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Comparing government and private schools in Pakistan: the way forward for universal education

Nadia Siddiqui¹ and Stephen Gorard²
School of Education, Durham University, United Kingdom

Abstract

This paper presents an analysis of children's proficiency in English, reading and maths on the basis of a citizen-led household survey run by the Annual Statistics of Education Report (ASER) in Pakistan in 2014. Our main analysis involves a sub-group of 26,070 children who were reported to be 8 –years-old. It was important for our purposes that this survey collected equivalent data on children in public, private and religious schools, as well as those not attending school at all. Unsurprisingly, the main difference in outcomes is between those children who attend school, and those who do not. Those missing out on school are more likely to be girls, and from poorer families in rural areas. Within the school system, the social stratification between school types is somewhat lower – both in terms of family background and test results. A binary logistic regression analysis is used to help assess the relationship between attending different types of schools and children's attainment of a specific proficiency level. Once their different student intakes are taken into account, the difference in test outcomes between government and private schools largely disappears. The worst outcomes are associated with the small proportion of children educated only in Madrasahs. The paper ends by proposing that policy-makers press for enforcement of schooling for all, aiming for a universal *state*-funded system with equivalent opportunities for all, meaning that the stop gap of cheap private schools in poorer areas is no longer necessary.

Key words

School types, private schooling, ASER, Pakistan, basic skills, Madrasahs, social stratification

Introduction

This paper presents the findings of analyses of the ASER 2014 household survey and tests of children's proficiency in English, reading and maths. It concerns the social and economic stratification of who attends school in Pakistan, who attends which types of school, and what their results are in terms of a basic proficiency test at age 8. After a consideration of some of the existing evidence from the literature, the paper includes a description of the ASER initiative and the methods used by the paper. Following the results, the paper considers the policy and practice implications for improving equity and access. This is the first time, thanks to the availability of the ASER dataset, that techniques of analysis pioneered and used in more developed countries to assess the social segregation of public service users can be applied to a large high-quality dataset from Pakistan.

¹ Corresponding author: Dr. Nadia Siddiqui, School of Education, Durham University, Durham, DH1 1TA, Email: nadia.siddiqui@durham.ac.uk, Phone: 01913348323

² Co-author: Professor Stephen Gorard, School of Education, Durham University, Durham, DH1 1TA, Email: s.a.c.gorard@durham.ac.uk, Phone: 019133448419

Challenges for school education

Receiving a basic education free of any cost is a human right, according to Article 26 (i) of the Universal Declaration of Human Rights (<http://www.un.org/en/documents/udhr/>). Pakistan is one of the first 48 signatories of this charter adopted in 1948. The state is deemed responsible for generating resources and formulating legal policies and practices that protect children's and young people's right to education. This means not only providing an education service free at point of delivery, but also making it incumbent on citizens to achieve basic education (mere attendance at school is not the purpose). However, the milestone of making education universal for children and young people has never been achieved at a national level in Pakistan. Many children who should go to schools are never enrolled (6.5 million according to UNICEF 2013) and many drop-out from school early (2.5 million). According to the Asian Development Bank (2014) those children not in schools are disproportionately from economically disadvantaged backgrounds, and Pakistan has the highest share of the most disadvantaged children who are not going to school among seven developing countries in South Asia.

The official age for children to attend primary school is 5 to 10 years old (Government of Pakistan 2009, p.36). According to the National Education Census more than 31% of children drop-out of education during their primary level. A majority of these children are reported to join low-paid income activities to support their families and parents in meeting the demands of basic survival. Such children very rarely resume formal education. In this respect, the state has failed to provide children their basic right to education, as stated in the Article 25 A, Constitution of Pakistan. A large number of children are not attending school. It is not mainly that there are not enough schools or places, or lack of children's access to schools, but lack of strict implementation of laws against child labour, and inaction against the cultural taboos that inhibit girls' education.

