

Economic and Social Analysis of Primary Education in Bangladesh: A Study of BRAC Interventions and Mainstream Schools

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EXECUTIVE SUMMARY

Bangladesh has achieved significant progress in enrolment in primary schools including gender parity. Currently, two major problems are dropout before completing primary education and poor quality of education with low attainment of basic competencies. These problems are especially acute among children of poor families. While the government of Bangladesh has the major responsibility of primary education, and it aims at universal access to education through government schools, the needs of the very poor are largely catered by non-formal and religious schools. BRAC has, in the past two decades, made significant progress in providing primary education to poor children through targeted interventions. The type of education provided by diverse actors is likely to have different impact on individuals and society. There are, however, very few studies on economic and social analysis of primary education in Bangladesh, especially with respect to education provided by different types of schools. There is also a lack of cost-benefit analysis of primary education, and cost-effectiveness study of specific interventions. This study focuses on the diverse outcomes of primary education, and private and social costs of providing primary education by BRAC and mainstream providers in rural Bangladesh. The study is based on school and household level primary data collected during December 2009 to February 2010. Specifically, it addresses the following aspects:

1. Performance of schools in terms of dropout, repetition and completion rates of children (internal efficiency)
2. Factors associated with internal efficiency
3. Effects of BRAC pre-primary education on the performance of poor children in formal schools
4. The role of BRAC non-formal schools in enhancing completion of primary level education among poor children in rural areas
5. School participation pattern and educational achievement of children in rural Bangladesh from household-level data
6. Effects of education on occupational pattern and income
7. Assessing private and social benefits and costs of primary education
8. Estimating private and social rates of returns to education and comparing the cost-effectiveness of different interventions

Household level longitudinal data, school level data and data on socioeconomic background of selected poor students are used in the study.

Main findings

Following are the major findings of this study:

- Household level data indicate that there has been substantial improvement in the enrolment of children at primary level (95.2% among age group 7-11) in 2010 since mid-1980s. Since many children do not start school at the official age of 6 years, the overall rate of enrolment of children aged 6-10 years is lower (92%). The enrolment rate at secondary level has also improved over time but it is still low especially among the very poor (52%).
- Low enrolment rate among children aged 6 indicates late start at school. Children from poor families especially male children tend to start late. This has negative implications for completion of primary education and quality of learning.
- Our study confirms that early childhood development through pre-primary education has significant impact on school performance. The scores achieved in primary school examination are higher for students with pre-primary (BRAC) education compared to students without such education. This effect is especially prominent among girls from poor families.
- Private economic benefits of education are higher for secondary education than primary education within all occupations. However, private rate of returns are higher for primary education than secondary because of low private cost at primary level and high cost at secondary level.
- High social costs of primary education are compensated by many social benefits reflected in low fertility, improved health practices, greater technology exposure and positive attitude to children's education especially for girls. Primary education of mothers is one of the significant factors determining the probability of children going to secondary school.
- There are differences in cost effectiveness of different interventions. Internal efficiency indicators are better for BRAC schools than mainstream schools. Cost per student completed is lower, and private rate of return is higher for BRAC. Greater efficiency is achieved through intensive monitoring and teacher input in spite of modest physical facilities.
- Policy and research implications of our study are: intensive effort needed to bring children from ultra poor families into the formal system of education; free and compulsory pre-primary education can alleviate the problem of late start at school as well as improve the quality of primary education; general financial support to students at the secondary level needed; and there is urgent need for research on cohort analysis of dropout and completion rates through matching of household and school level data.

INTRODUCTION AND METHODS

Achievements and shortcomings in primary education

Bangladesh has made significant progress in primary education in recent decades. According to the Education Watch Report 2008, net enrolment rate (NER) is 86.4% for Bangladesh with 87.1% for girls and 85.6% for boys (Nath and Chowdhury 2009). While the NER in urban areas is higher than in rural areas, rural girls have done significantly better than urban girls. Over the past decade 1998-2008, NER increased steadily from 77.0 to 86.8 in 2005 but stagnated in the past three years. There has been great progress in gender parity both at primary and secondary level. In terms of literacy, the poorest households have gained most in recent years. However, still the gap between rich and poor in adult literacy is wide. According to Education Watch 2008, Bangladesh primary education sector faces major problems in two areas:

- Universal attainment of completed primary level due to deterioration in internal efficiency indicated in high dropouts.
- Quality of education – learning outcomes

Different interventions

Provision of primary level education is the major responsibility of the government. This is not only because there are market failures in the provision of basic education but also the fact that education is considered as a basic human right that has to be guaranteed by the state. In the last two decades, concerted effort has been undertaken in the public sector to reach the goal of universal primary education and reducing gender disparity. In addition to this, the private sector plays an important role. While the private sector (for-profit) serves the children from well-off families, the NGO¹ sector caters to the needs of the poor. According to Education Watch 2008, the shares of government and non-government schools, non-formal schools run by NGOs, and madrasas in terms of students enrolled in 2008 are 56.9%, 20.5%, 9.6% and 7% respectively (Nath and Chowdhury 2009, Annex 5.3 p168). Because of the intervention by non-government providers in recent years, the share of government primary school decreased from 68.3% in 1998 to around 57% in 2008 (Nath and Chowdhury 2009, p14). National statistics record lower figures for government and non-formal schools but a higher figure for primary madrasas.

¹ NGO = Non-government Organization

According to BRAC, it covers approximately 6.7% primary school children. This is a small figure in terms of the whole population but the proportion of poor children enrolled in NGO/BRAC schools is much higher. It should be noted that NGOs, BRAC for example, target children from poorest households who fall out of the government system or never entered the system because of poverty and lack of awareness. Hence, BRAC primary school is not another alternative but is complementary to the government system.

BRAC has a pre-primary one-year education programme as well which facilitates poor children to enter government primary schools and to continue till completion through various support programmes. This is also complementary to the government programme and enhances efficiency of the whole system.

Education research in Bangladesh

There are several studies on primary education in Bangladesh that address institutional and financial issues as well as progress made in different education indicators. There is, however, a gap in research with respect to economic and social returns to primary education provided by different providers such as government schools, private and NGO schools and madrasas, and cost-effectiveness of different interventions. Reliable data on age-specific enrolment rates and cohort data on dropout and completion rates are not available.

The purpose of this study is to fill up some of these gaps. It is addressed to policymakers, donors, civil society, researchers and frontline service providers in primary education.

Objectives

Two main objectives are to study economic and social impacts of primary education and to evaluate the cost-effectiveness of different interventions. The study assesses diverse outcomes of investment in primary education, and private and social costs of providing primary education by BRAC, formal schools, and madrasas in rural areas of Bangladesh. Educational outcomes are generally reflected in benefits accrued to individuals in terms of increased productivity and income, and in other benefits that fall on households and society at large. There are also intermediate outcomes (output) of investment in education (input) that take place at school level such as the completion of primary level education, achievement in basic competencies, dropout and repetition rates of students. The costs of education are diverse as well, and borne by families, provider organizations and local community. Since costs may differ according to the type of intervention and provider, we studied different types of schools - BRAC non-formal primary schools, BRAC pre-primary, formal primary schools and primary madrasas. The following specific issues were looked into while conducting the study.

1. Performance of schools in terms of dropout, repetition and completion rates of children (internal efficiency)
2. Factors associated with internal efficiency

-
3. Effects of BRAC pre-primary education on the performance of poor children in formal schools
 4. The role of BRAC non-formal schools in enhancing completion of primary level among poor children in rural areas
 5. School participation pattern and educational achievement of children in rural Bangladesh from household-level data
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Data and methods

Household level data

A forerunner of this study is the IRRI-BIDS² sample surveys of 62 villages. These surveys provide household level longitudinal panel data from 62 villages for the years 1988, 2000, 2004 and 2008. In 1988, the sample was drawn using a multi-stage (union-village-households) random sampling method. In subsequent years, IRRI followed the same method and visited the same villages and households as far as possible. A similar survey was conducted in 2008 to assess the impact of SIDR. Originally, the survey was conducted to assess the impact of modern rice technology on income distribution and poverty in Bangladesh. The data set of 1988 and 2000 was used for many well-known studies on poverty in Bangladesh.

Data for this study were collected from the same 62 villages and 20 households (same households as much as could be traced). The purpose of taking the IRRI-BIDS study as our point of departure is to document changes over time in rural Bangladesh in terms of school participation patterns among children, income, occupation, mobility of workers with different level and types of education, and changes in the economy.

School level data

Since the focus of this study is primary education, we have collected data from schools selected from the same sample villages as in the household survey. Data were collected from five types of schools:

- BRAC non-formal primary schools (13)
- Government primary schools (49)
- Private primary schools (10)
- *Ebtedayee* madrasas (3)
- BRAC pre-primary schools (53)

² IRRI = International Rice Research Institute, BIDS = Bangladesh Institute of Development Studies

In addition to household and school surveys, we have conducted a small survey of 653 poor children (10 from each formal school) regarding their experience of pre-primary education, completion of primary education, performance in primary completion examination, and socioeconomic characteristics of their families.

Overview of the chapters

Comparison of schools

The surveyed schools (76) are compared in terms of resources – physical facilities, teacher qualifications, teaching process, monitoring by relevant authorities and school performance reflected in different indicators such as completion, drop-out and repetition rates and results in school final examination. We found that BRAC schools, in spite of their meagre facilities, performed better in terms of internal efficiency – dropout and repetition rates being lower and completion rates higher than other types of school. This is mainly because of intensive monitoring of teachers, better teacher input and the teaching process suited to the children from poor families.

Role of BRAC non-formal primary schools in reducing primary level completion gap

The goal of BRAC non-formal education programme is to bring out of school children into the education system, help them complete the primary level and prepare them for the secondary level. Statistics on how many students received such support and successfully completed the programme over time are available. Since its inception in 1985, 4.11 million children have completed the primary level. We cannot, however, claim that these children would remain out of school without BRAC intervention. We do not have bench-line information that can provide a control group. Propensity score matching (PSM) method could not be applied because of too few matched cases to form a control group.

A crude measure was followed – difference in the proportion of out of school children in villages and unions where BRAC non-formal schools operate/operated in the past and the areas with no BRAC schools from household level data. No clear-cut results emerged. The contribution of BRAC schools is reflected in other indicators such as repetition, dropout, completion rates and transition to secondary school which are better than in other types of school.

Effects of BRAC pre-primary education

The goal of this programme is to prepare children from very poor households to enter and continue in mainstream primary schools. BRAC's intervention takes place both at pre-primary stage as well as in monitoring and support provided to children during their education at primary level. First of all, we compared the performance in school final examination among poor children with or without receiving pre-primary BRAC education. For doing some kind of impact analysis, a comparison group was

constructed through propensity score matching method that created a group who differed with BRAC children *only* in terms of BRAC intervention while all other characteristics are the same. Comparing the performance of 653 students who came from similar socioeconomic background and similar probability of receiving pre-primary programme, we found that the total score was 7.7% higher among BRAC children than children without BRAC experience. The household level data also show positive effect of pre-primary education on the transition to secondary schools.

Analysis of household level data – school participation pattern

This section focuses on school participation pattern –

- Age-specific enrolment, and dropout, completion and transition to secondary school, and
- Participation patterns by socioeconomic characteristics.

Participation of children aged 6-16 years show that school enrolment rate at age 6 is much lower (70%) than in age group 7-11 years (95.2%). It means that a substantial number of children do not start school at the official age of 6. Enrolment rates fall after age 12 and it is 76.5% among 12-16 years age group. Enrolment rates have steadily increased since 1988. Low and late enrolment are mainly associated with poverty and low education of parents.

Education, occupation and income

This section shows how education is correlated with occupational choice and income over time. With the increase in the average years of schooling in rural Bangladesh, it has been possible for workers to move to non-farm activities which, in turn, were promoted by economic growth in the past decades. Private benefits of education were reflected in the income levels of workers in different occupations. High benefits were observed in trade/business and service. Private costs of education were mainly incurred for children enrolled at secondary level that are substantially higher than primary education provided free of charge by all providers in our study areas.

Social benefits of education

In addition to private economic benefits, various non-monetary benefits accrue to individuals, families and society at large. We have looked at several demographic variables - fertility, contraceptive behaviour, age at marriage, social variables – education of children, health practices, exposure to new technology and awareness about community issues. Primary education is strongly correlated with most of the variables moved in the favourable direction. Primary education of mothers is a significant factor in influencing the probability of children going to secondary school.

Benefit-cost analysis and cost-effectiveness of interventions by different providers

Benefit-cost analysis shows that private rate of returns to primary education (16%) is higher than secondary education (14%) in spite of high lifetime earnings of workers with secondary education. This is mainly because of high private costs incurred for secondary education. The rate of returns to primary level is higher for BRAC graduates compared to graduates from government non-government schools and madrasas. The reasons are lower cost of education at BRAC schools and the four-year cycle instead of five as in the formal school system.

Cost-effectiveness of different interventions

In terms of cost of education faced by providers, BRAC schools are better than formal schools and madrasas. The cost per student completing primary education is twice as high in formal schools than in BRAC schools. This is due to both lower cost per student and shorter time for completion – no repetition, low dropout and four-year cycle.

Implications for policy and research

Policy and research implications of our study are: intensive effort needed to bring children from ultra poor families into the system; free and compulsory pre-primary education that can alleviate the problem of late start at school as well as improve the quality of primary education; financial support to students at the secondary level; urgent need for research on cohort analysis of dropout and completion rates through matching of household and school level data.

ANALYSIS OF SCHOOL LEVEL DATA

Description of survey schools

There are different providers in the primary education sector of Bangladesh. We selected government primary schools, private primary schools, BRAC non-formal primary schools and *ebtedayee* madrasas located in 62 randomly selected villages.

We have surveyed 49 government primary schools, 10 private primary schools, 13 BRAC non-formal and 3 *ebtedayee* madrasas. In some of the 62 villages, BRAC non-formal schools were in operation but phased out at the time of survey. According to BRAC rules, there is no need for the school to remain in the same area after finishing one cycle of primary education. Information on the number of such schools and villages are derived from the household and primary school surveys. One school out of 75 was for boys only, others had co-education. The total number of girls and boys were 10,024 (51.6%) and 9,378 (48.3%), respectively.

Management of schools

All government schools under survey had school managing committees (SMC). One each from the other three categories of schools had no such committee. Educational qualification of SMC heads varied widely according to the type of school. In government schools, educational level among the SMC heads was much higher than in BRAC non-formal primary schools. Seventy-one percent of the heads in government schools had education from secondary to masters level, while it was 30.8% for BRAC primary schools (Table 2.1). On the other hand, 35.7% of the SMC heads in BRAC schools completed primary education which was only 8.8% in the government schools (primary data not shown in a table). This is a reflection of BRAC's targeted approach for the benefit of poor families.

Table 2.1. Distribution of head of SMC by educational qualification and school type

Educational qualification	Type of school				Total (%)
	Government primary (%)	Private primary (%)	BRAC primary (%)	<i>Ebtedayee</i> madrasa (%)	
Up to grade 9	13 (29.0)	2 (25.0)	9 (69.2)	0 (0.0)	24 (35.3)
Secondary	10 (22.2)	4 (50.0)	2 (15.4)	0 (0.0)	16 (23.5)
Higher secondary	11 (24.4)	1 (12.5)	0 (0.0)	0 (0.0)	12 (17.6)
Bachelors	10 (22.2)	1 (12.5)	1 (7.7)	1 (50.0)	13 (19.1)
Masters	1 (2.2)	0 (0.0)	1 (7.7)	1 (50.0)	3 (4.4)
Total	45 (100)	8 (100)	13 (100)	2 (100)	68 (100)

Note: we do not have data from four government and two private schools.

Assets and facilities

The total amount of land used for different purposes was highest in madrasas (337.8 decimals) and lowest for BRAC primary schools, 33 decimals (Table 2.2). Government schools and private schools had 110.4 and 110.8 decimals, respectively. Most of the land was used for playground in all schools except madrasas where land was mostly used for cultivation.

