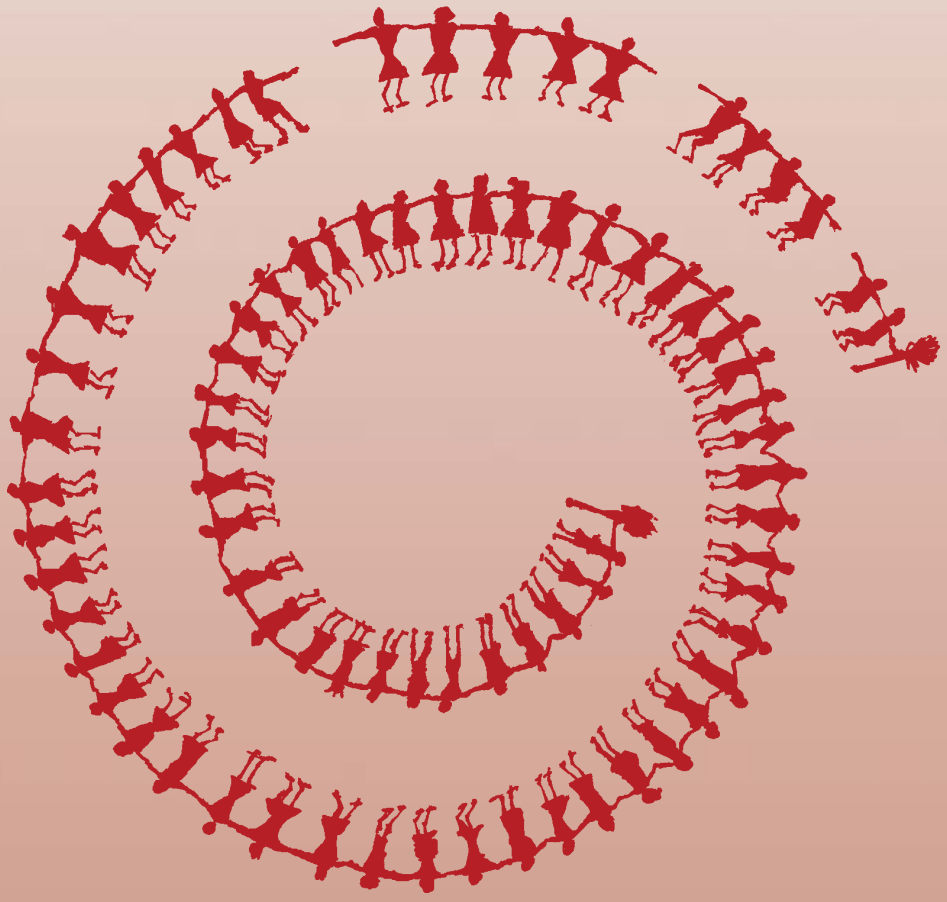
80121

Report No. 62

South Asia Human Development Sector

Educational Attainment in Afghanistan: An Economic Analysis

July 2013



Discussion Paper Series

Report No. 62

South Asia Region
Human Development Unit

EDUCATIONAL ATTAINMENT IN AFGHANISTAN: AN ECONOMIC ANALYSIS

July 2013

TABLE OF CONTENTS

LIST OF FIGURES AND TABLES

Figures

Tables

AUTHORS

Harsha Auturupane
Lead Education Specialist and Task Team Leader
The World Bank

Ramani Gunatilake
Consultant, The World Bank
Principal Author of the Report

Mari Shojo
Education Specialist
The World Bank

Roshini Ebenezer
Consultant
The World Bank

ACKNOWLEDGEMENTS

The team acknowledges with sincere gratitude the assistance of Government of Afghanistan counterparts in the preparation of this report as well as several World Bank colleagues. From the Government of Afghanistan counterparts, we would like to acknowledge in particular, the Ministry of Education and the Ministry of Higher Education. From the World Bank, staff of the South Asia Education Department, and the World Bank Kabul office provided valuable inputs. Early findings from the report have also been presented to the development partners in Afghanistan, such as the Governments of France, Germany, and the U.S.A., and multilateral partners such as UNESCO and UNICEF, who provided valuable suggestions and inputs.

INTRODUCTION

Afghanistan's ability to enhance its human capital resources will determine the course of the nation's future economic, human and social development. Recognizing this, the Government of Afghanistan is committed to implementing policies aimed at getting children, particularly girls, into the education system. This paper aims to inform this process by investigating a variety of characteristics of children, such as their households, educational facilities, community factors, and spatial variables that are associated with education enrollment in urban and rural Afghanistan.

COUNTRY CONTEXT

The country has an acute shortage of human capital resources (World Bank, 2013). This is evident from the fact that 78 percent of employed Afghans between the ages of 16 and 60 have not been to school. In 2007/08, 57 per cent of employed men and 86 per cent of employed women in urban areas had no schooling (NRVA, 2007/08). The situation in rural Afghanistan was much worse: there, nearly three-fourths of employed men, and almost all employed women, had not been to school. In the entire population of employed Afghans, only 4 per cent had completed primary school, only 2 per cent had completed middle school, and only 5 percent counted at least 12 years of schooling.

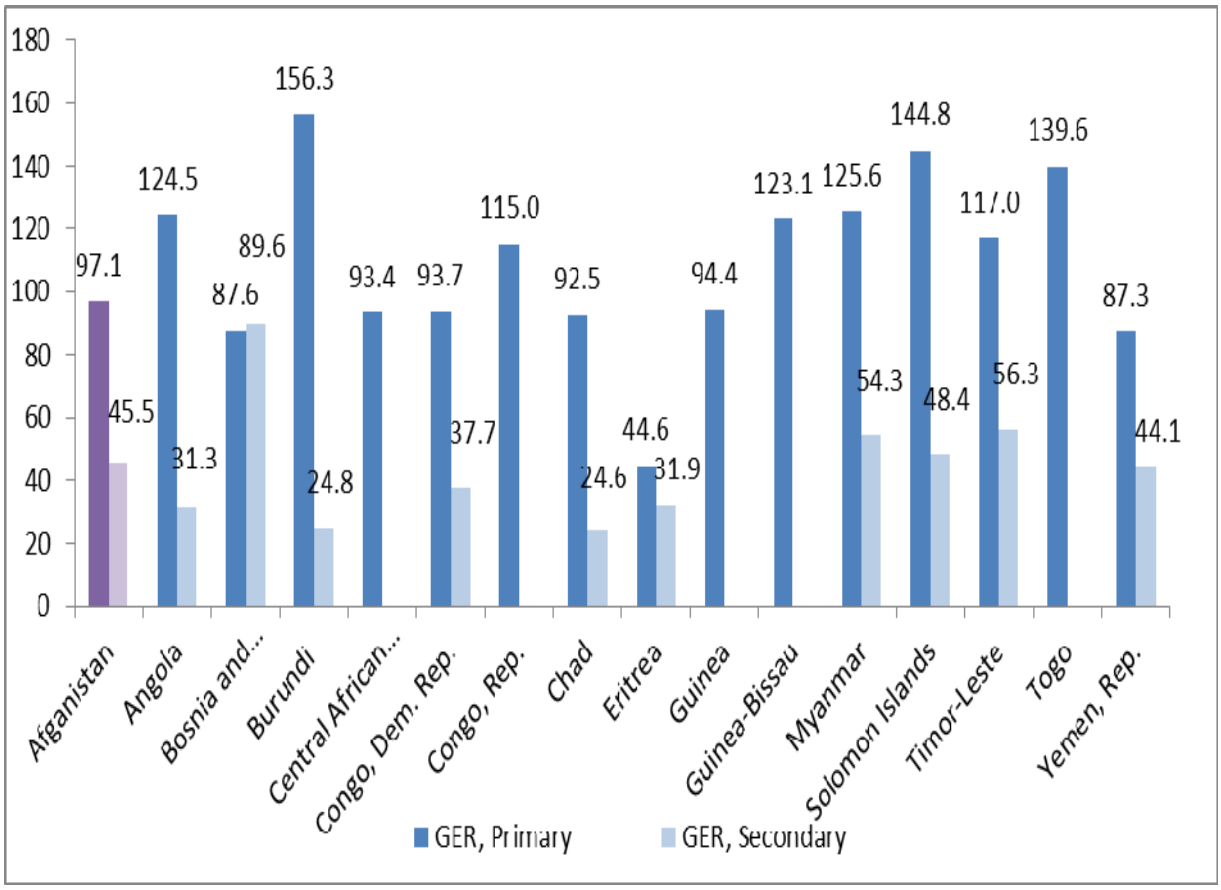
School enrollment is a key indicator of a country's progress in developing its human capital. As Figure 1 indicates, Afghanistan school enrollment rates are low even in comparison to other conflict- affected regions. Figure 2 illustrates the extent of the problem as it plots age-specific enrollment rates of boys and girls in 2007/08. Enrollment rates for boys range from 15 per cent of 6 year olds to 42 per cent of 18 year olds, peaking at 71 per cent in the 11-12 age range. Girls' enrollment is everywhere lower, from 11 per cent of 6 year olds to 17 per cent of 18 year olds, with a peak of 50 per cent at 11 years of age. The inverted U-shaped curves of the plots with higher rates in the middle of the age-range, likely reflect the movement through the system of the cohort enrolled in the 'significant leap' of the first two years following reconstruction in Afghanistan in 2002 (Miwa, 2005).