This lack of intervention by the state has *de facto* given the choice to parents/carers whether they want their child to receive a formal education or not. In general, therefore, children who attend schools already have the advantage of having parents or carers who do not belong to the most economically deprived section of the population and also those who may be less likely to abide by the cultural practices against girls' education. They form a group of children who belong disproportionately to families where parents are perhaps more aware of the need for education, and have enough earned income to be spent on a child's education (travel, uniform, school meal, resources and perhaps fees and extra tuition). There is currently no evidence that suggests simply increasing the number of schools or school types would help children's access to education from the most deprived and conservative families. Prior studies have suggested that girls who do attend schools attend private schools as opposed to government schools, more than boys (Ahmed et al. 2014; Lloyd et al. 2005, Andrabi et al. 2008). However, this does not imply that establishing private schools would challenge cultural barriers towards girls' education in Pakistan, any more than creating more places in government schools would.

Existing evidence on school types

Government schools are those where no tuition fee is charged, and they form a comprehensive system in which school admission is not officially dependent on academic

ability, ethnicity, religion, location of children's house and parents' occupation or income status (Sirivastava 2007; Jimenez & Tan 1987). On the other hand, private schools charge tuition fees, admission fees and other regular funds for school maintenance. There is quite a wide range of monthly or annual student fees charged by private schools and there is no regulation that has set a threshold amount for this. Private schools can be run by individuals, non-government and voluntary organisations who often have a donor-led agenda of promoting education. Some prominent non-government organisations that support school education are the Pakistan armed forces, overseas-employed Pakistanis who have their families in Pakistan, ex-service men associations, Christian minorities and so on (Rahman 2005). Voluntary organisations are also franchise businesses that provide a specific brand name to the schools, and people who want to run the schools as a profitable business become associates of the franchise (for example: The Educators, The City School, Roots School System).

The admission criteria to private schools vary but are primarily dependent on parents' ability to pay the fee in the form of an admission registration and regular monthly fees. Private schools generally charge fees for admission (Rahman 2001, World Bank 2002, Sathar et al. 1994), a monthly cost and for the period during vacations when children do not go to schools (The Express Tribune, June 6, 2015). A second common criterion of admission in some private schools is the child's performance on a school admission test or at interview. Madrasahs are also categorised as private schools that are donor led and charity dependent where religious education is dominant over any national curriculum but no student fee is charged (Rahman 2004). Non-formal education is also possible where children seek education in and out-of-school context and no fee or a very low paid student fee is charged.

The existing evidence from developing countries like Pakistan shows that non-state schools or education providers tend to deal with specific social class groups, and at least informally exclude the most deprived and marginalised groups who cannot afford even the lowest cost schools (Cameron 2011, Härmä 2011, Wang 2010, Lewin 2007). A small scale survey study was conducted in Pakistan schools run by the Non-Government Organisation (NGO) and Traditional Voluntary Organisations (TVO) (Bano 2008). It was based on a convenience sample of interviews with 20 leads in such organisations, along with school visits and interviews. The conclusion was that non-state organisations vary in their objectives and services in the cause of education in poor communities. TVOs focused more on the provision of education and the achievement of pupils they target. NGOs are more donor-led with the objective of creating a wider market place in the communities of needful and poor people. This diversity of school types is largely unchecked, unregulated and unaccountable. There are several private schools running that are not registered according to the government procedures (Shaukat 2014; Ali 2013).

In developed countries with high quality official data, the existence of different school types has been shown to be linked to the clustering within specific schools of children belonging to similar socioeconomic groups, first language and ethnicity (Gorard 2015a). If schools are diverse but given freedom in their pupil admission policies then their intakes of children tend not to be balanced in terms of the local population who could use the schools (Morris 2015; Norwich and Black 2015). More deliberate segregation on the basis of a targeted characteristic can also become a contentious issue. For example, non-state independent schools supporting a religious minority group would segregate on the basis of their parents' religion (Oldfield et al. 2013). This could then inadvertently create segregation in terms of other characteristics such as ethnic origin, socioeconomic status and parental education.

