Struggling against the Odds of Poverty, Access, and Gender: Secondary Schooling for Girls in Pakistan

Zeba A. Sathar,* Asif Wazir,** and Maqsood Sadiq***

Abstract

While schooling outcomes for girls have improved over the period 2001–11, progress has been uneven within Pakistan. Rural girls lag far behind urban girls and progress across the provinces remains unequal. The transition to secondary school—in some ways more critical for improving employability, reproductive health, and other outcomes—shows even more disparate progress by province and income class. Questions about the preference for public versus private schools and the actual choice of schools available to girls in most rural areas need to be answered if we are serious about a rapid escalation of secondary school enrollments for girls.

We use data from the Pakistan Integrated Household Survey for 2001/02 and the Pakistan Social and Living Standards Measurement Survey (PSLMS) for 2007/08 and 2010/11 to look at patterns in this transition. Access is likely to be the main driving force behind the transition to secondary-level schooling. Initial findings reflect the almost total reliance on public schools for 10–14-year-old girls. This suggests that private secondary schools are not an option for girls in rural areas. The next major intervening factor is household income level: even rich families appear to favor public schools for girls. The data also suggest that girls from poor and large families compete with their brothers and other siblings for limited resources.

Importantly, secondary school is only an option on completing primary school and the choices are greater at the primary school level. We study the choice of secondary school as conditioned on factors driving primary school completion. Regional patterns reflect the expansion of private schools in Punjab and Khyber Pakhtunkhwa (KP), less so in Sindh and Balochistan.

Keywords: Poverty, girls, education, urban-rural gap, Pakistan.

JEL classification: I21, I24.

* Country Director, Population Council in Pakistan.
** Senior Researcher, Population Council in Pakistan.
*** Senior Program Officer, Population Council in Pakistan.

1.   Introduction

While schooling outcomes for girls have improved over the period 2001–11, progress has been uneven within Pakistan. Rural girls lag far behind urban girls and progress varies across the provinces. The transition to secondary school is in ways far more critical for improving employability, reproductive health, and other outcomes. It is, therefore, important to assess why secondary schooling for girls shows even more disparities by province and income class.

Access is likely to be the main driving force behind the transition to secondary-level schooling. Initial findings reflect the almost total reliance on public schools for 10–14-year-old girls. The preference for public versus private schools and the actual choice of schools available to girls in most rural areas need to be explored to determine the possibilities of rapid escalation of secondary school enrollments for girls. The other major intervening factor is household income level: even rich families appear to favor public schools for girls. The data also suggest that girls in poor and large families compete with their brothers and other siblings for limited resources (this will be explored further). Most important, secondary school is only an option on completing primary school and choices are greater at the primary school level. We study the choice of secondary school as conditional on factors driving primary school completion. Regional patterns reflect the expansion of private schools across the provinces of Punjab, Khyber Paktunkhwa (KP), Sindh, and Balochistan.

This study utilizes an extensive, rich dataset from a Population Council study on 16 communities in Punjab, KP, and Sindh that provides detailed information on the number and quality of schools within and outside the community and schooling outcomes. We also use the Pakistan Integrated Household Survey (PIHS) for 2001/02 and the Pakistan Social and Living Standards Measurement Survey (PSLMS) for 2007/08 and 2010/11 to look at patterns of change in girls' schooling. We then run regressions to observe the weight of choice and distance in assessing the transition from primary to secondary school for girls.

2.   A Review of the Literature

Several studies have focused on the determinants of primary enrollment, particularly for girls, in developing countries (see Lloyd & Hewett, 2003; Lloyd, Mete, & Grant, 2007; Hewett & Lloyd, 2005; Gönsch, 2010; Huisman & Smits, 2009). These mostly reaffirm the importance of girls' education for socioeconomic development. Female education plays a

vital role in eradicating poverty by increasing the productivity of the poor; it also increases women's participation in the workforce, improves their health, and reduces fertility by equipping girls and women with the skills they need to fully participate in society.

Most developing countries have achieved a significant improvement in primary education, reaching an average of 89[1] percent in net primary enrollment, which, in Pakistan's case, is still 57 percent. With such a low primary enrollment rate, large numbers of students do not complete even their primary education, and the transition from primary to secondary level is lower still. In 2010, nearly 50 percent of children aged 5–9 had left school before completing the fifth grade. Moreover, only 30 percent of the remaining students had completed their primary education and continued to higher levels of schooling (Khan, Azhar, & Shah, 2011).

Only 30 percent of girls are enrolled in secondary school in Pakistan, while the rate for boys is 37 percent (see Table 1). Girls usually have a higher dropout rate than boys at the primary level. Poverty is the most important factor in girls' dropout from school (Rihani, 2006). Moreover, because of the drop in number of schools at the secondary level, travel time increases for both boys and girls (Rihani, 2006). Economic reasons and safety concerns make parents reluctant to send girls to boarding school or to let them walk long distances to day schools. Inadequate school infrastructure, such as a lack of latrines, also contributes to girls dropping out (Rihani, 2006). Thus, in addition to the large investments being made to achieve universal primary education, secondary education has to be given equal priority. The current focus on universal primary education is important but inadequate. Research shows that investing in secondary education together with primary education clearly boosts economic development (Lutz, Crespo Cuaresma, & Sanderson, 2008).

Glewwe and Kremer (2006) provide a comprehensive overview of a wide range of educational issues specific to developing countries and summarize the relevant literature. Colclough, Rose, and Tembon (2000) evaluate the reasons for low enrollment rates and gender gaps in schooling in developing countries. They conclude that low enrollment is a result of poverty, but that lower enrollment among girls is caused by adverse cultural practices (which themselves can be connected to poverty).

In their cross-country comparison, Huisman and Smits (2009) study household- and district-level determinants of primary enrollment in 30

---

[1] http://www.cedol.org/wp-content/uploads/2012/02/Primary-education-by-region.pdf

developing countries. The authors categorically show that parental decisions regarding children's education are based on socioeconomic and demographic factors, household characteristics, and the types of educational facilities available. While many factors drive school enrollment and attendance in developing countries, the effect of family resources is identified as one of the most influential and consistent factors in school enrollment and educational attainment (Oxaal, 1997).

Government education policies and school characteristics also determine children's schooling outcomes. Vital school characteristics include cost, the distance from the child's home, and the quality of the school (provision of water and sanitation facilities, for instance). The distance from the child's home to her school adversely affects enrollment and completion probabilities (Chaudhury, Christiaensen, & Asadullah, 2006). Gitter and Barham (2007) find that travel time to the nearest school in rural Honduras significantly affects children's educational attainment. In Ethiopia, the availability of a school in the vicinity determines the age at which a child is likely to start school (Abebaw, Delelegn, & Admassie, 2007). In addition to access to school, the availability and quality of textbooks, and the pupil-teacher ratio are also found to be important determinants of schooling (Woldehanna, Jones, & Tefera, 2005; Abebaw et al., 2007; Chaudhury et al., 2006).