Table 1: Distribution of Employed Men and Women by Years of Education in Rural and Urban Afghanistan, 2007/08

Years of Education	Urban		Rural	
	Men	Women	Men	Women
0	57.0	86.2	73.0	96.1
1	0.3	0.3	0.2	0.1
2	1.0	0.5	0.9	0.2
3	2.7	0.7	1.9	0.5
4	2.9	1.3	2.1	0.5
5	2.7	0.5	2.2	0.4
6	5.5	1.8	5.0	0.7
7	2.8	0.8	2.0	0.3
8	4.2	1.1	2.5	0.4
9	3.2	0.9	3.0	0.2
10	2.3	0.6	1.2	0.1
11	2.0	0.5	1.0	0.1
12	13.4	4.7	4.9	0.4
Total (%)	100.0	100.0	100.0	100.0
Total (numbers)	1,264,377	427,951	3,346,399	2,063,126

Source: Estimated using NRVA 2007/08 data, individual weights used.

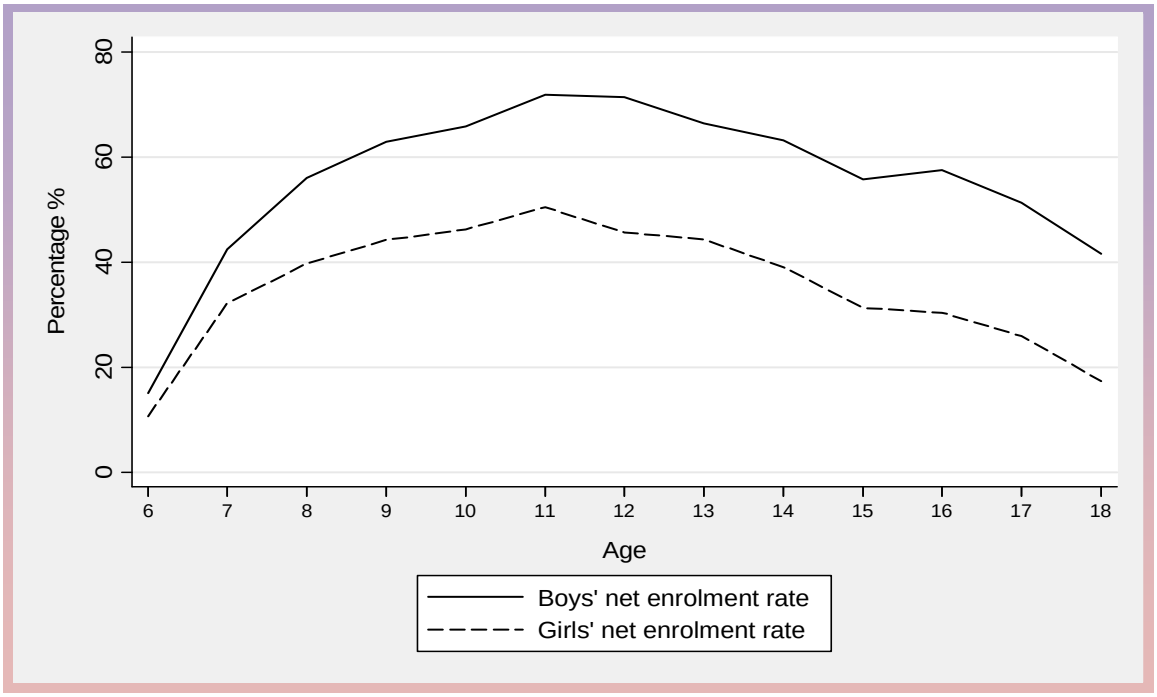
Figure 1: Gross Enrolment Ratio (GER) for Primary and Secondary Education in Fragile States



Source: World Bank Education Statistics (2007/2010).