This issue matters because secondary data analyses on large population data sets and longitudinal studies have shown that school level segregation on the basis of disadvantaged characteristics is one of the likely determinants of depressed academic attainment, poorer treatment, life chances and attitudes to later life (Gorard 2015b), including less chance of access to university education (Boliver 2011; Cavalcanti et al. 2010).

Are private schools better?

A systematic review of evidence on the effectiveness of private school performance in developing countries synthesised the results from 59 selected studies conducted in this area with data available from three countries in South Asia, six countries in Africa and one from the Caribbean (Day-Ashley et al. 2014). It was clear that private schools tended to have a better quality of services and teaching than government schools, and there was some evidence that pupils' learning outcomes were improved by attendance at fee-paying schools. However, the review findings were drawn from some weak studies, which the systematic reviewers did not report, or perhaps where they failed to take into account issues such as the quality of data, the sample size and quality, appropriate comparison groups and reporting of missing data. It is not stated how far these selected studies were independent research projects and not sponsored by organisations which may have agendas to promote private schools as a 'solution' to the problems in the third world.

Tooley and Dixon (2006) conducted a large scale survey study of schools, households and pupils in India, Nigeria and Ghana. The study developed profiles of the nature of schools in these developing regions and assessed the impact of types of schools on pupils' maths and English performance. The samples are not random or nationally representative but based on selected low-income regions. The study provided examples of small very low cost schools that may be unmatched in developed countries (but see Gorard 1997). For example, some private schools in Kenya cater predominantly for the most deprived pupils who live in slums, while government schools are located in the periphery of slum areas where pupils from disadvantaged and richer backgrounds are mixed. The overall finding of the study is that pupils in private schools get better test results than pupils in the government schools. The study attributes the performance differences to quality indicators of schools where private schools have lower pupil-teacher ratios, teacher's level of commitment to pupils' performance and better educational facilities as compared to government schools. Private schools are described as 'the poor's best chance' (Tooley 2004). Private schools are not seen in the same way in South Africa, and were found only to contribute to 5% of enrolments. They were very expensive to attend and are therefore highly exclusive to those who could afford the cost (Akaguri 2010; Motala et al. 2007).

In general, studies find that private schools in India and South Asia have better results than government schools, in raw score terms. Some studies even find better results, but with reduced differences, when the student intake characteristics have been taken into account somehow (Tooley et al. 2010; French and Kingdon 2010), and some studies find no difference for apparently equivalent students (Chudgar and Quin 2012).

Menashy et al. (2014) critiqued the investment policies and initiatives of the World Bank programmes that aimed to promote education enrolment and prevention of drop-out through new private school establishments (such as those surveyed by Tooley and Dixon 2006). Pakistan is one of the seven countries in South Asia where the private sector has been given

considerable financial support by the World Bank. There have been various projects targeted at a provincial level to intervene through the establishment of private schools and so improve the poor enrolment situation at primary and secondary level. This is linked to raised enrolment and retention rates slightly in the most deprived regions of the country. However, the long term impact of this privatisation of schools is not clear. For example, there is no evidence on how long private schools can be sustained without external help from non-government and foreign aid agencies.

Project LEAPS (Learning and Educational Achievements in Punjab Schools) is a survey-based study in Pakistan for the province of Punjab (Andrabi et al. 2007). The study surveyed 2,000 households, and 812 government and private schools based on a stratified district sample of the whole province. There are 36 districts in the province of Punjab out of which only 3 were selected. The district selection criteria are not mentioned. However, the selection of 112 villages from the selected three districts was reported to be on random basis. Around 12,000 pupils in Year 3 of the selected schools were assessed in English, reading and maths. Students did poorly overall in relation to the national curriculum levels, but those in private schools outscored those in the government schools, by the equivalent of about one year of additional progress.

