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IS THE PRICE RIGHT? A STUDY OF THE IMPACT OF SCHOOL FEES IN RURAL BANGLADESH

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The purpose of this article is to investigate the effect that user fees have on primary school enrollment and educational attainment in rural Bangladesh. There is growing international consensus that school user fees should be abolished in developing countries because they pose a barrier to universal enrollment. However, where school fees are the primary source of revenue for education, abolishing them significantly threatens the quality of education provided. Using data from three different regions in Bangladesh in 1996, this article employs a Heckman model to estimate the determinants of school enrollment. The results suggest that (i) fixed enrollment fees are a barrier to participation in the education market, (ii) but annual fees are not, and (iii) that the cost of secondary education has a significant impact on primary school enrollment. Based on these results, and considering the need for revenue, current policies aimed at abolishing all varieties of school fees are not justified. The article concludes by recommending advocacy for lower fixed enrollment fees and lower fees for secondary schools.¹

INTRODUCTION

A 2005 government report on education in Bangladesh given to the South Asian Society for Regional Cooperation recommended that all primary

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school user fees be abolished in the country (Ardt et al 2005, 18-19). This policy recommendation is inline with the current international push for universal primary education and the perception that school fees are a barrier to entry for students. The importance of school fees for revenue and the lack of systematic research into the determinants of enrollment are both reasons to carefully consider the policies aimed at abolishing all school fees. The purpose of this article is to investigate the impact school user fees have on enrollment and educational attainment in rural Bangladesh.

Country Context

Bangladesh is plagued by extreme poverty. Approximately 36 percent of the population was classified as 'very poor' and 53 percent as 'poor' in 1995-96. Rural poverty is especially prevalent and persistent in Bangladesh. Of the households classified as 'very poor,' 93 percent were in rural areas, as were 89 percent of 'poor' households (World Bank, 1999). As in many developing countries, there is a gender aspect to poverty in Bangladesh. Bangladeshi society is dominated by patriarchal rules of property ownership and family relations (Quisumbing and Maluccio 2000, 26-27).

The United Nations Development Programme (UNDP) currently ranks Bangladesh 137 on the Human Development Index, out of a universe of 177 countries (UNDP 2006, 285). One of the primary reasons for that ranking is low educational attainment and gender inequity in the country.

The Education System in Bangladesh circa 1996-1997

In Bangladesh, primary school typically includes grades one through five, which schools sometimes split into early primary and upper primary school. Secondary school runs from grade six to ten and higher secondary school from grades eleven to twelve. Students are expected to start primary school at age six, but often begin anywhere from age six to eight (Arends-Kuenning and Amin 2004, 304).

The time which students spend in school is very low by international standards: primary school students typically spend less than two hours a day and secondary students spend between four and four and a half hours (Amin and Sedgh 1998, 30-31). In terms of governmental commitment to education, Bangladesh spent only 1.5 percent of its gross domestic product (GDP) on education in 1991, which is very low compared to the South Asian regional average (UNDP 2006, 319).

In the early 1990s, it was not uncommon for rural villages to lack access to primary schools, and it was even less common that they have access to secondary schools. Ardt et al. (2005, 11) reported that this lack of rural access remained a problem in 2005. Historically, education was reserved

for the elite in Bangladesh, so the level of parental education in these areas is also quite low (Amin and Sedgh 1998, 7).

Significant gaps in educational achievement by gender also exist, as in many developing countries in the region. In 1990, UNDP reported that there was a significant difference in primary school attendance between boys (68 percent) and girls (60 percent). In 1996, the gender gap in adult literacy was remarkable: 26 percent of women were literate as compared to 49 percent of men (UNDP, 1996). While female enrollment in primary schools climbed throughout the 1990s, attendance remained lower than that of boys because girls are more frequently pulled out of school to work at home (Ardt et al 2005, 7). Girls also leave school earlier because marriage occurs at a young age. In a 1994 survey, the median age of marriage for women was fifteen years (Mitra et al. 1994, 301). It is also feasible that parents perceive a lower return to higher education for girls because of weaker labor markets.

Though government schools enroll most Bangladeshi students, they do rely heavily on other institutions to increase the number of rural schools. Outside of the government system there are three other varieties of schools: private institutions, madrasses (Islamic religious schools), and schools run by non-governmental organizations (NGOs). The number of NGO-run schools skyrocketed in the 1990s, and by 2005 they made up 8.5 percent of the educational system (Ardt et al 2005, 13). The most common of these in rural areas are schools run by the Bangladesh Rural Advancement Committee (BRAC), an NGO dedicated to demand-driven community-based development efforts.

BRAC schools first appeared in urban slums in 1992 as a response to community demand. Generally, BRAC schools are considered a better alternative than public schools in Bangladesh because of their flexibility (Ardt et al 2005, 14-15) and have had a wide-reaching positive effect on rural communities by increasing access to education (Kabeer et al. 2003, 292-303). BRAC schools are free of charge and their presence in rural villages is accredited with increased enrollment in the 1990s.

Policy Context: Abolishing School User Fees

As a direct result of participating in the 1990 World Conference on Education for All (WCEFA), Bangladesh re-committed to attaining universal primary education. The Government passed the Compulsory Primary Education Act in 1993, which made public primary education free for all students and government education free for rural girls through eighth grade. In creating 'free' education, the government abolished formal tuition

fees or user fees for schools. Fees were believed to be a primary barrier to enrolling in school for previously marginalized groups, a view that is still widely held in the international community (Kattan and Burnett 2004, 8-9).