Table 2.2. Average amount of land (in decimal) used for various purposes by school type

Type of school	School building	Play ground	Cultivation	Ponds	Garden	Other purposes	Total land
Government primary	15.23	47.21	13.50	13.82	5.08	15.57	110.4
Private primary	12.72	26.2	38.00	3.00	10.00	20.93	110.8
BRAC primary	8.00	23.00	0.00	0.00	0.00	2.00	33.0
<i>Ebtedayee</i> madrasa	13.33	31.67	235.33	18.00	7.50	32.00	337.8

Average number of textbooks available in the libraries was highest in government schools followed by madrasas, private schools and BRAC schools. The average number of other books was highest in madrasas followed by private schools, government schools and BRAC schools. The difference among the schools excluding the madrasas was not much. The madrasas did not have any magazines in the library. The number was highest in government schools followed by BRAC schools (Table 2.3). Government schools were better-off in other facilities such as newspapers, and maps compared to BRAC schools. All schools have globe. It should be noted that data on these facilities are presented per school. The facilities shared by students gave a more positive different picture for BRAC because number of students per school was lower than in other schools.

Table 2.3. Average number of reading materials in the school libraries by school and material types

Type of school	Text books	Other books	Magazine	Daily newspaper	Map	Globe
Government primary	76	152	50	1	7	1
Private primary	15	221	5		5	1
BRAC primary	14	149	17		2	1
<i>Ebtedayee</i> madrasa	48	425		1	2	1
Total	55	176	24	1	6	1

It should be noted that one out of 13 (7.7%) BRAC schools had playground while all 3 madrasas had playground, and 67% of the government schools and 70% of the private schools had playground (Table 2.4). Fifty-three percent of government schools, 40% of private schools and 66.7% of madrasas had electricity while only

one out of 13 BRAC schools had electricity. Toilet facilities for teachers were available in most government schools (85.7%), private schools (60%) and madrasas (100%). This was 23.1% in BRAC schools. The situation was similar for toilet facilities for boys and girls. In the case of access to tube-well, the position of BRAC schools was better than other schools (Table 2.4). According to the information gathered from BRAC regional office, BRAC students use toilet facilities of the households adjacent to the schools.

Table 2.4. Percentage of schools having various facilities by school type

School type	n	Play ground	Electricity	Toilet for teachers	Toilet for boys	Toilet for girls	Tube-well	Cub/scout activities
Government primary	49	67.3	53.1	85.7	44.9	46.9	57.1	46.9
Private primary	10	70.0	40.0	60.0	20.0	10.0	20.0	20.0
BRAC primary	13	7.7	7.7	23.1	15.3	7.7	76.9	7.7
<i>Ebtedayee</i> madrasa	3	100.0	66.7	100.0	66.7	66.7	66.7	33.3
Total	75	57.9	43.4	71.1	36.8	35.5	56.6	35.5

We considered the following three types of assets:

1. Furniture in the classroom, teachers' room and office.
2. Supporting material such as typewriter, computer, steel cabinet, TV and electric fan, and
3. Sport goods like cricket set, football, carom and ludo.

There were wide differences among schools with respect to asset value of furniture per school. Government schools had the highest amount followed by private primary schools, madrasas and BRAC schools (Table 2.5). The first two types of schools had 5 to 6 times more assets in furniture than the last two. This was mainly because BRAC primary schools were one-classroom and one-teacher school with no office or teachers' room. BRAC schools had no supporting material while the asset value of such material was highest in government schools, Tk. 7,806 followed by madrasas with Tk. 6,350 and private schools with Tk. 4,600. In terms of playing material, there were minor differences among school types. BRAC schools had more assets than private primary schools. It reflects the importance attached to children's extra curricular activities in BRAC programme.

Table 2.5. Average value of assets (in Taka) by school type

Assets	Government primary	Private primary	BRAC primary	<i>Ebtedayee</i> madrasa
Furniture	23,202	19,817	4,088	5,350
Supporting materials	7,806	4,600	0	6,350
Playing materials	304	135	224	225
Total	17,678	15,271	4,312	11,925

Monitoring of schools

Inspection and monitoring are more frequent in BRAC schools than in other schools. The government and the primary schools and the *Ebtedayee* madrasas were inspected once in the previous month of the study; however, it was five times in the case of BRAC schools (primary data not shown in a table). Inspection is done for various purposes (Table 2.6). Teacher attendance was inspected in 90% of government and private primary schools, in all madrasas, but in 57% of BRAC schools. Probably there was nothing to inspect in BRAC schools because of single teacher provision. However, the inspection rate in BRAC schools with respect to student attendance was high (85.7%) but lower than in other types of school. Inspection of classrooms and infrastructure was not widely spread among schools except in the private category with 90% and 70% in respective categories.

Table 2.6. Percentage of schools inspected by school type and issues for inspection

School type	No. of schools	Teacher attendance	Student attendance	Classroom	Infrastructure
Government primary	49	89.8	91.8	65.3	44.9
Private primary	10	90.0	90.0	90.0	70.0
BRAC primary	14	57.1	85.7	42.8	28.6
<i>Ebtedayee</i> madrasa	3	100.0	100.0	66.7	66.7
Total	76	84.2	90.8	64.5	46.1

Characteristics of teachers

Proportion of female teachers was highest in BRAC schools (82.4%) and lowest in the madrasas (15.8%). This was 61.3% in the government and 46.2% in the private schools (primary data not presented in a table).

Average level of education of teachers in madrasas and government schools was much higher than that of the private schools especially BRAC schools. While 56.8% of the teachers of government schools had bachelors and higher qualifications, the corresponding figure for BRAC schools was 11.8%. Sixty-five percent of BRAC teachers had SSC and 23.9% had HSC (Table 2.7).

Table 2.7. Percentage distribution of teachers by educational qualification and type of school

Educational qualification	Type of school				Total
	Govt. primary	Private primary	BRAC primary	<i>Ebtedayee</i> madrasa	
SSC	43 (15.9)	9 (23.1)	11 (64.7)	1 (5.3)	64 (18.5)
HSC	74 (27.3)	15 (38.5)	4 (23.9)	4 (21.1)	97 (28.0)
Bachelors	89 (32.8)	12 (30.8)	2 (11.8)	10 (52.6)	113 (32.7)
Masters	65 (24.0)	3 (07.7)	0 (0.0)	4 (21.1)	72 (20.8)
Total	271 (100.0)	39 (100.0)	17 (100.0)	19 (100.0)	346 (100.0)

Teaching process

Teaching hours in classes III, IV and V were highest in madrasas (Table 2.8). Excluding madrasas, BRAC schools had higher teaching hours than in other schools in all classes except class III (Table 2.8). The quality of teaching and learning is also affected by student-teacher ratio. BRAC schools had much lower student-teacher ratio, 32:1 compared to government schools with 60:1, private primary 64:1, and madrasas 55:1 (Fig. 2.1). All teachers except a few in government schools spent some hours in home preparation (Table 2.9).

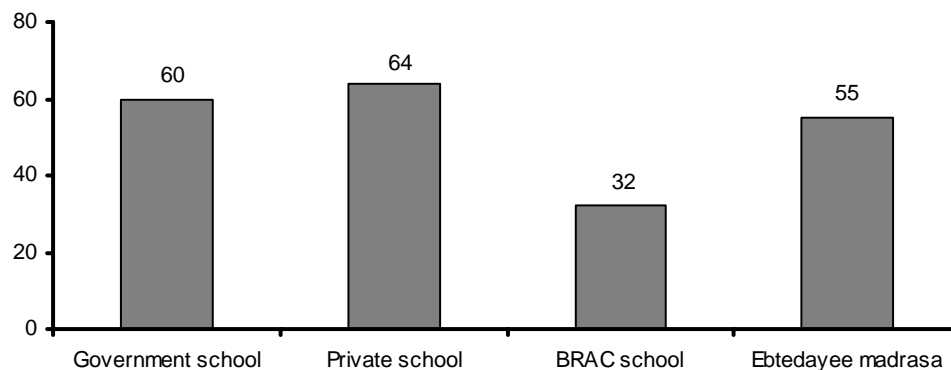
Table 2.8. Average teaching hours per day by school type and class

Type of School	Class				
	I	II	III	IV	V
Government primary	2.6	2.6	4.2	4.2	4.8
Private primary	2.4	2.4	3.7	3.7	4.0
BRAC primary	3.3	3.4	3.9	4.2	4.9
<i>Ebtedayee</i> madrasa	2.4	2.6	5.2	5.5	5.5
Total	2.6	2.6	4.1	4.2	4.7

Table 2.9. Distribution of teachers by hours per day for home preparation and school type

Hours per day for preparing at home for the class	Type of school				Total
	Government primary	Private primary	BRAC primary	<i>Ebtedayee</i> madrasa	
1	224	38	13	17	292
2	41	0	2	1	44
3	1	1	1	0	3
Total number of teachers with home preparation	266	39	16	18	339
Total teachers	271	39	16	18	344

Figure 2.1. Number of students per teacher by school type



Performance of schools in terms of internal efficiency indicators

There are three indicators usually used for measuring internal efficiency: dropout, repetition and completion rates. Since data collection for our survey was done at the end of the year, it was difficult to calculate the dropout rate. Our survey data show a much lower figure for dropouts than Education Watch 2008 (11.5%). Because of the probability of underestimation in school level data, we rely on household level data to understand school participation pattern of children in rural Bangladesh (presented in Chapter 5).

Table 2.10 presents repetition rates by type of schools according to different surveys. In government primary schools, the repetition rate was highest in BANBEIS, 2008 followed by our study and Education Watch (EW). Non-government primary schools have also similarly high repetition rates (more than 11%) in different surveys except in 2003 (7%). BRAC schools were not included in other surveys. In our study, the repetition rate was zero. In *ebtedayee* madrasa, it was 3.2% in our study much lower than in EW 2008, 8%.

Table 2.10. Repetition rates by type of schools

School type	2003 survey	BANBEIS 2008	EW 2008	Current study
Government primary	8	11.7 (Male) 11.4 (Female)	11	11.2
Non-government primary	7		11.1	11.1
BRAC primary				0
<i>Ebtedayee</i> madrasa			8	3.2
High school			4.4	
High madrasa			9.5	

Table 2.11 presents completion rates according to our study, EW 2008 and BRAC's own estimate. We observed a very high completion rate (96.4%) in BRAC schools. BRAC's own estimate is 93%. We were unable to calculate completion rates for other types of school from school level data. A comparison with EW2008 survey shows that other types of schools had much lower completion rates ranging between 31.5 to 53.1 percent.

Table 2.11. Primary completion rate

School type	EW 2008	Current study	BRAC's estimate
Government primary	53.1		
Non-Government primary	39.7		
BRAC primary		96.4	93
<i>Ebtedayee</i> madrasa	31.5		
High school	83.7		
High madrasa	65.4		

Performance of students

In Table 2.12, the number and percentages of male and female students with BRAC pre-primary experience are shown. In all types of school except madrasa, the percentages of female of students having pre-primary education were higher than those for male students. The highest (67.7%) was observed in private primary schools, According to BRAC's policy, BRAC pre-primary graduates do not go to BRAC non-formal primary schools. However, in our survey we find several students in this category.

Table 2.12. Number of students in class V by school type, sex and pre-primary experience, 2009

Type of school	Boys		Girls	
	Total students in class V	Students came from BRAC pre-primary (%)	Total students in class V	Students came from BRAC pre-primary (%)
Govt. primary	854	455 (53.2)	1019	673 (66.0)
Private primary	140	71 (50.7)	192	130 (67.7)
BRAC primary	10	3 (30.0)	50	11 (50.0)
<i>Ebtedayee</i> madrasa	52	4 (7.6)	82	3 (3.6)
Total	1056	533	1343	817

Tables 2.13 to 2.15 indicate that students from BRAC non-formal schools and those with BRAC pre-primary education have performed better compared to students of other schools with BRAC experience. Completion rates for both boys and girls are highest in BRAC schools (100%) followed by government schools, 98.7% for boys and 92.2% for girls (Table 2.13).

The impact of BRAC pre-primary education is visible from the higher completion rates among students with pre-primary education compared to all students in government schools, primary schools and madrasas (Table 2.13). In BRAC schools pass rate is 100% for all students. The impact is more visible in the case of girls in government and private primary schools Pass rates are much lower among all girls, 92.2% in government schools and 88% in primary schools, whereas the corresponding rates for girls with pre-primary experience are 97.1% and 96.4% (Table 2.14). Pre-primary education also affects the quality of education reflected in the receipt of scholarships. In government schools, 43.5% of girls having scholarships had pre-primary experience, and in private schools, it is 54.5% (Table 2.15).

Table 2.13. Results of primary completion test by school type and pre-primary experience, 2009

Type of school	Overall pass rate	Pass rate among those experienced BRAC pre-primary
Government primary	91.9	99.2 (1128)
Non-government primary	92.9	97.3 (201)
BRAC primary	100.0	100.0 (14)
<i>Ebtedayee</i> madrasa	77.1	100.0 (7)

Numbers in parentheses show the total number of students who attended BRAC pre-primary school

Table 2.14. Results of primary completion examination by school type, sex and pre-primary experience, 2009

Type of school	Boys		Girls	
	Total students passed in terminal examination (%)	Students came from BRAC pre-primary passed (%)	Total students passed in terminal examination (%)	Students came from BRAC pre-primary Passed (%)
Government primary	843 (98.7)	455 (100)	940 (92.2)	654 (97.1)
Private primary	121 (86.4)	69 (97.1)	169 (88.0)	128 (98.4)
BRAC primary	10 (100)	3 (100)	50 (100)	11 (100)
<i>Ebtedayee</i> madrasa	48 (92.3)	4 (100)	69 (84.1)	3 (100)
Total	1022	531	1228	796

Note: The percentages are based on total figures in Table 2.12.

Table 2.15. Number of students received primary scholarship by school type and pre-primary experience

Type of school	Total number of students got scholarship	Number of students with pre-primary experience got scholarship (%)
Government primary	39	17 (43.5)
Non-government primary	11	6 (54.5)
Total	50	23

Concluding remarks

Internal efficiency in schools is largely affected by different investments in schools. For example, physical facilities – building, furniture, teaching material, playground, teacher-student ratio, teacher quality and management, affects teaching effort/processes. We found that BRAC schools, in spite of their modest facilities, performed better in terms of internal efficiency, dropout and repetition rates being lower and completion rates higher than other types of school. This is mainly because of intensive monitoring of teachers, better teacher input, and the teaching process suited to children from poor families.

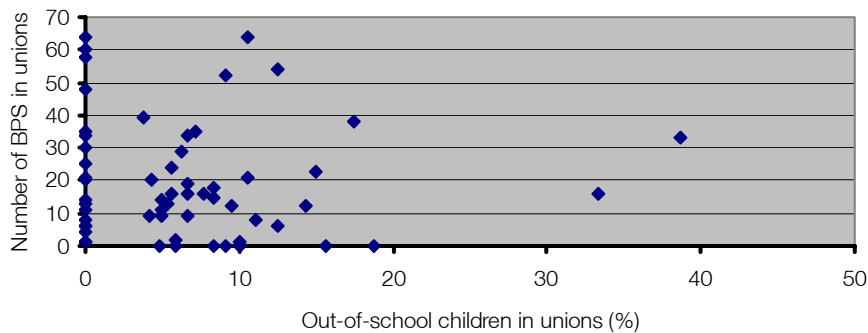
**BRAC IN ENHANCING PRIMARY EDUCATION
AMONG POOR CHILDREN**

The goal of BRAC non-formal primary education (NFPE) programme is to bring out-of-school children into the education system, help them complete primary education and prepare them for secondary education. Statistics on how many students received such support and successfully completed the programme over time are available from BRAC education programme (BEP). However, attribution of these results to BRAC investment is difficult. We do not have the counterfactual, what would have happened to these children if they did not receive BRAC support. There are no bench-line data that could provide information on the treatment versus control groups.