In another analysis of the LEAPS data the authors reported children's performance and school switching patterns between private and government schools (Andrabi et al. 2011). The reported results suggested that over a period of three years the learning gains do not show any big difference between children studying at private or government schools. The pattern of switching school from government to private or vice versa school also does not show a major change in children's learning gradient. The sample included in this analysis is a subset of the main data for those children who could be linked with household information (N= 4,031) and the number of cases further reduces for the analysis at school switching patterns (N=415). The study has used statistical measurement techniques and tests of significance that are not appropriate because the achieved data sets are not complete population data or random selection of the cases. Moreover, the reported attrition rate for children who were re-tested is nearly 32% of the initial sample.

Similarly, Amjad and MacLeod (2014) used ASER 2011 data (see later in the paper) to compare government, private and public-private partnership schools. The results indicate that pupils in the private schools outperform pupils in the government schools, and pupils in the public-private partnership outperform pupils in the private and government schools. The study also compared the association between school fee levels and performance in three areas of attainment. It was found that the fee paid schools performed better than the government schools where no pupil fee is charged. However, the amount of fee paid did not show any clear association with achievement except that pupils paying the highest fees were less likely (68%) to outperform in the test of reading (Urdu/Sindhi) compared to pupils in government schools. Private tuition was also analysed, and it was found that private-public partnership pupils' reading performance reduced in comparison to the government schools when private tuition was controlled for.

The demand for private tuition services for pupils is increasing. The trend seems to be more common among older boys who attend private schools. Students given extra tuition in addition to their formal schooling tend to perform better in tests (Aslam and Atherton 2014; Amjed and Macleod 2014), although there is no clear causal link. It is also not always clear why parents choose private tuition for their children and how these choices are made. The

underlying factor is parents' socio-economic status that determines if a child will be given private tuition or not.

In developing countries such as Pakistan, the growth of private fee-paying schools is associated with the increasing demand of those who want to have a better service and quality of education as compared with the service provisions available in the government schools (Alderman et al. 1996; Härmä 2010). The schools that do not function on the agenda of providing education for all, instead acting as replacements for those parents who can afford income expenditure on their children's education (Zeitlyn et al. 2015). There are also concerns that they will lead higher inequality for girls as it has been claimed that poor parents in general would prefer to spend money on boys' rather than on girls' education (Farah and Rizvi 2007). So, are these private schools a risk to social cohesion, and are they really any better in terms of attainment outcomes? These are the issues addressed in the remainder of this paper.

Methods used in this study

The ASER survey

The dataset used for secondary analysis in this paper was created by the Annual Status of Education Report (ASER) in Pakistan 2014. This is based on a nationwide survey conducted by volunteering citizens from the local regions. It is both larger and more representative of Pakistan than the LEAPS data (above). The sample includes 30 villages in each of the 143 districts of Pakistan. Each village is divided into four parts from its centre location, and from each part every 5th household is selected for the survey. Every year since 2009, 10 old villages are dropped and 10 new are selected so that the rotation of old and new villages provides an estimate of changes over a period of year. From each village, one government school is also surveyed, along with one private school if available.

ASER in Pakistan collects three main sets of information: household survey, child assessments in reading, English, and maths, and a school survey. The tools are standard and are translated into the national language or English so that volunteers can easily administer the surveys in a limited time. All volunteers are given initial training on how to conduct the surveys and to test children at home. The household and children's information are achieved through surveyors' home visits where structured surveys are conducted and children assessed. The household and child data is largely based on bespoke information therefore it has the limitations that any large scale survey study is prone to have. Respondents' age, educational experience, availability of resources at home are all based on the given information and surveyors observations rather than achieved through or even matched for reliability with some other documented resources (e.g. birth certificates, academic degrees certificates or TV/car licence registrations). Not all respondents, especially those living in the remote areas of the country, have any documented resources that verify their age or assets. It is, therefore, the only option to rely on respondents' given information and using judgement.

The reliability of ASER survey data has limitations but this is true for any structured survey study which depends on information provided by respondents more so than that achieved through any national administrative data resources (e.g. national health records or national pupil database). Any large scale existing data or even national administrative data of any developed or developing country or region will have its limitations. However, the ASER

dataset is the largest of this kind of information available that can be linked for analysis between parents, children, proficiency of children in reading, maths and English, schools and regions at a national level.

