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ABSTRACT

This paper assesses the effects of primary school characteristics, household characteristics, and recent household economic and demographic shocks on school dropout rates during the first eight grades (primary and middle school) in rural Punjab and North West Frontier Province. The analysis is based on two waves of panel data, collected in 1997 and 2004. These data are unique in a developing-country setting in that they track longitudinally changes in the school environment (i.e., school and teacher characteristics) and in the household environment (including the arrival of unwanted births) for a panel of women and their children. While grade retention has improved over the past six years, dropout rates for girls remain fairly high, particularly at the end of primary school (grade five), at which point one-third of girls who started school have left. The results provide evidence of the importance of both household and school factors as statistically significant determinants of dropout rates. For girls, the arrival in the family of an unwanted birth in the last six years and enrollment in a government primary school (as opposed to a private school) significantly increase the likelihood of dropout, whereas the availability of postprimary schooling in the community, having a mother who had attended school, and living in a household with higher consumption levels reduce the probability of dropout. For boys, school quality, as measured by the percent of teachers in the primary school attended who reside in the community, and living in a more developed community significantly reduce the probability of dropping out; a loss of remittances in the household during the past six years significantly increases the likelihood of dropping out.

Over the last decade, the schooling environment in rural Pakistan has changed dramatically. In the absence of effective government efforts to expand the number of government primary schools of adequate quality to meet demand, there has been a sharp increase in the number of private primary schools in rural Pakistan. Recent evidence suggests that the increased number of private schools, particularly private for-profit schools, has been accompanied by a substantial shift in the distribution of overall primary enrollment in favor of private schools as well as some improvement in primary school completion rates, particularly for girls (Sathar et al. 2003). Thus, at a point in Pakistan's educational development when primary schooling is still far from universal, an increasingly significant proportion of primary students are receiving their education outside the public system.

The achievement of universal primary school completion by 2015, Millennium Development Goal No. 2, will require that all children in Pakistan not only enroll in school but also stay in school through the end of the primary cycle. There is increasing recognition in the international community that school quality and access to postprimary schooling within or very near the community are critical factors in achieving this goal, particularly for girls in rural communities (NRC/IOM 2005; U.N. Millennium Project 2005). Other factors affecting rates of school enrollment include various economic constraints on households. These constraints are likely to remain critical in an environment where fertility rates are high, poverty remains persistent, and rural households have few forms of insurance against risk except the labor services of their children.

This paper assesses the effects of primary school characteristics (such as school type, the availability of postprimary grades, and various indicators of school quality) along with household characteristics and recent household economic and demographic shocks on progress through primary school since 1997 in rural Punjab and North West Frontier Province (NWFP). The analysis is based on panel data drawn from 12 rural villages. The first wave of data was collected in December 1997; the second wave was collected roughly six years later, in January 2004. Each wave collected data on household and school characteristics. As far as we know, these data are unique in a developing-country setting in that they track longitudinally changes in both the school environment (i.e., school and teacher characteristics) and the household environment (including fertility preferences and birth histories). These changes can be linked at the child and the community level while at the same time allowing us to measure behavioral change within the same settings for a panel of women and their children. A particularly noteworthy feature of the study is the availability of data on the arrival of unwanted births between the two surveys—an unexpected shock to the household that is rarely explored in the literature.

The paper begins with a brief review of literature followed by a description of our panel data. A description of recent changes in the schooling environment as well as in rates of primary school enrollment and completion over the past six years in rural Punjab and NWFP provides the context within which to interpret the results of the multivariate analysis. We use discrete time hazard models to model the determinants of school dropout between Waves 1 and 2. We conclude with some implications of these findings for future schooling trends and for education policy in Pakistan.

There is a rich literature on the determinants of school enrollment and retention and academic achievement in developing countries. Here, we discuss selected insights from that literature by summarizing findings on three groups of explanatory variables that are often considered in empirical studies: (1) household and community characteristics, (2) economic and other unexpected "shocks" experienced by the household, and (3) school and teacher characteristics.

Household and community characteristics

The strong correlation between household characteristics and children's schooling outcomes is well established. The policy implications of these findings are limited, however, because it is not feasible to design short-run interventions to change the occupation, the level of schooling, or the worldview of parents. If school enrollment at the primary level is found to be sensitive to fluctuations in household consumption, it may be possible to change household consumption levels through programs targeting subsidies or grants to the poor.

Most published studies analyzing the determinants of enrollment in Pakistan have found the association between household or family income and girls' enrollment in school to be positive and statistically significant, whether income is measured directly using a household consumption module or indirectly through some aggregation of household assets (Federal Bureau of Statistics 1998; Hazarika 2001; Sathar and Lloyd 1994; World Bank 2002). Furthermore, when results for boys and girls are compared, the size and significance of income effects are typically larger for girls than boys (Federal Bureau of Statistics 1998; Sathar and Lloyd 1994; World Bank 2002). These analyses are restricted to the effects of household consumption on enrollment, however; their effects on the likelihood of dropout may be different.

As for the role of community characteristics on schooling outcomes, the availability of a primary school within the community and some aspects of school choice and quality have been found to be important influences on enrollment decisions (Lloyd, Mete, and Sathar 2005). Similarly, a particularly strong correlate of progression beyond primary school (grades 1–5) is the availability of postprimary classes in the community. For example, in rural Ghana, Lavy (1996) found convincing evidence that the paucity of middle (grades 6–8) and secondary (grades 9–12) school options in a community is an important factor in holding down enrollments in primary school and prompting premature dropout.

Another linkage with community characteristics is through factors affecting the demand for child labor, including labor market conditions and community infrastructure affecting the demand for domestic chores. In settings where the demand for children's time is strong, schooling can be negatively affected. On the other hand, in settings where higher levels of schooling are available and where the economic returns from attending school are high, children are more likely to attend and progress in school.

Unexpected household-level shocks

The influence of unexpected household-level shocks on the school enrollment and attendance patterns of children is an important topic for research. A large literature investigates the impact of negative economic shocks on household consumption patterns (see, for example, Gertler and Gruber 2002; Townsend 1994). There is also a sizable literature on the impact of negative economic shocks on children's schooling and labor force participation. The majority of these studies explore the effect of these shocks when they occur during an economic crisis that affects an entire community (e.g., Frankenberg et al. 1999; Frankenberg, Smith, and Thomas 2003; Thomas et al. 2004, in the case of the Indonesian economic crisis; Behrman et al. 2000, for Thailand after the 1997 financial crisis; Skoufias and Parker forthcoming, for parental job loss and divorce during the Mexican peso crisis). Such studies tend to find a large impact of economic crises on school enrollment and attendance, sometimes positive and sometimes negative, with the exception of Skoufias and Parker, who find some negative effects for girls' school attendance but not for their grade advancement. The consequences for children's schooling of household-level shocks that occur during ordinary times may differ from the consequences that ensue from similar shocks that occur during times of community-wide economic crises because of differences in (a) the extent to which households can turn to others for support, (b) the duration of the shock, and (c) the extent to which the public safety net effectively smoothes the impact of the shock. Few studies have examined the effect of unexpected household-level adverse events on children's schooling in the absence of a country-wide economic crisis. One such study is that of Duryea, Lam, and Levison (2003), which finds that while job loss among Brazilian male household heads can have quite large effects on children's schooling in affected households, job loss has a small net negative effect on the grade advancement of Brazilian girls and no effect on Brazilian boys' grade advancement because of the relatively few household heads who experience job loss within a three-month period. This finding is consistent with that of Jacoby and Skoufias (1997) for rural India, who conclude that seasonal fluctuations in school attendance are a form of self-insurance, but one that does not result in substantial loss of human capital on average.

