Emerging Private Education in Africa: Determinants of School Choice in Rural Kenya

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Summary. — The number of private schools has increased by more than four times since the introduction of the Free Primary Education (FPE) policy in 2003 in Kenya. With the help of panel data obtained from rural Kenya, we observed that the proportion of children attending private primary schools increased from 4.6% in 2004 to 11.5% in 2007. The estimation results suggest that parents react to the quality of public education, as measured by the pupil–teacher ratios of public schools, by attending private schools and transferring to different schools. Their reaction also depends on the wealth of households and gender.
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Key words — private education, Free Primary Education, school choice, rural, Kenya, Africa

1. INTRODUCTION

Achieving Education for All (EFA) has been a priority for developing countries since the 1990s, and some countries in sub-Saharan Africa (SSA) have adopted the Universal Primary Education (UPE) policy, which advocates the abolition of tuition fees (Avenstrup, Liang, & Nellemann, 2004; UNESCO, 2008). Fee abolition has long been recognized internationally as a way of ensuring equal access to primary education for all children regardless of cultural, economic, and social backgrounds, as stated in the Convention on the Rights of Children (1989). Some observers, however, suggest that it is the cognitive skills, rather than mere school access, that have a larger impact on individual earnings, the distribution of income, and economic growth (Hanushek & Woessmann, 2008). Some also argue that, under the UPE policy in some countries, the quality of public education is compromised owing to overcrowded classrooms, reduced funds, and lowered motivation of teachers (Nishimura & Ogawa, 2009; Oketch & Somerset, 2010; Somerset, 2009). [1]

Pupils' dissatisfaction with the quality of public education could be manifested in their attitudes toward attending or transferring to private schools and joining after-school classes. Indeed, private provision of primary education has been flourishing in many countries in SSA and South Asia (Rose, 2009; Tooley & Dixon, 2005). Donors and governments seem to consider private provision of education as an effective means of improving education quality and reaching out to the poor (Chandani, Balan, Smith, & Donahue, 2007; World Bank, 2005). The rapid emergence of private schools in many low-income countries is, to some extent, a result of the failure of public providers (UNESCO, 2008). With the abolition of tuition fees, the decline in the internal efficiency of public education has already become evident in some countries (see Nishimura, Yamano, & Sasaoka, 2007). However, only a few studies have estimated the impact of school quality on the choice between public and private primary schools in developing countries (Alderman, Orazem, & Paterno, 2001; Carnoy & McEwan, 2001; Glick & Sahn, 2006). Studies focusing on rural areas are especially lacking. Furthermore, to our knowledge, no study has estimated the impact of school quality on school progress and student transfers in developing countries by using individual-level panel data.

Against this background, we examine the issues of school choice, progress, and transfers under the Free Primary Education (FPE) policy in the rural areas of central and western Kenya. We use data from panel surveys conducted in 2004 and 2007, of 718 rural households with 895 and 817 children aged 6–15 years, respectively, in each survey year. In the 76 communities where the sample households reside, there are 318 public primary schools and 119 private schools. We use school information from a community survey that we conducted along with the household survey in 2007. In this paper, we find that the probability of attending private schools increases as both the number of private schools and the average pupil–teacher ratio of public schools increase in the community. The latter finding may suggest that children tend to avoid overcrowded public schools. After describing other estimation results in later sections, we discuss how fee abolition in public schools alone does not address the inequity regarding the overall quality of education.

In the next section, we review literature on the public–private financing of primary education and discuss school choices within the context of the FPE policy in Kenya. Section 3 describes the household and community surveys and explains the estimation methods used in this paper. The results are presented in Section 4, followed by the conclusions in Section 5.

2. PUBLIC–PRIVATE SCHOOL CHOICE

(a) Emerging private primary education in sub-Saharan Africa

In SSA, private education has a long history. While faith-based organizations and community-based providers have supported educational provision even before independence, for-profit private providers have become more active in recent years. In the 1960s and 1970s, the governments in the region exerted influence on educational development. During the period, some countries in the region declared primary education fee-free, dramatically increasing public education expenditure. While little attention was paid to its cost-effectiveness and sustainability at the time, the role of community involvement in education was steadily reduced (World Bank, 2002).

Earlier attempts to provide free education in SSA in the 1970s and 1980s, however, had failed to achieve the objective owing to ineffective institutions, reduced quality of education, high informal fees, and other costs of schooling (Allison, 1983; Amutabi, 2003; Bray, 1986; Obasi, 2000; Prince, 1997; Sifuna, 2007; Somerset, 2009). Furthermore, mainly owing to structural adjustment programs (SAPs) that came with reduced budgets, the quality of public education deteriorated, while private education expanded its presence in the provision of basic education. The high demand for basic education partly explains such a persistent demand for private education. However, private education was not financially sustainable in some areas and was out of reach for children from poor households. Olembo (1985), for instance, indicates that many community-financed school projects in Kenya were abandoned because of the lack of capacity. Further, many families living in poor areas were unable to afford the nontuition fees and other contributions at the primary school level and many rural nongovernmental schools found it difficult to collect fees from the parents (Colclough & Lewin, 1993; UNESCO, 2007).