Schools are not chosen for administering the ASER tests for children because the aim is to create a complete profile of a house, linking the details of each household with children's performance. Schools do not record any household data and therefore cannot provide any accurate details about a child's family. Moreover, the schools could only test children who attend schools. Tests for children who are not enrolled in schools can really only be administered in their homes.

The household information gathered includes the number of people in the household sharing the same kitchen, ownership of land or house, type of house, availability of basic necessities in the house such as electricity, and access to television. From this basic level of information a socio-economic index can be created for the status of each household. The child data includes information on child's age, sex, education status, and their school type. Children aged 5-16 are also assessed on their proficiency in reading, English, and maths. The data provides information on regions such as rural areas or urban centres of the country. As rural areas generally have higher deprivation levels and a higher proportion of the population as compared with urban centres (Pakistan Bureau of Statistics) the regional information could be a predictor of children's education status. The data includes information on parents' age and education which in a Pakistani context could be helpful in predicting if a child goes to school or not.

The test of reading is in the national language, Urdu, and in the Southeast province it is also available in Sindhi. The reading test assesses if children can recognise simple letters, read one-word, read short and simple sentences, read a 6-line story followed by a bonus question on reading comprehension. The test of English assesses if children can recognise capitals and small letters, can read and understand two syllable words written in English, and can read and understand five word long sentences in English. The test of maths assesses if children can recognise the numbers 1-9, and 10-99, and can do simple sums using subtraction and division. The tests are scored in five categories from beginner level to highest level. The last section also assesses if a child can tell the time and can name objects in a picture shown to them. In terms of definition this assessment is neither age standardised nor based on any specified task or taught criteria. The purpose is simply to screen children aged between 5 and 16 years old according to their basic proficiency in reading, English and maths.

The data available on children's proficiency in each test is recorded in five categorical levels. According to ASER descriptions the highest difficulty level in each test can be interpreted as equal to Year 2 (age 5 years) of the national curriculum level. This means that children aged 5 and above should be able to read a short story, be able to read simple sentences written in English, be able to successfully do simple sums (details on ASER assessment tools: http://www.aserpakistan.org/index.php?func=page&page_id=18). The five recorded categories are beginner when children are just enrolled in school with no formal learning experience (Level 1). The second category is recognition of numbers 1-9, recognition of letters and capital alphabets of English (Level 2). The third category is when children can read one syllable words in reading test, recognise small letters of English, and recognise number 10-99 (Level 3). The fourth category is when a child can read short sentences, can read one syllable words in English and can do double figures subtraction sums (Level 4). The

fifth category is when a child can read a short story of a few lines, read a few words in sentences in English, and can do sums involving division in maths (Level 5).

The sample

The datasets on household information and parental information were merged with the child datasets. The datasets were merged on household identification number and parents' identification numbers which were common in all three data sets – for the subset of matching cases. The complete data consisted of 281,493 households, and of these 240,153 recorded at least one child in the age range 5 to 16 years. Children younger than 5 were not tested on reading, maths and English as part of the survey, and so are not included here.

The 26,070 children reported as being in in the 8 year-old age group were selected for further analyses on the performance of children. This was done because age could be a confounding variable when considering the basic assessment data – one would expect older children to do better on average. The age of 8 fits well with likely proficiency in the simple skills assessed, and this age group is also the largest single cohort in the data.

Coding

In addition to handling them separately, the variables concerning household possessions such as house, TV, phone and access to electricity were combined. Those with all were deemed 'rich' in this context, while anyone missing at least one of these was deemed not rich.

In addition to handling the test results separately, the variables were also combined. No raw scores were available – only levels. These levels cannot be assumed to be equal interval, and the cell sizes are very varied making them unusable for a multinomial logistic regression (Gorard 2016). For the regression analysis presented in this paper, a dichotomous variable of 'passed' and 'failed' was created which is consistent with grade retention school practice in Pakistan according to which children who failed in English, maths or Urdu reading do not up-grade with their age peers (King et al. 1999; Chohan and Qadir 2013). Children who scored level 3 in reading, English and maths were recorded as passed, and those who were below level 3 in any of these three tests were recorded as failed.