The impact of unexpected household shocks other than job loss and crop loss—in particular, unwanted fertility—is rarely explored. To our knowledge, research exploring the effects of unwanted fertility or excess fertility on children's schooling outcomes has been based on cross-sectional data that link current schooling outcomes with mothers' current reporting of fertility and fertility preferences or their retrospective reporting of the wantedness of particular births in the last five years. Montgomery et al. (1997), in their five-country comparative analysis of the effects of unwantedness on child outcomes, found statistically significant effects of excess fertility (actual fertility exceeding ideal fertility) and unwanted fertility (births that were reported as unwanted in the past five years) on children's schooling attainment in the Philippines, Thailand, and the Dominican Republic, but not in Egypt or Kenya. The absolute size of the effects in terms of grade level attained and percent continuing to secondary school, however, was relatively small.

School and teacher characteristics

There is strong empirical evidence of statistically significant associations between school/teacher characteristics and individual schooling outcomes in developing countries (for a thorough review, see Chapter 3 in NRC/IOM 2005). The particular elements of schooling that matter, however, appear to vary substantially from study to study, depending on the context as well as on the data and statistical approach. Researchers seeking to measure the importance of school and teacher characteristics face numerous challenges. The first is in determining the extent to which one can treat variations in school and teacher characteristics across communities as exogenous. In the absence of experimental/random allocation of schools and teaching resources, the correlations between school characteristics/availability and community characteristics must be explored. The interpretation of findings is easier in cases where these correlations are found to be weak (Alderman, Orazem, and Paterno 2001; Lloyd, Mete, and Sathar 2005). The second challenge is in determining whether or not measured school and teacher characteristics are adequate proxies for learning conditions in schools. The third is in determining whether or not parents have sufficient or accurate information about the learning conditions in schools to allow these conditions to directly affect enrollment and retention decisions at the primary school level—decisions that remain largely in the hands of parents.

Among cross-sectional studies of school retention and dropout, a few based on cross-sectional data have attempted to link students to the characteristics of the specific schools they have attended. One approach has been to construct latent school-quality variables, which can be derived by regressing individual standardized test scores on various explanatory factors at the individual and family level, and a set of dummy variables to represent each of the schools attended by students in the sample. Two studies using this approach have found statistical confirmation of the importance of school quality for enrollment, dropout, and attainment at the individual level but no direct evidence concerning which elements of school quality might matter (Hanushek and Lavy 1994; Khandker, Lavy, and Filmer 1994). More recently, studies that combine household and school survey data at one point in time suggest that: (a) various elements of school quality matter, (b) effects vary by sex (partly because the school environment experienced by boys and girls differs and partly because the effects of the school environment on boys and girls differ), and (c) some aspects of the school environment not traditionally linked to the development of cognitive competencies may also be important to remaining in school, such as teachers' attitudes and behaviors toward their students, in particular differential treatment of boys and girls (e.g., Lloyd et al. 2003, using data from Egypt; Lloyd, Mensch, and Clark 2000, using data from Kenya).

We end this subsection by pointing out an issue that is crucial for the study of schooling duration: the need to collect information on the schooling conditions of children before they drop out, so that one can make the linkage between the conditions that prevailed at the time of school attendance and subsequent dropout. Mete (2004) uses a two-stage survey design to investigate grade progression in a centralized, examination-based, highly selective education system in Tunisia. The results of such a study may apply to a number of African and Latin American countries with similar education systems, but not to Pakistan, for example. Because most studies of the determinants of school enrollment in developing countries are based on cross-sectional

data, understanding of the determinants of dropping out is limited. Most of the studies on the impact of unexpected economic shocks reviewed earlier, by contrast, use longitudinal data sets. They are, therefore, well designed for investigating the household determinants of dropping out, but less so for investigating the role of school and teacher characteristics because of the absence of linked school data.

PANEL DATA

Data for Wave 1 of the panel were collected as part of a study entitled "Investments in Children's Education and Family-Building Behavior" (see Sathar, Lloyd, and ul Haque 2000 for a full description). The original sample was drawn to cover the range of schooling conditions prevalent at the time in the two provinces of NWFP and Punjab. The 12 rural communities were selected from six districts, three from each province. The sample included 731 married women aged 20–45 (about 60 from each community) and their husbands. They were interviewed in detail about the schooling of all their children (regardless of the children's ages) and their household economic circumstances, using a shorter version of the consumption modules used by the World Bank's Living Standards Measurement Surveys. For each child who had ever attended school, whether currently alive or dead, data were collected on the name of the primary school attended, type of school attended (private or public and single-sex or mixed), age at entry, age at exit, current school status or grade attained, grades repeated, and reasons for nonentry or school exit. The respondents were also interviewed about their experiences with family building.

In addition to the household data, Wave 1 involved the collection of data on 50 primary schools attended by the children in the sample (all primary schools within the community plus any schools that were located nearby if two or more children from the community attended them) and on key features of each of the 12 communities. The school data included information on the conditions of the buildings and classrooms, availability of amenities such as running water, toilet, and electricity, medium of education (language of textbook) and medium of instruction (language spoken in classroom), presence of middle school grades within the same school compound, availability of textbooks, total fees, duration of daily sessions and number of days school was in session, official enrollment, student and teacher attendance on the day of the visit, teacher training, teacher workload, and date the school was established.

In Wave 2 of the panel, households previously visited in Wave 1 were recontacted (with appropriate protections for confidentiality and informed consent) and all ever-married women aged 20–55 in those households were interviewed. Women from the previous sample who had left their former household but remained in the community were also followed and reinterviewed. As a result, 81 percent of women previously interviewed in Wave 1 were successfully reinterviewed.[1] It is clear from Table 1 that women reinterviewed at Wave 2 do not differ significantly with respect to key characteristics from all women in the original sample, nor did their children, so we are confident that the women in our panel are representative of all women interviewed in Wave 1.