Being aware of methodological problems, we focus on the progress made in terms of number of schools established over time, students enrolled currently, and students completed the primary cycle. In 2010, the number of students enrolled was 565,697 and the number of schools was 18,650. The number of schools completed since the inception in 1985 was 4.11 million.

Another way to assess the effect of BRAC programme is to study the changes in the number and proportion of out-of-school children in Bangladesh. The proportion of out-of-school children has gone down in Bangladesh from 23.4 % in 1988 to 13.6% in 2008 (Nath and Chowdhury 2009, p.70). It is, however, difficult to attribute this change to BRAC schools since the government of Bangladesh also has various support programmes, including donor-supported projects like ROSC (Ahmed 2006), that aim at increasing the enrolment rate and completion of primary education among poor children.

Figure 3.1. Correlation between number of BRAC primary schools and number of out of school children



We tried a crude measure, that is finding the difference in the proportion of out-of-school children in villages and unions where BRAC non-formal schools operate/operated in the past and the areas with no BRAC schools from household data. Plotting the data gives no clear-cut results.

Using our household level data base, we tried Probability Score Matching to find a control group as we have done in the case of pre-primary schools. But the number of matched cases was too few to construct a control group.

Comparison of BRAC schools and mainstream schools in terms of repetition, dropout, and completion rates shows (Chapter 2) that students from BRAC schools have lower dropout rate, no repetition and higher completion rates than students from govt. schools. This confirms the contribution of BRAC programme on the enhancement of primary education among poor children. Our household-level data indicate that a higher proportion of BRAC primary graduates attended secondary level than mainstream students.

Changing the focus of BRAC programme

Our household level data discussed below show that school enrolment rate increased in Bangladesh substantially during the last decade and the number of out-of-school children including the dropout and never enrolled children decreased. However, out-of-school children were found among the ultra poor families, which means that BRAC non-formal education programme should be directed to such families.

Household level data also indicate low and stagnant enrolment rate at the secondary level and especially among poor families. BRAC intervention in the education sector should be in secondary education.

THE IMPACT OF BRAC PRE-PRIMARY EDUCATION ON SCHOOL PERFORMANCE OF RURAL CHILDREN IN BANGLADESH³

Introduction

The role of pre-primary education in educational attainment and the quality of learning is widely recognized internationally. Pre-primary education in Bangladesh is mainly limited to upper class and urban areas (Nath and Sylva 2007). The lack of opportunities for pre-primary education has serious implications for children from poor families. Late start at school and achievement at primary school are highly correlated to socioeconomic status of families and their ability to provide pre-primary education for their children. Among poor families where parents lack education and awareness, children are deprived of the motivation and support needed for sustainability and completion of education. The purpose of BRAC pre-primary education is to provide such support to poor children in rural areas.

In 2010, there are 11,753 pre-primary schools run by BRAC. These are one-year, one-room and one-teacher schools that are targeted to children from very poor families. The teachers are female, usually local residents. According to the information provided by BRAC their salaries are paid through the government and their minimum qualifications are at least eight years of schooling. The students are taught maths, Bangla and science (www.brac.net accessed 01 November 2010)

The objective of this paper is to assess the impact of BRAC pre-primary education on educational attainment of children in rural areas of Bangladesh. Data for the analysis come from a large study commissioned by BRAC during 2009-2010. The BRAC study has several components: a household survey of 2100 households randomly selected from 62 villages all over Bangladesh; surveys of 75 primary schools (59 mainstream, 13 BRAC non-primary schools, 3 *ebtedayee* madrasas) and 53 pre-primary schools. These schools are from the 62 villages mentioned above. The sample for this paper consists of 653 primary school students who appeared in primary final examination in 2009 from the 59 mainstream primary schools surveyed. Two groups of students were selected – 397 students having BRAC pre-primary education and 282 students without such education. Data on their socioeconomic background were collected through a small household survey, and the results of primary final exam were collected from the schools.

³ This chapter is based on a paper presented at the Conference on *Early Childhood Development in Bangladesh*, Dhaka on 8 December 2010 by Dr. Mahabub Hossain, Executive, Director, BRAC.

The paper has three parts: descriptive analysis, rigorous analysis based on PSM method and policy conclusions.

Descriptive analysis (based on primary data are not presented in tables)

The schools

As part of the BRAC study mentioned above, a survey of 53 pre-primary schools spread over 62 villages and 62 *upazilas* is undertaken. We find that almost 85% of the schools are rented, 9.4% do not pay any rent and 5.7% are owned. Almost 87% of these schools are of poor quality with tin or hay roof. The quality of the schools in terms of different types of facilities varies. The schools are better-off with respect to toilet and tubewell facilities - 79.2% and 66% of all schools have these facilities respectively. However, 94.3% do not have electricity and 66% have no playground.

The majority of the teachers (77.4%) have education up to class ten and/or SSC; and 13.2% have HSC. Most of the teachers are married and 60.4% come from lower middle class families. The share of teachers from poor families is higher (26.4%) than that from upper middle class (13.2%).

As per BRAC's general principles with respect to pre-primary education, children from all schools practise extra-curricular activities – music/dance, physical exercise and sports. Note that this takes place in spite of the lack of physical facilities like playground. Thirty-four percent of schools do not have playground.

The survey of 75 schools in the BRAC study provides some background data on the number and proportion of students currently enrolled at primary level having BRAC pre-primary school (see Chapter 2 of this report). The proportion of female students who came from BRAC pre-primary is higher than the proportion of male students in formal schools (Table 4.1). Children with BRAC pre-primary education are not supposed to be enrolled in BRAC primary school. In our survey, we found some 30% of male and 22% of female students.

Table 4.1. Proportion of students with pre-primary education in class V by school type and sex, 2009

Type of school	Boys	Girls
Government primary	53.2	66.0
Private primary	50.7	67.7
BRAC primary	30.0	22.0
<i>Ebtedayee</i> madrasa	47.6	3.6

Pass rates of students (girls) with BRAC pre-primary is better than those without pre-primary education (discussed in Chapter 2 of this report).

Socioeconomic background and performance in final exam of selected students

In this paper, we focus on an impact analysis of pre-primary education following the PSM (propensity score matching) method applied to the data on 653 students

concerning their performance in school final examination, and the characteristics of their parents – income/poverty, education of father/mother, asset position, housing condition, occupation and number of children. First, we present data on the socioeconomic characteristics of the households of the students (Tables 4.2a to 4.2f) and their exam results. This will be followed by the results of the PSM analysis.

Table 4.2a. Socioeconomic characteristics: poverty

Poverty level	BRAC pre-primary		Mainstream		All students	
	Number	%	Number	%	Number	%
Extreme poor	96	25.88	72	25.53	168	25.73
Moderate poor	159	42.86	108	38.30	267	40.89
Non-poor	116	31.27	102	36.17	218	33.38
Total	371	100.00	282	100.00	653	100.00

Table 4.2b. Socioeconomic characteristics: father's education

Father's education	BRAC pre-primary		Mainstream		All students	
	Number	%	Number	%	Number	%
Non-formal education	157	42.32	102	36.17	259	39.66
Primary	119	32.08	81	28.72	200	30.63
Secondary dropped out	62	16.71	58	20.57	120	18.38
SSC	17	4.58	17	6.03	34	5.21
HSC and higher	16	4.31	24	8.51	40	6.13
Total	371	100.00	282	100.00	653	100.00

Table 4.2c. Socioeconomic characteristics: mother's education

Mother's education	BRAC pre-primary		Mainstream		All students	
	Number	%	Number	%	Number	%
Non-formal education	136	36.66	102	36.17	238	36.45
Primary	138	37.20	91	32.27	229	35.07
Secondary dropped out	80	21.56	66	23.40	146	22.36
SSC	9	2.43	12	4.26	21	3.22
HSC and higher	8	2.16	11	3.90	19	2.91
Total	371	100.00	282	100.00	653	100.00

Table 4.2d. Socioeconomic characteristics: housing

Housing condition	BRAC pre-primary		Main stream		All students	
	Number	%	Number	%	Number	%
<i>Kancha/Jhupri</i>	225	60.65	145	51.42	370	56.66
<i>Tin/tally</i>	75	20.22	66	23.40	141	21.59
<i>Semi pucca</i>	45	12.13	45	15.96	90	13.78
<i>Pucca</i>	26	7.01	26	9.22	52	7.96
Total	371	100.00	282	100.00	653	100.00

Table 4.2e. Socioeconomic characteristics: land ownership

Land ownership	BRAC pre-primary		Main stream		All students	
	Number	%	Number	%	Number	%
None/homestead only	212	57.14	131	46.45	343	52.53
Less than 50 decimal	75	20.22	56	19.86	131	20.06
50-90 decimal	45	12.13	43	15.25	88	13.48
100-249 decimal	28	7.55	37	13.12	65	9.95
250 decimal and above	11	2.96	15	5.32	26	3.98
Total	371	100.00	282	100.00	653	100.00

Table 4.2f. Socioeconomic characteristics: father's occupation

Father's occupation	BRAC pre-primary		Main stream		All students	
	Number	%	Number	%	Number	%
Self cultivation	67	18.06	67	23.76	134	20.52
Tenant/agri labour	105	28.30	56	19.86	161	24.66
Small trader	79	21.29	53	18.79	132	20.21
Business	29	7.82	14	4.96	43	6.58
Services	49	13.21	54	19.15	103	15.77
Non-agri labour	42	11.32	38	13.48	80	12.25
Total	371	100.00	282	100.00	653	100.00

BRAC pre-primary school programme is supposed to be targeted to the poorest families. We look at different dimensions of poverty such as income, educational achievement of parents, landownership, occupation of household head and housing condition (4.2a to 4.2f). The socio-economic background of 653 students shows that those who received BRAC pre-primary education are not all from poor families. While 2\3 come from poor families, a significant portion is from the non-poor families, which is contrary to the intention of BRAC programme.

Performance of 653 students in final examination

Performance in terms of scores in final examination - differences between administrative divisions of Bangladesh and by sex.

The highest average score (375) was achieved by students from Rajshahi Division and lowest (339) by students from Barisal Division with difference of 36 points (Table 4.3). The performance BRAC pre-primary students is significantly better than mainstream students. BRAC students received average score of 371 while the other group had 357 (Table 4.4). Interestingly, the impact of pre-primary education is more visible in the performance of girls (Table 4.4). The difference in scores of boys with and without BRAC pre-primary education is 1, whereas the corresponding difference in the case of girls is 30.

Table 4.3. Performance (total score) in school completion exam in six divisions

Divisions	Mean	t-value
Khulna	363	-0.43
Rajshahi	375	2.70
Dhaka	366	0.25
Chittagong	355	-2.61
Barisal	339	-6.83
Sylhet	365	2.24

Table 4.4. Performance of the students in primary completion examination, 2009

Student groups	Number of students	Mean score	Standard error of mean
All students	544	365	3.777
Students with BRAC pre-primary	300	371	5.046
Students without BRAC pre-primary	244	357	5.668
All boys	293	369	5.035
All girls	251	360	5.691
Boys with BRAC pre-primary	152	370	6.755
Girls with BRAC pre-primary	148	372	7.538
Boys without BRAC pre-primary	141	369	7.539
Girls without BRAC pre-primary	103	342	8.397

Our data (Table 4.5) indicate how children from poor background benefit from BRAC pre-primary education. Poverty is reflected in occupation and lack of education of parents, housing condition and landlessness.

Fifty-one percent of children from tenant\agricultural households receiving pre-primary education passed with first division. The corresponding figure for students without pre-primary education in the same category of households is 34 percent. The percentages of having second and third divisions are higher among students without pre-primary education.

Among the children from households with illiterate father, the percentage of passed in first division is 46.6 for BRAC pre-primary and 33.3 for students without pre-primary education.

The positive effect is more prominent in case of children from households with illiterate mother. The percentages of having first division among students with BRAC pre-primary and without are 50.4 and 37.5 respectively.

Table 4.5. Students Performance by Socioeconomic Background

Grades	Tenants/ Agricultural labour		Illiterate Father		Illiterate Mother		Poor Housing Quality		Landless Family	
	PP	NPP	PP	NPP	PP	NPP	PP	NPP	PP	NPP
First	44.6	27.8	45.4	31.3	48.8	37.1	51.4	36.8	52.2	35.2
Second	40.6	48.1	36.8	43.4	34.1	41.2	36.8	42.2	36.3	38.4
Third	14.9	24.1	17.8	25.2	17.1	21.6	11.9	21.1	11.4	26.4
Total	100 (101)	100 (54)	100 (152)	100 (99)	100 (129)	100 (97)	100 (253)	100 (185)	100 (201)	100 (125)

PP = Those who attended BRAC pre-primary course
 NPP = Those who did not attend BRAC pre-primary course

PSM methodology and results

This section is devoted to a rigorous analysis of the impact of BRAC Pre-Primary School experience on students’ performance in primary education completion examination. We used Propensity Score matching (PSM) technique, an evaluation technique gaining increasing acceptance in the field of impact evaluation, to capture the impact of BRAC Pre-primary School. Rosenbaum and Rubin (1983) introduced the PSM technique in the field of labour economics and it is now considered as appealing tool for impact evaluation, as it ensures the similarity of treatment and control groups based on observable characteristics.

The absence of longitudinal or panel data motivated us for applying PSM technique in identifying the impacts of BRAC pre-primary schools on grades and scores received in primary school completion exam. PSM helped us avoid the selectivity problem which is common in impact evaluation study using cross-section data.

The propensity score (PS) measures the conditional probability of household’s participation in an intervention given its observable characteristics, X. In other words

$$PS = P(X) = P(T=1 | X) \dots\dots\dots (1)$$

The predicted value of standard binomial logit model is drawn as propensity score and PSM results are robust to alternative specifications for the logistic regression (Dehejia and Wahba 1999). However, choice of covariates in the estimation of propensity score should maintain two assumptions of ‘*Conditional Independence Assumption*’ (CIA) and common support. CIA requires the outcome variables must be independent of treatment assignment. Hence implementing matching requires choosing a set of observable covariates X which are unaffected by participation in the programme. To maintain CIA, we used a set of observable characteristics of households all of which are unaffected by participation in BRAC pre-primary school treatment.

Besides CIA, a further requirement of common support has to be maintaining in propensity score matching. This condition rules out the perfect predictability of covariates in participation of BRAC pre-primary programme and it ensures that

students with the identical characteristics have a positive probability of being both participants and non-participants to the programme (Heckman, LaLonde and Smith 1999).

Given CIA and common support conditions hold, estimated propensity score allow us to construct a comparison groups by matching propensity scores of students who participated BRAC Pre-primary programme and students who did not participate BRAC Pre-primary programme. Once programme samples are matched with control samples, the difference between the mean outcome of the programme samples and the mean outcome of the matched control samples can be measured and this is defined as ‘the average effect of treatment on the treated’ (ATT).

Under this PSM approach, we have matched students who participated in the intervention of BRAC Pre-primary schools and students that share similar characteristics (age of Student’s father, highest educational attainment of father, age of student’s mother, highest educational attainment of mother, number of siblings, type of main house, value of homestead land and house, yearly family income) but remained away from BRAC Pre-primary intervention anyway. Once the matching is made we computed the average effect of treatment on the treated (ATT). In the application of PSM technique, we used STATA 10.0 version using psmatch2 package, a PSM function, developed by Leuven and Sianesi (2009).

The estimates of ATT are shown in Table 4.6 for the intervention of BRAC Pre-primary schools using kernel matching. With kernel matching all untreated observations are used to estimate the missing counterfactual outcome and greatest weight being given to people with closer scores. Results show that students with BRAC Pre-primary intervention treatment received 7.7% higher marks in matched sample group and 5.8% in the unmatched group (Calculated from figures in Table 4.6).