Though tuition fees at government primary schools were officially eliminated in 1993, many barriers remained to participation in the education market. These barriers were greatest for the poor, especially the rural poor. The government's focus on the demand side ignored supply-side access problems, such as the lack of government schools in many rural villages. Underinvestment in education by rural households may also be related to low expected returns, either because the quality of the schools are poor or because the prospects for improved earnings with education are limited (Amin and Sedgh 1998, 4).

There are also hidden costs in the educational system that abolishing tuition fees does not address. Annual testing and activity fees exist in many schools, and families often employ private tutors outside of school. If a family cannot afford a tutor, children often fail because of the limited time they have with the teacher (Kabeer et al. 2003, 243). Many secondary schools also require a uniform. These additional costs are regressive, meaning that poor households will have to pay a larger portion of their income towards education.

Opportunity costs related to schooling are also particularly high in rural communities. The lack of government-run primary schools in rural villages means that students must travel to reach their schools, which is an opportunity cost in terms of both time and the risk of crime while in transit (Ardt et al. 2005, 12). Students attending school also incur a cost to their families by not participating in productive household activities, such as agricultural and domestic labor. The opportunity costs of education for the rural poor may be the largest contributing factor to the total costs of education.

The government of Bangladesh focused further efforts towards the demand side of education based on the belief that educational attainment was low because the total costs of education were too high for poor households. In 1994, in the hope of increasing demand, the government instituted two separate programs to decrease the costs of schooling through direct incentives.

The Food for Education program (FFE) began primarily as a food security program targeted to the poor. Children who work in Bangladesh are often paid in food or fed at work (Amin 1997, 224-225). Therefore, sending children to school represents an opportunity cost in both wages

and food for poor households.

The FFE program specifically distributes wheat to families classified as poor if their primary-school-aged girls and boys attend school. The wheat payments are fixed at fifteen kilograms per month regardless of how many children are sent to school and regardless of their gender. The wheat is often sold by the households because it is not a staple. The value of the wheat was calculated by Arends-Kuenning and Amin (2004, 300) to be between US\$2 and US\$4 depending on the season, which amounts to only 2 to 4.5 hours of wage work per month for children.

The Secondary-School Scholarship Program, also referred to as the Female Stipend Program (FSP), began in 1994. The goal of this program was to increase female enrollment in secondary schools and, consequently, decrease the high rate of early marriage. The program gives monthly stipends to female secondary students if they attend school and maintain a passing grade. The stipend is conditional on the parents signing an agreement that their daughter will not be married until she is eighteen years old. School fees are also waived. The stipend amount ranges from US\$1 to US\$2 per month (Arends-Kuenning and Amin 2004, 301).

The actions of the Bangladeshi government in the 1990s are consistent with the growing international consensus that user fees for schools should be abolished. The fact that fees represent a large portion of household spending in many countries, and that this proportion is highest among the poor, is a primary concern for those who believe basic education is a right and not a privilege (Fiske and Ladd 2006, 2-3). That different levels of fees can be charged by different schools, thus creating vast differences in school quality and barriers faced by certain students, is also a concern for the sake of educational equity (for more on this, see Fiske and Ladd, 2004).

However, the existence of alternative sources of revenue is a particularly important hurdle considering that the intent of abolishing fees is to increase the demand for schools. Without funds available to handle the increase in demand, the declining quality of schools resulting from the loss of fees as a revenue source may actually decrease the demand for education over time.

In addition to the possible quality problems that abolishing fees presents, there is a lack of systematic research into the determinants of enrollment that would clarify whether or not fees act as an obstacle (Kattan and Burnett 2004, 24). Considering the complex interaction of direct costs, indirect costs, opportunity costs, and expected returns, having a clear picture of the educational determinants in a country or region would be beneficial when considering user fee policies.

Current policy in Bangladesh is moving further toward eliminating all existing fees at public schools and increasing incentive programs, such as FFE and FSP (Ardt et al 2005, 17). This policy push is motivated by the perceived success of the policies implemented in the 1990s. However, if fees are not the main determinant of enrollment, this policy intervention may be costing the public school system valuable revenue without significantly improving outcomes. This trade-off with increasing enrollment presents a problem in Bangladesh, where public expenditure on education is historically quite low, reflecting a lack of political will. If revenues are lost from the public, there may be no compensating increase in government funding.

Another consideration is the possibility, recognized by Kattan and Burnett (2004, 4), that indirect costs and opportunity costs may be much higher than the direct costs of schooling. Lack of proximity to schools in rural Bangladesh, noted as a problem above, may be a far greater barrier than the fees. Directing policy interventions at these costs would then be a better policy choice than abolishing all fees.

Considering the lack of systematic research into the determinants of participation and the loss of revenue associated with abolishing all fees, this article attempts to estimate the effect school fees have on enrollment and educational attainment in rural Bangladesh.

LITERATURE REVIEW: DETERMINANTS OF PARTICIPATION IN THE EDUCATION MARKET

Fees for education represent the price within the education market. If people respond to school fees as they do prices in a market, fees are most likely a clear determinant of participating in the education market.