In Wave 2, all 50 primary schools visited in Wave 1 were visited again and comparable data were collected on school characteristics. In addition, all primary schools—including

religious schools and informal schools operated by nongovernmental organizations (NGOs)—that had been established within each community during the past six years were visited for the first time, as were schools outside the community that were not previously visited if we determined that some children from the community were attending those schools. A qualitative component was added to the school survey in Wave 2, administered after the structured part of the school inventory questionnaire was completed, in the form of in-depth interviews with teachers in each school. These interviews were organized around the following topics: job selection and security, teacher training refresher courses, curriculum, and medium of instruction. The responses elicited from these in-depth interviews revealed some additional differences in conditions between public and private schools that were not captured with the quantitative indicators.

THE CHANGING SCHOOL ENVIRONMENT IN RURAL PAKISTAN

The guidelines provided to the field teams, which were similar in both waves of the survey, were to visit all primary schools located within each community (primary sampling unit) and those primary schools outside the communities attended by two or more children in our sample. Following these parameters, our sample of primary schools expanded from 50 in Wave 1 to 104 in Wave 2 (see Table 2).[2] Fourteen of the newly attended schools were public and 40 were private.

There are two reasons for the dramatic increase in the number of primary schools visited by our field teams. First, a large number of new schools have been established since 1997, particularly private schools. Of the newly established private schools, 21 were located inside the community and 9 outside. In contrast, only two new government girls' schools were established since 1997, one inside and one outside the community; no new government schools for boys opened since 1997. Second, village children are choosing to attend a wider range of schools, some of which had existed at the time of the first wave but had not been previously included in the sample because few if any students attended them. An additional 22 schools that were not attended by community children in Wave 1 were being attended in Wave 2, the majority located outside community boundaries. Roughly half of these schools were government primary schools.

School access has also expanded in another way. An increasing percentage of primary schools include postprimary grades within the same facility (see Table 3), easing the transition to middle school for those who choose to continue. In 1997, only 18 percent of the primary schools visited had a middle school section. By 2004, the percentage with a middle school section exceeded 50 percent. The growth in availability of middle school grades has been most dramatic in the private sector. As shown in Table 3, the number of government schools with middle sections has increased from 3 to 12, while for private schools the number has increased from 6 to 41. As a result, as of Wave 2, roughly one-fourth of government primary schools had a middle section compared with over three-fourths of private primary schools. The growth of private schools has been particularly pronounced in Punjab, where the number has increased almost fivefold in just six years, from 7 to 33 in our sample communities.

As shown in Table 4, there has been some noticeable upgrading of government primary schools in the six years between Waves 1 and 2, particularly for girls. This upgrading has reduced the gap between government boys' and girls' schools in a variety of characteristics typically associated with school quality, as well as the gap between government and private schools. For example, the percentage of teachers absent on the day of the visit and the percentage of teachers residing in the village have increased substantially in government schools, and differences between government and private schools are no longer sizable. For teachers who are assigned to schools away from their homes, travel to school may be difficult, particularly for female teachers. Non-resident teachers are, therefore, more likely to be absent or late, a problem that is difficult to monitor in many rural government primary schools where there is no principal or head teacher on the premises. Previous research has shown that the percentage of teachers residing in the village can be an important determinant of primary school enrollment, particularly for girls (Lloyd, Mete, and Sathar 2005). While it is still true that a higher percentage of private school teachers than public school teachers reside in the community, the percentage residing in the community has increased for both government boys' and girls' schools. At Wave 2, the gap between public and private schools was only 18 to 21 percentage points, down from a gap of 46 to 51 percentage points between public and private schools six years earlier. The availability of basic amenities in government schools has also improved noticeably, particularly the availability of toilets in girls' schools.

Recent trends in primary school attendance and attainment among 15–19-year-olds can be observed by comparing the overall results for Waves 1 and 2 according to three indicators: the percentage who ever attended; the percentage who completed; and the percentage of those who ever attended who completed, or the primary retention rate (see Table 5). The only striking change in ever attendance rates is for girls in NWFP, where the percent who have ever attended has risen from 50 to 59 percent. Primary completion rates tell a different story. There have been no changes in primary completion rates for boys in NWFP, where completion rates were already high. There have been notable improvements, however, in completion rates for girls in both provinces and for boys in Punjab. These improvements are a reflection of the improvements in the primary retention rates. The gender gap in completion rates—49 percentage points in NWFP and 17 percentage points in Punjab—remains substantial in both provinces by international standards, but is unusually extreme in the case of rural NWFP. Retention rates, which are now about the same for girls and boys in Punjab (84 and 81 percent), still diverge substantially in NWFP (69 percent of girls as compared with 93 percent of boys).

Despite limited changes in ever attendance rates, there has been a substantial shift in the setting for primary school enrollment, with a growing percentage of both boys and girls attending private schools (see Table 6).[3] While 90 percent of 15–19-year-old boys in Wave 1 who ever attended school reported having attended a government school, only 57 percent of 5–9-year-old boys reported attending a government school in Wave 2. For girls, the shift in enrollment has been similarly dramatic, with 93 percent of 15–19-year-old girls reporting having attended a government primary school in Wave 1 but only 61 percent of 5–9-year-old girls in Wave 2 reporting attending a government school. NGO schools represent a very small percent of overall primary school enrollment. The overwhelming majority of children who attend private schools attend for-profit schools.

The focus of the multivariate analysis that follows is on primary school retention (grades 1–5) and progress through middle school (grade 6–8) since Wave 1. Thus, our sample of interest is all children who were ages 6–12 at Wave 1 and who had ever attended school by Wave 2. Of the 1,203 living children who were reported by their mothers to be ages 6–12 at Wave 1, 968, or 80 percent, were matched successfully at Wave 2, so that we have data on their participation and progress through school from both waves of the panel.[4] Of the 745 children who began primary school by Wave 2 in the matched sample, we have data on the characteristics of the primary schools that they attended for 704, or 94 percent.[5]

We model the probability of school dropout since Wave 1 using a discrete time hazard model. Introducing a series of dummy variables representing each grade individually allows us to model dropout probabilities by grade. Figure 1 shows the cumulative probability of continuing in school following the completion of a given grade. We can see that while grade retention has improved for both boys and girls, there is a sharp drop off in grade continuation beyond grade 5 for girls.

The explanatory variables reflecting household characteristics and community characteristics at Wave 1 include monthly household consumption, mother's schooling (whether or not she had ever attended school), father's occupation (whether or not he was in agriculture or other blue-collar work), an index of infrastructural characteristics in the community,[6] and a dummy variable for distinguishing those living in NWFP. The provincial dummy can capture differences in gender norms and in the management of government primary schools at the provincial level, among other factors.

