-schooling. This is because high PTR are associated with poor quality, which may prevent parents from sending their children to public schools. Therefore, parents are likely to consider PTR when deciding whether to send their children to school, as a high pupil-teacher ratio is likely to lower the expected gain. Figlio *et al.* (1997) and Alderman *et al.* (2001) had similar findings. With respect to private school choice, the PTR is not significant.

School costs

School costs are expected to be the major determinants for school choice, given that this is the direct price the family pays for sending the child to school. The school fees has a negative sign on non-schooling, depicting an inverse relationship but were expected to have a positive sign since school fees has been a major hindrance to enrolment. The relationship between private school choice and school cost is positive, which was expected. Therefore, school fees negatively influences non-schooling choice and has a positive impact on private schooling relative to public schooling. The coefficient is highly significant in both choices, but the effect is stronger on private schooling choice. As fee increases, the probability of choosing a private school increases by a bigger margin of 2 per cent, unlike the non-schooling option. Therefore, as school fees increases, a parent is less likely not to send the child to school even though the increase is by a small margin of 0.06 per cent. The

attractiveness of private schools when costs increase may be attributed to the additional and perhaps quality services availed, such as extra tuition, feeding, swimming and music lessons. This concurs with Alderman *et al.* (2001) results on increment on instructional costs, implying willingness to pay for quality improvement. This may be due to the fact that private schools can further be categorized into low, medium and high cost schools depending on other additional facilities and that parents attach some value to the quality of resources available in a school. This finding supports the argument that households should pay a fee so as to raise additional revenue that can be used to improve school quality (Gertler and Glewwe, 1990).[7]

In spite of the perception that choice is influenced by performance, KCPE scores, as well as distance to school were also not statistically significant.

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[7] The suggestion of paying fees is often not well received since the provision of free education is viewed as a goal in itself and enrolment among the poor would reduce (Gertler and Glewwe, 1990).

5.   Conclusions and Recommendations

5.1   Conclusions

This study sought to find out what influences parents choice of primary schooling for their children and considered a multinomial logit model to estimate effects of household and school characteristics on the three choices: non-schooling, public and private schooling. Following the introduction of FPE, the results indicate that the following factors influence the decision to enrol a child in school: age of the child, age of the household head, presence of elder siblings, PTR, school fees and the area of residence. The choice between public and private schools is influenced by age, education and employment status of the household head, school costs, gender and age of the child, area of residence and family expenditure.

Given the 2007 net enrolment ratio (NER) of 91 per cent, the country is nearly achieving the goal of universal primary education. Improving school quality to increase both mean grade attainment and efficiency and overall enrolment may be the key to closing the NER gap. Besides, the level of household income, choice between public and private school is highly influenced by quality aspects such as class size and pupil-teacher ratio. These two factors should be earmarked for improvement.

The study reveals that parents consider school quality when making schooling decisions for their children. Therefore, having adequately addressed issues of access and equity in education, policy makers should consider some of the school quality aspects highlighted in this study when deciding how to maximize the impact of scarce investments in the education sector, and also as a key step towards achieving a globally competitive quality primary education proposed in the Vision 2030.

The evidence that KCPE scores do not influence schooling choice gives weight to the recent policy reform that banned ranking of schools according to performance. The focus, therefore, should be on improving school quality.

5.2   Recommendations

Re-emphasize official primary school entry age

Policy interventions are geared towards making a certain desirable impact. The results show that age does not quite adversely affect schooling decision, but there is likelihood that as age increases, the child will be demotivated to join school. Consequently, there is need to re-emphasize the official starting primary school age (6 years) to minimize the expected marginal disutility after age 9. This could be achieved though compulsory primary education for all children enforceable through relevant legislation such as the Children's Act. This policy would also help in minimizing over age pupils in classes and improve PTR, which is a major quality indicator.

Hire more teachers

The PTR emerged as a key determinant of school choice, particularly the impact of PTR on non-schooling option. In order to improve PTR in public schools, it is important to address teacher shortages by providing additional teachers in regions with high PTR. This recommendation is in line with Vision 2030, which acknowledges the challenge of improving quality at primary school level linked to overstretch of resources after introduction of FPE.