The studies cited above mostly highlight the direct and indirect costs of schooling as important factors in school attendance and dropout. Income, assets, family size and structure, and parental education have also been identified as important correlates of school enrollment. A household's wealth and resources determine its ability to invest in its children's education. Numerous studies conducted on developing countries have found that household wealth significantly improves the probability of children's schooling (Rankin & Aytaç, 2006; Rose & Al-Samarrai, 2001; Oxaal, 1997). Furthermore, dropout rates are significantly lower among children from rich households (Sibanda, 2001; Chaudhury et al., 2006) while their accumulated educational attainment is also higher (Pal, 2004).

The international findings are confirmed in the Pakistani context. Most studies analyzing the determinants of enrollment in Pakistan have also found that family income is positively and significantly associated with girls' enrollment (World Bank, 2002; Pakistan Bureau of Statistics, 1998; Sathar & Lloyd, 1994). Moreover, when the results for boys and girls are compared, the effect of income is larger for girls than for boys. As to the direct cost of schooling, household poverty restrains parents from sending their children to school when they are not able to cover the expenses (Lloyd et al., 2007).

The indirect costs of schooling include forgoing child labor inputs to the household's economic activities and domestic chores (Lloyd et al., 2007).

Several studies have explored the determinants of primary school enrollment in Pakistan and found that access to school has a substantial impact on the variation in enrollment across communities, particularly for girls' enrollment (see Alderman, Behrman, Khan, Ross, & Sabot, 1995; Sawada & Lokshin, 2001; Sathar & Lloyd, 1994; Durrant, 1998; Lloyd, Mete, & Sathar, 2005; World Bank, 2002, 2005). These studies conclude that the problem has persisted for many years in Pakistan. However, given the recent rise in private schools, particularly in rural areas, it is of interest to policymakers to see whether private schooling can fill the gap in access to primary schooling for girls, reducing the past importance of access.

Poverty, access to school, cultural constraints, the socioeconomic and demographic characteristics of the household, and the insufficient availability of schools are the principal factors consistently identified in the literature in explaining the gender gap in secondary school enrollment. Additionally, early marriage and/or pregnancy, the threat of sexual harassment and violence in and en route to school, and lack of water and sanitation facilities (a serious problem for girls during menstruation) constrain girls' enrollment at the secondary level (Rihani, 2006).

Girls are persistently disadvantaged in enrolling in school, particularly in rural areas. In traditional and developing societies such as Pakistan, conservative attitudes tend to apply to girls' schooling when people are uneducated, poor, and typically live in villages where others endorse their views in the community. In addition, the empirical literature consistently confirms that mothers' education rather than fathers' education has a more significant impact on the decision to send daughters to school (see Holmes, 2003; Sathar & Lloyd, 1994; Pakistan Bureau of Statistics, 1998; World Bank, 2002).[2]

Sathar and Lloyd (1994) examine and identify the determinants of parents' decision to enroll their children in primary school and complete primary-level education. The authors find that children with educated mothers and a higher household income have a better chance of attending school. Girls are less likely to attend primary school, particularly in rural areas. In addition, children from larger households have a lower probability of attending primary school, particularly in urban areas.

---

[2] This finding is also confirmed in our statistical results, see the section "Multivariate Analysis"

Majid (2012) examines the role of parental perceptions of child quality (in addition to school characteristics and poverty status) on decisions regarding enrollment in private and public schools in Pakistan. Applying a generalized ordered logit estimation model to data from the LEAPS project (2003 and 2004) on schooling outcomes, she concludes that school environment and household socioeconomic status play a significant role in schooling decisions: "Poorer households exhibit a lower tendency to enroll their children, while children from richer households face a higher probability of being enrolled in private schools."

It is widely accepted that, in most developing countries, a large family will limit the household's resources available for children's nutrition, health, and education. High fertility is negatively correlated with school enrollments. The argument is clear: a small sib-ship size will increase enrollment while children from large families will enroll later or not at all. Eloundou-Enyegue, DaVanzo, Yana, and Tchala-Abina (2000) find the median age of children's enrollment to be six years in families with 7+ children; in families with 4+ children, the median age was five years. Moreover, the probability of dropping out is higher in large families, and their children are likely to be concentrated in low-tuition schools.

3. Data Sources and Methodology

Two main data sources have been used for this study. We use several rounds of the PSLMS from 2001 to 2011, which provide a nationally representative sample of 14,000–16,000 households. These surveys collect a broad range of information on all household members, including demographic characteristics, education, health, employment, household assets, household amenities, population welfare, water supply and sanitation, and economic characteristics.

We also use a study on schooling and fertility in rural Pakistan conducted by the Population Council in 2012 (Zaidi, Sathar, Haque, & Zafar, 2012). This is the third round of a survey on schooling conducted initially in 12 communities in KP and Punjab with four communities in Sindh added in the 2012 round. The earlier rounds were conducted in 2004 and 1997. We have used the latest wave of the panel survey dataset, which spans 16 communities from Punjab, KP, and Sindh. The study provides information on the supply of schools as well as the demand for schooling across Punjab, Sindh, and KP. The communities were selected on the basis of being high-, medium-, or low-performing districts in terms of enrollment in relation to income levels. The districts selected were Sialkot, Dera Ghazi Khan, and Rahimyar Khan in Punjab; Abbottabad, Karak, and

Swat in KP; and later, Dadu and Thatta in Sindh to represent relatively high- and low-performing districts. Returning to the initial 12 communities offers the opportunity to assess real changes in the same communities visited 14 years ago at the community, school, and household levels.

In order to measure road distance access to schools, GPS technology was introduced in the latest round of the survey in 2012. In addition to visiting each school and updating the school inventory, the GPS coordinates of each school were also recorded. Household GPS coordinates were recorded, a PSU centroid (geographical mean) was estimated, and the road distances between households and schools were measured from that centroid.

Four types of questionnaires were fielded to address basic information on the supply of and demand for schools. These included a community questionnaire, a school questionnaire, a household questionnaire, and a young women's questionnaire. We use this rich micro-level data to address questions related to access and availability of schools in communities, particularly for girls.

To examine the impact of demographic and socioeconomic characteristics on school enrollment more formally, we also use micro-level data obtained from the PSLMS for 2011/12. We apply a logistic regression model with the child currently enrolled as the dependent variable (if attending = 1 and 0 otherwise) and a number of independent variables including sex, parental education, household wealth quintile, province, and number of children under 15 in the household.

4. How Does Geography Affect Enrollment?

This section compares the level of and trends in net enrollment for boys and girls at the primary and secondary levels; the results are disaggregated by place of residence and province. Although education has not been a top priority for the Government of Pakistan for several decades, a sharp improvement has occurred in recent years. Table 1 gives the net enrolment rate (NER) at the primary and secondary level, disaggregated by gender and place of residence for the period 2001–12. There has been significant progress toward achieving universal primary education in Pakistan: the primary NER has increased from 42 in 2001/02 to 57 in 2011/12—approximately 15 percentage points in one decade. However, this improvement is not sufficient to achieve the Millennium Development Goal (MDG) educational targets by 2015. The secondary NER has, meanwhile, increased by 10 percentage points between 2001 and 2012.