Analysis

The relevant variables are presented in terms of frequencies, and cross-tabulated with test results, school attendance, and school-type. Children's proficiency in reading, English and maths has been analysed through cross-tabulation with the background variables. There were a lot of small inter-correlations and so a multivariate analysis was deemed appropriate.

Just over half of the 8-year-old children 'passed' the proficiency tests. This outcome is used as the 'dependent' variable in a binary logistic regression model, using the background, household and school variables as potential predictors. This is a clear and simple way of expressing the multiple associations in the dataset. The predictor variables were entered in two steps. Step 1 included all of the background variables, and Step 2 added the type of school attended (therefore this analysis involved only those children who attended school). In this way we can assess the impact of four different kinds of schooling and attainment once other factors such as differences between school intakes have been accounted for.

It is clear that the dataset is not a full random sample or from a pre-defined population. Nor have cases within the dataset been randomly allocated to groups. Therefore, the data can have no standard error, and analytical techniques based on standard errors such as significance tests would be wholly inappropriate (Freedman 2004, Glass 2014). Instead, the analysis is based on ‘effect’ sizes as portrayed by common variation between variables.

Schooling of children aged 5-16

It is clear that a large subset of children do not go to school from an early age, and that further pupils drop out of school before the age 16 (Table 1). This is perhaps the biggest issue for equity facing policy-makers in Pakistan, outweighing the secondary issue of whether private or government schools are to be preferred.

Table 1 – Percentage enrolment in formal education, and type of school attended, by age band

	Children age 5 to 8 years %	Children age 9 to 12 years %	Children age 13 to 16 years %
Currently enrolled in school	79	84	74
Dropped out of school	2	5	12
Never enrolled in school	20	11	14
Total (N)	98,625	81,419	60,109

The known characteristics of children not attending a school differ noticeably on average from those attending school (Table 2). Those attending school are more likely to be male, from the richer 10-15% of households, in urban areas, and with parents who had been to school themselves. The situation is likely to be even more stratified than portrayed in Table 2. For example, the achieved sample includes 59% boys and 41% girls. This suggests that girls were also less likely to respond (or have someone respond for them). Therefore, this analysis may exaggerate the proportion of girls at school at any age. Given that it is unlikely to be a genuine choice of the child not to attend school at such young ages, the rights of the child suggest that the government should do more to enforce education for all (see above).

Table 2 – Percentage of children with specific characteristics, attending and not attending school

	Enrolled in school	Not enrolled in school	Total
Girls	64	36	116,428
Boys	76	24	162,945
Living in rural area	67	33	197,329
Living in urban area	86	14	27,733
Parents attended school	85	15	66,810
Parents not attended school	67	33	205,276
‘Rich’ household	100	0	25,167
Not ‘rich’ household	68	32	253,178

For those who do attend schools, Government schools are the most common, with private schools a substantial sector but declining in use somewhat for older children (Table 3). The religious Madrasahs cater for only a small minority at all ages.

Table 3 – Percentage enrolment in formal education, and type of school attended, by age band

	Children age 5 to 8 years %	Children age 9 to 12 years %	Children age 13 to 16 years %
Government school	46	57	51
Private schools	31	24	20
Madrasah	1	2	2
Non-formal education	1	1	1
Total (N)	199, 436		

There is only a slight difference of enrolment rates by school type. Girls (34%) are more likely to attend private schools than boys (32%). This could be because private schools are more commonly single-sex, or are more accessible or near homes than the government girls' schools. In general, single sex schooling could be a preferred choice for girls' parents in Pakistan, but for many religious and conservative parents it is considered a necessity if the girl is to receive any education at all. Only around 25% of parents had been to school themselves, and this was less common among mothers. This gender gap tells the story of the past and possibly indicates the future of girls' access to education as well unless action is taken to intervene.