Because of the recognition that the high cost of education hinders many poor children from going to school, the abolition of school tuition has regained popularity in SSA (Avenstrup et al., 2004; UNESCO, 2008). As the rising demand for primary education under the EFA policy has given rise to a debate on whether the growth of private schools has a negative effect on equity. In this context, it is helpful to divide private schools into two groups: (1) high-cost private schools that provide high-quality education to wealthy children in urban areas and (2) low-cost private schools that are often financially supported and managed by communities and parents (Bray & Lillis, 1988; Knight & Sabot, 1990). While some argue that the low-cost private schools are only substitutes for public schools in areas where the latter are absent, others maintain that private schools provide basic education more cost-effectively for the poor even in areas where public schools are available (Kingdon, 2007; Phillipson, 2008; Tooley & Dixon, 2005).[2]

The dynamics of public–private financing may change under the FPE policy owing to an expanded public service delivery model. The phenomenon of high private expenditure on education in developing countries was explained by the excess-demand model (James, 1987, 1995). This model describes the role of the private sector in satisfying excess demand and filling in the gap, relative to the size of the age cohort, created by inadequate capacity of the public sector. Excess-demand-driven private schools often offer low-quality education. Contrary to the excess-demand model, the differentiated-demand model hypothesizes that the public education system is unable to meet the diverse demands of parents, especially for cognitive, religious, and linguistic education. While an analysis of the FPE policy in Kenya presents how the abolition of fees provides parents and pupils with the freedom of choosing between public schools, it may also reveal whether the quality of public education is attractive enough to keep pupils from different socio-economic backgrounds in the public education system. In other words, if the quality of education in public schools deteriorates under the FPE policy, the equity in the overall education system would suffer because those who are unable to obtain high-quality education in private schools would have no opportunity to obtain such education in public stream either.

(b) The Free Primary Education policy in Kenya

FPE was introduced in Kenya in the 1970s. In 1974, it was partially implemented to cover children in Standards I to IV, and in 1978, the coverage was extended to Standards V to VII. This initiative brought about a dramatic increase in primary school enrollment; the total enrollment figure for children from standards I to IV increased from 1.8 million in 1973 to nearly 2.8 million in January 1974 (Muhoro, 1975). As a result, the gross enrollment rate (GER) increased from 47% in 1963 to 115% in 1980. However, the oil crisis in the 1970s and the proceeding economic recessions in the 1980s forced the government to introduce a cost-sharing policy in 1989. This policy change resulted in a 20% drop in enrollment between 1989 and 1995 owing to the inability of parents to bear the economic burden of education. In December 2002, the dominance of a single political party, which had been ruling Kenya ever since independence, came to the end. Confronted with the enormous challenge of reconstructing the economy, the new government quickly embarked on strengthening efforts to eradicate poverty and addressing governance and economic management issues. The government emphasized the importance of education and acknowledged the close link between poverty alleviation, economic growth, and human development.

In January 2003, the new government introduced the FPE policy, which was one of their campaign pledges. The government abolished school fees at public primary schools and incurred the education costs, calculated on a per-pupil basis. One of the programs implemented was the Kenya Education Sector Support Program (ESSP), a five-year investment program aimed at "delivering quality-equitable education and training to all Kenyans," as guided by the broad principles stipulated in the Economic Recovery Strategy (ERS), Millennium Development Goals (MDGs), and EFA (Ministry of Education, Science and Technology, 2005). The Ministry of Education transferred the per-pupil capitation grant directly to public schools in order to help them purchase textbooks and run the schools under the FPE policy, while some public schools seemed to continue to charge parents fees beyond the cost of school uniforms and stationery (Mukudi, 2004, p. 451; Oketch & Somerset, 2010, p. 8).[3] Within the first year of FPE being implemented, school enrollments increased by 22% and the net enrollment rate rose from 64% in 1999 to 76% in 2004.

One notable phenomenon after the introduction of FPE has been the significant increase in the number of private schools. Figure 1 indicates a four-fold increase in the number of private primary schools in the first three years of FPE implementation. The number of private schools increased from 1,441 in 2002 to 5,857 in 2005, and the number of public schools rose only by 1.6%, from 17,589 in 2002 to 17,864 in 2005 (Central Bureau of Statistics, 2003, 2008).[4] A few studies have attempted to answer why private schools have mushroomed even as public schools become tuition-free. For instance, using the 2005 schooling history data that include 13,257 individuals
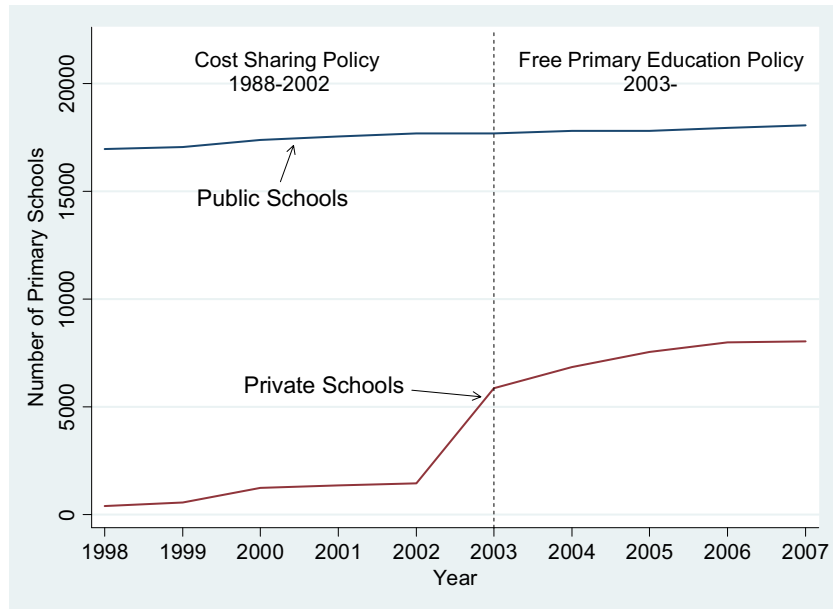
Figure 1. *Number of public and private primary schools in Kenya in 1998–2007. Source: Kenya Economic Survey 2003 and 2008.*

aged 5–19 in two slum and two nonslum localities in Nairobi city, Oketch, Mutisya, Ngware, and Ezeh (2010) find that as many as 36% of the children are enrolled in private schools. In addition, they find that the poorest in the slums are forced to enroll in private schools in the absence of public schools in the slums, while it is the wealthier quintiles that are more likely to send their children to private schools in nonslum localities. They also find that the majority of pupils who transferred to private schools did so to seek better pupil discipline and teacher performance in both slums and nonslum locations (Oketch *et al., 2010,* p. 30). Another study conducted in Kibera, the largest slum in Nairobi, estimates that approximately 70% of pupils attended private schools between 2003 and 2005 (Tooley & Dixon, 2005). They also find that the private and public schools perform at the same level in math, English, and Kiswahili in their originally administered tests, while the private schools are more cost-effective than the public schools. More specifically, the average pupil–teacher ratio was 60:1 in public schools, while it was 21:1 in private schools. Also, the average salary of public school teachers was nearly three times higher than that of private school teachers (Tooley & Dixon, 2005; Tooley, Dixon, & Stanfield, 2008).