The urban-rural differential at the primary and secondary level in Pakistan persists, even though the gap appears to be narrowing over time. For instance, the primary NER for rural areas was 18 percentage points lower than that for urban areas in 2001; by 2012, the difference had fallen to 13 percentage points. Table 1 also shows that Pakistan has made impressive gains in reducing gender disparity in primary and secondary schooling and between urban and rural areas. The ratio of females to males—formally known as the gender parity index (GPI)—in primary schools has steadily increased from 83 percent in 2001/02 to 90 percent in 2011/12.

A similar pattern of gender disparity exists in primary schools in urban and rural areas. The female-to-male ratio in rural primary schools has improved substantially in the last decade: the GPI has risen from 77 percent in 2001/02 to 86 percent in 2011/12. It is important to mention here that urban areas have contributed substantially to the rise in the primary NER compared to rural areas. On the other hand, gender disparity in rural areas has also declined significantly in primary and secondary schools.

Table 1: Primary and secondary NER disaggregated by gender and place of residence in Pakistan, 2001–12

| | 2001/02 PIHS | | | | | | | |
| | Primary | | | | Secondary | | | |
Region	Boys	Girls	Overall	GPI	Boys	Girls	Overall	GPI
Urban	57	54	56	95	36	40	38	111
Rural	43	33	38	77	24	12	19	50
Total	46	38	42	83	28	21	24	75
	2011/12 PSLMS							
	Primary				Secondary			
	Boys	Girls	Overall	GPI	Boys	Girls	Overall	GPI
Urban	67	66	67	99	44	44	44	100
Rural	58	50	54	86	34	24	29	71
Total	60	54	57	90	37	30	34	81

Table 1 also gives the NER at the secondary level by place of residence and disaggregated by gender for 2001/02 and 2011/12. As can be seen, there are significant disparities in the NER at the secondary level within and between urban/rural areas and by gender. In urban areas, the secondary NER has doubled compared to rural areas in 2001/02, although the gap between urban/rural enrollments narrows over time. The NER at the secondary level in rural areas has increased substantially—from 19 to 29 in a decade.

If we look at gender disparities in secondary schools in urban and rural areas in Pakistan, the picture is very interesting. In 2001/02, secondary school enrollment was severely biased toward boys in rural areas, but the pattern was entirely the opposite in urban areas. Girls have a higher enrollment rate in urban areas than boys—40 and 36 percent, respectively. However, by 2011/12, this gender disparity has diminished in rural areas.

These results suggest that there is a great deal of scope for raising both net primary and secondary enrollment in Pakistan, particularly in rural areas. However, the achievements in these rates are still likely to fall short of the levels called for by the MDGs.

As we can see, there are significant enrollment differentials by place of residence at both primary and secondary level in Pakistan. Figures 1 and 2 show the NER for girls at the primary and secondary levels, disaggregated by gender and place of residence at the provincial level for 2001–12. Rural girls' primary enrollment rates are almost 18 percent lower than that of urban girls both in Punjab and KP in 2011/12. Substantially higher differentials exist in Sindh and Balochistan for the same year—42 and 52 percent, respectively.

Figure 1 shows that girls' primary enrollment has improved in Punjab, particularly in the rural areas. The NER at the primary level for rural girls has increased by almost 21 percent in a decade. This shows that access to school and other socioeconomic barriers to rural girls' enrollment in Punjab are now being gradually overcome. However, rural girls still suffer large disadvantages in enrollment compared to urban girls across other parts of Pakistan.

Figure 1: NER for girls at primary level, disaggregated by gender and place of residence at provincial level, 2001–12
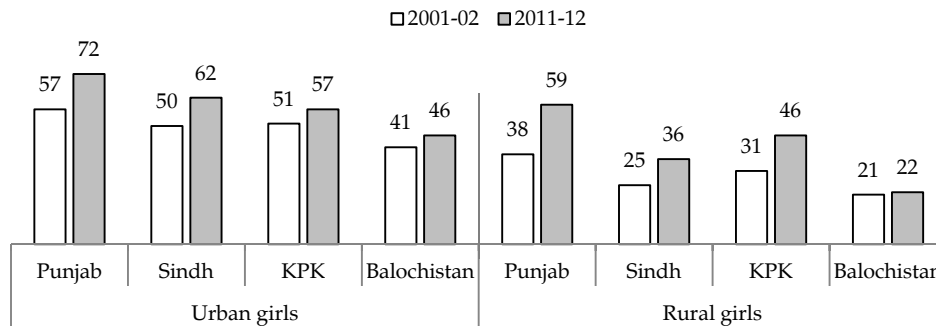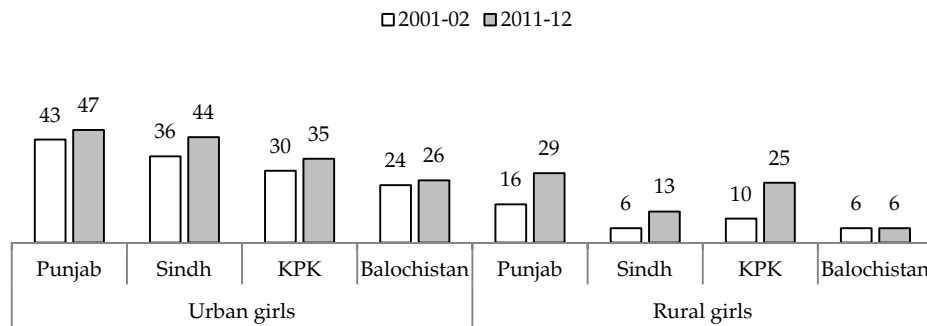

Source: PIHS 2001/02 and PSLMS 2010/11.

Geographically, the disparity in girls' secondary enrollment by place of residence in Punjab is lower than that for the other provinces. In 2011/12, enrollment rates at the secondary level were 17 percent lower in rural areas compared to urban areas. In Sindh and Balochistan, the urban-rural gap for secondary enrollment is substantially higher (see Figure 2). However, rural secondary enrollment rates in the provinces have increased drastically, while the pace of improvement in urban areas appears slower from 2001/02 to 2011/12.

These provincial variations are unlikely to have evolved by chance, and are likely the outcome of social and economic forces that influence other sectors such as health and poverty levels. These underlying socioeconomic and political influences on education opportunities can be assumed to intensify inter- and intra-provincial imbalances.

Figure 2: NER for girls at secondary level, disaggregated by gender and place of residence at provincial level, 2001–12

Source: PIHS 2001/02 and PSLMS 2010/11.

5.   What Does Poverty Have to Do With Enrollment?

We have already pointed out that poverty, cultural constraints, access to school, and insufficient government schools for girls in rural areas are the principal factors contributing to low primary enrollment, and are consistently recognized in the literature in explaining the gender gap in primary schools. Human capital theory posits a link between education and poverty (measured at the household level), and education is considered a means of poverty reduction[3] or vice versa.