Enhance per capita grants to not-for-profit private schools and needy families

The study found that urban households are less likely to send their children to school compared to rural households. This is mainly attributed to the large population in the informal sectors, fewer public schools and economic hardships. The initiative of providing per capita grants to not-for-profit private schools, especially those situated in urban slums and other areas under-served by public schools such as the Arid and Semi Arid Lands (ASALs), could help in improving the quality of education delivery. The proposal in the Vision 2030 of rolling out the voucher system and special grants to the most needy families would benefit the urban poor in accessing quality education.

Strengthen adult education

The level of education of the household also plays a major role when choosing the type of schooling. In order to close the NER gap, parents still need to be sensitized and educated to realize the importance of educating their children. This could require strengthening adult education programmes and other programmes targeting the youth who did not enrol in post-primary education so as not to lapse back into illiteracy, which would lead to poor choices. Primary school teachers could be encouraged to organize tuition during school holidays for youths and other adults willing to sit for national examinations. Though this is ongoing in some urban schools, the same should be encouraged in primary schools in rural areas where illiteracy levels are higher.

Expanding primary school choice

It is evident that private schools are an option for households in higher expenditure quintiles. The demand for private schools is expected to rise because, with increased per capita expenditure, more parents are willing to send their children to private schools, especially those in urban areas. However, most of these parents have still enrolled their children in public schools. Parents are also willing to pay a little more private school costs since this has a direct impact on school quality. The government could consider expanding primary school choice to parents by earmarking some public schools, e.g. 5 per cent within urban areas, as pilot projects that can either charge some fees or be concessioned and pupils receive additional services, which would in turn beef up the school kitty and enhance overall school quality.

5.3   Areas of Further Research

Results show that households in urban areas are less likely to send their children to school, which may be due to unfavourable conditions especially in the slums. The study recommends further research to find out the main causes and come up with possible intervention measures. It is still unknown whether some of the parents keeping their children at home could be home schooling. This is an area that may be of interest.

It has been found in previous studies that there is high unmet demand for private schools. The magnitude of this needs verification.

The analysis further shows that parents highly consider school quality when making a choice. Research utilizing school specific information such as school level KCPE scores, text book to pupil ratio, PTR and PCR is necessary, including other factors left out due to data challenges such as lighting, teachers' skills and motivation, computer laboratory, distribution of schools (rural vs urban) and feeding programme.

All primary schools registered by the Ministry of Education, both public and private, should be encouraged to submit annual data returns to facilitate further research and curb data challenges. The school heads should be sensitized on the importance of data in order to gain their cooperation.

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Annex

Annex 1: Sample (N=14,889) children aged 6-13 years

Schooling choice	% Male	% Female	% of total in school
Public	50	50	84
Private	51	49	15
No school	46	54	1
Missing	47	53	
No. of observations	7,408	7,481	

Source: Author's computation from KIHBS 2005/6

Annex 2: Reasons for not attending school

	Reason	Response (%)
1	No money	37.09
2	Own illness/disability	8.61
3	Family illness/disability	1.99
4	Not interested	18.54
5	Parents did not let me	8.61
6	Working to help at home	3.30
7	School too far	1.00
8	Other	14.57
		100

Source: Author's computation from KIHBS 2005/6

Annex 3: Proportion of enrolment by expenditure quintile

Choice	Quintiles				
	1st	2nd	3rd	4th	5th
No school	0.31	0.18	0.25	0.18	0.10
Public	0.22	0.24	0.22	0.20	0.11
Private	0.10	0.11	0.15	0.20	0.45

Source: Author's computation from KIHBS 2005/6

Annex 4: Summary statistics

Variable	Mean	Std dev
Child age	9.37887	2.307177
Public school	9.60671	2.25239
Private school	8.56132	12.245822
Child age squared	93.28592	43.92952
Sex of child (1=male)	0.4975485	0.5000108
Household head (1=Male)	0.7098857	0.4538302
Household head age	45.31345	12.93788
Household head education years	8.201597	3.609468
Age group siblings	2.514324	1.223177
Elder siblings	0.7605245	0.8649561
Monthly fees	1178.316	3755.95
Private (min=.083, max= 53500)	243.6693	1516.736
Public (min=.083, max= 7700)	81.13428	258.8722
Total distance (min=.0054653 7.875)	0.8903107	1.115581
Public (min=.0047311, max= 4.5)	0.7603891	0.7868219
Private (min=.0004449, max= 3.375)	0.3333851	0.6160914
PTR	44.39567	8.308723
PCR	35.20242	4.552532
KCPE scores	49.68912	3.210691
Expenditure quintiles: 1st quintile = base		
Second	0.2209576	0.414906
Third	0.2056704	0.4042043
Fourth	0.188969	0.3914971
Fifth	0.1506499	0.3577193
Monthly consumption expenditure: Average	2428.488	4025.488
Households public school	2052.9665	2145.667
Private school	447.673	9184.69
Residence: Urban vs rural (rural = base)	0.2511954	0.4337153