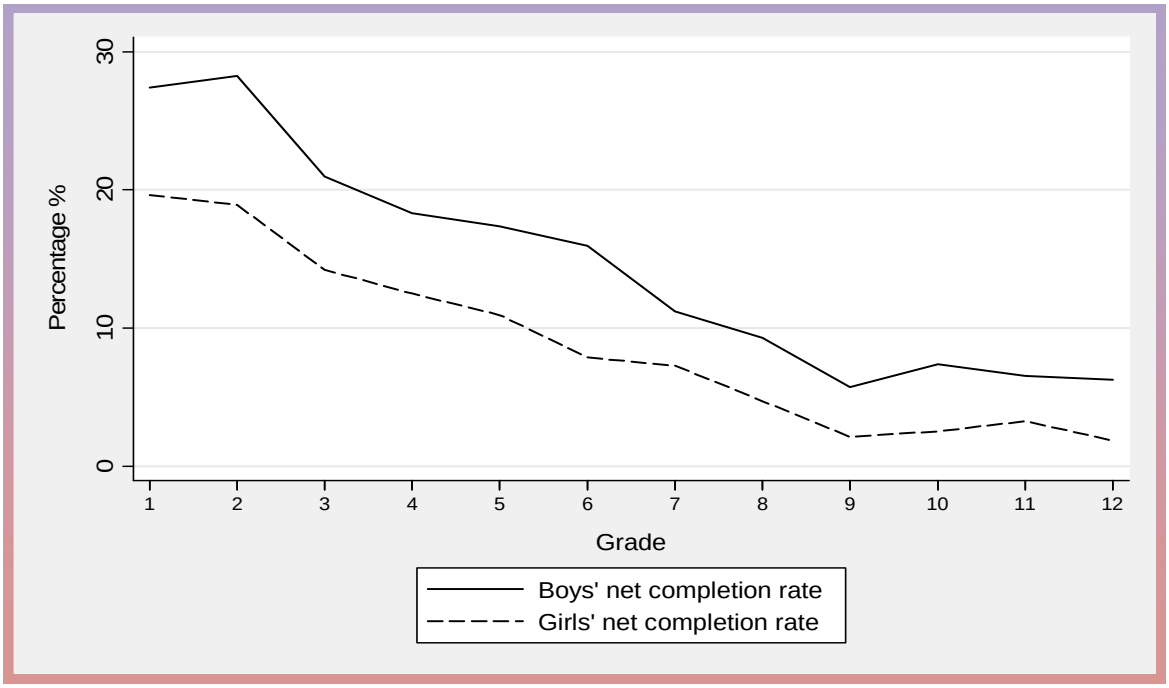
There appears to be significant leakage from the system which gathers momentum over the school cycle. This is evident in Figure 3 which plots grade-specific net completion rates. Only 27 per cent of six year old boys complete that grade, and this figure drops to 6 per cent at 17 years of age. It is much worse for girls. Only 20 per cent of six year old girls complete the grade, while only 2 per cent reach the finishing line at 17 years of age. Figure 4 sets out the ratios of gender-specific enrollment and net completion rates. Boys' enrollment rates are 1.5 times girls' enrollment rates at primary and lower secondary levels, rising to more than twice the female enrollment rate at the end of the school cycle. Gender differentials become even more starkly apparent when we look at the ratios between boys' and girls' net completion rates.

Figure 2: Age-specific Enrollment Rates, Afghanistan 2007/08



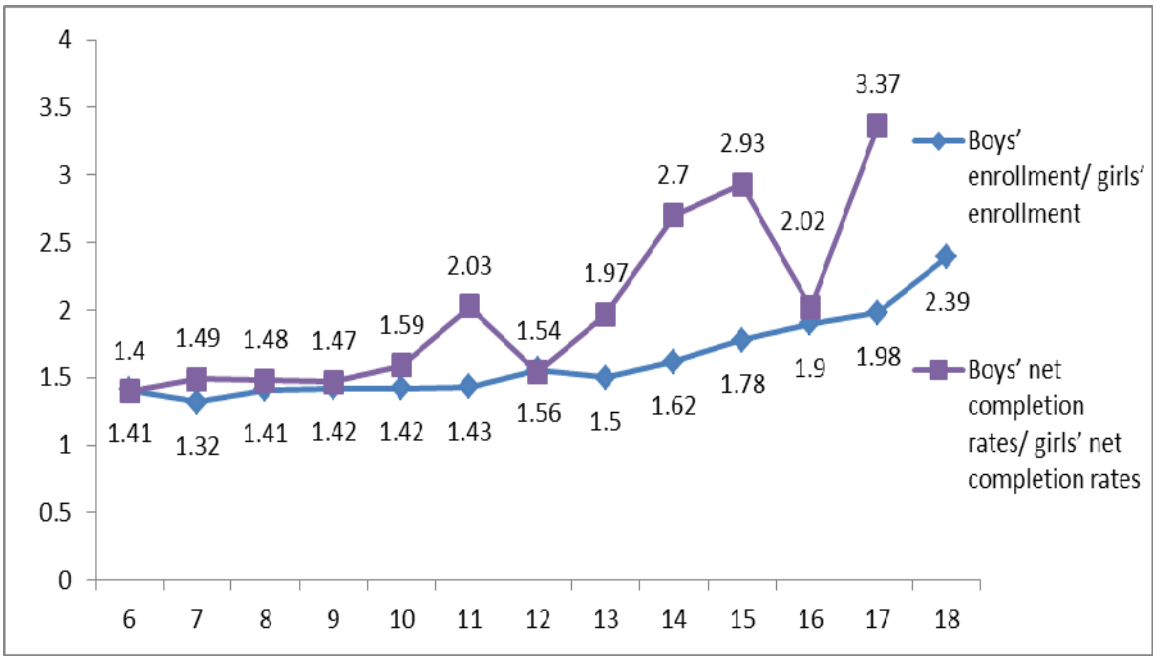
Source: Estimated using NRVA 2007/08 data, individual weights used.

Figure 3: Grade-specific Net Completion Rates, Afghanistan 2007/08



Source: Estimated using NRVA 2007/08 data, individual weights used.

Figure 4: Trend in Gender Parity Ratios in Enrollment and Net Completion Rates in Afghanistan, 2007/08



Source: Estimated using NRVA 2007/08 data, individual weights used.

This paper aims to investigate the factors underlying these low school enrollment figures and is structured as follows. Section 1 reviews previous research in this area. Section 2 provides a brief description the data and the methodology used in this analysis. In Section 3 we present the results which are then discussed in Section 4.

REVIEWING THE LITERATURE

There are few studies that investigate the factors associated with school enrollment in Afghanistan. Some these are econometric analyses (Rashid, 2005; Guimbert *et al.*, 2008; and Aturupane, Gunatilaka, Shojo and Ebenezer, 2013) and others are qualitative investigations. Hunte , 2006 and Rashid, 2005 used the National Risk and Vulnerability Assessment (NRVA) Survey data of 2003 while Guimbert et al., 2008 also used NRVA 2003 data but combined it with data from the School Census of 2004 and the Public Expenditure Tracking Survey of 2004/05. Hunte, 2006 used qualitative methods and the material from four case studies (two in in the cities of Kabul and Kandahar and two in villages in the provinces of Kabul and Faryab) to explore the complexities surrounding the issue of household decision-making about enrollment. In terms of supply-side factors affecting school enrollment, these studies suggest that:

1) The availability and quality of schools was found to be an important driver of enrollment and (Guimbert et al., 2008); In fact, among the reasons given for non-enrollment in the NRVA 2003, non-availability of a school accounted for 30 per cent of

cases and the availability of secondary schools was found to have some impact on primary enrollment. Proximity was another important factor

2) The quality of teaching was also found to be important. A high proportion of contract teachers reduced the likelihood of enrollment, a higher pass rate in the district increased the probability of enrollment and a high proportion of female teachers increased the likelihood of enrollment while the proportion of male-only schools had little impact. Enrollment was found to be higher for schools not operated by the government.

In terms of demand side factors, these studies indicate that:

1) Age and gender were strongly associated with the probability of being enrolled, with children in the age 7 to 11 age group, and boys, more likely to be in school than older children and girls (Guimbert et al., 2008). They found that being a boy increases the likelihood of going to school by almost 40 per cent.

2) Size of the household also was a significant factor: children in large households had significantly lower probability of enrollment but household expenditure was not strongly correlated with enrollment. For example, Hunte, 2006 found that many extremely poor households continue to place high expectations on education as a way out of poverty and, rather than require their children to work, they send boys (and to a lesser degree, girls) to school in the hope of a better future. But she also cautioned that while parents may want to educate both sons and daughters, they may be constrained by a combination of poverty (which inhibits the enrollment of both boys and girls) and their fear of negative social pressure (specifically in relation to girls' enrollment). As a result, some but not all boys in a household may go to school, while girls are not enrolled at all or stop going to school with the onset of puberty (Hunte, 2006).