Although some studies provide useful insights into school choice and the quality of education after the introduction of FPE in Kenya's urban areas, no empirical study has examined the same issues in rural areas, where the majority of the poor population resides. Our study regions, central and western Kenya, provide an interesting opportunity to study the interactions between school choice and the quality of education because these regions have been at the center of the *Harambee* (pulling together or self-help) movement during the colonial period and thus, may have some base for self-help and entrepreneurship in school establishment (Amutabi, 2003). The situation in rural areas is worth investigating in the context of FPE in Kenya. While the FPE program may have expanded learning opportunities in public primary education, quality assurance and equity in the education system received less attention. If the system exacerbates the disparity in the quality of education between public and private schools, as indicated in the previous studies on urban Kenya, extending access to

public education to the poor may not reduce the equity problem in the overall education system. On the contrary, freedom of choice would be limited to the poor and could serve to perpetuate inequality because the poor may not have alternatives. Therefore, the critical issue in Kenya's FPE policy is how different socio-economic groups experience the seemingly expanded learning opportunities and whether the growth of private schools has a negative effect on equity.

3. KEY RESEARCH QUESTIONS, DATA, AND METHODOLOGY

(a) *Key research questions*

This study utilizes panel data from recent rural household and community surveys to examine the dynamics of schooling behavior. In the community survey, we enquired about all the primary schools located in the community and obtained information on their year of establishment, number of students, teachers, and classrooms. By combining the school information with household-survey data, we can examine parental choice between private and public schools. In addition, by using the panel data, we can track all the children who attended public primary school in 2004 and examine their progress, including whether they had repeated grades, dropped out of school, or transferred to different schools.

As we have discussed in the previous section, the number of private primary schools has rapidly increased in Kenya since the introduction of FPE in 2003. We believe that this is in response to the increasing number of students per classroom in public primary schools. Thus, we hypothesize that many parents aspire to send their children to high-quality schools even if private schools cost more than public schools. Therefore, we propose the following hypotheses: The average pupil–teacher ratio of public primary schools in a community has a positive impact on (1) the probability of children attending private schools and (2) the probability of children who attend public primary schools transferring to different schools. By testing these hypotheses, we can better assess the FPE policy with

respect to freedom of choice and provide policy implications not only for Kenya but also for other countries that have recently adopted the FPE policy or those that are planning to do so.

(b) Data and descriptive analyses

We have conducted household and community panel surveys in the rural areas of central and western Kenya in 2004 and 2007 as part of the Research on Poverty, Environment, and Agricultural Technology (RePEAT) project. [5] Although the 2004 RePEAT survey covered 99 randomly selected sub-locations (the smallest administrative unit in Kenya) and about 10 randomly selected households in each sampled sub-location, the second RePEAT survey reduced the number of the targeted sub-locations to 76, excluding all the sample sub-locations in the eastern province and some in the central province because of a budgetary shortage. Out of the 777 target households in the 76 sub-locations, the project interviewed 725 households. Thus, the attrition rate was 6.7%. Out of the 725 households, we use the data from 718 households because of some missing data problems. [6] Among the 718 households, there were 973 children aged 6–15 years in 2004 and 864 children aged 6–15 in 2007. [7] To focus our analyses on primary education, we excluded 88 and 47 children in 2004 and 2007, respectively, who had completed primary education before the surveys. Thus, the final number of sample children included in the following analyses was 895 in 2004 and 817 in 2007.

We conducted community surveys wherever we conducted the household surveys. Although community surveys were conducted in both 2004 and 2007, the 2004 survey did not ask questions about each school in the community. During the 2007 survey, we listed all schools that were available [8] in the community and collected school information such as number of classrooms, teachers, and pupils for each school. [9] In Table 1, we present the school characteristics in 2007. To provide detailed information about the schools, we present not only the means but also the 25th, 50th, and 75th percentile values of the school variables. Among the 76 sample communities, we find 318 public primary schools and 119 private schools. Most of the private schools were new in 2007. The average length of operation among the private schools is just 7.2 years, while it is 35.9 years among the public schools. Indeed, 35 out of the 119 private schools had been established

in 2003, when the FPE policy was introduced, or later. In contrast, among the 318 public schools, only six public schools had been established in 2003 or later. According to Table 1, three quarters of the private schools have less than 10 years of operation, while three quarters of the public schools have more than 20 years of operation. Thus, our community survey provides a consistent trend with the macro level information in Figure 1, which shows an increase in the number of private schools in and after 2003 in Kenya.

Furthermore, in Table 1, we find that the private schools are smaller and less crowded than the public schools. The average school size for public schools is about 478 children, but it is less than 176 children for private schools. Indeed, three quarters of private schools have less than 200 students, while three quarters of public schools have more than 300 students. Thus, it seems appropriate to consider that many of the private schools in our sample communities in rural Kenya are small-scale private schools. In addition, the average number of students per teacher (the pupil–teacher ratio) is about 41 students per teacher in the public schools, but it is about 25 students per teacher in the private schools. The number of students per teacher is less than 30 students per teacher among three quarters of the private schools, while it is more than 30 students per teacher among three quarters of the public schools. A quarter of the public schools have more than 50 students per teacher. We can also draw the same conclusions about the number of students per classroom. The statistics in Table 1, therefore, suggest that the private schools are new, small-scale, and less crowded than the public schools.