Attendance at school matters for the analysis (below) involving results in the tests of attainment conducted as part of the ASER survey. The survey attempted to assess children's performance, whether they attended school or not. The response rate was only 53% for those never enrolled and only 45% for those who had dropped out. This compares to 90% for children currently enrolled. It is clear that those enrolled at school were much more likely to 'pass' these tests (Table 4). The difference is huge, and shows again why universal education for young children must be enforced as the right of each child, and not left to the choice of parents. But the situation may be even worse than portrayed if those who did not sit the assessment were also less likely, on average, to pass. Attendance at school is strongly linked to basic literacy and other skills.

Table 4 – 'Pass' percentage of children attending and not attending school

	Enrolled in school	Not enrolled in school	Total
Pass	55	5	10,726
Fail	45	95	11,269

Attainment of children aged 8

The overall performance in the reading, English and maths proficiency tests, of children reported as aged 8, is given in Table 5. Only around 12% reached level 5 in each test. For the rest of this paper, although level 5 in all subjects is expected to be reached by all children, a child is said to have 'passed' proficiency if they reach the modal level 3 or above in all three subjects, and to have 'failed' otherwise. Around 55% of children passed, and 45% failed,

according to this unambitious classification. Even those children who are enrolled in schools are often not attaining anything like the expected levels in basic skills.

Table 5 – Percentage of 8-year-olds attaining Levels 1 to 5 in reading, English and maths

	Reading	English	Maths
Attained level 1	16	21	15
Attained level 2	21	17	16
Attained level 3	33	24	35
Attained level 4	18	24	23
Attained level 5	12	12	11
Total	22,052	22,009	22,009

Note: these 22,000 cases are used in all successive tables

The characteristics of children who pass or fail, and their families and areas of residence, are stratified, just as they were for attendance at school itself. In general, children from urban areas with richer parents who went to school themselves are more likely to pass. Children attending school are more likely to pass than those not (see above), and those attending private schools are more likely to pass than those attending government schools (Table 6). Those in religious schools are much less likely to pass – a worrying result.

Table 6 – Percentage of 8 year-old children passing and failing in each type of school

	Pass	Fail	Total
Government school	50	50	13,044
Private school	63	37	6,468
Madrasah	22	78	251
Non-formal education	42	58	165

This is not evidence that any type of school is differentially effective with equivalent children since it is clear that those attending each type of school are not equivalent (although the results for Madrasah are worrying). A multivariate logistic regression model is used to deal with these differences between school intakes.

Modelling the results, by background and school attended

The baseline for the logistic regression model is the overall 55% ‘pass’ rate. A prediction whether an individual would pass or fail would be correct 55% of the time if it simply assumed that everybody passed. Adding the available variables on each child’s background and family increases the percentage predicted correctly to 61% (Table 7). This is the Step 1 model involving only background variables as possible determinants of passing/failing the test.

Table 7 – Ability of Step 1 model (background characteristics) to predict pass/fail

	Predicted passed	Predicted failed	Percentage predicted correctly
Observed passed	6,152	2,989	67%
Observed failed	3,571	4,014	53%
Overall correct			61%

The amount of variation in outcomes explained by Step 1 of the model is not large (just over 13% of the previously unexplained variation). This could be because the social stratification in attainment is not that large in rural Pakistan. It is more likely that the non-responders who are also more likely not to attend any school account for much of the social stratification that would be found in more developed countries with universal education systems. It is also possible that despite the range of background variables in the ASER survey something key has been missed. Once attendance at school has been accounted for, there is little difference in the model between boys and girls (Table 8). And there is little difference in terms of parents' age. This is despite considerable variation in age. For example, the average age of mothers is 28 years old but the data also records several young mothers in the rural areas who were as young as 14 when their first child was born.