Unexpected shocks to the household between Wave 1 and Wave 2 include measures of a loss of remittance income, the arrival of an "unwanted" child, and the presence of any other negative shock. In most respects, the household and school questionnaires used in Wave 2 replicate those used in Wave 1 in order to ensure comparability across rounds. A sequence of questions was added to the household survey in Wave 2, however, in order to measure whether or not the household had experienced any negative shocks in the past six years. These include loss of remittances, loss of a job, serious illness or death in the family, crop or business failure, or loss of property due to theft, fire, or destruction.[7] Furthermore, because a complete birth history was collected in both survey rounds, the presence of an "unwanted birth" in the past six years was also captured.[8]

We estimate three models for each of three samples: all children, boys, and girls, in grades one to eight (primary and middle school). In all three models, we include the full set of household, community, and unexpected shock variables enumerated above. The three models are distinguished from each other by the mix of school and teacher variables included. In the first model, we include a dummy variable to represent whether or not the student was enrolled in a government school versus a private primary school at Wave 1 (or entered school between Waves 1 and 2 and attended a government primary school at the time of Wave 2).[9] In the second model, we introduce several measures of school quality that characterize the school attended, including the amenities score, the mean grades of schooling for teachers in the school, and the percent of

teachers who reside in the community, to see whether or not we can explain some of the differences in retention rates observed between government and private schools on the basis of these characteristics. In the third model, we add a dummy variable for whether or not postprimary grades were available in the community at the time the child was ten years old.[10]

Mean values for the independent variables used in the three models are shown in Table 7 for the total sample and for boys and girls separately. On average, mean monthly household income is about 7,700 rupees. Roughly one-fourth of the children's mothers have ever attended school. Given that these children live in rural areas, a majority have fathers who work in agricultural or blue-collar occupations. More than 40 percent of these children have mothers who have experienced the arrival of an "unwanted" child in the household since Wave 1. This is based on the mother's expressed desire for no more children in Wave 1. Girls were slightly less likely to have an "unwanted" sibling because of the strong preference for male children in Pakistan. Only 3 percent of households have experienced a shock in the form of a loss of remittances in the past six years, but more than 50 percent have experienced at least one other shock, including job loss, serious illness or death, crop or business failure, or the loss of property.

Roughly 80 percent of children were attending a government primary school at the time of Wave 1. On average the primary schools the children attended at Wave 1 had less than two of the four amenities measured (electricity, water, toilet, and classroom furnishings). Roughly 40 percent of the teachers of children attending primary school at Wave 1 were residing in the community. On average, teachers had attained slightly less than 11 grades of schooling. Slightly more than half of children lived in communities that offered postprimary grades at the time they were ten years old.

The results of our multivariate analysis are presented for all students in Table 8, and for boys and girls separately in Tables 9 and 10. Although we prefer to present all of our data separately by sex, we have included the table of all respondents (Table 8) to see whether some of the measured effects might show up more clearly using this larger sample.

Household and community variables

In Table 8 we see that for all children who have ever attended primary school, higher levels of monthly household consumption reduce the chance of dropout and are always statistically significant (as reflected in the Z-values). These effects persist when boys and girls are treated separately (Tables 9 and 10).[11] Having a mother who attended school substantially reduces the probability of dropping out in all models and for all samples, but the size of the effect is substantially larger and statistically significant for girls. Having a father working in agriculture or another blue-collar occupation also increases the likelihood of dropout, but to a much smaller extent, and the effects are never statistically significant. This is an interesting finding in that despite the large (negative) relationship between fathers' occupation and girls' school enrollment found by Lloyd, Mete, and Sathar (2005), our finding here suggests that once children are enrolled in school, fathers' occupation is no longer an important determinant of duration of schooling.

With respect to community variables, living in a more developed community is an important and statistically significant factor in reducing the chance of dropout; however, community development is not significant for girls when the presence of postprimary grades is included in the model. Provincial differences are not significant when results for boys and girls are combined but become significant when boys and girls are treated separately. This finding is consistent with the results of the descriptive data presented in Table 5, which show that primary completion rates are much lower for boys in Punjab and much lower for girls in NWFP.

Household shocks

As shown in Table 8, having experienced the birth of an "unwanted" sibling in the past six years and having lived in a household that experienced a sudden loss in remittances in the past six years were both factors increasing the likelihood of dropout. When boys are considered separately, the loss of remittances is the more important factor. This makes sense because when boys are in their early teens they are in a position to assist the family in replacing cash income if they drop out of school. Indeed, child labor rates at these ages in Pakistan are not trivial for boys (see Lloyd and Grant 2005). When results for girls are estimated separately, experiencing the birth of an "unwanted" sibling during their primary school years is a significant factor increasing the odds of dropout at any point during primary or postprimary schooling. Here we can see a clear division of labor between boys and girls. Whereas boys are expected to contribute to cash income when a family experiences economic difficulty, a girl is expected to help out at home when there are extra domestic duties to perform. Since a significant proportion of mothers in the sample experienced an unwanted birth between the two waves of data collection in 1997 and 2004, the avoidance of unwanted births would have a major impact on grade progression rates, particularly for girls.

By using first-wave survey questions (on fertility desires) to explain events that took place after Wave 1, we hope to avoid the common ex-post justification problem associated with the measurement of births that are unwanted. Nonetheless, this method of designating some births that occurred between the two waves as unexpected events may still mischaracterize the desirability/expectedness of some births. For example, some women may have decided to have a child at some point after the first-wave survey. In order to tackle this issue, we have experimented with a more restrictive definition of not wanting another child, by taking into account both the reply to the survey question on wanting another child and whether or not the respondent used contraceptives at the time of the first-wave survey. This allows us to ask whether the desire to stop childbearing was strong enough to lead to a change in behavior. The signs and magnitudes of the estimated coefficients from this alternative definition are very similar to those reported in Tables 8–10, although the estimates are much less precise.[12] Ideally, one should also take into account husbands' preferences for more children. Unfortunately, our sample size is too small to take this aspect of intra-household decisionmaking into account—only 60 percent of husbands were interviewed.

School and teacher characteristics

Attending a government school is associated with higher dropout rates than those associated with attending a private school, and the size of the effects is much greater for girls than boys. Indeed, when the results for girls and boys are presented separately in Tables 9 and 10, we see that being enrolled in a government school does not alter the dropout probability of boys when other school/teacher characteristics are taken into account. For girls, however, being enrolled in a private school increases the duration of schooling significantly, even when other school/teacher characteristics are taken into account.

A higher school amenities score is not a significant factor reducing the probability of dropout. For boys, the sign of the amenities score is contrary to expectations but never statistically significant. Higher mean grades of schooling for teachers reduce the probability of dropout in the combined sample and for girls when analyzed separately. In other cases, effects are sometimes contrary to expectations but usually not statistically significant. An increase in the percentage of teachers residing in the community significantly reduces the probability of dropout for the combined sample and for boys when analyzed separately.