Unfortunately, we did not collect information about school fees and other costs in our community survey. Thus, we cannot confirm that the private schools are low-cost schools. In order to obtain some idea of the school fees, we calculated the education expenditure per pupil from the 2007 household survey, in which we had asked about the total education expenditure at the household level but not at the individual level. To calculate the average education expenditure per pupil, we first selected households that sent their children only to public primary schools and calculated the average education expenditure for these children. The expenditure included school fees, the cost of textbooks, and other school-related materials. We found that the average annual expenditure per pupil attending a public school was about $31 in 2007. Next, because the number of households that sent their children only to private schools was too small to obtain a reliable estimate,

Table 1. *Primary school characteristics in 76 survey communities*

| | Mean | Distribution | | |
| | | 25th | Median | 75th |
	(A)	(B)	(B)	(C)
Public schools (number = 318)				
Years since establishment	35.9	20	33	49
Number of students	478.0	300	400	600
Number of students per teacher	40.7	28.6	37.5	50
Number of students per room	42.9	30.7	39.1	51.1
Private schools (number = 119)				
Years since establishment	7.2	3	6	9
Number of students	175.8	60	150	200
Number of students per teacher	24.3	15	20	28.6
Number of students per room	25.2	12.5	22.2	31.3

Source: Created by authors.
Note: The data come from a community survey conducted in 2007 covering 76 communities. Please see text for details. While the Ministry of Education data do not include unregistered private schools, our data include them.

we selected households that sent their children to both public and private schools. Assuming that the average expenditure for children attending public schools was $31 per pupil, we found that the figure was $130 for children attending private schools. Thus, the expenditure was about four times more when children attended a private school than when they attended a public school. Because households that sent their children to private schools were likely to be relatively affluent, their education expenditure on their children who attended public schools might have been higher than the average $31. Thus, we could be overestimating the expenditure for children who attended private schools. Nevertheless, these estimates confirm that the cost of private education is significantly higher than that of public education but is not as high as the cost expected at high-cost/high-quality private schools.

Regarding the choice of school, we present information about the choice among children aged 6–15 years in our sample households in Table 2. In 2004, only 4.6% of the 895 children attended private primary schools, but the percentage increased to 11.5% in 2007. In Kenya, some children attend boarding schools. Although many boarding schools are at the secondary level, boarding schools at the primary level also exist. In our household survey, we also asked children who live away from home for their schooling information. Thus, although we are unable to distinguish between children who attended boarding schools and children who stayed with relatives when attending schools, we can still include them in our analyses. In our data, we find that the number of children who lived away from home and attended private primary schools was 10 in 2004 and 11 in 2007. The total number of children who attended private primary schools was 41 in 2004 and 94 in 2007; this clearly shows that the number of children attending private schools in rural areas has increased significantly over the years. During the same period, the percentage of children not attending primary schools remained at the same level, around 8%. As a result, the percentage of children attending public primary schools decreased from 87.2% to 80.3%. Thus, it seems that more parents have chosen private schools over public schools in 2007. To explore the possible reasons behind the change, we further stratify the sample children by the per capita asset value quartile in the next table.

In Table 3, we find that the proportion of children who attended private schools was higher in the wealthier quartiles in both survey years. For instance, in 2004, the proportion of children who attended private schools was less than 2% in the lowest and second lowest quartiles but was around 10% in the highest asset quartile. Also, the proportion of children who attended private schools increased in all quartiles in 2007. Even among the lowest quartile, the proportion increased from less than 2% to around 6%. The increase was

especially high among the least poor quartile where figures rose from 9.7% to 25.4%.

With the help of the individual-level panel data, we can track children from 2004 to 2007. In particular, we focus on the 677 children who attended public primary schools in 2004 and appeared again in the 2007 survey. Then, we classify their school progress into four categories: dropped out, graduated, stayed in the same school, and transferred to a different school. In Table 4, we find that about 14% of the children transferred to different schools, about 62% of the children remained at the same public school, 21% graduated, and 4% dropped out. Because Table 4 only indicates the percentage of children transferred to different schools, it is not clear which children are switching schools and why. To investigate more on the determinants of the school transfer, we conduct a regression analysis next.

(c) Methodology: Determinants of public vs. private school choice

Previous studies on school choice have assumed that parents derive utility from the human capital of their children along with the consumption of other goods and services (e.g., Alderman et al., 2001; Gartler, Locay, & Sanderson, 1987; Glick & Sahn, 2006). By sending their children to school, parents gain utility from the additional gain in the human capital of their children but suffer from a reduced consumption by the total sum of the school fees. The additional gain in the human capital depends on the quality of education provided at the chosen school. Based on these assumptions, the previous studies estimate the nested Multinomial Logit (MNL) model. Alternative specific variables take on different values even for the same child, depending on the possible school choice, while alternative-invariant variables, for example, child's age, take only one value for a child at a time. The coefficients of alternative specific variables are assumed to be common. When child i chooses a different school, the indirect utility of the household of child i changes along with the changes in the school characteristics and the household consumption, which depends on the school fees. Household i chooses a school that maximizes its indirect utility.

In this paper, however, our main hypothesis is with regard to the relationship between the pupil–teacher ratios of public schools with the probability of attending a private school. Thus, it is useful for us to include the pupil–teacher ratio of public schools as an alternative-invariant variable and directly obtain a coefficient of the variable for the probability of choosing private school. In addition, the nested MNL model suffers from computation, e.g., convergence, problems and forces us to simplify the estimation models to a level where we may face

Table 2. *School choice of children aged 6–15*

	All children	By school choice		
		Not attending	Public schools	Private schools
	(A)	(B)	(C)	(D)
	Number (%)	Number (%)	Number (%)	Number (%)
2004	895	74	780	41
	(100)	(8.3)	(87.2)	(4.6)
2007	817	67	656	94
	(100)	(8.2)	(80.3)	(11.5)

Source: Created by authors.
Note: The numbers in parentheses are the percentages.