---

[3] "Education—especially basic (primary and lower-secondary) education—helps reduce poverty by increasing the productivity of the poor, by reducing fertility and improving health, and by equipping people with the skills they need to participate fully in economy and society" (World Bank, 1995, p. 1).

At the macro-level, it is generally assumed that countries with a low per capita income tend to have low levels of enrollment. However, among poor countries, the evidence also shows that a low gross national product does not always translate into low levels of enrollment (as in the case of Lesotho and Madagascar, which have high levels of enrollment despite low income levels). Additional factors such as the better availability of schools and general awareness of the importance of education may override this (Oxaal, 1997).

At the micro-level, substantial evidence suggests that children from poor households generally receive less education. Figure 3 illustrates the NERs for girls at the primary and secondary levels, disaggregated by socioeconomic status for the period 2001–11. Girls from poor households received less education than their richer counterparts. The net primary enrollment rate for girls from rich households was more than double that for girls from poor household in 2010/11—a difference of 34 percent.

The data show that NERs at the primary level for girls from poor and middle socioeconomic groups have increased substantially from 2001/02 to 2010/11, with a 16 percentage point increase in primary enrollment for poor girls and an almost similar increase for the middle group. This shows that inequalities in enrollment and access to schools for poor and middle-class families have improved in the last decade.

However, the differential between girls from poor and rich households at the secondary level is far greater than at the primary level. In 2010/11, the poorest girls' enrollment rates were almost three times lower than those of rich girls, and the differentials have not changed since then.

Figure 3: NERs for girls at primary and secondary level, disaggregated by socioeconomic status, 2001–11
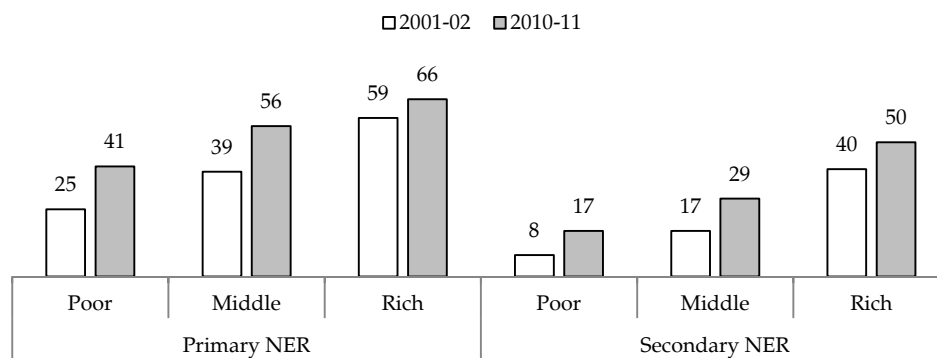
For Pakistan as a whole, primary enrollment rates for poor girls in rural areas are 13 percent lower than those for their urban counterparts (Figure 4), while the gap between urban and rural areas is even wider for rich girls. A difference of 19 percentage points is observed in the primary NERs for rich girls in urban and rural areas. The degree of inequality between rich and poor groups is even wider at the secondary level. Poor girls in urban areas have enrollment rates that are almost twice as high as poor girls in rural areas.

Similar inequalities exist for rich girls between urban and rural areas at the secondary level. Moreover, significant differences exist if one assesses parents' aspirations for their children's education in rural versus urban areas: "Eighty percent of parents of rural girls and 93 percent of parents of urban girls express the aspiration that their daughters should obtain secondary or higher education" (Lloyd et al., 2007).

Figure 4: NERs for girls at primary and secondary level, disaggregated by place of residence and socioeconomic status, 2010/11
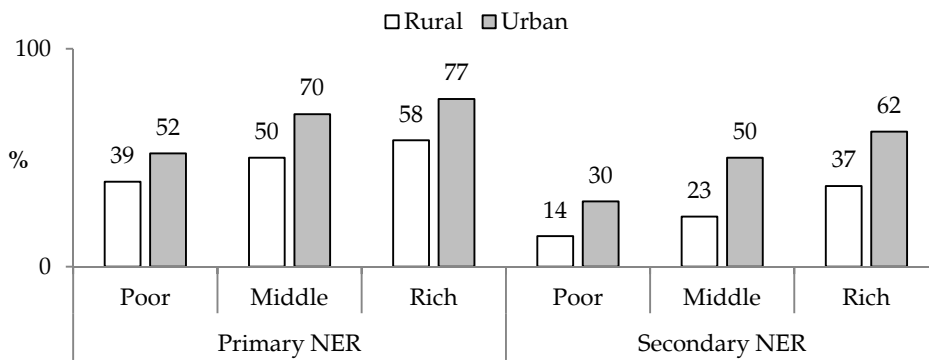
6.   Has Private Schooling Contributed to the Increase in Enrollments?

Private schooling is expected to produce better academic outcomes than government schools. This seems true after controlling for background characteristics such as parental education and household socioeconomic status (Alderman, Behrman, Lavy, & Menon, 2001). Several studies have focused on private-public schooling in developing countries, but only a few have looked at Pakistan where private schooling has grown rapidly in recent years. The evidence suggests that, even the poorest households use private schools extensively, and that utilization increases with income.

Lowering private school fees or distance or raising measured quality increases private school enrollments, partly through transfers from

government schools and partly through the enrollment of children who might otherwise not have gone to school. "The strong demand for private schools is consistent with evidence of greater mathematics and language achievement in private schools than in government schools" (Alderman et al., 2001). These findings support the increased role of private schools in raising enrollments, particularly among children from poor households.

Access to school is an important constraint to girls' enrollment, particularly in rural areas. The rapid growth of private schools as part of a national educational policy may be changing the educational opportunity structure for poor rural girls. Figures 5 and 6 depict the NERs for girls at the primary and secondary levels by public-private division and disaggregated by place of residence for 2001/02 and 2010/11.