The presence of postprimary grades at the time each child was ten years old reduces the probability of dropping out of school in all models and is significant in the combined sample and for girls when analyzed separately. This effect is found even when controlling for school/teacher characteristics and whether or not a child attends a government school. However, for girls, the community development variable becomes nonsignificant, suggesting a correlation between the level of development in the community and the presence of postprimary educational opportunities for girls.

Unfortunately, our school variables do not capture all aspects of schooling that may be relevant to school dropout. Even when school characteristics are controlled, we find that being in a government school is associated with a greater likelihood of school dropout, particularly for girls. This may seem surprising, given many parents' strongly expressed preferences for single-sex education, which is typically only available in government schools (Sathar, Lloyd, and ul Haque 2000). This finding suggests either that other features of government schools not captured in our survey are important determinants of dropping out, or that children who are likely to stay in school longer are also more likely to enroll in private schools in the first place.[13] Information gathered from our discussions with teachers may give us some hint as to what some of those aspects of schooling might be.

FOCUS GROUP DISCUSSIONS WITH TEACHERS

Certain themes from our discussions with teachers stood out as offering insights into some of the less easily measured distinctions between government and private primary schools. Most teachers in both public and private schools mentioned that private school teachers have no job security, whereas government school teachers have certain employment guarantees, such as longer-term contracts. Private school teachers are paid much less than public school teachers and cannot keep their jobs if they do not perform well, which means that employment is closely tied to performance. Private school teachers are also more closely supervised because the

owner/headmaster is on site, whereas in most public primary schools there is no daily supervision of teachers' attendance and performance. More than one-fourth of our conversations with teachers included some mention that the appointment and transfer of teachers in public schools were often based on favoritism, political influence, and bribes, rather than merit. Furthermore, these concerns were more likely to be mentioned in Punjabi schools. For example, in a government boys' primary school in Punjab, the following quotation was recorded:

> We have a complaint for the Ministry that our superiors irrelevantly have teachers transferred and halt their salaries, and then, after taking something again, resume their salaries but keep taking cuts from their salaries. In my sixteen ministry years, I have not seen such a poor situation, which has been prevalent for the past two years. The teacher only has his/her salary. If this is taken through cuts and bribery, then how will he manage? Selection is done upon the basis of bribery. The person who comes on merit is not hired until and unless he gives something.

Surveys conducted by Transparency International (2002) suggest that a major reason for corruption in the education sector in Pakistan is the lack of accountability.

Another factor that may make private schools appealing to parents, particularly the parents of girls, is that a substantial majority of teachers in mixed-sex private schools are female (see Table 4). Parents in rural Pakistan express a strong preference for having their children study with a same-sex teacher, particularly in the case of girls (Sathar, Lloyd, and ul Haque 2000).[14] While there is no consistent evidence in the literature that girls perform better with female than with male teachers (see review of the literature in Lloyd and Mensch 1999), it may be that parents' preferences for same-sex teachers are more important, particularly if girls are going to progress beyond primary school at an age when they are likely to have reached puberty. Unfortunately, it is difficult to test this hypothesis in a multivariate analysis using our data because all government girls' schools have exclusively female teachers and all but 2 percent of teachers in government boys' schools are male, so it is only in the case of private schools that there is any variation to explore.

CONCLUSIONS

The results of this study show clearly the complementary nature of supply and demand factors in determining grade progression in rural Pakistan, particularly for girls. The results suggest that substantial improvement in the schooling environment in rural Pakistan is required if universal primary completion is to be achieved by 2015. In particular, the quality of government primary schools and the ease of access to postprimary schooling must be improved. These improvements alone, however, will not ensure success as long as households remain poor and continue to face substantial economic and demographic risks, in particular the persistent risk of "unwanted" births within families in rural Pakistan. While fertility is beginning to decline in Pakistan, levels of unwanted fertility remain high, thus reducing the capacity of many families to support their girls' primary school completion. At the same time, boys' primary school

completion rates are very dependent on household economic circumstances. Child labor rates in Pakistan remain high, and primary school completion rates for boys, particularly in Punjab, remain surprisingly low by international standards.

It is likely that a conditional cash transfer scheme targeted toward poor parents to encourage them to enroll their children in school, possibly with some additional incentive for girls, will be required in the short run to boost enrollment and completion rates adequately to achieve universal primary schooling. These policy measures will need to be complemented by (a) substantial reforms in provision of public primary schooling so that government schools become more accountable to parents and to the community for the quality of the education they provide, and (b) better access to and improved quality of care in the delivery of family planning services to the rural poor. In the absence of these changes, we predict that primary enrollment will increasingly shift toward the private sector, with attendant benefits for primary completion rates. However, an increase in the supply of private-for-profit schools at the primary level has been shown to benefit overall enrollment rates only marginally (Lloyd, Mete, and Sathar 2005). Thus, an increased supply of private schools in the absence of other changes is unlikely to be sufficient to achieve universal primary enrollment.

1   Of the 133 women who were not reinterviewed, 24 were absent from the home, 28 refused to be interviewed, three could not be located, 63 had moved out of the community, six had died, and nine were unavailable for other reasons.

2   This does not include religious schools, which were not visited in the previous wave and which were attended by very few students—only 1 to 2 percent of children in the sample.

3   "Private schools" refers here primarily to private for-profit schools, although we have grouped into this category one school operated by an NGO attended by surveyed children in 1997 and two NGO schools attended by surveyed children in 2004.

4   Detailed data on school histories were collected on all children ages 5 to 20 who were reported by women in Wave 2.

5   Of the 654 matched children ages 6–12 at Wave 1 who had ever attended school by the date of the Wave 1 survey, 579 could be linked to a school visited in Wave 1, 43 could be linked to a school visited in Wave 2 but not visited in Wave 1, and 32 could not be matched to a school visited in either wave. Of the 84 matched children ages 6–12 at Wave 1 who had not attended school by the date of the Wave 1 survey but who enrolled in primary school for the first time between the two waves of the panel, 63 could be linked to a Wave 1 school and 12 to a school visited in Wave 2 but not in Wave 1. For the present analysis, those not matched to a Wave 1 primary school were assigned the value of the community means of the school quality variables by school type. Alternate models excluded children who were not matched to a Wave 1 primary school (results not shown). In these regressions, the size of the effect and the significance were often reduced, although the effect was always in the same direction. Their smaller sample size made these models less robust than those presented in Tables 8–10.

6   The index of community characteristics is a count of whether or not the community contained the following seven elements: a metalled road, public transportation within the community, sewerage, electricity, telephones, natural gas, and paved streets.