Table 4.6. PSM estimates of ATT for score achieved in primary completion examination

Intervention		Treatment	Control	Δ	S.E.
BRAC pre-primary	Unmatched	372.69	352.21	20.48	7.65
school education	Matched	373.55	346.94	26.61	10.72

We ran another PSM exercise taking the probability of getting first division in primary completion examination. We took the same variables (Age of Student’s father, Highest Educational attainment of Father, Age of Student’s Mother, Highest Educational attainment of mother, number of siblings, type of main house, value of homestead land and house, yearly family income) for matching. The result is given below.

Regarding the probability of getting first division in the primary completion examination, the ATT shows significant difference between matched treatment and control groups (4.7). After matching the households using estimated propensity

scores, we find that probability is 13.8 percentage points higher in treatment groups compare to the students who did not attend Pre-primary School for the unmatched group. For the matched group it is much higher, 24.5%

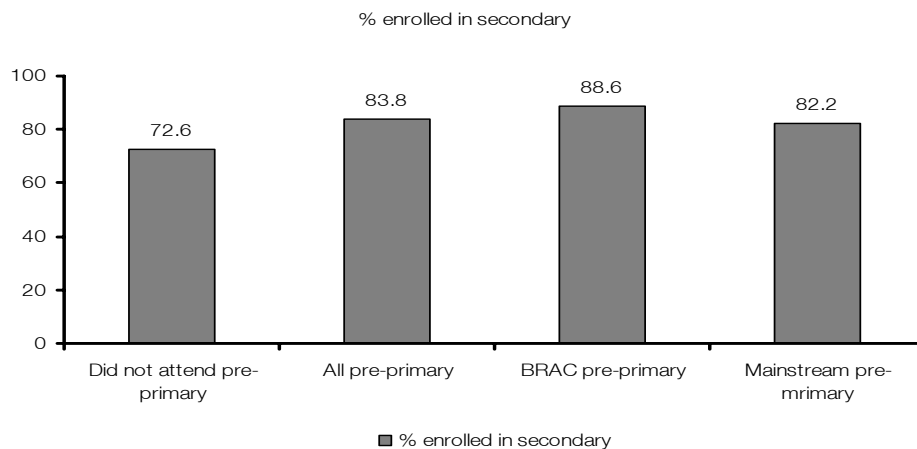
Table 4.7. PSM estimate of ATT for probability of getting first division in primary completion examination

Intervention		Treatment	Control	Δ	S.E.	T-Stat
BRAC pre-primary	Unmatched	0.543	0.405	0.138	0.0419	3.27
school education	Matched	0.544	0.299	0.245	0.0574	4.27

The impact of pre-primary education on transition to secondary school

The effect of primary education is also reflected in the transition of primary graduates to the secondary level of education (Fig. 4.1). The percentage of enrolment in secondary school is lower for children without pre-primary education 72.6% compared those having pre-primary education 83.8%. BRAC pre-primary is associated with higher rate of enrolment (88.6%) than mainstream pre-primary (82.2%)

Figure 4.1. Pre-primary education and secondary enrolment



We also used PSM method to assess the impact of pre-primary education on the transition to secondary school. Under this PSM approach, we matched students who participated in the BRAC Pre-primary schools and students who have similar characteristics but did not attend such schools. Matching was done on the basis of sex of household head, education of household head, land-ownership, number of siblings, income from agriculture, non agricultural income and agro-ecological characteristics.

Once the matching is done, we computed the average effect of treatment on the treated (ATT). The estimates of ATT are shown in Table 4.8. It shows that for the unmatched groups, the difference in the probability of enrolment into secondary school for the treatment and control groups is 0.063. The corresponding figure for the matched groups is 0.185. However, while the positive impact of pre-primary education is high, its statistical significance is low.

Table 4.8. PSM estimate of ATT for probability of enrolment into secondary level

Intervention		Treatment	Control	Δ	S.E.	T-Stat
BRAC pre-primary	Unmatched	0.862	0.799	0.063	0.076	0.82
school education	Matched	0.852	0.666	0.185	0.130	1.42

Policy conclusions

The purpose of BRAC pre-primary education is to enable children from poor families to enter/sustain in formal schools and complete the primary level successfully. Our evaluation study confirms the positive impact of pre-primary education on the results of students in final examination as well as their ability to continue education at the secondary level. Pre-primary education has benefited children from poor families, especially female children.

The BRAC study (Chapter 5 of this report) on which this paper is based indicates that a substantial number of children in rural areas do not start school at the age of 6 which is the official age for entry to primary school. The late start at school is observed to be highly correlated to poverty and low education of parents. One of the ways of dealing with this problem is the expansion of pre-primary education similar to BRAC programme.

The BRAC study also indicates that the rate of enrolment of children of primary school age is quite high in Bangladesh - 92% among age group 6-10 years and 95.2% among 7-11 years (Chapter 5 of this report). However, bringing the remaining 5% out of school children to the formal system is a major challenge for the policymakers and the implementing agencies as these children are a) disabled children, b) children from remote/inaccessible areas where there is no school (such as *haor* areas in the Sylhet region), and c) children from extremely poor families. The availability of pre-primary education for these children will facilitate their transition to formal primary schools.

Lastly, school statistics provided by BRAC indicates a sharp decline in the number of pre-primary schools from 20,140 in 2009 to 11,753 in 2010. The reasons for this decline and measures to prevent such trends need to be investigated urgently.



SCHOOL PARTICIPATION PATTERN

Gross and net enrolment rates are usually calculated taking the official age for primary and secondary levels of education. These are 6-10 years for primary and 12-16 years for the secondary level in Bangladesh. EW2008 shows that the net enrolment rate for the age group 6-10 is 86.4%. However, in Bangladesh children do not always start school at the official age of 6 years. Hence, the enrolment rate among the 6 year old is lower than among 7 to 11 year old children. The overall enrolment rate of children in primary school can vary depending on the age group taken for calculation. In our study we compared the rates for both 6-10 and 7-11 years.

Our study is based on longitudinal household level data from IRRI/BIDS surveys of 62 randomly selected villages in 1987, 2000, 2004 and 2008 and fresh data collected in 2010 using the same methodology. In our survey of households, we collected data on enrolment status of children 5-16 years of a random sample of about 2100 households. Three categories of children are considered: currently enrolled, enrolled before but dropped out, and never been enrolled.

We note that enrolment rates have gone up for all ages since 1987 (Fig. 5.1). The slopes of the curves indicate a similar pattern – rising from a low level at age 6, reaching a maximum around 10-11 and falls to a low level at age 12. Comparing the overall enrolment rates for age group 6-10 and 7-11 (Fig. 5.2 and 5.3), we find that in 2010, the overall enrolment rates for the age groups 6-10 and 7-11 are 91.9% and 95.2% respectively. In 1987, these rates were 59.6% and 65.8%. The rates for the two age groups do not differ much for 2000 and 2004 because of high enrolment of 6 year old children. In 2010, enrolment rate among 6 year old children dropped again and the gap between 6-10 and 7-11 has widened.

Figure 5.1. Enrolment rates overtime by age

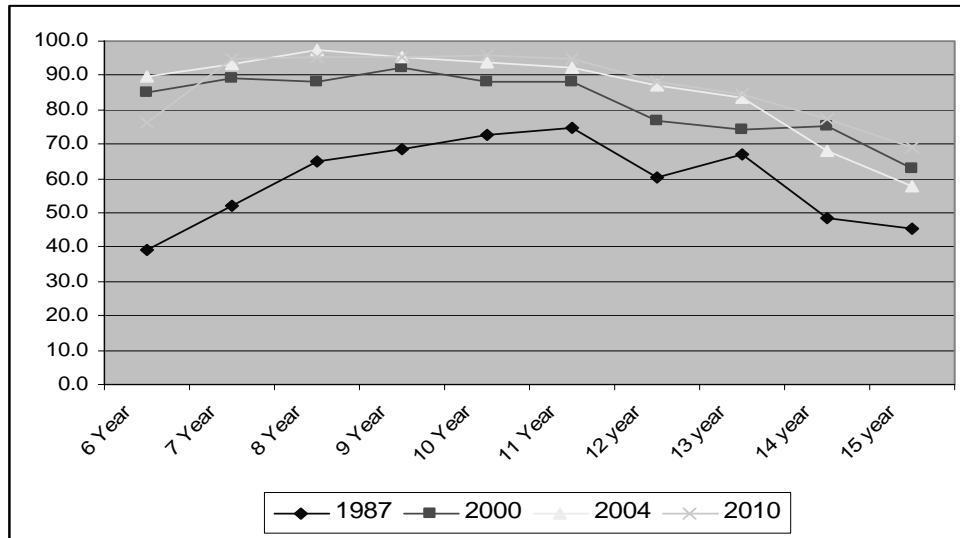


Figure 5.2. Enrolment rates of 6-10 and 7-11 year-old children

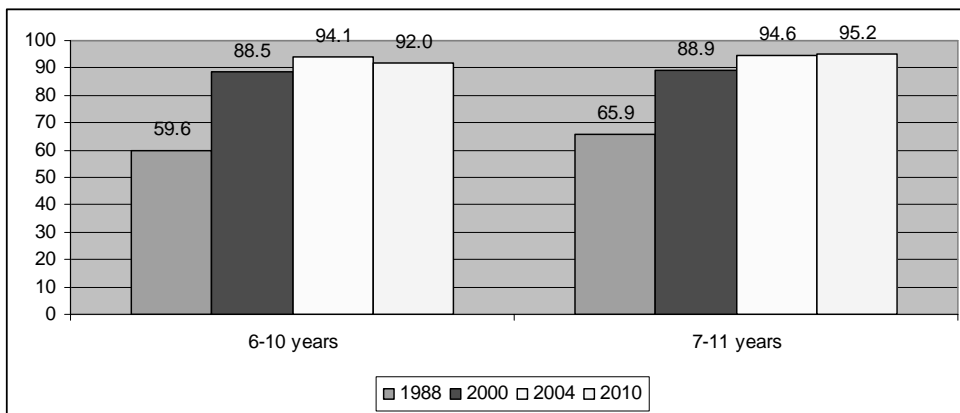
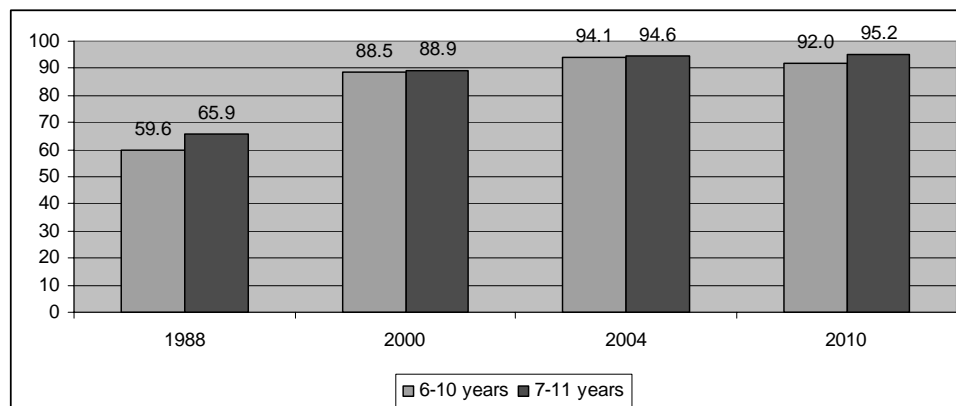


Figure 5.3. Comparison of enrolment rates in different Surveys



Gender difference in enrolment

The enrolment rates of the boys and the girls did not differ much until 12 years of age when the girls' rate of enrolment surpassed that of boys by a wide margin. The overall rate became 82.1% for boys and 87.6% for girls (Table 5.1). The reasons behind this difference at a higher age may be the higher opportunity cost for boys (boys work for wages) than girls, and also various support programmes (government and non-government) for girls for secondary education. We have also seen in the previous chapter that the proportion of girls receiving pre-primary education was higher than that of the boys, and the effect of pre-primary education on the performance in examination was more prominent in the case of girls than boys.

Table 5.1. Age-specific net enrolment rates by sex, 2010

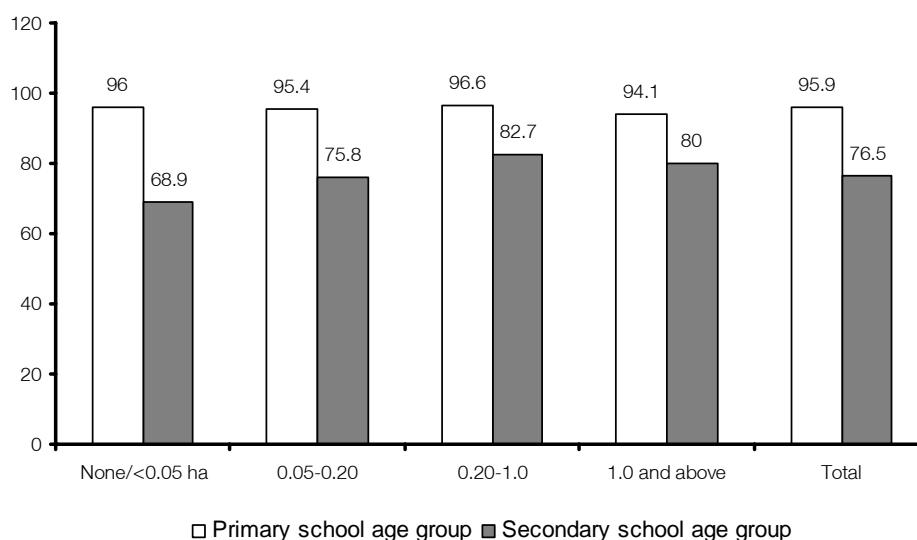
Age (in year)	Sex	
	Boys	Girls
6	72.8	80.2
7	94.2	95.6
8	95.2	95.3
9	96.0	95.2
10	95.7	95.7
11	94.3	94.9
12	85.6	91.4
13	79.8	89.5
14	76.0	78.9
15	62.3	76.0
16	50.0	61.5
Total	82.1	87.6

Enrolment rates by socioeconomic groups

Primary level

Enrolment rates at the primary level by landownership status did not vary much. However, interestingly the rate was lower for households owning land, 1 hectare and above (94.1%) compared to households owning less than 1 hectare and the landless group (Fig. 5.4).

Figure 5.4. Net enrolment rate by land ownership



Enrolment rates by education status of household heads did not show a clear-cut pattern (Fig. 5.5). Although the rate among the group with no formal education was the lowest (94.8%), the rates for primary (97.1%) and secondary education (97.2%) not completed, were higher than completed secondary and above (95.7%). It shows that targeting the poor in the case of primary education has been successful in Bangladesh.

Net enrolment rates at the primary level varied little across different occupational groups (Fig. 5.6) as it is with respect to education of household heads discussed above.