3) Parents are the primary decisions makers in the enrollment process with input from grandparents and the child's older brother (Hunte, 2006). In general, those households which enroll all of their children (boys and girls) in school appear to have comparatively more egalitarian relations between members. This is in contrast to another conflict-affected society, Somaliland, where the mother's decision-making was found to be highly predictive of girls' schooling (Viswanathan, 2006).

4) Disability was negatively associated with enrollment (Guimbert et al., 2008)

5) Working children were also less likely to go to school. (Guimbert et al., 2008).

6) The children of literate parents were more likely to go to school and community factors were also found to be important. For example, the probability of enrollment was lower in the Western region and higher in the Eastern and Southern regions, and Pashto speakers were less likely to be enrolled than Dari speakers. (Hunte, 2006) also noted that households tend to copy their neighbors' enrollment decisions.

7) Insecurity was negatively associated with enrollment as households that experienced a security incident were 9 per cent less likely to send their primary aged children to school than households which had not, other things being equal (Guimbert et al., 2008). But insecurity did not appear to be associated with less likelihood of girls enrolling rather than boys. This is contrast to Tajikistan, for instance, where exposure to conflict had a large significant negative effect on the enrollment of girls, and little, or no, effect on enrollment of boys (Shemyakina, 2011). In post-conflict Mozambique, too, conflict-exposure during the first seven years of life was found to be negatively associated with a lower probability of enrollment for girls, not boys, and this result was related to the choices that the household made during the conflict years (Domingues, 2011). But Guimbert et al. (2008) found that in Afghanistan, insecurity did not have a significantly negative effect on girls' secondary enrollment, even though it was associated with marginally higher enrollment for the entire sample.

8) Migration was found to be a factor in qualitative study but not in the econometric analysis. Hunte (2006) found that Afghan refugees returning home have greater aspirations for their children's education, having observed the benefits of education in Pakistan and Iran. This appears to have been the experience in some other conflict-affected countries too, for example in Somaliland (Viswanathan, 2006). But Guimbert et al.'s (2008) econometric analysis found migration having little impact on enrollment in Afghanistan.

In this paper we investigate use the most recent NRVA household survey (2007) data set to investigate the association of these and other factors with the enrollment of girls and boys in rural and urban Afghanistan.

DATA AND METHODOLOGY OF THE STUDY

Data

This analysis is based on data from the National Risk and Vulnerability Assessment (NRVA) Survey of 2007/08. This comprehensive household survey collected information on demography, consumption expenditure, education, maternal and child health, employment, household and community-based infrastructure. The survey instruments also included several questions related to certain cultural practices and the respondents' perceptions. The sample of 20,576 households was drawn from 2,572 communities in all 34 provinces of all Afghanistan and was designed to be representative at the province level for most key indicators. The survey took place over a 12 month period from September 2007 through August 2008 to capture the effects of seasonality unlike its predecessors, the NRVAs of 2003 and 2005.

The NRVA 2007/08 includes four key instruments: a men's questionnaire, a women's questionnaire and two community questionnaires, one for male community leaders and the other for female community leaders. While the quality of household-level information related to demography, consumption expenditure of households and educational attainment of individuals was good, there was a very high non-response rate for several

key education facilities-related variables at the community level. For example, the community questionnaire included questions about the availability of schools by type, distance and source of funding, as well as about the number of male and female teachers in the community, but the response rate for most of these variables was around 20-30 per cent. Hence in looking at supply-side factors, we had to confine ourselves to only a few variables. Nevertheless, the survey instrument also included some questions about household decision-making concerning enrollment which enabled us to investigate econometrically some of the issues raised by Hunte (2006), although parents' attitudes about children's education have not been elicited in this survey, unlike the NRVA of 2003 which Guimbert et al. (2008) used. Moreover, the 2007/08 questionnaire also included some questions on cultural practices which we used as proxies for the extent to which some cultural factors are associated with the probability of enrollment. Investigating these influences is particularly important as cultural notions that education is 'unnecessary' or 'harmful' for girls in particular are fairly widely prevalent, and have been leveraged by political groups for their own advantage (World Bank, 2005).

Methodology and Variables

The conceptual framework used for the econometric analysis follows Guimbert et al.'s (2008) previous analysis in comparing the demand and supply-side factors associated children attending school. The model is based on the relationships between school enrollment and demand and supply-side factors that have emerged from the theoretical and empirical literature as follows:

$$E = f\left(C, H, S, R\right). \qquad (1)$$

The binary dependent outcome E takes the value one if the individual is enrolled in school and zero if he or she is not. $\boldsymbol{C}$ is a vector of child characteristics, $\boldsymbol{H}$ a vector of household characteristics, $\boldsymbol{S}$ a vector of school characteristics and $\boldsymbol{R}$ a vector of community and spatial characteristics. It should be noted that the model does not address the issue of causality and only seeks to identify the variables associated with school enrollment.

Equation (1) is a reduced form equation in which some key variables influencing enrollment outcomes are absent: for example, school inputs under the parents' control, such as school attendance and purchase of stationery, and other child characteristics that may be unobservable. Some of the omitted variables may also be correlated with the error term.

While Guimbert et al. (2008) adopt the probit model as their standard specification, with logit and linear probability model specifications used for robustness tests, in this paper we adopt the logit model as the standard specification. This is because Stata's estimation commands that adjust for sample design do not produce goodness of fit tests, whereas Archer and Lemeshow's (2006) user-written program, svylogitgof.ado, can be deployed to perform a F-adjusted mean residual test to measure goodness of fit after fitting a logistic regression model to survey data.

Primary education in Afghanistan consists of Grades 1-6 from age 7-12, mid or lower secondary school consists of Grades 7-9 from age 13-15 and high or senior secondary school consists of Grades 10-12 from age 16-18. Hence, equation (1) is estimated over 12 sub-samples related to enrollment type (primary, mid and high school enrollment of children in the relevant age groups), gender and sector of residence (urban or rural). Our main variables are as follows:

Child Characteristics

Among the child characteristics considered, apart from the usual demographic characteristics such as age, we were able to include variables denoting two levels of disability, mild and severe; whether the child was employed; and, how many hours he or she spent on household chores the previous week.