Table 3. *School choice by asset quartile*

	All	Asset quartile			
		1 (Poorest)	2	3	4 (Least poor)
	(%)	(%)	(%)	(%)	(%)
2004					
Not enrolled	8.2	10.2	10.0	6.1	6.4
Public schools	87.0	88.3	89.7	86.3	83.9
Private schools	4.8	1.5	0.3	7.3	9.7
All	100	100	100	100	100
2007					
Not enrolled	7.7	11.1	7.7	7.4	4.6
Public schools	80.3	85.6	85.6	82.7	70.0
Private schools	12.0	6.3	6.7	9.9	25.4
All	100	100	100	100	100

Source: Created by authors.

Table 4. *School progress from 2004 to 2007 among children who were attending public schools in 2004*

	All (A) Number (%)	Drop-outs [a] (B) Number (%)	Graduate (C) Number (%)	Remain in the same school (D) Number (%)	School transfer (E) Number (%)
All	677 (100)	29 (4.3)	139 (20.5)	417 (61.6)	92 (13.6)

Source: Created by authors.
Note: The numbers in parentheses are the percentages.
[a] A drop-out is defined as a child who was attending a public primary school in 2004 but not attending any school in 2007, although her or his highest grade obtained is less than eight.

serious problems of omitted variables. Thus, we have decided to estimate the following model with the MNL model:

$$\Pr(C_{ij} = s) = \exp(\gamma_s Q_j + \beta_s X_{ij} + \varepsilon_{s,ij}) \Big/ \sum_{s=0}^{2} \exp(\gamma_s Q_j + \beta_s X_{ij} + \varepsilon_{s,ij}),$$

(1)

where C_{ij} is the choice of school of child i in community j, and the choices are nonenrollment ($s = 0$), public primary school ($s = 1$), and private primary school ($s = 2$); Q_j is the set of characteristics of school s in community j, and X_{ij} is the set of child and household characteristics. Note that Q_j is the alternative-invariant characteristics of the schools that are located in the community j where child i lives. By estimating this model with the MNL model, we can directly test whether the pupil–teacher ratio of the public schools affects the children's choice of attending private schools. Admittedly, however, as a result, the estimation model in this paper deviates from the theoretical model, and we are unable to control for the school quality that children directly learn from. Instead, we simply control for the availability of public and private schools and the pupil–teacher ratio at the public schools in their community. This deviation from the theoretical model is one of the major limitations of the paper. Finally, note that since the majority of the children attend public primary schools, we set them as the base group ($j = 1$) and compare them with those not attending schools at all ($j = 0$) and with those attending private schools ($j = 2$).

In addition to the school choice, we also estimate the grade progress and school transfer model with the MNL model:

$$\Pr(T_{ij} = t) = \exp(\gamma_t Q_j + \beta_t X_{ij} + \varepsilon_{t,ij}) \Big/ \sum_{s=0}^{2} \exp(\gamma_t Q_j + \beta_t X_{ij} + \varepsilon_{t,ij}),$$

(2)

where T_{ij} takes on the value of 0 if child i remains at the same school, 1 if child i drops out, 2 if child i graduates, and 3 if child i transfers to a different school. The other terms are the same as defined earlier. For both MNL models, we present the results of the marginal changes in the probability of each outcome category evaluated at the mean values of the continuous independent variables and evaluated for a change when the dummy variables change from zero to one.

We need to make a note about the interpretation of the average pupil–teacher ratio at public schools in a sample village. In this paper, we use this variable as an indicator of the teaching quality at public schools, but it is possible that this variable reflects not only the education quality but also other unobserved characteristics of the village (Glewwe, 2002). For instance, it is possible for us to find high levels of both the pupil–teacher ratio at public schools and the private school enrollment because of high demand for education in the area, not because of poor education quality at the public schools. Because of this identification problem, we need to be careful when we interpret the results. Nonetheless, the pupil–teacher ratio at public schools is quite high, at 41 students per teacher on average, in our sample areas of Kenya, as shown in Table 1, and we believe that this high level of pupil–teacher ratio is likely to be correlated with poor education quality.

(d) *Variables*

The dependent variables are defined as in the previous subsection. The school characteristics include the total number of public primary schools in the community, total number of private primary schools in the community, and pupil–teacher ratio of the public schools in the community. As we have explained in the previous sub-sections, we only have the corresponding school information from the 2007 survey. We did not try to collect recall data of school characteristics in 2003

because the quality of such data would have been poor. Thus, we only estimate the school choice model for 2007. The child characteristics X_{ij} include age, its squared term, and a gender dummy for girls. We also include variables for the maximum education level of male adults aged 20 and older and the maximum education level of adult females. For household characteristics, we include the age and gender of the head of the household as well as the total number of adults in the household and the value of their asset holdings in logs. Finally, we also include district dummies, although we do not report the estimated coefficients of the district dummies in the paper.

4. RESULTS

(a) *Determinants of school choice*

We present the results of the MNL model with respect to the school choice in Table 5. As we have explained earlier, the base group is the group of children who attend public schools. Compared with them, we find that, as the number of private schools in the community increases by one, the probability of attending a private school increases by about 3% points. In contrast, the number of public schools does not have any impact on the probability of attending a private school. This finding is inconsistent with the excess-demand model, which suggests that children attend private schools because public

schools are unavailable to them. In addition, the average pupil–teacher ratio of public schools has a positive impact on the probability of attending a private school. Specifically, this probability increases by 0.2% points as the average pupil–teacher ratio of the public schools increases by one. In Table 1, we see that the average pupil–teacher ratio is about 43 among public schools and only 25 among private schools. Thus, the result suggests that, if the average pupil–teacher ratio in the community increases by 10, from 43 to 53 pupils per teacher, for example, then the probability of children attending private schools also increases by 2% points. Overcrowding in public schools seems to be one of the important factors influencing parents' (and children's) decision to choose private schools, and this finding is more consistent with the differentiated-demand model than the excess-demand model.