7   Of the household shocks listed, only the loss of remittances was ever significantly associated with school dropout. Therefore, in the regressions, only the loss of remittances is controlled independently; the presence of any other household shock is controlled in a single dummy variable.

8   At Wave 1, women were asked whether they would like to have any additional children. If a woman responded that she was ready to end childbearing but then gave birth to an additional child between the two survey rounds, it was considered to be an unwanted birth for the household. One shortcoming of the data was the failure to record the year of birth for each child in the birth history; the data list only the current age or the child's age at death. We made the assumption that all children not previously listed at Wave 1 but mentioned by the mother at Wave 2 were born between the two waves of data collection. It is possible that infants listed for the first time at Wave 2 who were not living at the time of the survey were born and died prior to the Wave 1 survey but were not reported by the mother at Wave 1. To

take account of this possibility, we constructed an alternate measure of unwanted births that was restricted to new births (between the two survey rounds) that survived to the time of the Wave 2 survey (results not shown). Although the odds ratio was estimated to be slightly lower when using this alternate measure, the association was still significant for girls at grades 1 through 8, supporting the inclusion of the unwanted births variable in the form we chose.

9   Roughly 9 percent of the sample were attending a primary school different from the one that they had first entered. For these students, as for all other students, we attribute all the effects of schooling to the characteristics of the school they currently attend rather than the school they first entered. Unfortunately, we do not know how much time they spent at the previous school before they switched.

10   Information from the community survey at Wave 2 was used to determine the year that each postprimary school (middle or secondary) was established. Primary schools that also offered postprimary grades were also included in this variable. The Wave 2 school survey collected information on the year in which a school expanded to offer postprimary grades.

11   The application of several alternative specifications of the household consumption variable (i.e., using dummy variables for consumption quintiles or using the natural log of household consumption) did not affect the results for other variables and showed the same basic story of a negative and mostly statistically significant association of household consumption with the probability of dropout.

12   The estimated coefficients are statistically significant at the 10 percent level. Sixty-two percent of women who reported that they did not want another child at Wave 1 were using contraception, as compared with 50 percent of those who reported either wanting another child later or not having made a decision (not shown).

13   In the absence of an exogenous shock to the education system, it seems impossible to find variables that would belong in an enrollment equation but not in a duration-of-schooling equation and vice versa. Thus, we are not in a position to shed more light on this issue by formulating a model that involves the joint estimation of enrollment and duration of schooling.

14   Eighty-five percent of mothers and 80 percent of fathers in Wave 1 expressed a preference for their girls' having a same-sex teacher. The percentages for mothers and fathers of boys were 79 and 68 percent.

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Table 1 Selected characteristics of women and children interviewed in panel, by survey wave, Pakistan, 1997 and 2004

Characteristic	Married women aged 20–45 at Wave 1		Children aged 6–12 at Wave 1	
	Wave 1	Wave 2	Wave 1	Wave 2
Age (mean years)	31.3	31.3	8.8	8.8
Grades of school (mean)	1.4	1.4	1.4	1.5
Grades of school among those who ever attended school (mean)	5.4	5.2	1.9	2.0
Household consumption (mean rupees)	7,561	7,463	7,628	7,577
Total children ever born (mean)	5.1	5.1	—	—
Male (percent)	—	—	50.4	51.2
Female (percent)	—	—	49.6	48.8
(N)	(731)	(597)	(1,203)	(968)

— = Not applicable.

Table 2 Number of schools surveyed, by province and type of school, according to location inside or outside primary sampling area, survey wave, and date of establishment, Pakistan, 1997 and 2004

Location/type of school	Inside			Outside		
	Wave 1	Wave 2		Wave 1	Wave 2	
	<1997	<1997	≥1997	<1997	<1997	≥1997
Punjab						
Mixed-sex, government	0	0	0	0	1	0
Boys', government	11	11	0	2	3	0
Girls', government	6	7	0	1	4	1
Private	7	7	13	0	7	6
NWFP						
Mixed-sex, government	0	1	0	0	0	0
Boys', government	8	8	0	2	7	0
Girls', government	5	5	1	1	1	0
Private	4	5	8	3	5	3
Total						
Mixed-sex, government	0	1	0	0	1	0
Boys', government	19	19	0	4	10	0
Girls', government	11	12	1	2	5	1
Private	11	12	21	3	12	9

Table 3 Number of Wave 1 and Wave 2 schools, by type and province, according to grades offered, Pakistan, 1997 and 2004

Type/province of school		Preprimary and primary	Preprimary, primary, and postprimary	Incomplete primary	Total
Government					
Punjab	1997	17	3	0	20
	2004	18	8	1	27
NWFP	1997	16	0	0	16
	2004	18	4	1	23
Private					
Punjab	1997	6	1	0	7
	2004	8	23	2	33
NWFP	1997	2	5	0	7
	2004	1	18	2	21
Total					
Government	1997	33	3	0	36
	2004	36	12	2	50
Private	1997	8	6	0	14
	2004	9	41	4	54

Note: Preprimary school, often called *kachi*, refers to formal schooling that precedes grade 1.

Table 4 School and teacher characteristics, by type of school and survey wave, Pakistan, 1997 and 2004

Characteristic	Government				Private	
	Boys' schools		Girls' schools		Mixed-sex schools	
	Wave 1	Wave 2	Wave 1	Wave 2	Wave 1	Wave 2
Amenities index (0–4)	1.5	2.4	1.3	2.2	3.8	3.8
Water (percent)	69.6	81.5	69.2	66.7	91.7	97.9
Toilet (percent)	18.2	33.3	8.3	66.7	91.7	95.7
Electricity (percent)	31.8	55.6	15.4	44.4	100.0	95.7
Furnished (percent)	40.9	74.1	41.7	38.9	91.7	89.4
Urdu textbook (percent)	91.3	79.3	84.6	88.9	58.3	48.9
English textbook (percent)	4.3	0.0	0.0	0.0	41.7	48.9
Teaching in local language (percent)	87.0	69.0	69.2	26.3	8.3	16.7
Teachers' years of schooling (mean)	11.5	12.2	11.5	11.9	11.3	12.6
Teacher absent on day of visit (percent)	20.8	9.6	31.0	15.7	9.0	8.7
Teacher resides in community (percent)	29.7	35.8	35.0	38.6	81.0	56.4
Student-to-teacher ratio	26.3	29.9	27.1	26.4	22.6	19.0
Teachers per school (mean)	4.5	4.8	4.2	4.1	5.3	5.4
Female teachers (percent)	2.7	1.7	100	100	85.4	69.1

Note: A small minority of private and government schools do not fall in any of these three common categories and are omitted. From the school sample at Wave 1, two private boys' schools are omitted; from the school sample collected at Wave 2, four private boys' schools, two private girls' schools, and two government mixed-sex schools are omitted.