Group Variables

Of the group of variables denoting household characteristics, we included per capita household consumption expenditure which had been adjusted for spatial and temporal differences. This was exactly the same data used for the World Bank's (2010) *Poverty Status in Afghanistan*, and details about how the data was adjusted can be found in that report. The impact of conflict was captured by a dummy variable which took one if the household had suffered a security-related shock last year. To represent the impact of inter-generational schooling, both mother's and father's years of education were included in the model. To control for the impact of cultural factors, we included dummy variables denoting whether the child's mother was usually accompanied when she left the family compound, and whether she wore a burka outside the home. Some aspects of the nature of household decision-making about enrollment, highlighted by Hunte (2006) were captured by variables that took the value one if the decision about boys' or girls' education was taken by the principal female of the household, or the principal male member of the household, who need not necessarily have been the child's parent. The reference category includes consultative decision-making that ranges from including just the spouse of the principal male or female member in making the decision, through consultation with the child concerned, to consultation with male members of the family or the decision being made by non-family members. Matching the data used for the construction of the two variables with the child's own parents' data would have resulted in the loss of too many observations, hence we opted to maintain the representativeness of the variable and hence of the sample. It should be noted that other studies that have looked at the impact of the nature of household decision-making have expressed the variable as a dummy variable that takes one if the mother has sole decision-making responsibility rather than sharing decision-making with someone else (for example, see Upadhyay and Hindin, 2005 and Viswanathan, 2006). However, given the patriarchal and traditional nature of Afghan society, we thought that it would be more interesting to look at the extent to which sole decision-making responsibility by both men and women in the household was correlated with the enrollment of girls and boys separately. Hence we constructed the variables accordingly.

Supply-side variables

The only variables relating to supply side factors available in the survey at relatively high non-missing frequencies were those related to the availability of a boys' only school, girls' only school, co-educational school and madrassa in the community. Among community variables considered, topographic variables were included in the model estimated on the rural sample as variation in terrain characteristics were mainly in rural areas, the towns locating mainly in plains, and also because terrain has been found to be highly correlated with poverty in Afghanistan (World Bank, 2010). We also controlled for accessibility and connectivity by including variables on the distance to the nearest road, and a dummy variable to indicate whether the road was passable all year. Since the World Bank's (2010) poverty assessment suggested that the level of economic prosperity of the community as denoted by the proportion of bad jobs (casual laborer, self-employment and family work) and the share of underemployed (working less than 35 hours a week) among the employed were important correlates of poverty, we included these variables in the models to see their impact on enrollment. Finally, we included province dummies to capture the effect of regional fixed effects not captured by the other spatial variables.

The results of the econometric analysis of the factors associated with primary, mid and high school enrollment of girls and boys in rural and urban Afghanistan are presented in the next section.

RESULTS AND FINDINGS

We will focus here on explaining the results pertaining primary school enrolment in some detail. We have discussed middle school and high school results when they differ from the results of our primary school analysis.

Factors Associated with Primary Enrollment

Table A.1 sets out the marginal effects of the logistic estimation of factors associated with the probability of being enrolled in primary school for children between 6 and 12 years of age. The first two columns set out the means or proportions of the explanatory variables relating to the sub-samples of boys and girls in the sample as a whole, and the remaining columns set out the results of the estimation for the urban and rural sub-samples. Results of the F-adjusted mean residual test suggests that the four specifications explain the variation in the probability of enrollment of the sub-samples quite well.

The following factors that appear to be most strongly and significantly associated with the probability of enrollment: 1) The two age-related variables; 2) The variables related to disability; 3) Child labor; 4) Who makes the decisions about children's education; 5) The level of economic prosperity in the community; and 6) Regional variables. Of these factors, however, the level of economic prosperity in the community as measured by the proportion of bad jobs appears to be the single most important factor as its marginal effects in all the equations are much larger than those of any of the others. All of the

above are demand-side factors and supply side variables, while significant, together account for much less of the variation in school enrollment.

There also appear to be important rural and urban differences in the association of these key factors with the dependent variable. For example, household per capita expenditure is positively correlated with the probability of enrollment but impact is largest and most significant in urban areas. On the other hand, the negative impact of child labor is also most pronounced in urban areas, and is likely to reflect the opportunity cost of going to school in terms of foregone household income. Severe disability appears to constrain boys' access more than girls' access. Sole decision-making about children's education by the principal female member of the household appears to be more strongly correlated with the probability of enrollment than sole decision-making by the principal male member. But note that the impact of sole female decision-making is much higher in rural areas rather than in urban areas and on girls' likelihood of participation than boys' likelihood.

The regional variables are by and large significant across the board, but there are important differences among provinces. Girls and boys in the south, west, and southwest regions are less likely to participate in primary education than children in Afghanistan's central region. Those in the southwest region, in particular seem much disadvantaged as all the marginal effects are negative, large and significant. However, while children in the west central region are more likely to be enrolled than those in the central region, girls in the west and the north east appear to have a higher probability of being enrolled than boys in the same provinces.

The marginal effects of the age-related variables are note-worthy. Together they tell us that the probability of enrollment rises but at a decelerating rate as age rises. This is reflected in the inverted U of the plot on enrollment in 2 and confirms that the significant leap in enrollment which began with reconstruction has not been sustained.
We turn next to some of the other variables that appear to be significantly correlated with the probability of enrollment although their impacts appear to be relatively smaller. Of particular interest is the impact of parental educational attainment on the probability of enrollment. These two variables appear to be significantly correlated (at the 1 per cent critical level) with the probability of enrollment across all four equations, but note that mother's education always has a bigger impact than the father's level of education, and that it is more for girls' enrollment rather than boys' enrollment. Thus, the results show that while parental education is important, mother's education is the more important, particularly for girls' enrollment.

The impacts of cultural factors are also interesting. It appears that the mother usually wearing a burka outside the compound is positively correlated with child enrollment although only the results for urban boys and rural girls are significant. It is possible that if the mother wears a burka she has greater freedom of movement outside the home and is able to take her children to school and bring them back herself, which increases their chances of enrollment. On the other hand, having to be accompanied by somebody else when she leaves the compound is significantly and negatively associated with girls'

enrollment in urban areas and positively and significantly associated with girls' enrollment rural areas. It is possible that it is more difficult to find people to accompany one in busier urban areas hence the mother is not able to accompany her daughters to school in urban areas. In contrast, in rural areas, it may be easier to find people to accompany oneself, and safer to do so as well. Hence girls' chances of participating in school appear to be greater in rural areas if the mother is always accompanied when she leaves the compound.

The impact of an insecurity or violence-related shock on the probability of schooling is negative across all four equations, but significant only for rural girls. These results are in line with Guimbert et al.'s (2008) findings for Afghanistan in 2003. Although Afghanistan is a conflict-affected country, the impact of conflict on the probability of children's education does not appear to be as important as the impact of many other variables, although it is likely to have an impact on other variables associated with enrollment, for example, by affecting the economic prosperity of communities.

The signs of the accessibility variables in the rural samples are counter-intuitive and hard to interpret. The results show that in urban areas, the sign of the marginal effect of the variable is as expected with the probability of enrollment declining as distance increases. But in rural areas, the probability of enrollment increases as distance from the nearest road increases. It is possible that if the model included variables denoting distance from the nearest educational facility, we would obtain more meaningful results for the rural sample as well. However, the poor quality of the relevant data in the survey precluded our including that information in our model as well.

Factors Associated with Enrollment in Middle School

Table A.2 sets out the marginal effects of the logistic regressions which looks at the extent to which much the same factors investigated in the analysis of primary education, are associated with the probability of children in the relevant age group being enrolled in mid or lower secondary school. The four equations on the four subsamples differentiated by gender and location appear to explain variation in the dependent variable quite well as they all pass the goodness of fit test.