Figure 5.5. Net enrolment rate by household head's education

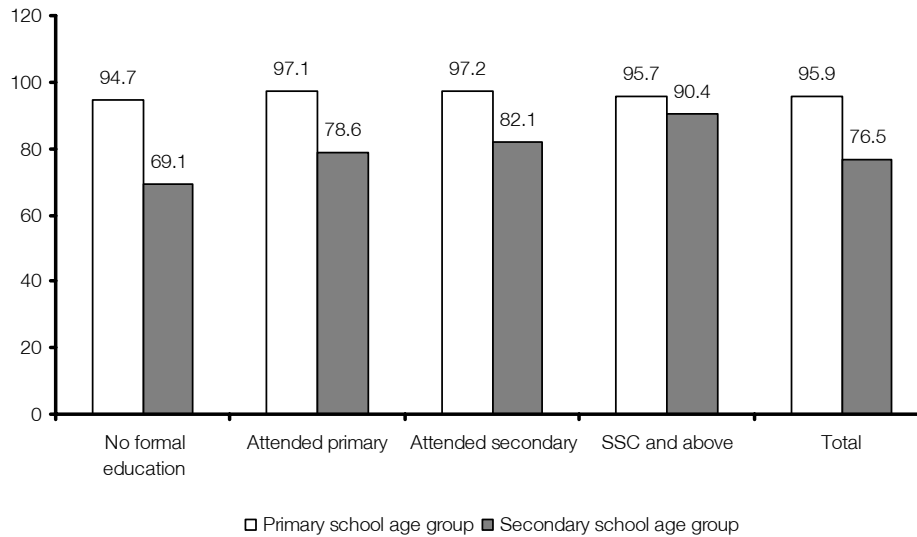
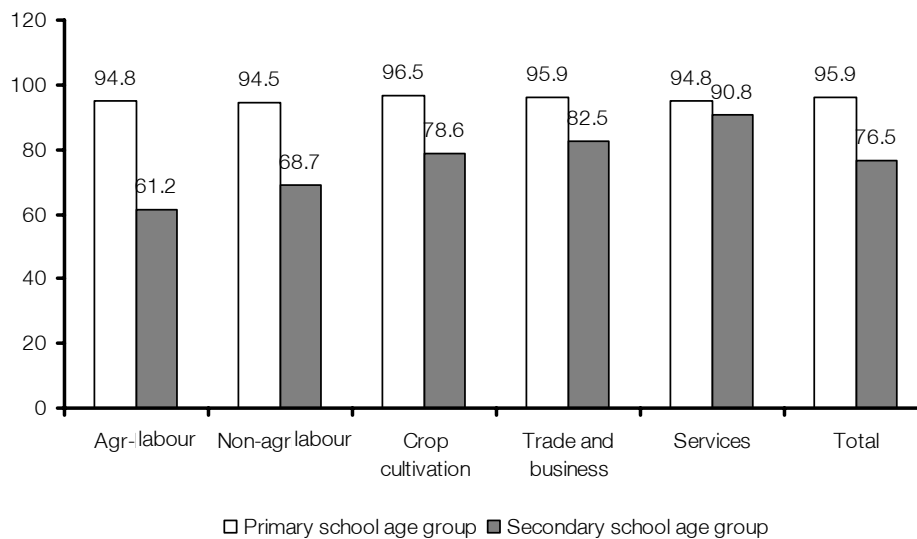
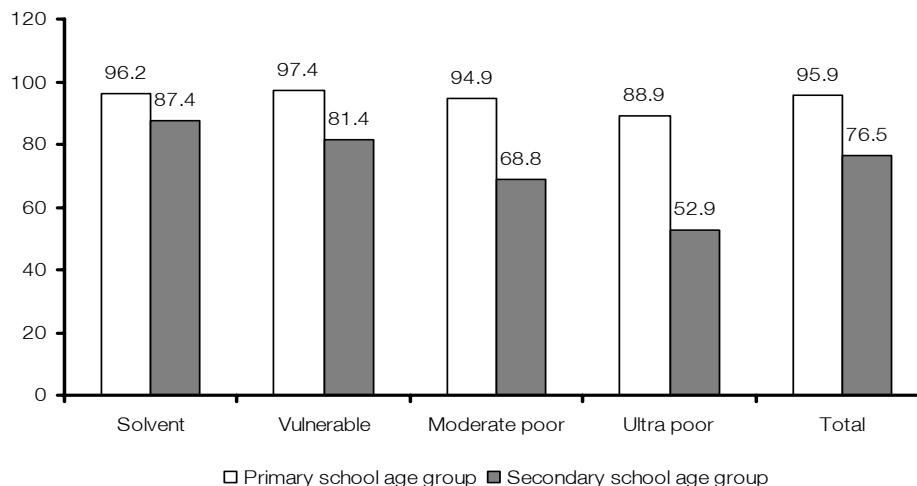


Figure 5.6. Net enrolment rate by household head's occupation



Significant differences in the rate of enrolment existed among the non-poor/moderate poor and ultra poor. Households who considered themselves as ultra poor performed much worse in enrolment of children compared to other groups (Fig. 5.7). While the overall rate was 95.9%, only 88.9% of the ultra poor children were enrolled at primary level. The number of these children was, however, few – 72 out of 1062.

Figure 5.7. Net enrolment rate by poverty status (self stated)



Secondary level

Enrolment rates at secondary level showed more consistent pattern with respect to all indicators of socioeconomic status (Fig. 5.4 to 5.7). About 69% of the children from landless and marginal households were enrolled compared to landowning households (80%). Highest landowning group (1 hectare and above) has lower rate than those having land between 0.20-1.0 hectare (Fig. 5.4). This may be due to the need for farm workers.

Educational status of the household heads had a consistently positive relationship with the enrolment of children at secondary level. The rate of enrolment among children of households with no formal education was 69.1% while it was 90.4% for the households with education SSC and above (Fig. 5.5).

Occupational status had more impact on enrolment than landownership and education. Around 61% of the children from agricultural labour households were enrolled whereas 90.8% of the children from service holder families were enrolled. The rate of enrolment among children from households of crop cultivation this group was 78.6% indicating the need for labour on the farm (Fig. 5.6).

Poverty had a consistently negative effect on enrolment. Among the ultra poor the rate of enrolment was 52.9% compared to 87.4% among the solvent families. The number of ultra poor was 68 out of 1,107 (Fig. 5.7).

Difference in the enrolment rate of boys and girls by education of household head: We have seen above that girls had higher enrolment rates than boys especially at secondary level. The relationship between education of household heads and enrolment rate was more prominent in the case of boys than girls. The rate for boys rose steadily from 77% for households with no formal education to 94.0% for

households with SSC or above education level. The rate for girls rose from 84.1% to 91.5% (Table 5.2). Again, among the most educated group, net enrolment rate was higher for boys than girls. This may be an indication that girls from non-poor families need more support.

Table 5.2. Net enrolment rate of children (6-16 years) by education of household head and gender

Education of household head	Gender		All
	Boys	Girls	
No education	77.0	84.1	80.5
Attended primary	83.5	88.9	86.2
Attended secondary	86.0	91.8	88.9
SSC and above	94.0	91.5	92.7

Problem of late start at primary level

Our data on age-specific school participation rates indicate that a high proportion of children aged 6 years were not enrolled in any school. The rates of not being enrolled were 27.2% for boys and 19.8% for girls (calculated from Table 5.1). Enrolment rates went up sharply at age 7 which means that many children especially boys started schooling at a late age. The late start was closely associated with education and poverty status of the families of children. Poverty was found one of the main causes of late enrolment. There were no children aged 6 years in the rich families who were not in school. The proportion of such children varied between 38-40% for the poor and ultra poor families (Table 5.3).

Education of household heads was also closely related to the age of admitting in the school (Table 5.4). The effect was different for boys and girls. The proportion 'not in school' at age 6 was much higher for boys than for girls among household heads without formal education. For the group with household heads who attended primary education, boys enrolment improved but a higher proportion of girls were not in school compared to boys in the same education group, and the group without education. The situation for girls changed dramatically with household heads having education of secondary level and above.

Table 5.3. Number and percentage of children of age 6 not at school by poverty status

Poverty status	Number	Percentage
Rich	0	0.0
Upper middle	26	19.2
Lower middle	14	14.0
Poor	25	37.9
Ultra poor	4	40.0

Table 5.4. Number and percentage of children of age 6 not at school by education of household head

Education	Number	Boys	Girls	All
No education	29	34.6	26.2	30.9
Attended primary	13	21.4	29.2	25.0
Attended secondary	3	18.2	5.3	10.0
SSC and above	3	16.7	6.7	10.0

Dropout and never enrolled children

So far, we have discussed enrolment rates for all age groups. We have seen that the overall enrolment rate was higher among children of 7-11 years, and the decline comes after age 12 (Fig. 5.1). It means that dropout of children started after the primary level, and reached its climax around 15-16 years. Focusing on two age groups 11-12 and 15-16, we found that the overall dropout rate among children aged 11-12 years was 5.6% and the rate of never enrolled was 1.9%. The corresponding figures for the age group 15-16 were 32.1% and 5.7%, respectively (Data not presented in a table). Although our estimates of out of school children among age groups 11-12 (7.5%) are not strictly comparable with Education Watch 2008 (13.6% among 6-10 age) (Nath and Chowdhury 2009, p.70) and ROSC project (more than 10% among 6-11 age, Ahmed 2006, p.27), there is a strong indication that the estimates in our study are much lower because dropout rates are usually higher among older children.

Dropout among different generations

With the increased level of education over time, changes in dropout patterns among different age groups were observed. A comparison among age groups, 6-15, 16-24, 25-39 and above 40 indicate that dropout rates among the older (above 40) respondents were mostly concentrated to primary level completion and below. Among the younger age group of 16-24 and 25-39, the dropout rates were higher at Class X and XI (data not presented in a table). This indicates that dropout rates in primary schools have gone down in recent decades.

Male-female differences

While the overall dropout rate was higher for boys (11.9%) than for girls (8.1%), the girls started dropping out earlier (Table 5.5). The rates for boys accelerated from age 12 and became very high around 15-16 years. For girls, a high rate was observed at age 14 and it reached very high at age 16. The difference between boys and girls was most pronounced at age 15. But at age 16, the gap is reduced because dropout rate for girls rises sharply whereas the rate for boys rises slowly.

Table 5.5. Dropout rates as percentage ever enrolled children by age and gender

Age (years)	Boys	Girls
6	0.0	0.0
7	0.0	0.0
8	0.0	0.8
9	0.0	0.8
10	0.9	0.9
11	2.9	3.5
12	10.4	6.6
13	16.8	7.6
14	21.6	18.5
15	33.3	20.0
16	44.9	37.8
Total	11.9	8.1

Dropout by socioeconomic characteristics

Dropout (11-12 years) was mainly concentrated among the very poor (23.3%) and 10.0% of them did not ever enrol (Fig. 5.8). The number of children from the ultra poor households was few, it was 30 out of 425 children in the age group of 11-12 years (data not presented in a table). Dropout rate was relatively high (10.6%) among households owning 1.0 hectare or more land (data not presented in a table).

High dropout among age group 15-16 years was observed among the landless households, with no education of household head, agricultural and non-agricultural labour and among moderately poor families (Fig. 5.9-5.11: figures for landholding status are not presented). It should be noted that dropout rate is lower (36.4%) among the ultra poor than among moderately poor families (Fig. 5.11).

Figure 5.8 Dropout rate by self-stated poverty status 11-12 years

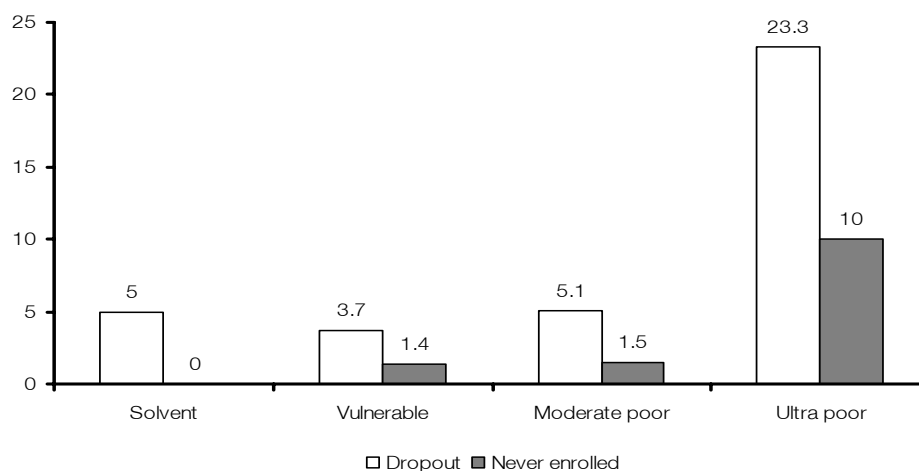


Figure 5.9. Dropout at secondary level by education of the household head

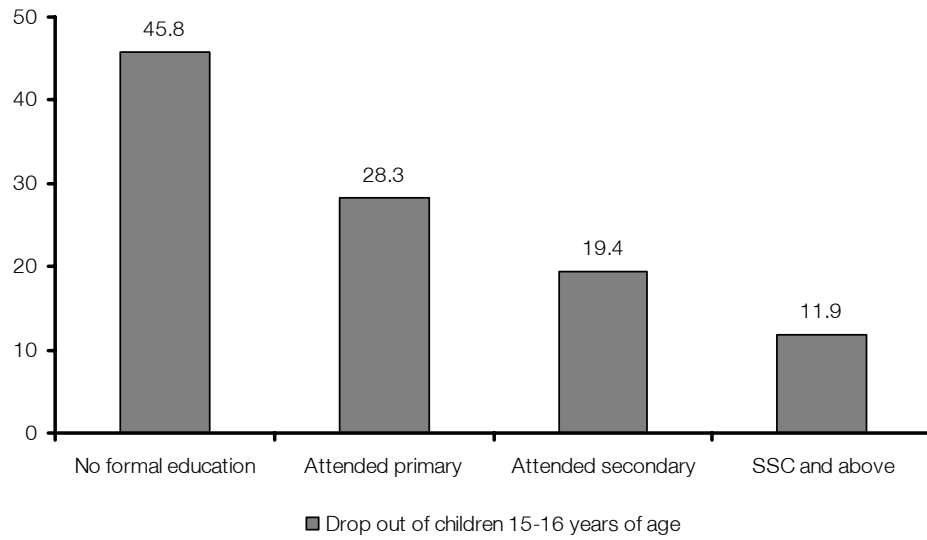


Figure 5.10. Dropout at secondary level by occupation of the household head

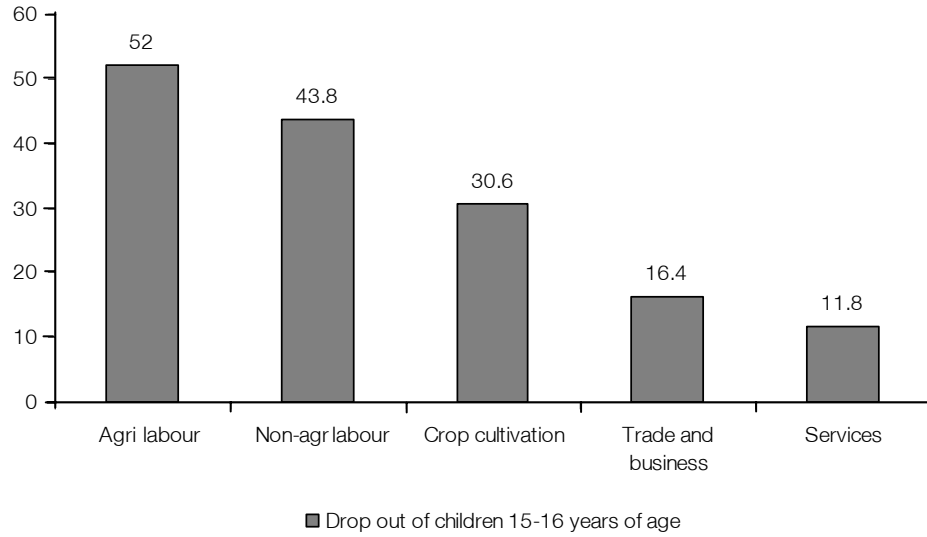


Figure 5.11. Dropout at secondary level by self stated poverty

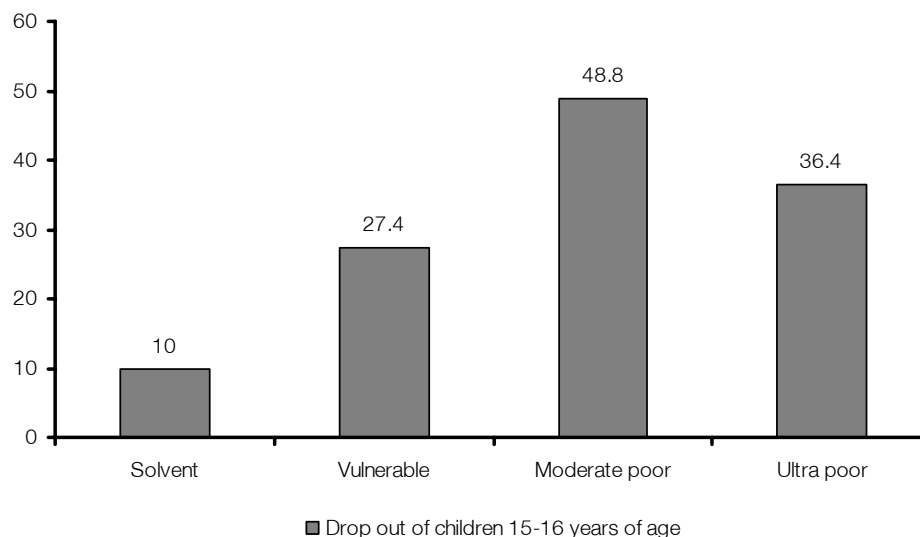


Table 5.6. Causes of leaving school before 16 years

All			
Causes	6-15 years	16-24 years	25-39 years
Marriage	2.1	8.7	12.0
Education was not fruitful	0.0	0.6	0.7
Education at school was irregular	0.0	0.0	0.2
Did not like to go school	29.8	21.9	18.8
Was not Good Student	13.5	5.7	2.4
Economic incapability of maintaining cost	31.2	30.5	29.2
Helping Parents in economic activity	17.0	18.3	17.4
Girls being aged, disturbed by boys	0.0	1.0	0.7
Helping Mother in Household Works	3.5	11.7	16.7
Others	2.8	1.6	1.7

Males			
Causes	6-15 years	16-24 years	25-39 years
Marriage	0.0	0.3	0.3
Education was not fruitful	0.0	0.3	0.0
Education at school was irregular	35.3	28.9	23.6
Did not like to go school	12.9	6.7	3.4
Was not Good Student	22.4	30.7	37.1
Economic incapability of maintaining cost	25.9	31.9	34.5
Helping Parents in economic activity	0.0	0.0	0.3
Girls being aged, disturbed by boys	0.0	0.3	0.3
Helping Mother in Household Works	3.5	0.9	0.6

(Table 5.6 continued.....)