Figure 5: NERs for girls at primary level by public/private sector, disaggregated by place of residence, 2001/02 and 2010/11
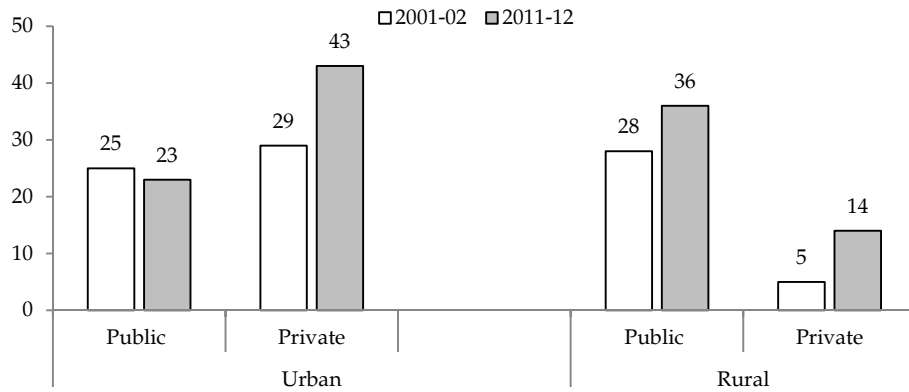

Figure 6: NERs for girls at secondary level by public/private sector, disaggregated by place of residence, 2001/02 and 2010/11
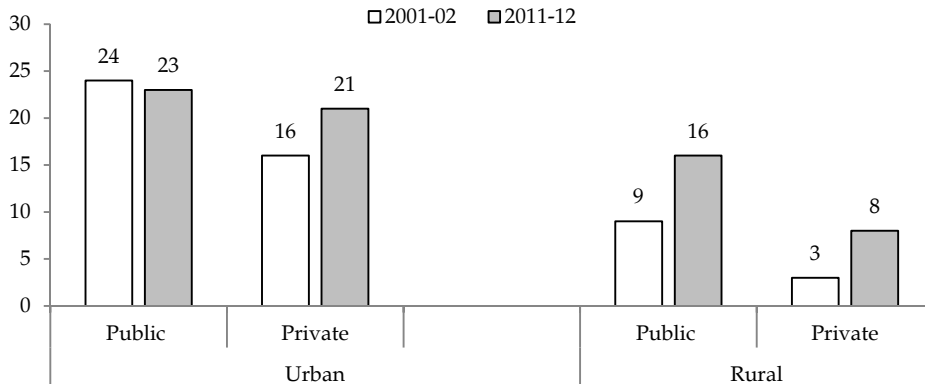
Figure 5 shows the distribution of public and private primary schools for girls in rural and urban areas, and how it has changed over the period 2001–11. We find very significant differences between public and private primary enrollment for girls. In a decade, the primary NER for public schools in urban areas has decreased from 25 percent in 2001/02 to 23 percent in 2001/12. However, girls' primary enrollment in private schools has risen considerably in this time. The increase in primary enrollment in rural private schools is also impressive, although primary enrollment in rural public schools has also increased notably. Thus, it would appear that communities in both urban and rural areas are moving toward higher girls' enrollment in private primary schools, given that more private schools are becoming available in their vicinities.

A similar, though less dramatic, pattern exists for secondary enrollment in public and private schools. The NER at the secondary level for rural private schools has jumped up drastically between 2001/02 and 2011/12. This seems to imply that urban areas have experienced more of a shift toward private schools rather than a dramatic rise across the board, whereas in rural areas, both public and private school enrollments have risen substantially.
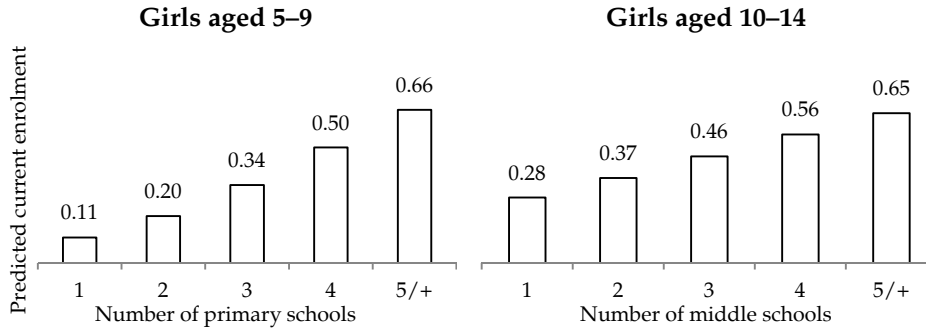
7. Are New Schools Addressing the Needs of the Most Disadvantaged Girls?

The most important factor in girls' enrollment, particularly in rural areas, is access to and the availability of schools in the community. Of course, access is conditioned on household resources and poverty remains a constraint to sending children to school. The increased availability of schools has, nevertheless, improved the probability of attending school, especially for girls in poor rural households. Using community- and household-level data, Zaidi et al. (2012) provide evidence that the availability of schools in a community increases the probability of girls' enrolment at primary and lower secondary levels.

Figure 7 shows the predicted probability of current enrollment by the number of girls' schools after controlling for province and socioeconomic status. At the primary level, with a choice of three schools in the community, enrollment for girls aged 5–9 increases to 34 percent and the probability goes up to 50 percent if there is a choice of four schools. Moreover, for older girls aged 10–14, three schools (at lower secondary level) increases enrollment to 46 percent. Interestingly, with the same choice of two schools in the community at primary and middle level, the

predicted probability of girls' enrollment rises to 20 percent and 37 percent at the primary and middle school levels, respectively.

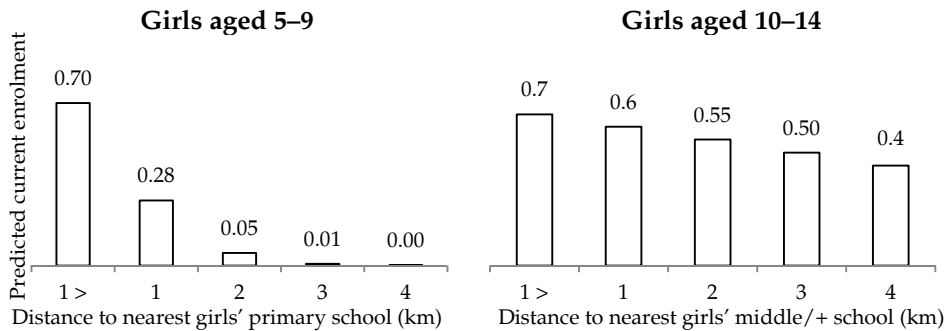**Figure 7: Predicted probability of current enrollment by number of schools**

Girls aged 5–9

0.66
0.50
0.34
0.20
0.11

1   2   3   4   5/+
Number of primary schools

Girls aged 10–14

0.65
0.56
0.46
0.37
0.28

1   2   3   4   5/+
Number of middle schools

Predicted current enrolment

Source: Adapted from Zaidi et al. (2012).

8. Does Distance to Schools Increase Girls' Enrollment?

There is a strong association between girls' enrollment and the distance to school. The shorter the distance, the higher will be the probability that girls will attend school. At the primary level, a school located within 1 km raises the enrollment rate for girls aged 5–9 to 70 percent and to 65 percent if a middle or high school is nearby for 10–14-year-old girls. Likewise, if a primary school is located 3 km away, the predicted probability of girls' attendance falls to 1 percent, and to 50 percent in the case of middle schools (see Figure 8). Thus, we can conclude that, in order to increase girls' enrollment at both the primary and secondary level, the number of girls' schools in proximity to communities should be increased.

Figure 8: Predicted probability of current enrollment by nearest distance to a girls' school (controlling for province and SLI)

Girls aged 5–9

0.70
0.28
0.05   0.01   0.00

1 >   1   2   3   4
Distance to nearest girls' primary school (km)

Girls aged 10–14

0.7
0.6
0.55
0.50
0.4

1 >   1   2   3   4
Distance to nearest girls' middle/+ school (km)

Predicted current enrolment

Source: Adapted from Zaidi et al. (2012).