The key factors found to be associated with the probability of primary enrollment also appear to be at play in determining the probability of enrollment in mid-school. Community-level economic development and regional factors appear all important. The average proportion of bad jobs in the community has the largest and most significant, negative association with enrollment from among all the explanatory variables. Girls and boys in urban and rural areas in the north, west and southwest are significantly less likely to be attending mid-school than children in the central region. Children in the south are also less likely to be attending mid-school but the results are significant only for rural girls. In contrast, both girls and boys in urban and rural areas in the west central region are more likely to be attending school than children in the central region, although the result for boys in urban areas is not significant. Boys and girls in rural areas in the north east, however, are more likely to be attending school than those in the central region.

The next most important variable associated with the probability of enrollment is disability, as in the primary school enrollment analysis. But here we are on the downward slope of the inverted U- shaped curve apparent in Figure2, and the econometric results confirm that the probability on enrollment declines as the child's age increases: the leakage from the system begins here. Household per capita expenditure and child employment also behave in much the same way. But note that involvement in household chores is negatively and significantly associated with the enrollment of rural girls. Experiencing a security-related shock the previous year has little significant impact on mid-school enrollment and it should be recalled that Guimbert et al. (2008) found much the same in relation to secondary school enrollment in 2003. Mother's years of education continues to be more positively correlated with the probability of children's enrollment in mid-school than father's education other than in the case of rural boys where mother's education has a negative but not statistically significant impact but father's years of education has a positive impact. Sole decision-making power over enrollment by the principal male member of the household has a significantly positive effect only on the enrollment of boys and girls in rural areas, whereas sole decision-making power by the principal female member of the household has a much larger positive impact on children's education, particularly on the enrollment of girls. The availability of appropriate schools in the community is also positively and significantly associated with the probability of enrollment, but here too, the demand-side factors appear to have greater explanatory power in the equation.

Factors Associated with Enrollment in High School

Table A.3 sets out the results of the logistic regression analyses investigating the factors associated with the probability of young people between the ages of 16 and 18 attending high school. All the equations except the last one pertaining to the enrollment of rural girls in high school pass the goodness of fit test.

Here too, the same variables found to be highly correlated with the probability of primary and mid-school enrollment, appear significantly correlated with the probability of high school enrollment. But there are interesting differences. The impact of employment on employment is larger and significant across the board. The negative impact of household per capita expenditure on high school enrollment is also much larger, suggesting that the opportunity cost of foregone earnings in household income is much higher at this age and stage of the education cycle. Exposure to conflict appears to have little impact on the probability of high school enrollment.

Sole decision-making over education by the principal male household member is correlated significantly only with the enrollment of girls in urban areas. In contrast, sole decision-making about education by the principal female member of the household has a little less than twice as large an impact, and highly significant in the equations related to the probability of enrollment of urban boys and rural girls. Unlike in the case of primary and mid-school enrollment, neither of the decision-making variables is significantly correlated with boys' enrollment in rural areas.

Father's years of education appear more significantly correlated with the probability of boys and girls attending high school in urban areas, and its impact is even greater than that of mother's years of education for urban boys. But the size of the marginal effect of mother's years of education on the probability of girls participating in education, whether in rural or urban areas, is much larger. The impacts of variables denoting cultural background of household are interesting. The mother having to wear a burka and having to be accompanied when outside the compound are significantly and negatively correlated with the probability of enrollment of girls in urban areas. It is possible that in urban areas, negative social pressure may be preventing girls from participating in school after puberty if their cultural background is more traditional, as Hunte (2006) points out. But the mother wearing a burka is significantly associated with a greater probability of rural girls and urban boys attending high school. It is not immediately clear why this may be so.

In comparison with these demand-driven factors, supply-side factors are not significantly correlated with the probability of high school enrollment other than in the case of rural girls whose likelihood of participation is positively and significantly associated with the availability of a girls' only high school.

Thus the findings of this study, too, confirm those of Guimbert et al. (2008) and Hunte (2006) that conclude that demand-side factors appear to be more important in Afghanistan.

CONCLUSION

Our results confirm that demand-side factors appear to be more important in Afghanistan. In fact this study found that while the availability of appropriate schools is significantly correlated with primary and mid-school enrollment, they have a significant impact only on the enrollment of rural girls in high school.

In particular, the mix of explanatory variables we have been able to include in our models and the results obtained reinforce the observation that, while parents may want to educate both sons and daughters, they may be constrained by a combination of poverty and their fear of negative social pressure. The analysis in this paper found that economic factors such as the economic backwardness of the community families live in, and their level of economic welfare as denoted by consumption expenditure were the most important correlates of the probability of enrollment. These two factors likely combine with the opportunities available for child labor in the community, and so affect the opportunity costs of sending children to school. It is apparent that these choices become more acute as the child grows older, and his or her income-earning capacity increases.

While children of more educated parents, particularly of better-educated mothers, are more likely to go to school, whether they actually do crucially depends on the economic situation the household is in. Moreover, while sole decision-making, by either the female or male principal member of the household about the education of boys and girls increases the chances of enrollment, relative to a more consultative decision-making

process, decision-making solely by the principal female member has a greater impact, particularly on the enrollment of girls. Less consultative decision-making such as this, either by the principal male or female member of the household, is likely to be closely influenced by immediate family circumstances rather than with the opinions of others who may not be as preoccupied with the cost constraints, both in terms of parental inputs and children's foregone earnings and help with household chores, perhaps freeing up older members to go out to work, that face the household.

Right now, Afghanistan appears to be in a paradoxical situation: while education and better human capital needs to power economic growth, incomes need to expand to ease the constraints on education enrollment that are currently imposed by economic backwardness. To break out of this circle of constraints against enrollment, policy makers need to aggressively pursue policies that concentrate on easing the economic costs to households of children attending school, while enhancing the supply and quality of the facilities provided.

REFERENCES

ARCHER, K. J. & LEMESHOW, S. 2006. "Goodness-of-fit test for a logistic regression model fitted using survey sample data". *The Stata Journal,* 6**,** 97-105.

ATURUPANE H., GUNATILAKA R., SHOJO, M. & EBENEZER R., 2013. "Education, Economic Welfare and Subjective Well-Being in Afghanistan, 2007/2008". World Bank Working Paper Series. Report No.XXX. The World Bank. Washington DC.

DOMINGUES, P. 2011. "Civil War Exposure and School Enrolment: Evidence from the Mozambican Civil War". Sorbonne, Network of European Peace Scientists.

GLEWWE, P. & KREMER, M. 2005. "Schools, Teachers and Education Outcomes in Developing Countries". Policy Paper No. 009. Bureau for Research in Economic Analysis of Development.

GOVERNMENT OF AFGHANISTAN & INTERNATIONAL AGENCIES 2004. "Securing Afghanistan's Future: Accomplishments and the Strategic Path Forward".

GUIMBERT, S., MIWA, K. & NGUYEN, D. T. 2008. "Back to School in Afghanistan: Determinants of School Enrollment". *Journal of Educational Development,* 28**,** 419-434.

HUNTE, P. 2006. "Looking beyond the school walls: household decision-making and school enrollment in Afghanistan". *Briefing Paper*. Afghanistan Research and Evaluation Unit. Kabul, Afghanistan.

MIWA, K. 2005. "Investing in Afghanistan's Future: A Strategy Note on the Education System in Afghanistan". The World Bank.Washington DC.

RASHID, F. 2005. "Education and gender disparity in Afghanistan". Master Thesis in Development Economics, Williams College, Massachusetts.