Source: Author's computation from KIHBS 2005/6, Ministry of Education and KNEC (2006)

Annex 5: Multinomial logit results: 1 = public schooling = base

Variable	0=Non-schooling		2=Private schooling	
	Estimate	t-value	Estimate	t-value
Ln(child age)	-.0207917**	-2.20	-.3584907***	-6.31
Child age squared	.0001185**	2.13	.0010071***	3.00
Ln(Household head age)	.0008144	.36	.0381042**	2.05
Household head education yrs	-.0003793**	-2.07	.0093412***	9.20
Siblings (age group)	-.0008915*	-1.93	-.0065492**	-2.06
Siblings (elder)	-.0017488**	-1.98	.0009426	.23
PTR	.0002028***	2.89	.0003034	.73
Ln(monthly school fees)	-.00065***	-3.83	.0200833***	9.97
Ln(distance)	.000172	.40	-.0022658	.93
Ln(KCPE score)	.0021201	.29	.0504484	1.11
Sex of child (1=male)	-.000000214	-.00	.0125382**	2.01
Household head (1=Male)	-.0007951	-.58	-.0111341	-1.34
Quintiles (First, the lowest, is the reference)				
Second	-.0003101	-.19	-.0028414	-.20
Third	.0006026	.36	.0219385	1.50
Fourth	-.0011961	-.75	.045224***	2.82
Fifth	-.0017176	-1.13	.1746518***	7.18
Location: 1=rural, 2=Urban	.003182*	1.85	.0797396***	9.62
No. of observations	9692	*Prob > chi2*		0.0000
Wald Chi2(34)	1619.37	*Pseudo R2*		0.2138
Log pseudo likelihood	-3696.2973			
*Significant at 10% ** Significant at 5% *** Significant at 1%				

Source: Author's computation from KIHBS 2005/2006

Annex 6: Correlation matrix

	Child age	Child gender	Head Age	Head Eduction	Head gender	Age mates	Siblings Elder	Consum-ption	Location	PTR	PCR	Distance	Fees	KCPE
Child age	1.0000													
Child gender	-0.016	1.0000												
Head age	0.1360	0.0228	1.0000											
Head education	-0.01	0.0003	-0.191	1.0000										
Head gender	-0.048	0.0060	0.0466	0.0897	1.0000									
Siblings age mates	0.0273	0.0010	0.0429	0.0781	-0.069	1.0000								
Siblings elder	0.1144	-0.012	0.1886	0.0133	-0.075	0.1870	1.0000							
Consumption	-0.004	-0.012	-0.086	0.0400	0.3251	-0.123	-0.1009	1.0000						
Location	-0.016	-0.016	-0.129	-0.007	0.2869	-0.088	-0.0674	0.3031	1.0000					
PTR	-0.009	0.0069	0.0198	0.0134	0.0198	0.1845	0.0706	-0.0187	0.0896	1.0000				
PCR	-0.016	-0.001	0.0058	0.0459	0.1235	0.0914	0.0341	0.1335	0.2182	0.8164	1.0000			
Distance	-0.004	-0.011	-0.034	0.0184	0.1132	-0.152	-0.0633	0.1682	0.1710	-0.163	0.0425	1.0000		
Fees	-0.001	-0.007	-0.025	0.0446	0.2303	-0.058	-0.0403	0.6230	0.1696	-0.0108	0.1243	0.0797	1.0000	
KCPE	-0.013	0.0130	-0.026	0.0649	0.0558	-0.045	-0.0432	0.0951	0.0138	-0.045	-0.022	0.0208	0.0932	1.000

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