Previous studies have calculated the price elasticity of demand for primary education to illustrate the direct impact fees have on enrollment decisions. In the 1990s, Lavy (1996, 306) estimated the price elasticity for Ghana to be -0.1 , using distance to school as a proxy for price. This result shows enrollment to be fairly unresponsive to price changes. Low price elasticities were historically the basis for arguing that fees should be increased to improve the quality of schools in developing countries without hurting enrollment. The results of that study also show that the price of secondary education has a significant effect on enrollment at the primary school level.

Gertler and Glewwe (1990, 266-270) estimated price elasticities for education among different income levels in Peru in the 1980s. They found that the elasticity of the poorest quartile was two to three times that of the

richest quartile. Studies in Africa, Asia, and Latin America have also found that the price elasticity of demand is higher for girls than for boys (King and Mason 2001, 88-90). These results imply that educational choices for both the poor and for girls are more sensitive to fluctuations in the price of education than for other students.

Anecdotal evidence that school fees are a significant barrier to enrollment exists in the experiences of some African countries. Malawi abolished user fees in 1994 and saw a 51 percent increase in enrollment the following year; Uganda abolished fees in 1996 and saw a 71 percent enrollment in the following year; most recently, Kenya abolished fees in 2003 and had an influx of 1.2 million additional students to the education system (Kadzamira and Rose 2001, 12; Hillman and Jenker 2002, 23; Kattan and Burnett 2004, 51-63).

A program evaluation of Programa de Educación, Salud y Alimentación (PROGRESA) in Mexico lends additional support to the impact of school costs on enrollment. The program gave cash grants to poor families conditional on their children attending school. Many studies have found that the grants caused increased school enrollment, and some predict an increase in years of attainment as a result of the program (Behrman et al., 2001, 12-17; Schultz 2001, 22-26; Skoufias 2001, 52-59).

The two incentive programs instituted in Bangladesh in the 1990s allow for similar analysis of the impact of cost on enrollment choices. Amin and Sedgh (1998, 13-23) compare enrollment rates in two villages before and after the programs; however, no village or household characteristics are controlled for in the analysis. Enrollment for all children in both villages increased after the programs were instituted.

However, there was an underlying trend of increasing enrollment in general at the time, as evidenced by increases in groups not eligible for any program. This could be because of a spillover effect from the programs, or simply attributable to changes in perceptions regarding education at the time. In either case, Amin and Sedgh (1998, 32) concluded that enrollment rates rose over and above the underlying trend due to the implementation of the programs. The result of their study lends specific evidence to the idea that price determines participation in the education market in Bangladesh.

The Bangladeshi dataset used in this article was previously used by Quisumbing and Maluccio (2000, 23-26) to test whether or not the assets of a husband or wife had an effect on resource allocation within the household using a censored choice model, called a tobit. Women's assets at marriage had a positive and significant effect on children's educational

expenditures, whereas the father's assets were insignificant. Their results for the wife's assets are consistent with previous studies showing a positive and significant effect of women's incomes on investments in children (Doss 1996, 18-25; Thomas and Chen 1994, 15-16). Combined parents' schooling was also found to have a positive and significant effect on younger children's educational attainment (Quisumbing and Maluccio 2000, 43-46).

Maitra (2003, 131-137) identified individual and household characteristics that determine the demand for schooling in Bangladesh. A probit, a discrete binary choice model, was used to analyze current enrollment and a "censored ordered probit" was used for highest grade attained. Considering that there is a large mass point at zero years and there are probability spikes in enrollment at the completion of a level (i.e. primary and secondary), ordered probit/logit models are normally used to estimate the highest grade attained (Tansel 1998, 4-6).

In addition, Maitra looks at individual characteristics of parents and children; costs or fees are not included. The results support the existence of an income effect where enrollment increases with household expenditures. Parental education had a positive and significant effect on both enrollment and grade attainment, with the mother's educational status having a stronger effect. This result agrees with previous data from various countries that indicate that an increase in women's education and bargaining power has a greater effect on children's education levels (Schultz 1993, 51-80; Haveman and Wolfe 1995, 1843-1857).

The collective result of previous studies indicates that the total cost of schooling (including direct price), parental schooling, household income and assets, and gender are all partial determinants of the demand for education in Bangladesh.

METHODOLOGY

The question this article endeavors to answer is: are school fees a major determinant of participation or the extent of participation in the education market in rural Bangladesh?

Though the dataset offers panel data on individuals and households, the community-level surveys with school information were only administered during the fourth round in 1997. Therefore, the analysis will be a cross-section of individuals and households in the fourth round.

Due to the policy focus on increasing access through eliminating fees, the outcome variables considered in this analysis are (i) enrollment in school (ever enrolled vs. never enrolled) and (ii) number of years of schooling as a measurement of attainment. In this dataset, number of years of schooling

includes partial years, so the variable is not discrete. The fees included in the dataset are also divided into fixed enrollment fees, charged once upon enrollment, and annual fees that vary from year to year.

For the purposes of this paper, the sample is restricted to children ages 6-15 years old, because marriage is common by age 15. Individual-level explanatory variables include age, age squared (because of possible life-cycle effects), and an indicator variable for gender GIRL, where 1=girl and 0=boy.