With regard to child and household characteristics, we find that children from wealthy households have a higher probability of attending a private school than children from poor households. A simple calculation suggests that when the total asset value changes from the 25th to the 75th percentile, the probability of attending a private school increases by 11.5% points, that is, from 9.5% to 21.0%. This result corresponds to what we find in Table 3. According to Table 3, the proportion of children attending private schools is 6.3% in the poorest asset quartile and 25.4% among the least poor quartile in 2007. The difference is about 19% points. Since the 25th and 75th percentiles are at the top and bottom of their quartiles,

Table 5. *Primary-school choice in 2007 (Multinomial Logit model: Base group is "attending public school")*

	Not attending school (A)	Private school (B)
School characteristics		
Number of public schools	0.008	−0.003
	(1.23)	(0.39)
Number of private schools	0.0002	0.043***
	(0.22)	(3.74)
Pupil–teacher ratio at public school	−0.0002	0.002*
	(0.062)	(1.90)
Individual characteristics		
Girl (= 1)	−0.005	−0.036*
	(0.435)	(1.713)
Age	−0.217***	0.007
	(5.64)	(0.0954)
Age squared	0.009***	−0.0004
	(4.73)	(0.156)
Highest education among male adults	−0.009**	0.002
	(2.30)	(0.69)
Highest education among female adults	−0.008**	0.001
	(2.12)	(0.35)
Household characteristics		
ln (asset value)	−0.005	0.069***
	(0.12)	(5.12)
Head's age	−0.001	−0.001
	(0.51)	(0.94)
Number of adults	0.014**	0.0043
	(2.05)	(0.49)
Constant	1.216***	−0.995***
	(4.830)	(3.578)
	817	

Source: Created by authors.
Note: Numbers in parentheses are absolute *z*-values. Coefficients indicate marginal changes in the probability of each outcome category. Twelve district dummies are also included in the model but are omitted in the table.
* Indicate significance at the 10 % level.
** Indicate significance at the 5 % level.
*** Indicate significance at the 1 % level.

respectively, it is reasonable to find the predicted value of 11.5% points within the range of the difference in the percentages found in Table 3. This result raises equity concerns that children in poor households study in crowded public school classrooms, while children from relatively wealthy households can choose private schools (Somerset, 2009, p. 249).

An important finding with regard to the gender issue is that girls have a 3.6% point lower probability of attending private schools than boys do. The result suggests that gender inequality persists in the access to quality education. This may reflect the parents' views on the returns to education of girls and boys. The parents of girls may hold a narrow view with regard to the returns to their daughters' education, while the parents of boys may hold a wider view on returns to their sons' education. It is worth highlighting that, although the elimination of tuition fees is said to favor girls from poor backgrounds and reduced the enrollment gender gaps in a number of countries including Kenya (UNESCO, 2007), our findings suggest that girls continue to be disadvantaged in learning opportunities when considering the quality of education.

(b) *Determinants of school progress and transfer*

Next, in order for us to understand transfers from public primary schools, we select children aged 6–15 who attended public schools in 2004 and reappeared in the 2007 survey. We have data of 677 such children whose information was presented in Table 4. The results in Table 6 indicate that when public schools are crowded with a high pupil–teacher ratio, a child who attends a public school in the community has a higher probability of transferring to a different school than a child who lives in a community with public schools with a lower pupil–teacher ratio. A one-unit increase in the average pupil–teacher ratio of public schools increases the probability of transfer to a different school by 0.2% points. Thus, the results in Table 6 indicate that parents consider the degree of crowding in public schools when they decide to transfer their children to private schools. This result is consistent with what we find in the school choice model.

The results of the grade level in 2004 reflect the typical progress of a school. Children who were in the lower grades in 2004 were less likely to have dropped out of school in 2007 as compared to children in the upper grades. At the same time, the probability of dropping out increases after the 3rd grade, where the bottom is at 3.3. Regarding the school transfer, the probability of this is low among the lower grades but increases after the 4th grade, where the bottom is at 4.6. This is probably because parents want their children to receive better education to prepare for the Kenya Certificate for Primary Education (KCPE) exam before they take it in the 8th grade.[10] Thus, as their children enter upper grades, some parents decide to transfer their children to private or better public schools to help them prepare better for the exam.

Regarding household wealth, we find that children from wealthier households are more likely to transfer to different schools than children from less wealthy households. As

Table 6. *School progress and transfer in public schools from 2004 to 2007 (MNL model: Base group is "remain in the same public school")*

	Drop-outs (A)	Graduate (B)	School transfer (C)
School variable			
Number of public schools	0.014*	−0.014	−0.004
	(1.95)	(0.62)	(0.30)
Number of private schools	−0.014	0.033	−0.007
	(1.59)	(0.94)	(0.53)
Pupil–teacher ratio at public school	−0.001	−0.003	0.002*
	(0.59)	(0.81)	(1.78)
Individual characteristics			
Girl (= 1)	0.033*	−0.011	−0.026
	(1.89)	(0.37)	(0.87)
Grade in 2004	−0.039*	0.616	−0.172***
	(1.84)	(1.34)	(4.33)
Grade in 2004 squared	0.006***	−0.015	0.019***
	(2.70)	(0.27)	(4.39)
Highest education among male adults	0.000	0.012	−0.002
	(0.15)	(1.41)	(0.65)
Highest education among female adults	−0.001	−0.003	0.001
	(0.39)	(0.26)	(0.20)
Household characteristics			
ln (asset value)	−0.564**	0.0235	0.292**
	(2.010)	(0.133)	(2.138)
Head's age	0.002***	0.006**	0.004***
	(2.67)	(2.50)	(3.64)
Number of adults	0.004	0.002	−0.029***
	(0.422)	(0.285)	(3.205)
Constant	0.046	−3.815***	−0.328**
	(0.14)	(2.71)	(1.96)
Number of observations	677		

Source: Created by authors.