9. Is Fertility Associated with Enrollment?

Female education is believed to be one of the most influential factors in fertility decline. Evidence from both developed and developing countries shows that female education is associated with a decrease in fertility (see Sackey, 2005; Lam & Duryea, 1999; Vavrus & Larsen, 2003; Lloyd, Kaufman, & Hewett, 2000). Lloyd et al. (2000) find that developing countries (mostly in sub-Saharan Africa) that have achieved mass schooling now also show evidence of the onset of the fertility transition.

Very few studies have explored the relationship between girls' schooling and fertility in Pakistan's context. High fertility, particularly in rural areas, as well as poor nutrition and health among rural school-age children from poor households have been found to be related to schooling. Lloyd, Mete, and Grant (2006) find that the birth of an unwanted child is one of the most significant factors associated with dropout rates for girls in rural KP and Punjab. Moreover, the empirical evidence generated using the PSLMS for 2011/12 shows that the probability of attending school is significantly higher for those children with fewer siblings. As is evident from Figure 9, children living in households with fewer siblings are more likely to attend school than children with six or more siblings under 15 (75 versus 66 percent). The results are more pronounced for girls.

Figure 9: Percentage of children (aged 10–14) currently enrolled in school, by number of children under 15 in household
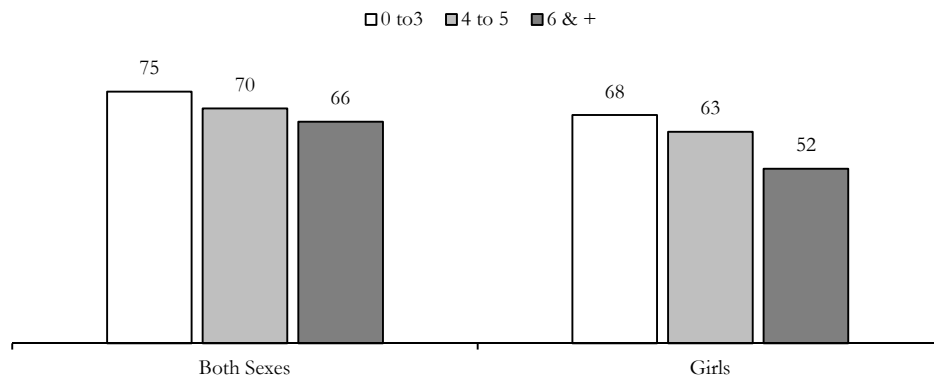
Source: PSLMS 2011/12.

10. A Multivariate Analysis

We apply a binomial logistic regression model to the dichotomous variable, in which the log odds of the outcomes are modeled as a linear

combination of the predictor variables. The selected dependent variable is those children who were attending school at the time of the survey.

Table 2 presents the results of the logistic regression in terms of odds ratios and reveals some interesting outcomes. The first model is based on observations for both sexes and the second is based on outcomes for girls alone. The dependent variable in both models is children (aged 5–14) who are currently enrolled in school or not enrolled. Punjab is set as the reference group in both models to capture the variation in other provinces. Punjab leads in school enrollment compared to the other provinces, although KP appears not far behind. The odds ratios for KP are very close to those for Punjab and are statistically significant (see model 1). This relationship also holds for girls (model 2) in KP. In addition, the probability that the child is enrolled in school is almost 51 percentage points lower for Balochistan and 58 percentage points for Sindh compared to Punjab—the results are highly statistically significant.

Model 1 introduces the gender variable to capture gender disparities. The probability of being enrolled in schools is almost 47 percentage points lower for girls than for boys and the estimated coefficient is statistically significant. This makes it logical to run separate regression models for girls alone, because they are severely disadvantaged.

For both boys and girls, household socioeconomic status has a strong, positive, and statistically significant association with enrollment. Both models 1 and 2 explicitly conclude that socioeconomic status is the strongest influence on enrollment in Pakistan, particularly for girls, after controlling for the mother and father's education. As far as household size is concerned, households with fewer siblings have a positive and statistically significant impact on enrollments as a whole and for girls in particular. The results are significant when the sib-ship size is six or more.

The place of residence contributes positively to the likelihood of enrollment. Girls in rural areas are less likely to be enrolled in school than girls in urban areas, and the estimated coefficient is strongly statistically significant (see model 2). Parental education proves to be one of the most significant factors in girls' schooling outcomes. In both models, the mother and father's education have a strong, positive, and statistically significant association with enrollment. If the mother has attained higher education, the probability that her children will enroll in school is 10 times greater—for girls, the probability is eight times higher—than for mothers with no education.

Table 2: Estimated odds ratios from logistic regression model for children (both sexes and girls) aged 5–14, currently attending school

Variable	Model 1 Both sexes (n = 26,452)	p > z	Model 2 Girls only (n = 12,413)	p > z
Dependent (current) children aged 5–14				
Currently not attending school = 0				
Currently attending school = 1				
Province				
Punjab (ref.)	1.00			
Sindh	0.42***	0.000	0.36***	0.000
KP	0.98+	0.701	0.80**	0.002
Balochistan	0.49***	0.000	0.34***	0.000
Region				
Urban (ref.)	1.00			
Rural	0.53***	0.000	0.43***	0.000
Sex				
Male (ref.)	1.00			
Female	0.53***	0.000	NA	NA
Socioeconomic status				
Poor (ref.)	1.00			
Middle	1.63***	0.000	1.59***	0.000
Rich	1.93***	0.000	1.73***	0.000
Children aged 5–15 in household				
1 to 3 (ref.)	1.00			
4 to 5	0.96+	0.330	0.93+	0.226
6 +	0.87**	0.025	0.79*	0.006
Father's education status				
No education (ref.)	1.00			
Primary	1.69***	0.000	1.56***	0.000
Secondary	2.72***	0.000	2.91***	0.000
Higher	4.01***	0.000	4.30***	0.000
Mother's education status				
No education (ref.)	1.00			
Primary	3.02***	0.000	3.61***	0.000
Secondary	4.10***	0.000	6.37***	0.000
Higher	9.70***	0.000	7.86***	0.000

Note: *** = significant at 1 percent, ** = significant at 5 percent, * = significant at 10 percent, + = not significant.

With such a remarkable expansion of school availability and choice, private schools have contributed substantially to boosting enrollment in

recent years in Pakistan. However, this expansion in enrollment is mostly in urban areas; rural areas have seen only a slight increase in private schooling. This might suggest that private schooling in rural areas is not widespread and that the costs are fairly prohibitive. We therefore apply the regression models to public and private enrollment separately to assess the determinants of girls' enrollment in Pakistan.