Household-level explanatory variables include each parent's educational attainment, which is divided into three groupings for each parent. The groups are given indicator variables as follows: F/MPrim = 1 if father's/mother's highest attainment is primary school, F/MSec = 1 if father's/mother's highest attainment is secondary school, F/MUpp = 1 if father's/mother's highest attainment is beyond secondary. As Maitra (2003, 133) notes, the reason for dividing educational attainment into categories is that the effect of parents' schooling is often non-linear. There are threshold levels of attainment that will have a greater impact on household decisions regarding children's education. The educational attainment of the mother also includes information about women's empowerment in the community, so no other empowerment measures are included in the estimation.

Total household expenditures are used as a proxy for household income. In the event of agricultural shocks or shocks to the employment market, there can be significant shocks to short-term income. Most households will smooth consumption in the face of external shocks; in which case, expenditures are a better approximation of income than annual or monthly income.

Parents' individual assets at marriage are included as a variable that explains bargaining power in the household (Quisumbing and Maluccio 2000, 17). Combined assets also explain the wealth of the household. Both aspects of this variable have been shown to influence education decisions.

The distance to the nearest school, time spent gathering water, and the dependency ratio represent opportunity costs within the household. The dependency ratio is the number of members under 15 and over 65 divided by the total members of the household. This number represents strain on household resources. Time spent gathering water is commonly cited as a reason girls do not attend school in developing countries and is an indicator for the level of labor intensity in household chores.

The existence of the FFE programs is included as an indicator variable where FFE=1 if it exists and 0 if it does not, because it impacts the cost of

primary school. Based on the results of Lavy (1996, 303-308), the price of secondary schooling has a significant impact on primary school enrollment, so the existence of the FSP program is also included as an indicator variable, $FSP=1$ if it exists and 0 if it does not.

The final household explanatory variable is the gender of the household head. Previous research shows that women are more likely to invest in their children's education (Guyer 1997, 120), so an indicator variable for female headed households where women make most decisions is included ($FHH = 1$ for female head and 0 for male head).

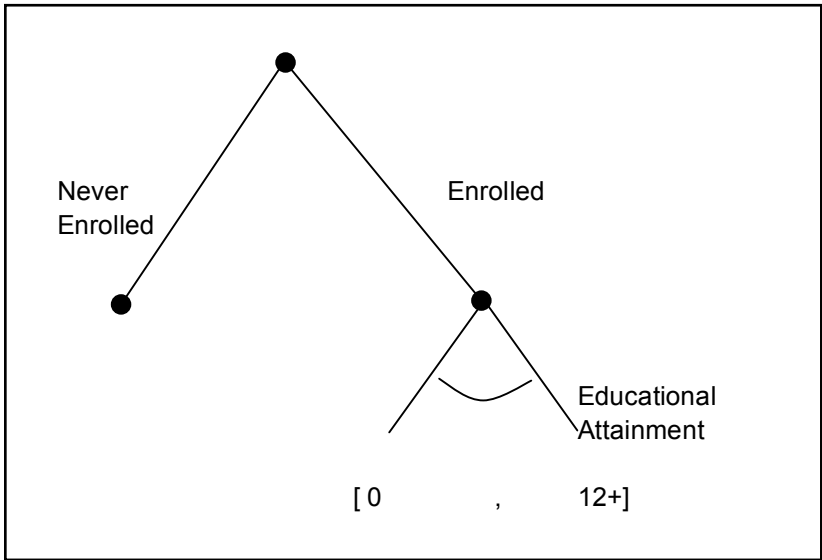
Information on schools themselves was collected at the village and community level. In order to apply these school variables to households within each community, I had to create aggregate community variables. Based on previous research (Kattan and Burnett 2004, 16), the number of female teachers is a positive determinant for girls attending school. The average number of female teachers per school in a community was therefore calculated and included, as was the presence of a water source at the school.

Costs of education are included at the community level. The variable costs of primary school fees are the annual fees for each year of enrollment from 1st through 5th, the cost of uniforms, and the cost of textbooks for each year of enrollment. The annual fees for enrollment, uniforms, and textbooks are averaged for the school and then averaged across the community.

The framework used is the market participation framework that Goetz (1992, 445-447) pioneered. Under this framework, the decision to participate in the education market by enrolling a child is a discrete decision: either the child is enrolled or not. The second decision is how long the child will remain in school, conditional on choosing to participate.

These education decisions, unlike the market participation decisions modeled in Key et al. (2000, 246), are most likely sequential rather than simultaneous. The decision to remain in school is made after the decision to enroll and is based on external factors (such as shocks to the family, marriage, or increased enrollment costs). Most often the decision to remain in school is made at the completion or initiation of a grade. It is unlikely that a parent decides how many years a student will remain in school upon their initial enrollment.

Figure 1: Diagram of How Education Decisions are Modeled



As in Maitra's dataset (2003, 130), there will be many observations at zero for years of schooling completed and spikes in probability at certain thresholds. This non-linearity makes the use of an ordinary least squares (OLS) regression inappropriate for the data.

The use of a tobit to estimate market participation was considered, but there is a different set of determinants for enrolling in school from those that determine the how long a student will remain in school. Therefore, this analysis uses a Heckman model, which allows for the inclusion of different variables in the initial decision to enroll and the second decision to remain. This model indicates that selecting into the education market can have different determinants than the extent of schooling, while also allowing overlapping variables that can be determinants in both choices.