Table 5 Percentage of 15–19-year-olds attending and completing primary school, by province, according to sex and survey wave, Pakistan, 1997 and 2004

Advancement through primary school by province	Boys		Girls	
	Wave 1	Wave 2	Wave 1	Wave 2
Ever attended				
Punjab	83.8	86.9	63.7	62.5
NWFP	97.1	97.0	50.0	59.2
Total	90.5	92.7	56.3	60.8
Completed				
Punjab	61.6	70.3	41.7	52.5
NWFP	92.2	90.4	29.2	40.8
Total	77.1	81.8	35.0	46.4
Completed among ever attended				
Punjab	73.5	81.4	65.5	84.0
NWFP	94.9	93.1	58.5	68.8
Total	85.2	88.5	62.2	76.3

Table 6 Distribution of students, by type of school and survey wave, according to age and sex, Pakistan, 1997 and 2004

	5–9-year-olds		10–14-year-olds		15–19-year-olds	
	Boys	Girls	Boys	Girls	Boys	Girls
Wave 1						
Government	72	81	83	86	90	93
Private (for profit)	27	19	16	14	10	7
Private (NGO)	0	0	1	0	0	0
Wave 2						
Government	57	61	65	73	76	84
Private (for profit)	41	38	34	25	24	16
Private (NGO)	1	1	0	2	0	0

Note: Students who ever attended preprimary school but did not go on to grade 1 are not included in this table.

Table 7 Household and school characteristics of girls and boys ages 6–12 at Wave 1, used as independent variables in the multivariate regression analysis

Independent Variable	Girls	Boys	All
Household characteristic			
Monthly household consumption (mean rupees)	7,400	7,900	7,700
Mother attended school (percent)	27.4	24.2	25.6
Father works agriculture/blue collar (percent)	58.2	59.8	59.1
Community development index (0–7)	4.2	4.2	4.2
Household shock in past six years (percent)			
Unwanted birth	37.3	45.2	41.8
Loss of remittances	2.5	3.8	3.2
Any other household shock	58.0	51.3	54.1
School characteristic in Wave 1			
Attended a government primary school (percent)	81.5	77.3	79.1
School amenities index (0–4)	1.7	1.5	1.6
Teacher resides in community (percent)	39.8	39.9	39.9
Teachers' years of education (mean)	10.2	11.3	10.8
Postprimary grades available in community			
at age ten (percent)	38.9	63.3	52.9
Province			
NWFP (versus Punjab) (percent)	50.0	62.6	57.2
(N)	(314)	(425)	(739)

Table 8 Odds ratios of dropping out of school among all respondents, by various characteristics, according to discrete time hazard models

Characteristic	Grades 1 through 8					
	Model 1		Model 2		Model 3	
	Odds Ratio	Z Value	Odds Ratio	Z Value	Odds Ratio	Z Value
Schooling attained						
Grade 2 (versus Grade 1)	3.905	2.67**	3.908	2.66**	3.914	2.67**
Grade 3 (versus Grade 1)	7.381	4.11***	7.494	4.12***	7.478	4.12***
Grade 4 (versus Grade 1)	7.192	3.97***	7.301	3.99***	7.320	4.00***
Grade 5 (versus Grade 1)	27.918	7.11***	28.809	7.14***	29.178	7.17***
Grade 6 (versus Grade 1)	12.938	5.07***	13.401	5.11***	13.499	5.12***
Grade 7 (versus Grade 1)	11.166	4.55***	11.650	4.62***	11.676	4.62***
Grade 8 (versus Grade 1)	30.124	6.70***	32.023	6.77***	31.662	6.74***
Sex						
Male (versus female)	0.281	−7.18***	0.325	−6.29***	0.360	−5.52***
Household						
Household consumption	0.956	−2.25*	0.939	−2.85**	0.941	−2.69**
Mother attended school	0.523	−2.95**	0.541	−2.73**	0.575	−2.42*
Father's occupation	1.123	0.71	1.194	1.07	1.227	1.22
Household shock in past six years						
Unwanted birth	1.391	1.95*	1.417	2.05*	1.416	2.05*
Loss of remittances	3.227	3.44***	2.828	2.84**	2.637	2.69**
Any other household shock	1.054	0.32	1.073	0.42	1.062	0.36
Community						
Community development	0.862	−2.83**	0.860	−2.61**	0.902	−1.76
NWFP (versus Punjab)	1.054	0.31	0.896	−0.54	0.925	−0.41
School/teacher						
Government primary (versus private)	3.134	3.64***	3.100	3.27***	2.818	3.00**
School amenities	—	—	1.046	0.48	1.053	0.53
Teachers' years of education	—	—	0.938	−2.42*	0.953	−1.78
Teacher resides in community	—	—	0.509	−2.46*	0.538	−2.34*
Postprimary grades present in community at age ten	—	—	—	—	0.641	−2.30*
Number of person-years	3,923	—	3,923	—	3,923	—
Wald chi2(15)	201.83	—	202.64	—	206.04	—
Prob>chi2	0.000	—	0.000	—	0.000	—
Pseudo R2	0.1648	—	0.1747	—	0.1779	—
Log pseudolikelihood	−657.46	—	−649.62	—	−647.08	—

— = Not applicable.
* Significant at p≤ 0.05; ** p≤0.01; ***p≤0.001

Table 9 Odds ratios of dropping out of school among boys, by various characteristics, according to discrete time hazard models

| | Grades 1 through 8 | | | | | |
| | Model 1 | | Model 2 | | Model 3 | |
Characteristic	Odds Ratio	Z Value	Odds Ratio	Z Value	Odds Ratio	Z Value
Schooling attained						
Grade 2 (versus Grade 1)	7.406	1.87	7.400	1.87	7.406	1.87
Grade 3 (versus Grade 1)	5.762	1.60	5.760	1.59	5.753	1.59
Grade 4 (versus Grade 1)	18.783	2.83**	18.940	2.84**	18.957	2.84**
Grade 5 (versus Grade 1)	28.446	3.26***	28.772	3.25***	28.910	3.25***
Grade 6 (versus Grade 1)	31.296	3.33***	31.475	3.32***	31.541	3.32***
Grade 7 (versus Grade 1)	23.512	2.99**	23.645	2.98**	23.710	2.98**
Grade 8 (versus Grade 1)	55.371	3.84***	56.397	3.85***	56.012	3.84***
Household						
Household consumption	0.948	−1.49	0.945	−1.46	0.946	−1.41
Mother attended school	0.890	−0.34	0.813	−0.58	0.825	−0.53
Father's occupation	1.397	1.12	1.595	1.55	1.645	1.63
Household shock in past six years						
Unwanted birth	1.194	0.68	1.111	0.41	1.088	0.33
Loss of remittances	3.927	3.15**	4.838	3.49***	4.630	3.45***
Any other household shock	1.021	0.08	1.035	0.13	1.010	0.04
Community						
Community development	0.865	−1.89	0.782	−2.85**	0.795	−2.75**
NWFP (versus Punjab)	1.054	0.31***	0.896	−0.54***	0.925	−0.41***
School/teacher						
Government primary (versus private)	2.156	1.93	0.902	−0.17	0.860	−0.24
School amenities	—	—	1.032	0.25	1.033	0.24
Teachers' years of education	—	—	1.172	1.75	1.175	1.76
Teacher resides in community	—	—	0.336	−2.40**	0.319	−2.43**
Postprimary grades present in community at age ten	—	—	—	—	0.834	−0.66
Number of person-years	2,401	—	2,401	—	2,401	—
Wald chi2(15)	98.43	—	102.59	—	106.35	—
Prob > chi2	0.000	—	0.000	—	0.000	—
Pseudo R2	0.1427	—	0.154	—	0.1545	—
Log pseudolikelihood	−289.08	—	−285.28	—	−285.11	—