Table 3 gives the estimated odds ratios from the logistic regression model for girls (aged 5–9 and 10–14) currently attending public or private schools (based on the PSLMS for 2011/12). The regression results show that private primary schooling for girls (aged 5–9) has risen in KP while Sindh and Balochistan lag behind in the expansion of the private sector in primary schools. The provincial estimates are statistically significant at 1 percent, except for KP. The expansion of private secondary schools for girls (aged 10–14) is more dramatic in Sindh (probably concentrated in Karachi and Hyderabad). The probability of attending a private secondary school for girls is 35 percent higher compared to Punjab, and the estimate is statistically significant at 10 percent.

As expected, substantial urban/rural differentials are observed, particularly at the primary level. Girls aged 5–9 are 78 percent less likely to attend private schools in rural areas compared to urban areas. However, the expansion of private schools at secondary level is striking in rural areas. Estimates from both models are strongly statistically significant at 1 percent.

In both models, the household's socioeconomic status and parental education have a strong, positive, and statistically significant association with enrollment in private schools at primary and secondary level. Enrollment in private schools for girls from rich households at primary and secondary level is four times higher than for poorer households. Likewise, the mother's education plays a more vital role in girls' enrollment than the father's education. If the mother has attained higher education, the probability that her daughters will enroll in school is four times higher than for a mother with no education.

High fertility is one of the most significant factors associated with girls' enrollment, particularly in rural areas. In order to assess the impact of fertility on girls' enrolment (either public or private), we use the proxy variable of children aged 5–15 in the household. The regression results show that the number of children in the household has a strong impact on girls' primary schooling (Table 3, model 1) and is statistically significant. For girls aged 10–14 (Table 3, model 2), the regression coefficient is negative but not statistically significant.

**Table 3: Estimated odds ratios from logistic regression model for girls
aged 5–9 and 10–14, currently attending public or private school**

Variable	Girls aged 5–9, enrolled in class 1–5 (n = 3,274)		Girls aged 10–14, enrolled in class 6–10 (n = 1,511)	
	Odds ratio	p > z	Odds ratio	p > z
Dependent (school) girls aged 5–9 and 10–14				
Attending public school = 0				
Attending private school = 1				
Province				
Punjab (ref.)	1.00			
Sindh	0.58***	0.000	1.36	0.074
KP	0.65*	0.007	0.54*	0.006
Balochistan	0.08***	0.000	0.04***	0.000
Region				
Urban (ref.)	1.00			
Rural	0.22***	0.000	0.63*	0.007
Socioeconomic status				
Poor (ref.)	1.00			
Middle	0.22***	0.000	3.44***	0.000
Rich	0.22***	0.000	3.87***	0.000
Children aged 5–15 in household				
1 to 2 (ref.)	1.00			
3 +	0.80***	0.000	0.90+	0.898
Father's education status				
No education (ref.)	1.00			
Primary	1.43*	0.057	1.11+	0.712
Secondary	1.51*	0.008	1.23+	0.327
Higher	1.66**	0.023	1.35+	0.281
Mother's education status				
No education (ref.)	1.00			
Primary	1.29+	0.141	1.88**	0.003
Secondary	2.49***	0.000	1.75***	0.004
Higher	2.50**	0.011	3.47***	0.000

Note: *** = significant at 1 percent, ** = significant at 5 percent, * = significant at 10
percent, + = not significant.

11. Conclusions and Policy Implications

Despite the dramatic expansion of primary schools (public and
private) in Pakistan, universal primary education is still a distant dream.
The percentage of girls—in poor rural households—enrolled in school

(both at primary and secondary level) remains low. Girls' secondary school enrollment has progressed at only a modest pace in the last decade. This finding may be explained by the fact that access to school and school choice has expanded mostly in urban areas and in those areas where the gender disparity is narrower. Consequently, many of the poorest rural communities still lack girls' schools.

Rural girls are more disadvantaged. Most private schools (primary as well as secondary) are limited to urban areas and there is substantial variation across urban and rural areas in terms of the cost of private schooling (Zaidi et al., 2012). The high cost of private schools means that it is only affordable for higher-income groups. Thus, it is unlikely that the growing private sector can fully substitute for the public sector in addressing the educational needs of poor rural girls.

There is also substantial variation across provinces in girls' enrollment at primary and secondary level. Punjab leads in terms of girls' enrollment, while KP is catching up. However, rural Sindh and Balochistan lag far behind in reaching the MDG targets. There is a dire need to reduce provincial disparities in girls' enrollment. Following the 18th constitutional amendment, it is now a provincial responsibility to establish government schools (especially for rural girls). If a cost-effective model is developed and implemented across all the provinces—and equally in urban and rural areas—the probability of reducing the gender gap improves considerably because the poorest rural communities are least likely to have a school for girls.

If public and private schools are made equally available in urban and rural areas as well as for boys and girls, we would expect some improvement but with a remaining gender differential. This is because some of the constraints to girls' schooling are clearly economic. First, due to the higher cost of private schooling and less availability of government schools within the community, parents are more reluctant to enroll their daughters in private schools. Second, parents are somewhat less willing to invest in girls' schooling compared to boys due to cultural constraints such as requirements for female teachers and possible chaperones for travel (Lloyd et al., 2007). Providing a greater choice of schools with female teachers and shorter distances will be necessary to break the barriers to girls' schooling for the majority of parents, and will ultimately lead to higher enrollments.

References

Abebaw, D., Delelegn, A., & Admassie, A. (2007). *Determinants of child schooling progress in rural Ethiopia* (Working Paper No. 3). Addis Ababa: Ethiopian Economic Policy Research Institute.

Alderman, H., Behrman, J. R., Khan, S., Ross, D. R., & Sabot, R. (1995). Public schooling expenditures in rural Pakistan: Efficiently targeting girls and a lagging region. In D. van de Walle and K. Nead (Eds.), *Public spending and the poor: Theory and evidence.* Baltimore, MD: Johns Hopkins University Press.

Alderman, H., Behrman, J. R., Lavy, V., & Menon, R. (2001). Child health and school enrollment: A longitudinal analysis. *Journal of Human Resources*, *36*(1), 185–205.

Chaudhury, N., Christiaensen, L., & Asadullah, M. N. (2006). *Schools, household, risk, and gender: Determinants of child schooling in Ethiopia* (Working Paper No. 2006-06). Oxford, UK: Centre for the Study of African Economies.

Colclough, C., Rose, P., & Tembon, M. (2000). Gender inequalities in primary schooling: The roles of poverty and adverse cultural practice. *International Journal of Educational Development*, *20*, 5–27.

Cox, D., & Jimenez, E. (1990). The relative effectiveness of private and public schools: Evidence from two developing countries. *Journal of Development Economics*, *34*(1–2), 99–121.

Durrant, V. L. (1998). Community influences on schooling and work activity of youth in Pakistan. *Pakistan Development Review*, *37*(4), 915–937.

Eloundou-Enyegue, P., DaVanzo, J., Yana, S. D., & Tchala-Abina, F. (2000). *The effect of high fertility on human capital formation under structural adjustment in Africa*. Washington, DC: RAND Corporation and Futures Group International.