The Heckman model is a structural model, in which the decision to enroll in school is estimated jointly with the decision of how long to attend. Information from the selection decision is then accounted for in the second decision in the form of an inverse Mills ratio (IMR). It is important to estimate these decisions jointly, as opposed to using a discrete choice model and an OLS conditional on enrollment, because a separate estimation would rule out any influence the determinants of the choice to enroll have on the choice to remain in school for a certain number of years. In other words, the Heckman model allows for the group of vari-

ables that influence the initial enrollment decision to indirectly influence the continuous enrollment decision. The dependent variables in the two choices are as follows:

$$Y_1 = \{1 \text{ if ever enrolled, } 0 \text{ if never enrolled}\}$$

$$Y_2 = \{\text{amount of schooling} \mid Y_1 = 1\}$$

Unlike Maitra, (2003, 146) this analysis finds that whether or not a parent was ever enrolled in school can be used as an exclusionary restriction (parent enrollment = 0 if neither attended, 1 if one attended, and 2 if both attended). Whether or not parents ever enrolled in school is likely to impact their decision to enroll a child, but it will not explain how long the child remains in school.

There are also fixed transaction costs, in the form of one-time enrollment fees, in the education market that can be used as an exclusionary restriction. Following Key et al. (2000, 249) and Bellemare and Barrett (2006, 332), these fixed transactions costs are part of the selection into the education market and should not affect the years of schooling completed, since they are a sunk cost. Once the fixed enrollment fee is paid, it should not affect the decision to continue schooling on the margin. The amount of the fixed enrollment fee is not reported for each school, so the percent of schools in each community with a fixed fee is used to represent their prevalence.

DATA AND DESCRIPTIVE STATISTICS

This dataset is composed of surveys conducted over four rounds, from June of 1996 to September of 1997. The questionnaires were designed to judge the impact of disseminating 'green revolution' technologies on intra-household resource allocation, with a specific focus on gender differences within a household (IFPRI, 2001). Information was collected on household production activities, income earning, expenditures, nutrient intakes, time allocation, health and education activities, and decision-making within the household.

The surveys were administered to 5,541 individuals in 955 rural households. These households are in forty-seven different villages clustered in three different communities. Community-level surveys also asked about various amenities, such as health and education facilities and NGO activities. For more information on the dataset, see IFPRI (2001).

The three communities surveyed include (i) the Saturia thana in the Manikganj district, (ii) the Gaffargaon thana Mymensingh district and the Pakundia and Kishoreganj Sadar thanas in the Kishoreganj district,

and (iii) the Jessore Sadar thana in the Jessore district. For the purposes of this article, the three sites will be referred to as Saturia, Mymensingh, and Jessore respectively.

Ten villages were surveyed in Saturia, which is less than two hours outside of the capital Dhaka. Despite its limited access to Dhaka markets, Saturia is the poorest of the three sites (Hallman et al 2003, 23). Twenty-one villages were surveyed in Mymensingh, which is far more remote from the capital than Saturia and more socially conservative. This site is relatively richer than Saturia, but has more conflict over issues of land and marriage. Sixteen villages were surveyed in Jessore, which lies on the western border with India. Jessore is the least conservative area and is 'reasonably prosperous'; however, it suffers from a high level of political instability and tension which create fear and insecurity in the region (Hallman et al. 2003, 23).

The primary occupation for men in this sample is farming and agriculture, with 90 percent of wives reporting household chores as their primary occupation. Twenty-two percent of adult males in the sample are illiterate and 36 percent of adult females, a higher literacy rate than the country as a whole at the time.

Status of Primary Schools

There were 109 schools reported in the forty-seven villages included in the study: twenty-nine in Saturia, fifty-three in Mymensingh, and twenty-seven in Jessore. Fee information was only collected for fifty primary schools (defined as having classes below grade six). The remaining schools were either secondary schools or schools offering only one or two years of education. Since the focus of this study is the price of primary schools, the question is whether or not there is a significant difference between the fifty primary schools included in the study and other schools offering some level of primary education.

Some of the differences between the ninety-six schools offering primary education and the subset of fifty schools are notable. The fifty schools included in the study offer more years of education, with a mean of 4.7 years as compared to 2.1 years in the remaining forty-six schools. The fifty schools included are also more likely to be government schools (58 percent), whereas the other forty-six are almost entirely non-formal schools run by BRAC (93 percent).

The BRAC schools left out of the study are entirely in Saturia and Mymensingh. There are two BRAC schools in the sample of fifty. Since BRAC schools are free, both the fixed fee and annual fee estimates for Saturia and Mymensingh are over-inflated for primary education.