(..... Table 5.6 continued)

Females

Causes	6-15 years	16-24 years	25-39 years
Marriage	5.4	16.2	19.9
Education was not fruitful	0.0	0.8	1.2
Education at school was irregular	0.0	0.0	0.4
Did not like to go school	21.4	15.7	15.6
Was not Good Student	14.3	4.9	1.7
Economic incapability of maintaining cost	44.6	30.3	23.9
Helping Parents in economic activity	3.6	6.2	6.0
Girls being aged, disturbed by boys	0.0	1.9	1.0
Helping Mother in Household Works	8.9	21.9	27.8
Others	1.8	2.2	2.5

Following comments can be made from the analysis of responses in Table 5.6.

- ‘Did not like school’ was one of the most important reasons for leaving school for the respondents of all ages. However, the proportion of respondents reduced as age of them increased.
- Economic incapability of maintaining cost of education was the most important reason for all age groups. The proportion of males mentioning this reason increased with the increase of age; however, it decreased for the females.
- Helping parents in economic activities was important for the males and helping mothers in household activities was important for the females. Both the rates were falling over time.
- Marriage was an important cause of leaving school for the women of older age.

Completion of primary education

In the absence of school level cohort data, we could not assess the rate of primary level completion. Data on age-specific educational achievement of children from the surveyed households provide us some information (Table 5.7). Since the children started school and finish primary education at late ages, we look at data on both 11 year and 12 year old children.

Among the 11 years old, only 28.7% have passed the primary level and continuing school at the secondary level. However, a high percentage of children are still at school (68.9%). A different picture emerges for the 12 year olds. Around 47% have completed and continuing school and 42.2% are still in primary level. If we assume that at least 70% of those at the primary level would be able to complete the cycle (a lower bound, the pass rate for the last primary school exam was around 90%), primary level completion rate among children of 11-12 years would be around 76%. This is consistent with our enrolment data at the secondary level, 76.5%.

Table 5.7. Distribution of children of age 11-12 years by attending and passed primary

Various groups of children	11 years old children		12 years old children	
	Number	Percentage	Number	Percentage
Passed primary and continued school	48	28.7	121	46.9
Passed primary and dropped out	0	0.0	6	2.3
Primary continued	115	68.9	109	42.2
Dropped out before completing primary	3	1.8	15	5.8
Never attended	1	0.6	7	2.7
Total	167	100.0	258	100.0

Transition to secondary level

One of the important goals of education policy is to ensure universal access and good quality of primary education, so that the students are motivated to continue education at secondary level and beyond. Differences in the quality of teaching and learning may arise due to the type of intervention. We saw the differences between BRAC schools and mainstream formal schools and madrasas in terms of facilities, teacher input, teaching processes and monitoring of teachers and students. In this section, we considered the differences in terms of transition to the secondary level. Overall enrolment rate of BRAC graduates was 83.6% and for the mainstream graduates 80.9% (Table 5.8). A substantial number and percentage of both groups dropped out at class VI. For BRAC graduates, the rate fell to 16.7% in classes VII and VIII from 41.7% in class VI but rises again in class IX (25%). Once they reached class X no drop out occurred afterwards.

Table 5.8. Transition to secondary schools by type of schools

	Currently attended		Dropped out		Total N	Drop out pattern
	N	%	N	%		
BRAC graduates						
Class VI	12	70.6	5	29.4	17	41.7
Class VII	16	88.9	2	11.1	18	16.7
Class VIII	5	71.4	2	28.6	7	16.7
Class IX	7	70.0	3	30.0	10	25.0
Class X	18	100.0	0	0.0	18	0.0
Class XI	3	100.0	0	0.0	3	0.0
Total	61	83.6	12	16.4	73	100.0
Mainstream graduates						
Class VI	121	62.1	74	37.9	133	45.4
Class VII	132	86.8	20	13.2	148	12.3
Class VIII	96	83.5	19	16.5	101	11.7
Class IX	116	83.5	23	16.5	123	14.1
Class X	187	89.0	23	11.0	205	14.1
Class XI	39	90.7	4	9.3	42	2.5

The pattern was quite different for mainstream primary graduates. Starting with a high dropout at class VI (45.4%) the rate declined to a lower level than BRAC graduates up to class IX. Unlike BRAC graduates, dropout rates continued albeit at a lower rate in class XI (Table 5.8).

Probit analysis

We ran a Probit model to find out the factors that affect enrolment at secondary level. The probability of attending secondary school was assumed to be influenced by the following factors:

- Sex of the student: 0=female; 1=male
- Sex of household head: 0=female; 1=male
- Education of household head: primary, secondary and post-secondary compared with no formal education
- Education level of HH spouse; primary and above = 1, otherwise 0
- land ownership: 5-20 decimal
- land ownership: 21-100 decimal
- land ownership: More than 100 compared with no ownership of land
- Number of siblings having negative effect
- Income from agriculture having positive effect
- Non-agricultural income having positive effect
- Drought-prone
- Saline coastal
- Non-saline coastal
- Favourable

All compared with flood-prone areas.

- if attended pre-primary school =1 otherwise 0
- if attended BRAC Primary =1 otherwise 0

The variables that came out as significant at 1% level are sex of student being female, household head being female, primary and above level of education of spouse, number of sibling having negative effect and non-agricultural income. BRAC pre-primary and primary variables were significant at 10% level (Table 5.9).

Table 5.9. Determinants of secondary enrolment

Probit regression		Number of obs = 451				
Log likelihood = -176.84442		LR chi2(18) = 82.88				
		Prob > chi2 = 0.0000				
		Pseudo R2 = 0.1898				
	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Sex of the students	-0.67***	0.16	-4.15	0	-0.99	-0.35
Sex of household head	-0.75***	0.29	-2.59	0.01	-1.32	-0.18
Education of Household head: primary	0.14	0.19	0.74	0.459	-0.23	0.50
Education of Household head: Secondary	0.60	0.62	0.98	0.328	-0.61	1.81
Education of Household head: Post Secondary	-0.29	0.51	-0.57	0.571	-1.28	0.71
Education level of the spouse of the HH: Primary and above	0.52***	0.20	2.6	0.009	0.13	0.92
land ownership: 5-20 decimal	0.03	0.26	0.11	0.916	-0.48	0.53
land ownership: 21-100 Decimal	0.00	0.26	0.01	0.991	-0.52	0.52
land ownership: More than ? Decimal	0.59	0.30	1.95	0.052	0.00	1.19
Number of siblings	-0.18***	0.05	-3.75	0	-0.28	-0.09
Income from agriculture	0.00	0.00	-0.55	0.581	0.00	0.00
Non agricultural income	0.00***	0.00	2.45	0.014	0.00	0.00
Drought prone	0.52**	0.25	2.12	0.034	0.04	1.01
Saline coastal	-0.17	0.24	-0.7	0.486	-0.64	0.30
Non-saline coastal Favourable	0.48**	0.27	1.8	0.071	-0.04	1.01
If attended pre-primary school	0.40**	0.21	1.89	0.059	-0.02	0.82
If attended BRAC Primary	0.60*	0.36	1.65	0.099	-0.11	1.31
_cons	1.90***	0.42	4.51	0	1.08	2.73

*** Significant at 1 % level, ** Significant at 5% level, * Significant at 10% level

Concluding remarks

There are several findings and interpretations in our study that differ from those of Education Watch 2008. We observed that a higher percentage of children enrolled in primary schools, and the enrolment rate has gone up over time. We noticed that a significant proportion of children aged 6 years were not yet enrolled (same as Education Watch 2008). Contrary to Education Watch 2008 report, we considered that the overall enrolment rate for age group 7-11 gives a more realistic picture of enrolment than the rate for official age group of 6-10 years.

The dropout rates were found lower and completion rates were higher in our survey than in Education Watch 2008 report. Completion rates in Education Watch 2008 were calculated for children aged 11 years. Since children start school late, we calculated for children aged 12 years. We found that completion rate of primary education among children in Bangladesh is quite high even though they finish at a late age.



EDUCATION, OCCUPATIONAL CATEGORY AND INCOME

Education leads to direct economic benefits in the form of higher lifetime earnings for individual, lower incidence of poverty, higher productivity, and upward mobility of labour. Often it is the occupational category that determines income, and occupational choice is directly related to level of education of the worker.

In this chapter, first we presented data on occupational category of household members and their level of education followed by income earned. We also analysed the changes that occurred over time in the average level of education in each category. This followed by income function analysis to discern the effects of education controlling other factors, and costs of education incurred by households for different levels of education.

Education and occupation

Since 1988, the proportion of household members with no formal education has gone down from 56.6% to 34.0% in 2010. The greatest improvement has taken place in the case of secondary attended which also mean the completion of the primary level (Table 6.1).

Table 6.1 Percentage distribution of adult members (16 years and above) of the surveyed households by level of education and year

Education	1988	2000	2004	2008	2010
No formal education	56.6	38.1	39.3	36.0	34.0
Attended primary	21.8	27.7	23.6	24.6	26.6
Attended secondary	12.3	20.6	22.9	24.5	24.0
Secondary passed	6.2	8.3	8.3	8.4	9.2
College & above	3.1	5.3	5.9	6.5	6.3
Total	100.0	100.0	100.0	100.0	100.0

Bangladesh has experienced modest but steady economic growth in the past decades that has led to structural changes in terms of growth of non-farm activities. The proportion of adult members in farming as primary occupation has declined from 21.5% to 16.5% in 2010. The proportion increased in other agriculture such as livestock and fisheries. The share of agricultural labour has also decreased (Table 6.2).

The proportion of members in business rose in 2000, but fell in 2004 and 2008 and rose again in 2010. The share of working members in service increased from a low level, 5.3% in 1988 to 9.1% in 2008 but fell sharply in 2010 (4.7%). The proportion of housewives has also decreased over time. Focusing on the average years of

schooling, we found that while all sectors have experienced a higher level of education, in some sectors the gain is more. Other agriculture, business, service, non-agricultural labour and housewife are such sectors. These are the sectors (except housewife) where higher education is demanded.

Education of household heads

Among the household heads, 15.7% had no education, 29.4% completed primary education, 8% completed secondary education, and 46.9% received tertiary education. About 16.5% of the household heads were females (Table 6.3).

Table 6.2. Average years of schooling of household adult members (16 years and above) by occupation

Primary occupation	1988		2000		2004	
	% in occupation	Average years of schooling	% in occupation	Average years of schooling	% in occupation	Average years of schooling
Farming	21.5	3.6	18.3	4.1	20.2	4.0
Other agriculture	0.5	1.8	0.7	1.9	0.8	2.1
Agri labour	10.3	1.2	5.1	1.5	4.4	1.7
Business	4.4	3.8	6.9	5.5	6.4	5.7
Service	5.3	6.8	5.3	8.8	6.2	8.7
Non-agri labour	4.4	1.9	7.5	3.0	6.3	3.3
House wife	41.2	1.4	39.2	3.0	37.8	3.5
Inactive	12.3	5.1	17.0	6.6	17.9	6.0
Total	100.0	2.7	100.0	4.2	100.0	4.4

Table 6.2 Continued...

Primary occupation	2008		2010	
	% in occupation	Average years of schooling	% in occupation	Average years of schooling
Farming	20.3	4.2	16.5	4.3
Other agriculture	0.6	4.1	1.3	4.6
Agri labour	5	1.9	5.8	2
Business	6.3	5.9	7.3	6.3
Service	9.1	6.8	4.7	9.8
Non-agri labour	7	3.3	6.7	3.6
House wife	37.8	4	39.9	4
Inactive	14	6.5	17.8	6.1
Total	100	4.4	100	4.8

Table 6.3. Percentage distribution of household heads by level of education and sex

Level of education	Sex		Total
	Male	Female	
No Education	214 (15.5)	46 (16.8)	260 (15.7)
Primary Completed	397 (28.7)	91 (33.3)	488 (29.4)
Secondary completed	126 (9.1)	7 (2.6)	133 (8.0)
Tertiary Education	648 (46.7)	129 (47.3)	777 (46.9)
Total	1385 (100.0)	273 (100.0)	1658 (100.0)

Private benefits of education

Private benefits of education are reflected in higher productivity and income of the workers. Income of adult members increased consistently with the increase of level of education (Table 6.4). Workers with no formal education earned almost half of those having education above secondary level. The difference between members with no primary education and primary completed was not very high. It is the completion of the secondary level that made a difference.

We have seen above (Table 6.2) that average years of schooling were the highest in service (9.8 years) followed by business (6.3 years). Table 6.5 provides the effects of education on income within these two sectors. In business, secondary passed was associated with a significant jump in income, whereas in the case of service, this happened at a higher level of education, college and above.

Relating income to occupation we found that the lowest income category was agricultural labour followed by livestock rearing, small business and self-employment, and construction and transport labourer (Table 6.6). Highest earnings were found among contractor and large business workers not among service holders where the average level of education was high. Income has also increased more in trade and business (Table 6.7). Increase of income in non-agricultural labour may be explained by a higher demand for labour with some education in trade and business sector.

Table 6.4. Private benefits of education - Income by education and occupation

Last class passé in education life	Mean income	n	Std. deviation
No Education	45793.08	380	29194.13
Primary Completed	49526.7	442	30450.64
Secondary Completed	85279.91	140	1079.71
Above secondary	87568.06	158	58475.53
Total	58095.64	1120	53641.92

Note: Annual earnings (Taka) from primary occupation (excluding agriculture)

Table 6.5. Income by occupation

Groups by Education	Trade and business	Services
No formal education	48952	39583
Attended primary	57594	36950
Attended secondary	58344	45415
Secondary passed	101915	59552
College & above	108753	80915
Average of all Groups	69080	60629

Table 6.6. Annual mean income (in Taka) from primary occupation (excluding agriculture) by occupation category

Primary Occupation	Annual income (in Taka)
Agricultural labour	29356.23
Fishermen	57163.37
Livestock rearing	29535.71
Construction worker	47903.06
Transportation labour (Van/Boat/Rickshaw)	45209.01
Job	59694.71
Large business	129407.41
Small business	58535.91
Shopkeeper	54613.33
Contractor	241857.14
Doctor or <i>kobiraj</i>	81483.33
Small industry/Cottage	40872.22
Other self-employed occupation	45007.14
Total	51200.97

Table 6.7. Annual household incomes for different occupations (Taka at 2000 constant price)

Occupation	1987-1988	1999-2000	2010
Farming	27,292	24,061	-
Agricultural labour	16,526	8,215	17678.02
Trade and business	25,266	48,024	41599.53
Service	50,109	58,040	36509.86
Non-agricultural labour	13,100	17,262	26707.45

Determinants of household total income: regression analysis

We ran OLS regression model to find out the factors determining household income.