Note: Numbers in parentheses are absolute *z*-values. Coefficients indicate marginal changes in the probability of each outcome category. Twelve district dummies are also included in the model but are not reported.

* Indicate significance at the 10 % level.
** Indicate significance at the 5 % level.
*** Indicate significance at the 1 % level.

suggested in Table 5, children belonging to very wealthy households may have attended private schools from the very beginning but the less wealthy may try to transfer to private schools only later in the upper grades to reduce the education costs.

5. CONCLUSION

With the introduction of the FPE policy in Kenya in 2003, school enrollment increased by 22% in the first year alone. In this paper, we find that more parents opted for private schools in 2007 than in 2004 even in rural areas in the central and western regions in Kenya. The quality of education in public schools may have deteriorated because of increased enrollment after the introduction of FPE. As a result, families that can afford to pay relatively high school fees may have chosen to send their children to private schools. Our study shows that parents react to the quality of public education, as measured by the average pupil–teacher ratios of public schools in the community. As this ratio increases, the probabilities of both attending private schools and transferring to different schools increase among children. We also find that children have a higher probability of attending private schools and transferring to different schools if they belong to wealthier households than poor households. Regarding the gender issue, we find that girls have a lower probability of attending private schools than boys do and a higher probability of dropping out of schools over the years.

If the abolition of tuition fees at public schools leads to the transfer of wealthy pupils to private schools, two major international goals, namely, access to quality education and poverty alleviation, may face unintended outcomes. In this sense, it is imperative to examine the effectiveness of the FPE policy in terms of access to quality education rather than simply access to education. Although the FPE policy has expanded the access to education for many children, the actual school choice could be limited to low-quality education for children of poor households. This study shows that wealthy families utilize the actual school choice more than poor families, and this choice is more open for boys than for girls. Thus, it is important to make quality education easily accessible for children from poor households and girls.

NOTES

1. Some also argue that the poorest of the poor are still excluded from schooling owing to high nontuition costs and the lack of facilities (Akyeampong, 2009; Oketch & Ngware, 2010).

2. In some countries, low-cost private schools are unaffordable for disadvantaged children in both urban and rural areas (Kingdon, 2007; Srivastava, 2006). For instance, Härmä (2009) found that low-fee private school costs were unaffordable for many children, especially girls, in low caste and Muslim families in Uttar Pradesh, India.

3. Before the introduction of FPE, public primary schools charged various levels of tuition-fees. In Kenya, a national primary school-leaving examination, the Kenya Certificate for Primary Education (KCPE), determines the promotion to the different types of secondary schools, and there is some correlation between the amount of tuition-fees and school performance in KCPE (Lloyd, Mensch, & Clark, 2000). After the FPE policy was implemented, the formerly high-cost primary schools generally "found ways to maintain the barriers, often through levies of various kinds for additional facilities or activities— swimming pools, school buses, computers, libraries, school visits" (Oketch & Somerset, 2010, p. 8). They also made enrollment in the pre-school unit that charges high fees a pre-requisite for admission to Grade 1.

4. According to the Economic Survey, 2006, the number of private schools in 2005 was 1,985, indicating a mere increase of 38% between 2002 and 2005. The Economic Survey, 2008, amended this and hence, it is difficult to grasp the accurate trend prior to 2002.

5. The Kenya RePEAT survey was conducted by the Tegemeo Institute, the Foundation for Advanced Studies on International Development, and the National Graduate Research Institute for Policy Studies. Details of the surveys and the project are described in Yamano, Otsuka, and Place (2011).

6. Preliminary analyses show no signs of systematic selection problems with the attrition. None of the determinants of the re-interview was significant.

7. Because of some changes in community boundaries over the years, some households reside outside of the communities that were covered by the community surveys. We excluded such households from the analyses, resulting in losses of 132 and 55 children in 2004 and 2007, respectively.

8. The community survey covered some schools that were located outside of the community boundary as long as the survey participants considered it possible for students to travel to these schools. The survey did not cover boarding schools.

9. While we initially attempted to use the official statistics available from the Ministry of Education for school information, we found that these statistics severely lacked information on private schools. It seems that the ministry did not recognize many small-scale private schools in rural areas.

10. Pupils at registered private schools can take KCPE exams in Kenya. In fact, in 2006 Kenya Certificate for Primary Education league tables, for example, private schools took 45 of the 50 top places in Nairobi and Nyeri (central province-our sample area) (Somerset, 2009, p. 249).

REFERENCES

Akyeampong, K. (2009). Public–private partnership in the provision of basic education in Ghana: Challenges and choices. *Compare, 39*(2), 135–149.

Alderman, H., Orazem, P., & Paterno, E. (2001). School quality, school cost, and the public/private school choices of low-income households in Pakistan. *The Journal of Human Resources, 36*(2), 304–326.

Allison, C. (1983). Constraints to UPE: More than a question of supply? *International Journal of Educational Development, 3*(3), 263–276.

Amutabi, M. N. (2003). Political interference in the running of education in post-independence Kenya: A critical retrospection. *International Journal of Educational Development, 23*(2), 127–144.

Avenstrup, R., Liang, X., & Nellemann, S. (2004). Kenya, Lesotho, Malawi and Uganda: Universal primary education and poverty

reduction. In *A paper presented at the Scaling up poverty reduction. A global learning process and conference in Shanghai, May 25–27, 2004*.

Bray, M. (1986). If UPE is the answer, what is the question? A comment on weakness in the rationale for universal primary education in less developed countries. *International Journal of Educational Development, 6*(3), 147–158.

Bray, M., & Lillis, K. (1988). Community financing of education: Issues and policy implications in less developing countries. Oxford: Pergamon Press.

Carnoy, M., & McEwan, P. J. (2001). Privatization through vouchers in developing countries: The case of Chile and Columbia. In H. M. Levin (Ed.), *Privatizing education* (pp. 151–177). Colorado & Oxford: Westview Publishers.