Table 1: Descriptive Statistics of Schools: Means with standard deviations reported in ()

Variable	Total Sample (n=50)	Schools in Saturia (n=5)	Schools in Mymensingh (n=23)	Schools in Jessore (n=22)
# of Schools with Fixed Enrollment Fee	0.12 (0.32)	0.20 (0.45)	0 (0)	0.23 (0.43)
Annual Enrollment Fees (in taka)	14.19 (30.42)	13.99 (4.58)	10.87 (5.28)	17.71 (45.84)
Total Cost of Primary Schooling (in taka)	71.68 (152.05)	65 (0)	56.8 (29.2)	88.75 (229.12)
# of Teachers per School	3.63 (1.77)	4.20 (1.92)	4.39 (1.11)	2.60 (1.90)
# of Female Teachers per School	1.34 (1.09)	1.40 (1.14)	1.48 (1.27)	1.16 (0.83)
Total Enrollment per School	240.56 (151.78)	287.40 (87.33)	314.30 (127.18)	152.82 (144.27)
Female Enrollment per School	119.14 (74.44)	131.80 (48.93)	155.91 (62.92)	77.82 (70.84)
Male Enrollment per School	121.42 (78.90)	155.6 (39.61)	158.39 (66.91)	75.00 (74.19)
% of Schools with Water Source	0.64 (0.48)	1 (0)	0.78 (0.42)	0.41 (0.50)
% of Schools with Blackboards	0.96 (0.20)	1 (0)	0.95 (0.21)	0.95 (0.21)
% of Schools with FFE	0.14 (0.35)	0.20 (0.44)	0.09 (0.29)	0.18 (0.39)

One of the hidden fees in Bangladeshi education is uniform fees, which exist in two schools in the sample. These fees are slightly higher for girls than for boys and are drastically higher than the annual enrollment fees for those schools (172-350 taka compared to 12-60 taka). The uniform fees make these two schools outliers in the data and both occur in Jessore, increasing the mean school fees in that community.

It is also interesting to note that a majority of the government schools in the sample charge annual enrollment fees. These are most likely exam fees and activity fees, because tuition fees are illegal. The average annual fee for a government school was 10.42 taka, which shows that abolishing tuition fees in 1993 did not make public primary education free. Annual fees also vary widely from year to year, possibly because of exam fees after specific grades.

One major hole in the data for schools is the missing fees for a private tutor. It is common practice in Bangladesh for teachers to be paid outside of school to act as private tutors. Hiring a private tutor significantly increases the cost of schooling for families, but it is not reported in this dataset.

**Table 2: Descriptive Statistics of Enrollment and Completion by Site:
Means and standard deviations reported in ()**

Variable	Total Sample	Saturia	Mymensingh	Jessore
Age of First Enrollment	7.30 (1.70)	7.92 (1.73)	7.24 (1.53)	6.83 (1.68)
# of 6-15 year olds Enrolled	0.85 (0.36)	0.79 (0.40)	0.96 (0.20)	0.81 (0.39)
Female Enrollment Ages 6-15	0.85 (0.35)	0.81 (0.39)	0.96 (0.20)	0.81 (0.39)
Male Enrollment Ages 6-15	0.85 (0.36)	0.78 (0.41)	0.95 (0.21)	0.80 (0.39)
Years of Schooling Completed Ages 6-15	5.08 (3.79)	4.26 (3.39)	6.21 (3.99)	4.85 (3.72)

Female Years Completed Ages 6-15	4.84 (3.44)	4.01 (3.02)	5.98 (3.66)	4.64 (3.37)
Male Years Completed Ages 6-15	5.27 (4.03)	4.43 (3.63)	6.38 (4.21)	5.03 (4.01)

Enrollment rates vary significantly by site. The variation by site, from 79 percent in Sauria to 96 percent in Mymensingh, may be due to access, costs, or social norms for education. From the previous table, the costs of primary school are lowest in Mymensingh, where enrollment rates are highest.

The only significant correlation with the enrollment rate at each site is the existence of the FFE program (at 5 percent). The correlation is negative, so the more prevalent FFE is in the community, the lower the enrollment rate. This result could be misleading, however, because FFE is a program targeted towards the poorest groups. If the program is less prevalent, it may indicate higher incomes in the area and, therefore, higher enrollment.

Enrollment rates by gender are not significantly different. This means that these communities have achieved gender parity in enrollment. The average total years of schooling completed for this sample of 6-15 year olds is 5.06 years. This estimate is biased, however, because many students have yet to complete their desired level of schooling. There are significant (at 5 percent) differences in years completed between communities. The same trend appears as in enrollment rates, with Mymensingh having the highest completion.

There is also a significant difference in years completed by gender. Unlike Maitra's (2003, 146) result, where girls completed more schooling, this data shows that girls complete significantly less schooling than boys.

Table 3: Descriptive Statistics of Regression Variables for Ages 6-15

Variable	Mean	Standard Deviation	Num. of Observations
Total school years completed	3.595	2.221	1080
Age	10.659	2.529	1246
Girl (1=girl, 0=boy)	0.457	0.498	1246

Mean Water Source at School	0.729	0.239	1246
Mean Annual Fees	14.065	2.829	1246
Mean # of Female Teachers	1.350	0.136	1246
FFE Program	0.0987	0.298	1246
FSP Program	0.0369	0.189	1246
Dependency Ratio	0.467	0.140	1246
Female Headed Household	0.008	0.089	1246
Mother's Primary School	0.1998	0.400	1206
Father's Primary School	0.211	0.408	1206
Mother's Secondary School	0.0945	0.293	1206
Father's Secondary School	0.227	0.419	1206
Mother's Upper Secondary	0	0	1206
Father's Upper Secondary	0.0547	0.227	1206
Time Gathering H2O (min/day)	16.78	22.53	1246
Mother's Assets at Marriage	286.006	786.55	1243
Father's Assets at Marriage	1414.13	4969.91	1243
Total Household Expenditures	5593.35	9181.87	1246