Dependent variable: log total household income

Explanatory variables with the expected signs:

- Sex of household head male +
- Education of HH, primary, secondary and post secondary +
- Total amount of owned land +
- Village level dummy
 - Electricity +
 - Disaster prone -
- Primary occupation non-crop agri +
- Primary occupation non-farm +

The regression model (Table 6.8) explained 21.5% of the differences in household income of all categories. Several variables have turned to be significant at 1% level. If the household head is male, there would be 63.2% increase in mean income. Primary level of education means only 3.3% increase in income compared to no formal education. This variable is not significant. Secondary and post secondary education is associated with 23.8% and 28.4% increase in mean income respectively. Both the variables are significant at 1% level. Land owned is significant at 1% but its impact on income is only 0.1%. Disaster-prone coastal areas have 17.6% less income, and the variable is significant at 1% level. If the primary occupation is non-crop agriculture, the increase in income is 27.2% whereas if it is non-farm activities, the income increase is 26.4%, and both are significant at 1% level.

Table 6.8. Determinants of income

Source	ss	df	MS	Number of obs	= 1554
Model	195.461035	12	16.2884196	F (12, 1541)	= 36.60
Residual	685.730304	1541	.444990463	Prob > F	= 0.0000
Total	881.19134	1553	.567412324	R-squared	= 0.2218
				Adj R-squared	= 0.2158
				Root MSE	= 066708

	Regression Coefficient	Std. Err	t-Value	P> t
Sex of household head	.632***	.106	5.94	0.00
Education of HH head: primary	0.033	0.038	0.87	0.384
Education of HH head: Secondary	0.238***	0.067	3.52	0.00
Education of HH head: Post Sec.	0.284***	0.079	3.57	0.00
Amount of land owned in decimal	0.001***	.000	13.97	0.00
Village Level Dummy				
Access to Electricity	-0.023	.049	-0.48	0.633
Drought prone	-0.083*	.049	-1.67	0.096
Coastal Saline	-0.176***	.062	-2.84	0.005
Coastal non-saline	.020	.062	0.33	0.741
Flood Prone	.0586	.046	1.26	0.206
Primary occupation: Non-crop agri	0.272***	0.106	2.56	0.011
Primary occupation: non-farm	0.264***	0.037	7.13	0.00

*** significant at 1% level
 ** significant at 5% level
 * significant at 10 % level

Our model is different from Mincerian earnings function where wage earnings are attributed to years of schooling, skill and experience. Since our data are from rural areas and include non-wage income, we use OLS income function model. In Section IX, we also calculated net rate of returns to education using household level data on costs of education. Studies using Mincerian earnings function do not take account of costs of education. One such study by Asadullah (2005) shows a return of 7.7% for primary education in Bangladesh.

Private costs of education

Table 6.9 presents, private costs of education by type of school and class. On average, highest expenses were incurred by the students of non-government schools followed by government schools and madrasas. These schools (differences among them are small) were much more expensive than BRAC schools, average cost for which was only BDT 667 (Table 6.9 and 6.10). Breakdown of costs shows that it is private tuition and personal expenses where BRAC costs were low (Table 6.10). Very few students of BRAC schools took private tuition (Fig. 6.1).

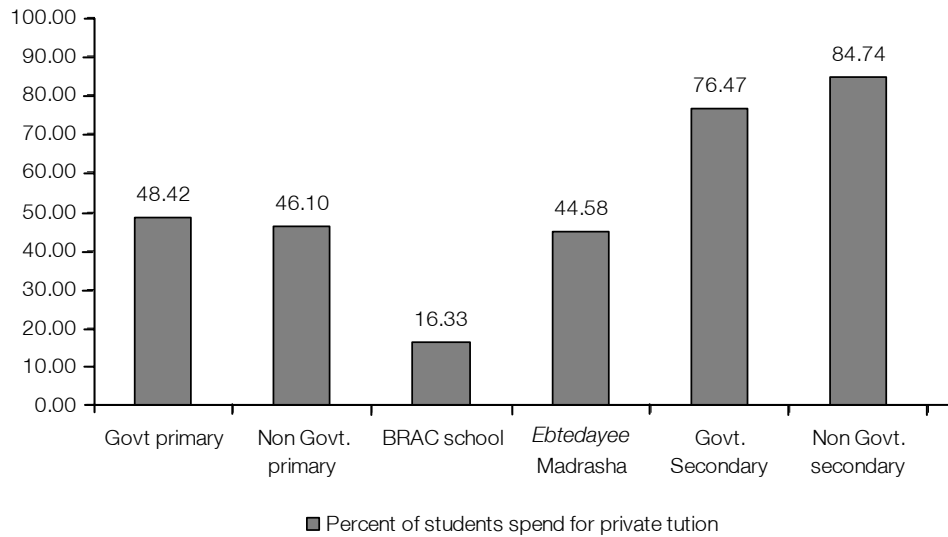
Table 6.9. Cost of education at primary education by major category and class

Type of school and Class	All kinds of fees	Cost for private tuition	Books and stationery	Personal costs	Other spending	Total
Government primary						
Class One	44.19	317.74	459.57	400.95	0.77	1223.23
Class Two	62.46	364.46	502.59	423.77	8.26	1361.54
Class Three	67.81	676.87	636.23	515.86	0.60	1897.37
Class Four	79.98	1011.09	763.91	591.18	0.00	2446.16
Class five	112.75	938.03	944.88	695.10	0.00	2690.76
Average of five years	73.44	661.64	661.43	525.37	1.93	1923.81
Non-government Primary						
Class One	57.26	239.29	379.17	413.10	0.00	1088.81
Class Two	65.18	271.43	520.00	488.07	0.00	1344.68
Class Three	88.94	696.88	620.31	632.19	0.00	2038.31
Class Four	94.38	329.17	654.88	502.92	0.00	1581.33
Class five	161.00	816.67	976.67	548.33	0.00	2502.67
Average of five years	93.35	470.68	630.20	516.92	0.00	1711.16
BRAC School						
Class One	15.32	104.55	199.09	157.05	0.00	476.00
Class Two	24.09	54.55	228.18	77.27	0.00	384.09
Class Three	19.17	233.33	226.67	333.33	0.00	812.50
Class Four	21.00	200.00	313.50	452.00	10.00	996.50
Average of four years	19.89	148.11	241.86	254.91	2.50	667.27
<i>Ebtedayee</i> Madrasha						
Class One	161.25	37.50	335.63	400.00	0.00	934.38
Class Two	271.92	426.15	618.85	228.08	0.00	1545.00
Class Three	353.75	825.00	642.50	287.50	0.00	2108.75
Class Four	504.29	762.86	777.14	385.71	0.00	2430.00
Class five	362.78	300.00	936.67	644.44	0.00	2243.89
Average of five years	330.80	470.30	662.16	389.15	0.00	1852.40

Table 6.10. Average annual cost of education by school type and cost of completion

	All kinds of fees	Cost for private tuition	Books and stationery	Personal costs	Others spending	Total/year	Average cost of completion
Govt Primary	73.44	661.64	661.43	525.37	1.93	1923.81	9619
Non Govt. Primary	93.35	470.68	630.20	516.92	0.00	1711.16	8556
BRAC School	19.89	148.11	241.86	254.91	2.50	667.27	2669
<i>Ebtedayee</i> Madrasha	330.80	470.30	662.16	389.15	0.00	1852.40	9262
Govt. Secondary	392.26	2986.90	2105.86	1599.85	25.00	7109.88	35549
Non Govt. Secondary	765.84	1593.79	2237.13	1179.02	0.38	5776.16	28881

Figure 6.1. Percent of students spend for private tuition by school type



Concluding remarks

The level of education among household members has gone up across all occupations. The highest level is observed in service followed by large business and trade. With the increasing share of non-farm activities in employment, secondary level of education is becoming a necessity. However, the private cost of secondary education is prohibitive for poor families. We have found that BRAC has been able to provide primary education at a low private cost compared to formal schools. Similar effort should be extended to the secondary level of education.

SOCIAL BENEFITS OF EDUCATION

Social rate of return analysis is useful for policy-makers or any organization providing education. For example, BRAC having the goal of reducing poverty may like to know how its investment in pre-primary and primary education leads to improved earnings of beneficiaries. While the basic idea is the same, there are important differences between private rate of return analysis and analyses carried out by service providers that have multiple goals. For the latter, benefits are not only productivity improvement reflected in higher earnings but also various non-market benefits to individuals receiving education, and benefits that accrue to family members, community and greater economy (externalities). Social returns to education include social costs and social benefits - non-monetary benefits and externalities in addition to private costs and benefits. When primary education is provided free of charge, private returns to education become higher than social returns. However, if one takes into account non-monetary benefits to individuals and society then social returns are likely to be higher than private returns.

Since social analysis includes both private and social perspectives we need to find out first private rate of returns in monetary terms, and thereafter identify social non-monetary returns, and try to impute values on some indicators. From household level data we derive private (direct and indirect) costs incurred for primary education provided by different organizations – BRAC, mainstream formal schools and madrasas. In an earlier chapter we have presented private benefits in terms of income and costs of education at primary and secondary levels provided by different providers.

Social benefits of education

Identifying the indicators of non-market benefits and externalities is a challenging task, and more difficult it is to measure changes in these indicators. A list of non-market and external benefits of education (Table 7.1) is taken from the article by Jimenez and Patrinos (2008) and Schultz (1988).

Table 7.1. Non-market and External Benefits of Education

Benefit type	Findings
Child education	Parental education affects child's educational level and achievement
Child health	Child's health positively related to parental education
Fertility	Mother's education lowers daughter's birth
Own health	More education increases life expectancy
Spouse's health	More education improves spouse's health lowers mortality
Job search	More schooling reduces cost of search, increases mobility efficiency
Desired family size	More schooling improves contraceptive efficiency
Technological change	Schooling helps R & D diffusion
Social cohesion	Schooling increases voting and reduces alienation
Crime	Education reduces criminal activity

The literature on the effects of education on fertility, age at marriage, female labour force participation, empowerment and next generation effects on education and health in Bangladesh and other developing countries confirms the social benefits of education. The benefits of primary education are particularly high for demographic variables such as fertility, child mortality and age at marriage. Our study traces some of these effects from time-series household panel data mentioned before (Ahmad and Hossain 2004). This is complemented with fresh data on demographic, social and behavioural changes (attitude, opinions of individual and groups). The valuation of social rate of return is difficult because of the non-monetary nature of benefits and externalities. We try with some variables, for example, if education reduces fertility the costs of educating extra children may be taken as social benefit. Cost data are available from previous analyses in Section VII. We present the results in the following order.

- Age at marriage
- Fertility
- Health and contraceptive behaviour
- School participation of children
- Exposure to new technology and investment
- Participation in social activities
- Awareness about the benefits of education

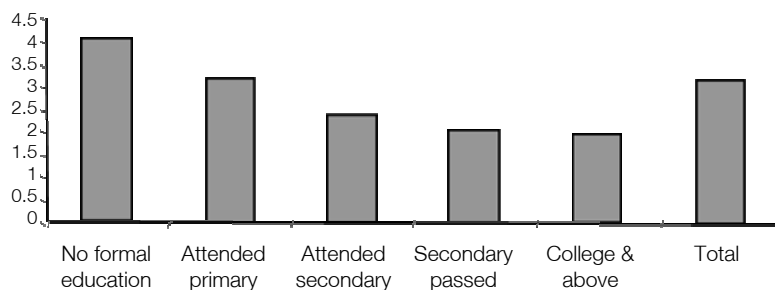
Education and demographic variables

The level of education is assumed to be associated with the age at marriage of women more than men. However, in both cases, primary education has no effect. The age at marriage rises slowly with secondary passed with more effect after college education and above. There is a clear-cut negative relationship between

fertility and education of household head. Interestingly, this relationship is more prominent at completed primary (attended secondary) which then becomes weaker with more education. The average number of children among households with no formal education is four compared to 2.3 for households who completed primary level (Fig. 7.1). There is, therefore, 1.7 fewer children per couple, a substantial private and social gain. Fertility is closely related to contraceptive behaviour.

The use of contraceptive is lower among households without education than among households with primary and secondary education. The proportion of households who never used contraceptives before is much higher among the households without education compared to the educated group.

Figure 7.1. Average number of children per couple



Health practices

Drinking water

Almost all households irrespective of education of household heads use tube-well water. The proportion of households using sanitary latrine is higher among the educated especially at the level of completed secondary and above. The overall rate of immunization of children is high in our survey area – more than 96%. This indicates the ability of public health services in Bangladesh to reach the masses. However, we still see that no-education households have lower rate than households with education. A much higher proportion of households with no education use trained village doctors (LMF⁴) while households with primary and secondary education use trained physicians (MBBS⁵).

⁴ LMF = License of Medical Faculty

⁵ MBBS = Bachelor of Medicine and Bachelor of Surgery

Education of parents and school participation of children

Social benefits in terms of school start and educational achievement by education of parents

School participation patterns in the survey areas indicate that children did not start school at the official age of six. Late start at school can cause low motivation in learning and slow socialization processes that can lead to either dropout or high repetition/late completion and impaired quality of education.

The pattern of late participation of children at school is analyzed in terms of household characteristics in Chapter 5. We found that the proportion of children not enrolled in school at age six was very low among the household heads who attended secondary or above education. The proportion was especially low for girls (5.3%) compared to boys (18.2%). It should be noted that female education has more spill over effects than male education not only in Bangladesh but also in other countries (Klassen 2004).

Education of parents and children's educational achievement

One of the most important externalities of education is the impact on the educational achievement of the next generation. We refer to the results of probit analysis provided in Chapter 5 on the probability of attending secondary education. The results show that education of spouse (mother of the child) above primary level is a significant factor.

The analysis of school participation data from 2000 IRRI survey (Ahmad and Hossain 2004) shows that the secondary level of education (10 years of schooling) of household head increased participation by 13%. The effects of parents' education are stronger for girls than for boys. Father's education increases girls' participation by 16% as against 9% for boys. However, mother's education has higher effect on the male participation rate – 14% as against 9% for girls. Secondary level (10 years) education of mother increases participation of girls by 26%. Positive effects of education are also reflected in technology exposure and investment in new technology (Table 7.2).

Table 7.2. Average investment in technology by level of education of household heads

Level of education	Average Investment (in BDT)
No Education	4289.82
Primary Completed	6379.11
Secondary Completed	8741.67
Tertiary	9543.59
Average of all groups	6468.93

Benefits in terms of community-related behaviour

Education is expected to affect a person's interaction with the community and her/his social behaviour. Proportion of females with no education is quite high probably because of their membership in micro-credit organizations. Again the tertiary education seems to be weakly related to membership in organizations (Table 7.3).

We have also asked the respondents about their awareness regarding the benefits of primary education. Table 7.4 shows the importance attached to different benefits by the respondents. The most important benefit reported is improvement in household activities followed by education of children, management of own business and health. Responses do not differ much across occupational groups, age, sex or level of education (not presented in the table). It is noteworthy that non-monetary and social benefits top the list.