Central Bureau of Statistics (2003). *Economic survey 2003*. Nairobi: Government of Kenya.

Central Bureau of Statistics (2008). *Economic survey 2008*. Nairobi: Government of Kenya.

Chandani, T., Balan, J., Smith, M., & Donahue, M. (2007). Strengthening the private basic education sector: A case for USAID support and financing through the development credit authority. New York: Banyan Global.

Colclough, C., & Lewin, K. (1993). Educating all the children: Strategies for primary schooling in the South. Oxford: Clarendon Press.

Gartler, P., Locay, L., & Sanderson, W. (1987). Are user fees regressive? The welfare implications of health care financing proposals in Peru. *Journal of Econometrics, 36*(1–2), 67–88.

Glewwe, P. (2002). Schools and skills in developing countries: Education policies and socioeconomic outcomes. *Journal of Economic Literature, 40*(2), 436–482.

Glick, P., & Sahn, D. (2006). The demand for primary schooling in Madagascar: Price, quality, and the choice between public and private providers. *Journal of Development Economics, 79*(1), 118–145.

Härmä, J. (2009). Can choice promote education for all? Evidence from growth in private primary schooling in India. *Compare, 39*(2), 151–165.

Hanushek, E., & Woessmann, L. (2008). The role of cognitive skills in economic development. *Journal of Economic Literature, 46*(3), 607–668.

James, E. (1987). The public/private division of responsibility for education. *Economics of Education Review, 6*(1), 1–14.

James, E. (1995). Public–private division of responsibility for education. In M. Carnoy (Ed.), *International encyclopedia of economics of education* (2nd ed., pp. 450–455). Oxford: Pergamon Press.

Kingdon, G. (2007). The progress of school education in India. *Oxford Review of Economic Policy, 23*(2), 168–195.

Knight, J. B., & Sabot, R. H. (1990). Education, productivity, and inequality: The East African natural experiment. Oxford: Oxford University Press.

Lloyd, C. B., Mensch, B. S., & Clark, H. (2000). The effects of primary school quality on school dropout among Kenyan girls and boys. *Comparative Education Review, 44*(2), 113–147.

Ministry of Education, Science and Technology (2005). Kenya education sector support programme (2005–2010). Nairobi: Ministry of Education, Science and Technology, Government of Kenya.

Muhoro, J. M. G. (1975). Universal free primary education: The Kenyan experience. Mimeograph. ATEA (Association for Teacher Education in Africa) conference paper.

Mukudi, E. (2004). The effects of user-fee policy on attendance rate among Kenyan elementary school children. *International Review of Education, 50*(5–6), 447–461.

Nishimura, M., Yamano, T., & Sasaoka, Y. (2007). Internal efficiency under the universal primary education policy in rural Uganda. *Journal of International Development Studies, 16*(1), 69–81.

Nishimura, M., & Ogawa, K. (2009). Universal primary education policy in sub-Saharan Africa: A comparative analysis of Ghana, Kenya, Malawi, and Uganda and policy recommendations. Kobe, Japan: Kobe University.

Obasi, E. (2000). The impact of economic recession on UPE in Nigeria. *International Journal of Educational Development, 20*(3), 189–207.

Oketch, M., Mutisya, M., Ngware, M., & Ezeh, A. C. (2010). Why are there proportionately more poor pupils enrolled in non-state schools in urban Kenya in spite of FPE policy? *International Journal of Educational Development, 30*(1), 23–32.

Oketch, M., & Ngware, M. (2010). Free primary education still excludes the poorest of the poor in urban Kenya. *Development in Practice, 20*(4), 603–610.

Oketch, M., & Somerset, A. (2010). *Free primary education and after in Kenya: Enrolment impact, quality effects, and the transition to secondary school. Create pathways to access research monograph* (Vol. 37). Sussex, UK: Consortium for Research on Educational Access, Transition & Equity.

Olembo, J. O. (1985). *Financing primary school buildings in Kenya*. Nairobi: Transafrica Press.

Phillipson, B. (Ed.) (2008). *Low-cost private education: Impacts on achieving universal primary education*. London: Commonwealth Secretariat.

Prince, A. (1997). Quality of learning in Nigeria's universal primary education scheme 1976–1986. *Urban Review, 29*(3), 189–203.

Rose, P. (2009). Editorial introduction: Non-state provision of education: Evidence from Africa and Asia. *Compare, 39*(2), 127–134.

Sifuna, D. N. (2007). The challenge of increasing access and improving quality: An analysis of universal primary education interventions in Kenya and Tanzania since the 1970s. *International Review of Education, 53*(5–6), 687–699.

Somerset, A. (2009). Universalising primary education in Kenya: The elusive goal. *Comparative Education, 45*(2), 233–250.

Srivastava, P. (2006). Private schooling and mental models about girls' schooling in India. *Compare, 36*(4), 497–514.

Tooley, J., & Dixon, P. (2005). *Private education is good for the poor: A study of private schools serving the poor in low-income countries*. Washington, DC: Cato Institute.

Tooley, J., Dixon, P., & Stanfield, J. (2008). Impact of free primary education in Kenya. A case study of private schools in Kibera. *Educational Management Administration and Leadership, 36*(4), 449–469.

UNESCO (2007). *Education for all global monitoring report 2008*. Paris: UNESCO.

UNESCO (2008). *Education for all global monitoring report 2009*. Paris: UNESCO.

World Bank (2002). *Community support for basic education in sub-Saharan Africa*. Washington, DC: World Bank.

World Bank (2005). *Education sector strategy update. Achieving education for all, broadening our perspective, maximizing our effectiveness*. Washington, DC: World Bank.

Yamano, T., Otsuka, K., & Place, F. (Eds.) (2011). *Emerging development of agriculture in East Africa: Markets, soil, and innovations*. Amsterdam, Netherlands: Springer.