SHEMYAKINA, O. 2011. "The Effect of Armed Conflict on Accumulation of Schooling: Results from Tajikistan". *Journal of Development Economics,* 95**,** 186-200.

UPADHYAY, U. D. & HINDIN, M. J. 2005. "Do higher status and more autonomous women have longer birth intervals? Results from Cebu, Philippines". *Social Science & Medicine,* 60**,** 2641-55.

VISWANATHAN, K. 2006. "Factors Affecting School Enrollment in a Post-Repatriation Context: A Study of Household Roles, Attitudes and Forced Migration Processes in Urban Somaliland". PhD Thesis. John Hopkins University.

WORLD BANK. 2005. "Afghanistan National Reconstruction and Poverty REduction - the Role of Women in Afghanistan's Future". The World Bank. Washington DC.

WORLD BANK. 2010. "Poverty Status in Afghanistan: A Profile based on National Risk and Vulnerability Assessment (NRVA) 2007/08". The World Bank Washington DC.

WORLD BANK. 2013. "Higher Education in Afghanistan: An Emerging Mountainscape". The World Bank. Washington DC.

Table A.1: Factors Associated With the Probability of Being Enrolled in Primary School in Urban and Rural Afghanistan 2007/08: Marginal Effects of Logistic Estimation

	Means or proportions		Urban		Rural	
	Boys	Girls	Boys	Girls	Boys	Girls
Child's characteristics						
Age	9.43	9.33	0.5040***	0.6103***	0.4221***	0.2392***
Age squared	91.94	90.12	-0.0223***	-0.0285***	-0.0183***	-0.0116***
Child is mildly disabled	0.01	0.01	-0.3923***	-0.3821***	-0.0958	-0.0181
Child is severely disabled	0.01	0.00	-0.4639***	-0.2739	-0.4142***	-0.2210***
Child engaged in income-earning activity last week	0.16	0.09	-0.2833***	-0.1421**	-0.1030***	0.0166
Hours spent on household chores during previous week	10.12	11.76	-0.0012	-0.0055***	-0.0006	-0.0017**
Household, parents, culture						
Household's per capita expenditure	7.22	7.21	0.2037***	0.2151***	0.0335**	0.0205
Household suffered violence/insecurity-related shock last year	0.11	0.11	-0.0057	-0.0249	-0.0408	-0.0396*
Mother's years of education	0.39	0.38	0.0137***	0.0310***	0.0205**	0.0456***
Father's years of education	2.00	2.03	0.0129***	0.0194***	0.0198***	0.0073***
Mother usually accompanied outside the compound	0.82	0.81	0.0104	-0.0707**	-0.0002	0.0451***
Mother usually wears burka when outside the compound	0.66	0.65	0.0811***	0.0486	0.0108	0.0387***
Female head/spouse of male head, has sole decision-making power over boys' education	0.04		0.1793***		0.1166***	
Male head/spouse of female head, has sole decision-making power over boys' education	0.57		0.0304		0.0437***	
Female head/spouse of male head, has sole decision-making power over girls' education		0.04		0.2986***		0.2917***
Male head/spouse of female head, has sole decision-making power over girls' education		0.52		0.1340***		0.0542***
Education facilities in community						
Boys' primary school in community	0.26		0.1176***		0.0728***	
Girls' primary school in community		0.24		0.0531		0.1185***

	Means or proportions		Urban		Rural	
	Boys	Girls	Boys	Girls	Boys	Girls
Co-educational primary school in community	0.15	0.16	0.0671**	0.0330	0.0615***	0.0713***
Community and infrastructure variables						
Valley					-0.0189	0.1171***
Valley and hills					-0.0442***	0.0139
Hills					-0.0055	0.0111
Distance in km to nearest road	2.53	2.60	-0.0069***	-0.0111**	0.0008**	0.0013***
Road is passable all year	0.72	0.72	-0.0453	0.0745	0.0081	-0.0100
Average proportion of bad jobs in the community	0.89	0.89	-0.5020***	-0.6013***	-0.7330***	-0.6649***
Average proportion of underemployed persons in community	0.31	0.31	0.0812	-0.1084	0.0488	0.0593**
Regional variables						
East	0.12	0.12	-0.1578***	-0.0596	-0.0682**	0.1481***
Northeast	0.15	0.16	0.0525	0.1503***	-0.0624**	0.2577***
North	0.11	0.11	-0.1175**	0.0083	-0.1952***	0.0626**
West	0.09	0.10	-0.1558***	0.1868***	-0.2130***	0.0979***
Southwest	0.11	0.11	-0.2707***	-0.2921***	-0.6590***	-0.3531***
West central	0.06	0.07	0.0430	0.1465*	0.0299	0.2951***
F-adjusted mean residual test (p-value)			0.800	0.120	0.720	0.328
Number of observations			2998	2749	8560	7878

Notes:

1. Dependent variable is the probability of being enrolled in primary school. Boys: mean 0.62, standard deviation 0.005. Girls: mean 0.41, standard deviation 0.005
2. The omitted categories in the dummy variable analyses are: consultative decision-making that ranges from including just the spouse of the principal male or female member in making the decision, through consultation with the child concerned, to consultation with male members of the family or the decision being made by non-family members; plain; Central.
3 ***, **, and * denote statistical significance at the one per cent, five per cent and ten per cent levels respectively.
4. The F-adjusted mean residual test measures goodness of fit after fitting a logistic regression model to survey data. Archer and Lemeshow's user-written Stata program svylogitgof.ado was used to generate the test results. See Archer and Lemeshow (2006), 'Goodness-of-fit test for a logistic regression model fitted using sample survey data', in *Stata Journal*, 6 (1), pp. 97-105.
5. Estimated using NRVA 2007/08 data, individual weights used.

Table A.2: Factors Associated With the Probability of Being Enrolled In Middle School in Urban and Rural Afghanistan 2007/08: Marginal Effects of Logistic Estimation

	Means or proportions		Urban		Rural	
	Boys	Girls	Boys	Girls	Boys	Girls
Child's characteristics						
Age	14.04	13.99	-0.0430**	-0.0781***	-0.0554***	-0.0737***
Child is mildly disabled	0.02	0.01	-0.1534	0.2197**	-0.1822**	-0.0322
Child is severely disabled	0.01	0.01	-0.6781***	-0.5119***	-0.4422***	-0.1584**
Child engaged in income-earning activity last week	0.39	0.22	-0.1957***	-0.1302**	-0.1764***	-0.0012
Hours spent on household chores during previous week	13.88	18.56	0.001	-0.0034	-0.0005	-0.0038***
Household, parents, culture						
Household's per capita expenditure	7.24	7.26	0.1906***	0.1913***	0.0829***	0.0235
Household suffered violence/insecurity-related shock last year	0.14	0.10	0.0129	-0.0305	-0.0267	-0.0476
Mother's years of education	0.38	0.48	0.0209*	0.0374***	-0.0041	0.0185**
Father's years of education	2.13	2.15	0.0124***	0.0166***	0.0271***	0.0115***
Mother usually accompanied outside the compound	0.79	0.79	0.0064	-0.0753	0.0302	0.0394
Mother usually wears burka when outside the compound	0.65	0.65	0.1061***	0.0067	0.0156	0.0137
Female head/spouse of male head, has sole decision-making power over boys' education	0.05		0.1680***		0.0792	
Male head/spouse of female head, has sole decision-making power over boys' education	0.56		0.0423		0.0487*	
Female head/spouse of male head, has sole decision-making power over girls' education		0.04		0.2192***		0.2502***
Male head/spouse of female head, has sole decision-making power over girls' education		0.50		0.0365		0.0464**
Education facilities in community						
Boys' mid school in community	0.20		0.1432***		0.1122***	