Table 7.3. Membership in organizations

Level of education	% of household heads	% of spouse of household heads
No education	10.18	29.64
Primary completed	22.13	29.05
Secondary completed	33.81	21.01
Tertiary	21.49	32.08

Table 7.4. Awareness about benefits of primary education in order of importance (3518 respondents)

Benefits	% of respondents	Number of respondents
Improvement in household activities	87.5	3079
Education of children	86.2	3035
Management of own business	79.1	2783
Benefits in terms of health	76.2	2680
Enhancement of social status	43.5	1531
Self satisfaction and self esteem	35.9	2162
Getting proper groom/bride	24.5	861
Low dowry at marriage	19.6	691
Getting job	10.8	381

Concluding remarks

Social benefits of primary education in poor countries like Bangladesh are usually high, but are very difficult to quantify. Our study could capture some of these benefits.

COST-BENEFIT AND COST-EFFECTIVENESS OF INVESTMENT IN EDUCATION

In this section, we focus on private and social benefit-cost analysis and cost effectiveness of different interventions. Benefit-cost analysis is usually based on monetary values of benefits and costs especially in case of private investment made by individuals and households. There are very few social benefit-cost studies because many social benefits are difficult to translate into monetary terms. When the outcomes of investments cannot be expressed in monetary terms, cost-effectiveness analysis is undertaken. Cost per unit of outcome is compared for different interventions, for example cost per student completed primary education may be compared for different types of schools as we have done in this study.

Private benefit-cost analysis

Private benefits of education are productivity improvement expressed in the incomes earned by individuals. In Chapter 6, we have discussed how incomes vary with the level of education. From this data we derive the lifetime earnings profile of workers having no education, primary education and secondary education. Figure 8.1 shows that workers with no education have flatter earning profile than workers with primary education. The latter group starts earning at a lower age and lower income but surpasses the no education group after age 26-30. Workers with secondary education start working late (16-20), and from a low level of income which rises fast after 26-30 years of age.

Costs of private education are presented in Chapter VII. We found that private costs of education at primary level was very low compared to the secondary level because primary education is provided free of charge. There are, however, differences in costs with respect to the type of school attended by children. Private costs were higher in government schools than in BRAC non-formal schools (Table 8.1).

Table 8.1. Private costs (in BDT) of primary education per student per year by school type and gender

School Type	Gender	Private cost (in BDT)
Government Primary	Male	2030.9
	Female	1821.8
	Overall	1923.8
BRAC Primary	Male	553.9
	Female	512.9
	Overall	533.8

Costs for girls were lower than for boys in both types of schools. Differences in costs by types of school are reflected in the rates of returns discussed below.

Method of calculating rate of returns to primary education

- Earnings profiles are derived from household level data
- Direct costs of education from household data
- Indirect costs are derived from earnings of workers aged below 16. As found in our study, the age of primary school children varies between 7-12 years, and children work from age 13. Hence, opportunity cost in terms of foregone earnings at the primary level is nil in our study. In the absence of data, we could not take into account opportunity costs.
- We discount both costs and benefits to derive the present value. Discount rates reflect opportunity of education investment fund as well as the cost of waiting for future benefits\earnings.
- Present values of costs are derived from discounting: $\text{cost} / (1+r)^5$.
- Present values of benefits are derived from discounting:
- Expected earnings $/(1+r)^{40}$ assuming a working life of 40 years.
- Net present value is discounted benefits minus discounted costs whereas benefit-cost ratio is discounted benefit by discounted costs. Different discount rates are used.
- Internal rate of return (IRR) is the rate that makes net present value zero.
- We present both benefit-cost ratios and private rates of return (IRR).

Figure 8.1 Age-earnings profile

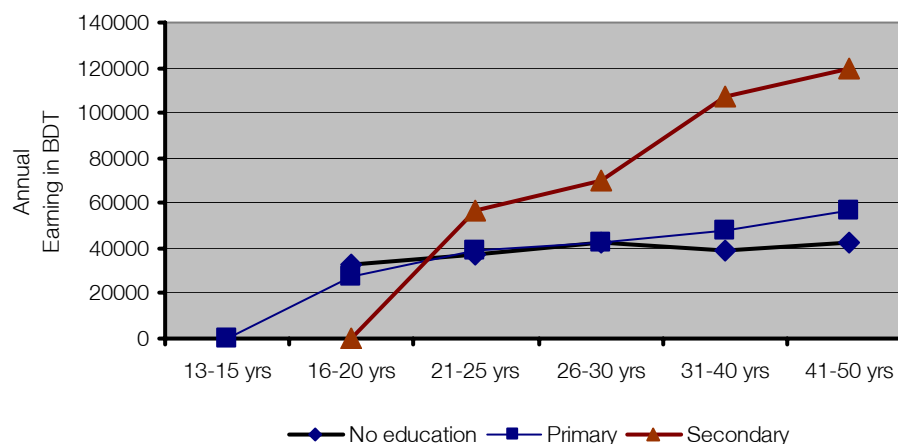
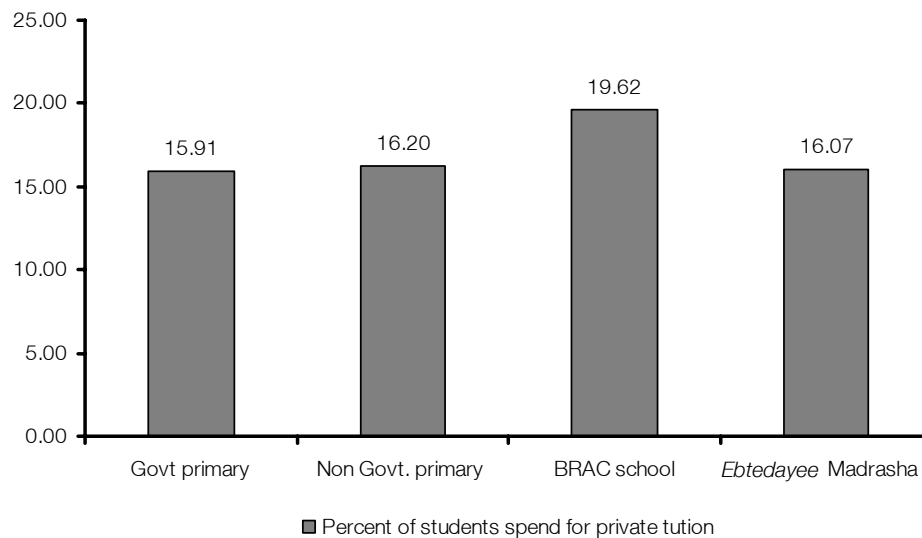


Figure 8.2. Private rate of returns on investment in primary education (overall)



The overall estimates of rates of return are mainly based on earnings of male workers (Fig. 8.1 and 8.2). Our survey data on female workers in different age groups are not consistent because educated women have less opportunity for wage work in rural areas of Bangladesh, and it is difficult to construct a proper lifetime earnings profile. Our calculation of male and female rates separately gives us the following results (Fig. 8.3). Female rates are lower than male rates for all types of school, and this is in spite of lower costs of primary education for girls as our household level data show. Hence, the reason for lower returns to primary education is that the premium earned by primary graduates over non-graduates is lower for female workers than male workers. This is a labour market issue: the demand for female labour is either low or there is occupational and wage discrimination against female workers. It should be noted that social benefits of female education is very high as discussed in the previous section. Lower female returns at primary level are also found in the study of Psacharopoulos (1994).

Benefit-cost ratios for male and female primary graduates indicate similar trend in rates of returns (Fig. 8.4).

Figure 8.3. Private rate of return on investment in primary education (male and female)

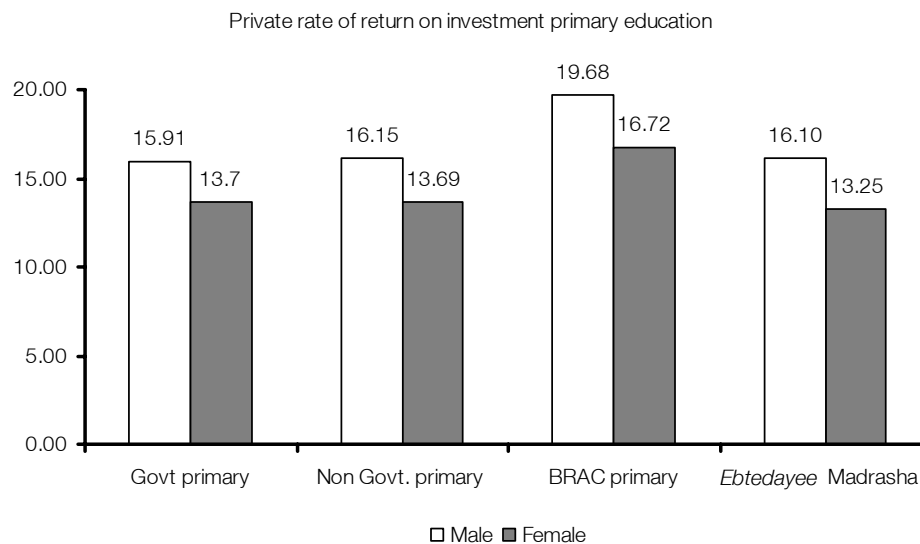


Table 8.2. Benefit-cost ratios and private rates of return of primary education

School type	Gender	Benefit cost ratio when $r=10\%$	Private rate of return
Government primary	Male	2.41	15.91
	Female	1.01	13.07
	Overall	2.40	15.91
Non-government primary	Male	2.59	16.20
	Female	1.22	13.69
	Overall	2.70	16.21
BRAC primary	Male	9.71	19.68
	Female	3.95	16.72
	Overall	9.53	19.62
Ebtedayee madrasah	Male	2.25	15.88
	Female	0.99	13.02
	Overall	2.36	15.84

Rate of returns of secondary education is lower than primary education by almost two percentage points (Tables 8.2 and 8.3) in spite of the sharply rising lifetime earnings profile shown above in (Fig. 8.1). This is mainly because of the high private costs of secondary education. We now turn to provider costs, cost-effectiveness analysis of different interventions, and social returns to primary education.

Table 8.3. Benefit-cost ratios of secondary education (Followed the same method as Primary education mentioned above)

School type	Benefit-cost ratio when $r=10\%$	Private rate of return
Government secondary	1.42	14.17
Non-government secondary	1.73	14.81

Provider costs of primary education and cost-effectiveness

Cost of primary education is mostly borne by government and other providers. We see that cost per student per year at the primary level is higher for government schools compared to BRAC schools (Table 8.4). Total cost is derived by adding private costs to the provider cost. Total costs for completed primary level per student are BDT 23,799 for government schools and BDT 10,955 for BRAC schools (Table 8.4). Hence, BRAC schools are twice as effective as government schools. Cost-effectiveness of BRAC schools is higher because of lower dropout, higher pass rates, and four-year cycle.

Table 8.4. Private and provider cost (in BDT) per student per year by school type

School type	Private cost (1)	Provider cost (2)	Total cost (1+2)	Total cost of completion
Government primary	1923.8	2836	4759.8	23799.0
BRAC primary	533.8	2205	2738.8	10955.3

Note: Government costs are derived from BANBEIS and BRAC costs are from BEP, BRAC.

Note: Female-male social rates are based on similar social costs but different private costs. Provider cost for non-government private schools and madrasas could not be procured.

Table 8.5. Social benefit-cost ratio and rate of return of primary education

School type	Gender	Benefit-cost ratio when $r=10\%$	Rate of returns
Government primary	Male	1.01	13.05
	Female	0.4	10.08
	Overall	0.97	12.94
BRAC primary	Male	2.44	15.17
	Female	0.93	12.13
	Overall	2.32	15.02

Note: Only private benefit was considered

Social rates of returns that take account of cost of education borne by providers become lower than private returns (Table 8.5). For government schools, private rate is 15.9% and social rate is 12.9%. For BRAC schools private rate is 19.6% and social rate 15.0. However, as we have shown in our study, there are many non-monetary benefits of primary education that are reaped by individuals and households, and many benefits that fall on the society at large (externalities). These

are difficult to quantify, but they suggest that social benefits of primary education are likely to be higher than private returns, and are definitely worth its costs. It should be noted that without good quality primary education, one cannot move on to the secondary level which gives much higher benefits than primary education. Besides, access to primary education is a basic human right that has to be ensured by the state irrespective of its costs.

Concluding remarks

Our study shows that primary education generates much lower economic benefits than secondary education. But non-economic benefits of primary education are high as reflected in the data and opinions of the respondents discussed in previous chapters.

MAIN FINDINGS AND IMPLICATIONS FOR POLICY AND RESEARCH

The overall objectives of the study are to assess diverse outcomes of investment in primary education in rural Bangladesh, and to analyse the cost-effectiveness of different interventions. Among the outcomes, we include internal efficiency indicators at school level, and benefits accrued to individuals and households in terms of income, and non-monetary benefits that affect the society at large. In calculating the costs, we consider private costs incurred by families in terms of direct expenditure and indirect costs of foregone income of children at work. To this, we add the costs undertaken by specific providers which is the major item as primary education is provided free of charge by the government and large NGOs like BRAC. The data for the study come from household level dataset from BIDS/ IRRI studies in 1988, 2000, 2004, 2008, and fresh data collected in 2010 specifically for this study. School level data are collected during 2009/2010 from government primary, non-government primary, BRAC non-formal primary and pre-primary schools, and *ebtedayee* madrasa.

The main findings are:

- Household level data indicate that there has been substantial improvement in enrolment at primary level (95.2% among age group 7-11, and 92% among age group 6-10 years) in 2010 since mid-1980s. The enrolment rate at secondary level has also improved over time but it is still low especially among the poor (52%).
- Low enrolment rate among children aged 6 indicates late start at school. Children from poor families especially male children tend to start late. Late start has negative implications for completion of primary education and quality of learning.
- Our study confirms that early childhood development through pre-primary education has significant impact on school performance. The scores achieved in primary school exam are higher for students with pre-primary (BRAC) education compared to students without such education. This effect is especially prominent among girls from poor families.
- Private economic benefits of education are higher for secondary education than primary education within all occupations. However, private rate of returns are higher for primary education than secondary because of the low private cost at primary and high cost at secondary level.
- High social costs of primary education are compensated by many social benefits reflected in low fertility, higher age at marriage, improved health practices,

greater technology exposure and positive attitude to children's education especially for girls. Primary education of mothers is one of the significant factors determining the probability of children going to secondary school.

- There are differences in the cost-effectiveness of different interventions. Internal efficiency indicators are better for BRAC schools than mainstream schools. Cost per student completed is lower, and private rate of return is higher for BRAC. Greater efficiency is achieved through intensive monitoring and teacher input.

Implications for policy and research

Bangladesh economy has changed over the past decades with important implications for education policies. With steady economic growth, structural changes have occurred. Agriculture has lost its importance in relative terms, and it is mostly reflected in the distribution of labour force in favour of non-farm activities. These changes are evidenced in our study and documented in others as well (Hossain and Bayes 2009).

On the education front, the average level of education of workers in all sectors has increased, but the returns to education are higher in non-farm activities than in agriculture. Our analysis of household data confirms that it is the secondary level of education that entails high private benefits, while primary education generates many social benefits. Good quality primary education is also important for transition to the secondary level. The completion and achievement of good quality primary education, on the other hand, depends on pre-primary education for all children.

Pre-primary education is very limited in rural areas. In urban areas, it is costly and available only to rich families. We have also seen that private costs of secondary education are prohibitive for poor families. Given these realities in Bangladesh, education policies should focus on compulsory pre-primary education, and free compulsory education should be extended to the secondary level free of cost. Recent policy changes are moving in the right direction.

BRAC policy of continuation of pre-primary programme: Non-formal primary education should be directed to children of ultra poor families and other disadvantaged children. Innovative programmes are needed for secondary level education.

Research policy: There are some problems with the enumeration of dropout children in Bangladesh. We suggest the use of household level data on age-specific enrolment, dropout and completion. Moreover, collection of cohort school level data and analysis are recommended.

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