Gitter, S. R., & Barham, B. L. (2007). Credit, natural disasters, coffee and educational attainment in rural Honduras. *World Development*, *35*(3), 498–511.

Glewwe, P., & Kremer, M. (2006). Schools, teachers, and education outcomes in developing countries. In E. Hanushek & F. Welch (Eds.), *Handbook of the economics of education* (vol. 2, pp. 945–1017). Amsterdam: Elsevier.

Gönsch, I. (2010). *Determinants of primary school enrollment in Haiti and the Dominican Republic* (Discussion Paper No. 54). Giessen, Germany: Justus Liebig University, Center for international Development and Environmental Research.

Hewett, P. C., & Lloyd, C. B. (2005). Progress towards "Education for All": Trends and current challenges for sub-Saharan Africa. In C. B. Lloyd, J. Behrman, N. P. Stromquist, & B. Cohen (Eds.), *The changing transitions to adulthood in developing countries: Selected studies* (pp. 84–117). Washington, DC: National Academies Press.

Holmes, J. (2003). Measuring the determinants of school completion in Pakistan: Analysis of censoring and selection bias. *Economics of Education Review*, *22*(3), 249–264.

Huisman, J., & Smits, J. (2009). Effects of household and district-level factors on primary school enrollment in 30 developing countries. *World Development*, *37*(1), 179–193.

Jimenez, E., Lockheed, M. E., Luna, E., & Paqueo, V. (1991). School effects and costs for private and public schools in the Dominican Republic. *International Journal of Educational Research*, *15*(5), 393–410.

Khan, G. A., Azhar, M., & Shah, A. S. (2011). *Causes of primary school dropout among rural girls in Pakistan* (Working Paper No. 119). Islamabad Pakistan: Sustainable Development Policy Institute.

Kingdon, G. (1996). The quality and efficiency of public and private schools: A case study of urban India. *Oxford Bulletin of Economics and Statistics*, *58*(1), 55–82.

Lam, D., & Duryea, S. (1999). Effects of schooling on fertility, labor supply, and investments in children, with evidence from Brazil. *Journal of Human Resources*, *34*(1), 160–192.

Lloyd, C. B., & Hewett, P. (2003). *Primary schooling in sub-Saharan Africa: Recent trends and current challenges* (Policy Research Division Working Paper No. 176). New York, NY: Population Council.

Lloyd, C. B., Kaufman, C. E., & Hewett, P. (2000). The spread of primary schooling in sub-Saharan Africa: Implications of fertility change. *Population and Development Review*, *26*(3), 483–515.

Lloyd, C. B., Mete, C., & Grant, M. J. (2006). *The implications of changing educational and family circumstances for children's grade progression in rural Pakistan: 1997–2004* (Policy Research Division Working Paper No. 209). New York, NY: Population Council.

Lloyd, C. B., Mete, C., & Grant, M. J. (2007). Rural girls in Pakistan: Constraints of policy and culture. In M. Lewis & M. Lockheed (Eds.) *Exclusion, gender and education: Case studies from the developing world* (pp. 99–118). Washington, DC: Center for Global Development.

Lloyd, C. B., Mete, C., & Sathar, Z. A. (2005). The effect of gender differences in primary school access, type and quality on the decision to enroll in rural Pakistan. *Economic Development and Cultural Change*, *53*(3), 685–710.

Lutz, W., Crespo Cuaresma, J., & Sanderson, W. C. (2008). The demography of educational attainment and economic growth. *Science*, *319*(5866), 1047–1048.

Majid, H. (2012). *School choice in rural Pakistan* (Working Paper No. 12-03). Lahore, Pakistan: Lahore University of Management Sciences.

Oxaal, Z. (1997). *Education and poverty: A gender analysis* (Report No. 53). Brighton, UK: Institute of Development Studies, University of Sussex.

Pal, S. (2004). Child schooling in Peru: Evidence from a sequential analysis of school progression. *Journal of Population Economics*, *17*(4), 658–680.

Pakistan Bureau of Statistics. (1998). *Education sector performance in the 1990s: Analysis from the PIHS*. Islamabad, Pakistan: Author.

Pakistan Bureau of Statistics. (2002). *Pakistan integrated household survey (PIHS) 2001–02*. Islamabad, Pakistan: Author.

Pakistan Bureau of Statistics. (2009). *Pakistan social and living standards measurement survey (PSLM) 2007–08 national/provincial*. Islamabad, Pakistan: Author.

Pakistan Bureau of Statistics. (2011). *Pakistan social and living standards measurement survey (PSLM) 2010–11 national/provincial*. Islamabad, Pakistan: Author.

Pakistan Bureau of Statistics. (2012). *Pakistan social and living standards measurement survey (PSLM) 2011–12 national/provincial*. Islamabad, Pakistan: Author.

Rankin, B. H., & Aytaç, I. A. (2006). Gender inequality in schooling: The case of Turkey. *Sociology of Education*, *79*(1), 25–43.

Rihani, M. A. (2006). *Keeping the promise: Five benefits of girls' secondary education*. Washington, DC: Academy for Educational Development.

Rose, P., & Al-Samarrai, S. (2001). Household constraints on schooling by gender: Empirical evidence from Ethiopia. *Comparative Education Review*, *45*, 36–63.

Sackey, H. A. (2005). *Female labor force participation and fertility in Ghana: The effects of education* (Research Paper No. 150). Nairobi, Kenya: African Economic Research Consortium.

Sathar, Z. A., & Lloyd, C. B. (1994). Who gets primary schooling in Pakistan? Inequalities among and within families. *Pakistan Development Review*, *33*(2), 103–134.

Sawada, Y., & Lokshin, M. (2001). *Household schooling decisions in rural Pakistan* (Policy Research Working Paper No. 2541). Washington, DC: World Bank.

Sibanda, A. (2001). Who drop out of school in South Africa? The influence of individual and household characteristics. *African Population Studies*, *19*, 99–111.

Vavrus, F., & Larsen, U. (2003). Girls' education and fertility transitions: An analysis of recent trends in Tanzania and Uganda. *Economic Development and Cultural Change*, *51*(4), 945–975.

Woldehanna, T., Jones, N., & Tefera, B. (2005). *Children's educational completion rates and achievement: Implications for Ethiopia's second poverty reduction strategy (2006–10)* (Young Lives Working Paper No. 18). Oxford, UK: Young Lives Project.

World Bank. (1995). *Development in practice: Priorities and strategies for education*. Washington, DC: Author.

World Bank. (2002). *Poverty in Pakistan: Vulnerabilities, social gaps and rural dynamics* (Report No. 24296-PAK). Washington, DC: Author.

World Bank. (2005). *Pakistan country gender assessment – Bridging the gender gap: Opportunities and challenges* (Environment and Social Development Sector Report No. 32244-PAK). Washington, DC: Author.

Zaidi, B., Sathar, Z., Haque, M., & Zafar, F. (2012). *Fewer and better educated children: Expanded choices in schooling and fertility in rural Pakistan*. Islamabad, Pakistan: Population Council.