— = Not applicable.

* Significant at p≤ 0.05; ** p≤0.01; ***p≤0.001

Table 10 Odds ratios of dropping out of school among girls, by various characteristics, according to discrete time hazard models

Characteristic	Grades 1 through 8					
	Model 1		Model 2		Model 3	
	Odds Ratio	Z Value	Odds Ratio	Z Value	Odds Ratio	Z Value
Schooling attained						
Grade 2 (versus Grade 1)	3.021	1.86	3.027	1.86	3.048	1.87
Grade 3 (versus Grade 1)	8.156	3.84***	8.419	3.89***	8.494	3.90***
Grade 4 (versus Grade 1)	4.027	2.32**	4.112	2.36**	4.167	2.38*
Grade 5 (versus Grade 1)	34.958	6.66***	35.954	6.69***	37.112	6.74***
Grade 6 (versus Grade 1)	7.989	3.31***	8.336	3.37***	8.574	3.40***
Grade 7 (versus Grade 1)	8.596	3.23***	8.790	3.27***	8.853	3.27***
Grade 8 (versus Grade 1)	31.358	5.42***	33.427	5.49***	33.303	5.51***
Household						
Household consumption	0.962	−1.31	0.944	−1.86	0.941	−1.93
Mother attended school	0.390	−3.18***	0.408	−2.96**	0.444	−2.65**
Father's occupation	1.105	0.46	1.178	0.73	1.174	0.70
Household shock in past six years						
Unwanted birth	1.674	2.29*	1.764	2.46**	1.810	2.54**
Loss of remittances	2.178	1.46	1.689	0.97	1.338	0.53
Any other household shock	1.193	0.80	1.204	0.80	1.229	0.89
Community						
Community development	0.868	−2.05*	0.829	−2.28**	0.889	−1.36
NWFP (versus Punjab)	2.026	3.30***	1.843	2.14*	2.011	2.41*
School/teacher						
Government primary (versus private)	5.020	3.09**	4.331	2.71**	3.719	2.43*
School amenities	—	—	0.892	−0.77	0.852	−1.03
Teachers' years of education	—	—	0.942	−1.71	0.962	−1.00
Teacher resides in community	—	—	1.240	0.45	1.919	1.20
Postprimary grades present in community at age ten	—	—	—	—	0.504	−2.04*
Number of person-years	1,522	—	1,522	—	1,522	—
Wald chi2(15)	124.29	—	124.95	—	128.75	—
Prob > chi2	0.000	—	0.000	—	0.000	—
Pseudo R2	0.2044	—	0.2116	—	0.2172	—
Log pseudolikelihood	−339.98	—	−336.9	—	−334.5	—

— = Not applicable.

* Significant at p≤ 0.05; ** p≤0.01; ***p≤0.001

Figure 1 Cumulative probability of 10–14-year-old boys and girls continuing in school following completion of specified grade, Pakistan, 1997 and 2004
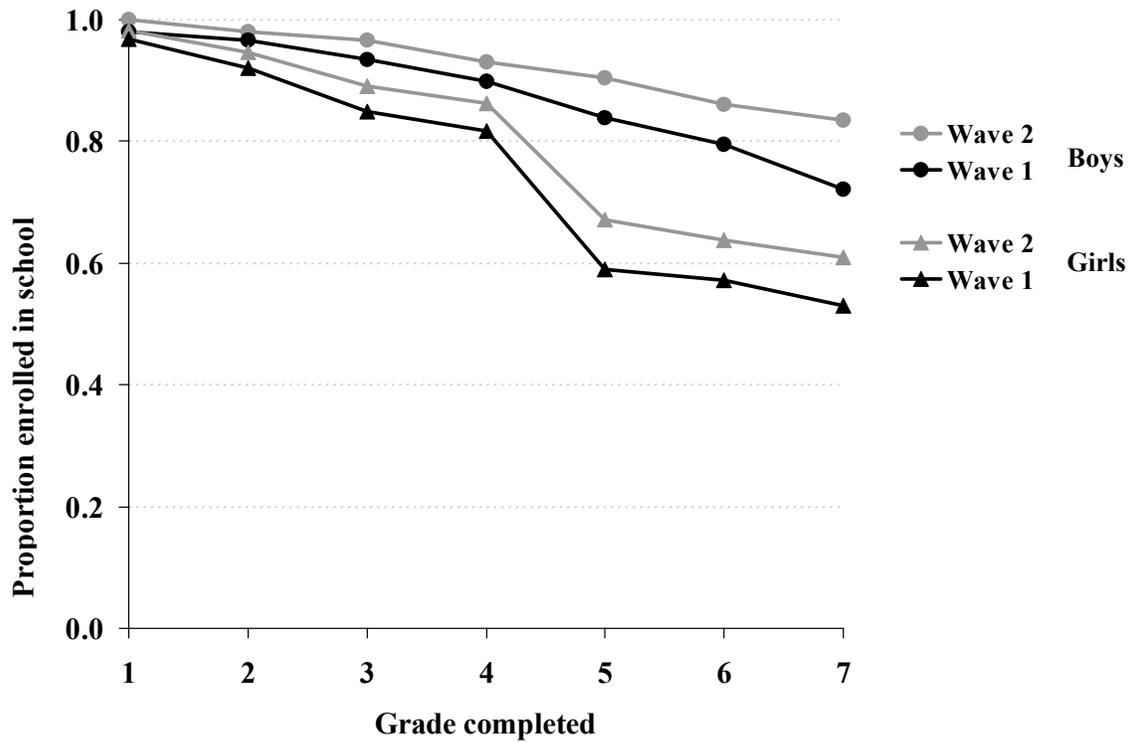
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