	Means or proportions		Urban		Rural	
	Boys	**Girls**	**Boys**	**Girls**	**Boys**	**Girls**
Girls' mid school in community		0.15		0.2183***		0.1231***
Co-educational primary school in community	0.13	0.16	0.0123	-0.0576	0.1066***	0.3222***
Community and infrastructure variables						
Valley					0.0065	0.1561***
Hills					-0.2025*	0.0166
Distance in km to nearest road	2.02	2.30	-0.0315**	-0.0623**	-0.0003	0.0012
Road is passable all year	0.73	0.72	0.0254	0.0913	0.0315	-0.0375
Average proportion of bad jobs in the community	0.89	0.87	-0.3204***	-0.5015***	-0.8310***	-0.6027***
Average proportion of underemployed persons in community	0.32	0.29	0.0363	-0.0308	0.1655***	0.018
Regional variables						
South	0.11	0.10	-0.0863	0.1501	-0.0633	-0.1001***
Northeast	0.14	0.17	0.0644	0.1866***	-0.0736	0.1886***
North	0.12	0.13	-0.2048***	0.1655***	-0.1747***	-0.0423
West	0.10	0.10	-0.1298*	0.2391***	-0.2653***	0.0978**
Southwest	0.11	0.08	-0.2554***	-0.4674***	-0.6691***	-0.2666***
West central	0.05	0.06	0.0071	0.2716***	0.1373***	0.2464***
F-adjusted mean residual test (p-value)			0.927	0.265	0.683	0.696
Number of observations			1292	1204	3169	2755

Notes:

1. Dependent variable is the probability of being enrolled in middle school. Boys: mean 0.63, standard deviation 0.008. Girls: mean 0.39, standard deviation 0.008

2. The omitted categories in the dummy variable analyses are: consultative decision-making that ranges from including just the spouse of the principal male or female member in making the decision, through consultation with the child concerned, to consultation with male members of the family or the decision being made by non-family members; plain; Central.

3 ***, **, and * denote statistical significance at the one per cent, five per cent and ten per cent levels respectively.

4. The F-adjusted mean residual test measures goodness of fit after fitting a logistic regression model to survey data. Archer and Lemeshow's user-written Stata program svylogitgof.ado was used to generate the test results. See Archer and Lemeshow (2006), 'Goodness-of-fit test for a logistic regression model fitted using sample survey data', in *Stata Journal*, 6 (1), pp. 97-105.

5. Estimated using NRVA 2007/08 data, individual weights used.

Table A.3: Factors Associated With the Probability of Being Enrolled In High School in Urban and Rural Afghanistan 2007/08: Marginal Effects of Logistic Estimation

	Means or proportions		Urban		Rural	
	Boys	Girls	Boys	Girls	Boys	Girls
Child's characteristics						
Age	17.05	16.93	-0.0852***	-0.1183***	-0.1019***	-0.0377***
Mildly disabled	0.02	0.01	-0.1483	0.0498	-0.2119**	-0.0193
Severely disabled	0.01	0.01	-0.5120***	-0.2504	-0.4532***	-0.0939***
Employed	0.58	0.30	-0.4557***	-0.2549***	-0.4238***	-0.0583***
Household, parents, culture						
Household's per capita consumption expenditure	7.29	7.31	0.2404***	0.2605***	0.0857***	0.0329
Household suffered violence/insecurity-related shock last year	0.12	0.09	0.0308	0.0183	-0.0264	-0.0454
Mother's years of education	0.42	0.47	0.0160*	0.0177*	0.0077	0.0217***
Father's years of education	2.12	2.52	0.0201***	0.0148***	0.0147***	0.0081***
Mother usually accompanied outside the compound	0.76	0.77	0.0180	-0.1598***	0.0747**	-0.0109
Mother usually wears burka when outside the compound	0.63	0.63	0.1650***	-0.1269**	0.0088	0.0407**
Female head/spouse of male head, has sole decision-making power over boys' education	0.05		0.2659***		0.0488	
Male head/spouse of female head, has sole decision-making power over boys' education	0.57		0.0368		0.0362	
Female head/spouse of male head, has sole decision-making power over girls' education		0.04		0.3321***		0.1812**
Male head/spouse of female head, has sole decision-making power over girls' education		0.52		0.1893***		0.0096
Education facilities in community						
Boys' high school in community	0.23		0.0107		-0.0204	
Girls' high school in community		0.30		-0.0526		0.0773***

	Means or proportions		Urban		Rural	
	Boys	Girls	Boys	Girls	Boys	Girls
Madrassa in community	0.12	0.12	-0.0670	-0.0619	-0.0089	0.0485
Community and infrastructure variables						
Valley					0.0190	0.1242***
Valley and hills					-0.0233	0.0155
Hills					-0.0432	0.1463
Distance in km to nearest road	1.98	2.27	-0.0134***	-0.007	0.0016*	0.0001
Road is passable all year	0.72	0.75	0.0318	0.0280	0.0297	-0.0272
Average proportion of bad jobs in the community	0.87	0.85	-0.4077***	-0.7410***	-0.7065***	-0.6190***
Average proportion of underemployed persons in community	0.31	0.28	0.0866	0.109	0.2012***	0.0873**
Regional variables						
South	0.12	0.10	0.1519**	0.0386	-0.0944*	0.1035**
East	0.11	0.11	0.0204	0.1714**	-0.1401***	0.0346
Northeast	0.16	0.16	0.0858	0.1955***	-0.1702***	0.1499***
North	0.13	0.13	-0.0606	0.2677***	-0.2712***	0.054
West	0.08	0.10	0.0099	0.2467***	-0.2338***	0.2324***
Southwest	0.07	0.03	-0.2010**	-0.2835***	-0.5181***	-0.1260***
West central	0.05	0.05	0.1327	0.2157	0.0229	0.2438***
F-adjusted mean residual test (p-value)			0.675	0.975	0.420	0.092
Number of observations			1098	879	2576	1768

Notes:

1. Dependent variable is the probability of being enrolled in high school. Boys: mean 0.52, standard deviation 0.009. Girls: mean 0.28, standard deviation 0.010.
2. The omitted categories in the dummy variable analyses are: consultative decision-making that ranges from including just the spouse of the principal male or female member in making the decision, through consultation with the child concerned, to consultation with male members of the family or the decision being made by non-family members; plain; Central.
3 ***, **, and * denote statistical significance at the one per cent, five per cent and ten per cent levels respectively.
4. The F-adjusted mean residual test measures goodness of fit after fitting a logistic regression model to survey data. Archer and Lemeshow's user-written Stata program svylogitgof.ado was used to generate the test results. See Archer and Lemeshow (2006), 'Goodness-of-fit test for a logistic regression model fitted using sample survey data', in *Stata Journal*, 6 (1), pp. 97-105.
5. Estimated using NRVA 2007/08 data, individual weights used.