Distance to Nearest School	1.849	0.920	943
Student Ever Enrolled	0.875	0.331	1080
Mother Never Enrolled (1=never enrolled)	0.696	0.486	1206
Father Never Enrolled (1=never enrolled)	0.468	0.499	1206
Mean Fixed Fees	0.136	0.103	1246
Parent Ever Enrolled (0/1/2)	0.7616	0.8156	1246

The distance to nearest school variable is calculated as a range, with 1=to less than a quarter mile and 2=a quarter to a half mile. The mean indicates that a majority of households (65.69 percent) are within a half mile of the nearest school. Very few households (4.92 percent) are more than three miles from the nearest school.

A very small minority of households have a female head, making male-headed households the dominant type. The average dependency ratio is 0.467. Average assets at marriage differ significantly for males and females, with men bringing much more wealth and bargaining power to these relationships. Average total household expenditures during the month of the survey are 5,593.35 taka, which is about US\$80.

As expected, differences in educational attainment exist between mothers and fathers in the sample. Fathers are far more likely to have attended secondary school than mothers. A majority of fathers have attended some type of school, where a majority of mothers have not. Looking at the parent ever enrolled variable, it is most common that neither parent ever attended school (48 percent).

The mean annual fee for primary schools in this sample is 14.065 taka. This is less than US\$1 per year, which represents less than a few hours of wage work per year. The mean annual fee is lower than the subsidies given through both FFE and FSP. Neither program, however, is commonly offered in the sample, with the FFE only available to 9.87 percent

of the sample population and the FSP only available to 3.69 percent. The prevalence of schools with fixed fees is 13.6 percent. Both the annual fees and the incidence of fixed fees for schooling are remarkably low in these communities.

FINDINGS

Table 4: Estimation Results for the First Stage of the Heckman (N=1078)

Variable	Coefficient	Standard Error
Parent Ever Enrolled	0.2646***	0.0768
Girl	0.1362	0.1088
Mean Annual Fees	0.0479	0.0401
Mean Fixed Fees	-3.7285***	1.2022
FFE Program	5.5617	.
FSP Program	5.4866	.
Dependency Ratio	-0.8934**	0.3954
Mother's Assets at Marriage	-0.0000186	0.000071
Father's Assets at Marriage	0.0000184	0.0000206
Total Household Expenditures	-5.02e-06	4.87e-06

*Note: *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively. The lack of standard errors for the binomial variables FFE and FSP Programs indicate that the standard errors in this estimation are most likely biased.*

The two exclusionary restrictions included in the estimation of the selection decision both have a significant impact on the choice to enroll a student. As expected, whether or not parents were ever enrolled in school has a significant and positive relationship with children's enrollment. This result is consistent with the logic that a parent who attended school will want, at least, the same level of education for their children and will expect the same returns. The result also indicates that having two parents who attended school significantly increases the likelihood that children will attend school.

The prevalence of fixed fees in a community has a significant negative impact on enrollment in school. As a fixed transactions cost, the more

often this cost is applied to schooling, the more often households remain autarkic with respect to the education market. This result is consistent with the findings in Key et al. (2000, 255-256), where increased fixed transaction costs decreased participation in the market. The effect of fixed fees indicates that this particular fee is a barrier to enrollment.

The dependency ratio also has a significant and negative effect on participation in the education market. Higher dependency ratios indicate more strain on household resources because there are fewer people of productive age; thus there is lower enrollment. The direct price of enrollment may be too high for these households and/or children may be kept home to add to productive work.

Unlike in previous studies, the existence of the FFE and FSP programs does not have a significant impact on enrollment rates in this estimation, though both programs do have a positive relationship with enrollment. The gender of the student and assets of the parents are also not significant.

Table 5: Estimation Results for the Second Stage of the Heckman (N=1078)

Variable	Coefficient	Standard Error
Age	0.01921	0.1812
Age2	0.02702***	0.008399
Girl	0.003639	0.10324
Mean Water Source at School	-1.6997***	0.4239
Mean Annual Fees	-0.01506	0.04578
FFE Program	0.5471	0.3507
FSP Program	1.3467***	0.3077
Dependency Ratio	-0.05638	0.4437
Mother's Primary School	0.5752***	0.1413
Father's Primary School	0.1952	0.1439
Mother's Secondary School	0.5994***	0.1898
Father's Secondary School	0.4726***	0.1502
Father's Upper Secondary	0.6531***	0.2508
Time for Gathering Water (min/day)	-0.003273*	0.001862

Mother's Assets at Marriage	0.0000181	0.0000607
Father's Assets at Marriage	8.20e-06	0.0000112
Total Household Expenditures	4.42e-06	5.50e-06
Distance to Nearest School	0.2946***	0.04779
Inverse Mills Ratio	1.5067	1.0680

Note: *, **, *** indicate significance at the 10%, 5%, and 1% levels respectively.

The years of schooling estimation is the second step in the Heckman model and represents the extent of participation in the education market. While the mean annual fees variable has the expected negative relationship with educational attainment, it is not significant. This result indicates that the decision to enroll in another year of school is relatively price inelastic. The primary reason for this result could be the remarkably low level of annual fees: low prices tend to produce lower elasticities than high prices.

The effect of parents' level of education is consistent with previous studies. A mother's highest level of schooling being primary or secondary school has a significant and positive relationship to total years of schooling, as does father's highest level being secondary or higher levels of education. It appears that it is more important for a mother to attend any type of schooling, whereas a father attending only primary school has no significant effect.

As for the two subsidy programs, FFE has the expected positive effect but is not significant for total years of schooling. The FSP program is positive and significant, which reinforces Lavy's (1996, 312) result that cross-price elasticity is significant in educational choices. The FSP program applies only to secondary level girls, but has a positive impact on total years of schooling. It may be serving as an incentive for girls to complete primary school, and also may be improving the communities' perceptions of the returns to secondary education.

The age squared term has a positive and significant effect on total years of schooling. As a child ages, there is a decreasing likelihood of attaining more years of schooling up until a certain age, then the trend reverses and there is an increasing likelihood of achieving higher levels of schooling. This result can be attributed to the fact that many children in the sample have yet to complete their desired level of schooling. The younger children in the sample have fewer total years of schooling than the older children simply because they have yet to progress.

Two surprising results from this estimation are the effect of having a

water source at school and the effect of distance to the nearest school. Having a water source at school has a significant and negative effect on years of schooling. Previous research indicates that a water source should have a positive impact on enrollment because it lowers opportunity costs. This result may be explained because a higher prevalence of water at schools is correlated with better irrigation systems. Better irrigation systems indicate a more developed agricultural area, which could offer higher agricultural wages. Thus the presence of a water source, without being able to control for agricultural wages, may actually indicate a higher opportunity cost in the form of lost wages.

The other counter-intuitive result is the significant and positive impact of distance to the nearest school. Taken at face value, this relationship would indicate that increasing the distance between schools and households actually increases educational attainment. However, the result is mostly likely linked to the fact that most rural villages do not have a secondary school. When students attend more years of schooling they are, almost by definition, increasing the distance to the nearest school. This is a case of reverse causality or endogeneity in the data, which should be controlled for in future studies.

RECOMMENDATIONS

Overall, the results of the Heckman model indicate that all fees do not have the same impact on schooling decisions. The fixed enrollment fees appear to represent a barrier to participating in the education market; abolishing them will then increase enrollment. However, this study shows that educational decisions with regards to annual fees are relatively price inelastic. At the same time, the price of secondary education has a significant impact on the level of educational attainment. Based on these results, I recommend the following to increase enrollment and educational attainment:

1) *Decrease or eliminate only fixed enrollment fees.* The abolishment of *all* fees is not appropriate when one considers the need for revenue. Abolishing annual fees could decrease the quality of schooling without a marked increase in participation or attainment. Considering the low level of public expenditure on education in Bangladesh, and the lack of political will to increase the quality of education, it is particularly dangerous to eliminate all fees as a source of revenue for schools.

2) *Decrease the fees and costs related to secondary education.* The significant result for the FSP program indicates the importance of paying attention

to the price of secondary education. The user fee debate has been mostly focused on abolishing or decreasing fees for primary education. This study suggests that decreasing the direct price of secondary school impacts enrollment and attainment decisions more than the level of annual primary school fees. Policies should, therefore, consider the fee structure and incentives for education at all levels.

3) Address the limitations of this study through further research. As noted throughout the paper, this analysis is limited in scope. A panel study of enrollment and educational attainment with regards to changing school fees over time would yield far more concrete results. Endogeneity in the distance to nearest school variable should also be controlled for in future studies, and the amount of fixed fees should be included along with a fully representative sample of primary schools. The price elasticity of demand for education is also bound to differ in other regions and countries considering eliminating school user fees. Systematic research that improves on the data and methodology used here is a critical input into school fees debates.

CONCLUSION

This article focuses on the role of user fees as a determinant of participation in the education market in rural Bangladesh. The goal of the study is to inform the policy debate over abolishing all school fees in developing countries. Anecdotal evidence and previous studies indicate that the direct price of schooling can be a barrier to enrollment. There are, however, many opportunity costs and indirect costs of schooling in developing countries which may play a significant role. As with most issues in developing countries, policies based on practices in other regions may not have the desired effect.

The model in this article uses both fixed enrollment fees and variable annual fees to represent the direct costs of primary schooling. In terms of current policy mechanisms, two subsidy programs are also included in the model: the FFE which decreases the cost of primary school and the FSP which decreases the cost of secondary school for girls. Results of the estimation show that fixed costs are significant in the decision to enroll. Annual costs were not significant in either selecting into the education market or on the total years of schooling. Finally, the results of this study also show that the price of secondary school is significant in determining educational attainment, as indicated by the significant positive effect of the FSP program on total years of schooling.

Overall, the results of the Heckman model analysis indicate that abolishing all school fees in Bangladesh, which was suggested in a policy report in 2005, may not be appropriate. While the elimination of fixed fees could increase enrollment in rural areas, the low price elasticity with regard to annual fees indicates that abolishing these fees will not significantly increase enrollment or educational attainment. Moreover, these fees represent important revenue for the education system in Bangladesh.

NOTES

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