Table 8 - Explanatory standardised coefficients for Step 1 of the logistic regression model

Variable	Standardised coefficient
Boy (versus girl)	1.06
Mother went to school (or not)	1.38
Father went to school (or not)	1.24
Mother's age in years	1.03
Father's age in years	0.98
Living in mud house (versus Pucca house)	0.62
Living in semi-mud House (versus Pucca house)	0.78
House owned (or not)	0.98
TV available (or not)	1.06
Mobile phone available (or not)	0.90
Electric mains connection (or not)	1.31
Does child have paid extra tuition (or not)	1.46
Urban area (or rural)	1.47

The extra 13% of variation explained is largely attributable to where the child lives (including the type of house with access to regular electricity), parental education, and whether they receive extra tuition. Poor families who live in mud houses (Kutchha) are much less likely to pass the test (only 62% as likely as those in concrete houses). However, the link with house ownership itself is very weak. It is likely that the people who do not own houses are those who live in rented places or with parents and extended family members. In the context of Pakistan, those who live in rented houses do have some source of income so these households cannot be categorised as extremely poor. Living in rented houses is actually more common in urban areas where people are clustered in bigger cities, and this is also an indication that the source of income could be through working in developed cities. Mud-houses or semi-mud houses are more common in areas of extreme poverty such as rural parts of the country or slum areas around the cities. Living in a rural area can itself be an indicator of poverty. Urban regions are generally more economically developed, and provide opportunities for earning and access to better life chances.

The coefficients in Table 8 are odds, meaning that, all other things taken into account so far, a child with extra tuition is 1.46 times as likely to be recorded as 'passing' the basic proficiency tests. A tuition fee is an extra expenditure on children's education, and only parents who can afford to spend are in this category. Paying a tuition fee is also considered an indicator of income and social status. However, according to the ASER 2014 data the range of tuition fee

could be as low as Rs 20/- and as high as Rs 8,000/-. This shows that such an unregulated practice attracts consumers from very different backgrounds (except presumably the very poorest).

In Step 2 of the model, we added the type of school attended. This did not raise the quality of the predictions at all. The percentage of cases that could be predicted correctly using the background data in Table 7 plus the type of school attended remains at 61%. This suggests that the differences in outcomes between school types (as shown in Table 5) are almost entirely due to the differential nature of school intakes plus unknown factors, and should not be attributed to the schools themselves. There is some evidence that going to school, as opposed to not going to school, is linked to better outcomes – but this applies to both government and private schools.

For completeness, Table 8 shows the standardised coefficients linked to each type of school. Attending a private school does appear to be a slight advantage but not sufficiently to improve the amount of variation explained by the model (equivalent to the pseudo-R²). Attending a Madrasah does appear to be a major disadvantage in terms of learning basic skills. Children going to a Madrasah instead of a mainstream school are only half as likely to pass the test as those even in non-formal settings, and even once the characteristics of the child and their family have been taken into account. This may not show up in the overall results because the numbers attending such schools are so small compared to mainstream settings.

Table 8 - Explanatory standardised coefficients for Step 2 of the logistic regression model

Variable	Standardised coefficient
Attending government school (versus non-formal)	1.17
Attending private school (versus non-formal)	1.41
Attending Madrasah (versus non-formal)	0.51

The unexplained variation in outcomes could be due to deficiencies in the sample, the ability to link children, household and school datasets, the nature of information collected, and unknown variables such as children’s health, teacher qualities, and the effect of peers (as created by social segregation between schools – dealt with in another paper).

Conclusion

As shown above, the key issue for equity in education in Pakistan is the substantial minority of the child population who do not attend any school. The social and economic stratification between those attending and not attending school is far greater than that between those attending different types of school. There are different ways of addressing this. One way of widening participation – favoured by the World Bank and others – is to provide financial incentives to schools to increase their enrolment and access to the poorest population in the areas. A second way would be to rely on digital technology and virtual participation. But studies have shown repeatedly the value of socialising with others as a child, and that access to the relevant technology (such as cable) is poorest in the remotest areas that need it most – the enduring irony of each digital ‘age’. The foremost need of the time is for the state or provinces to enforce attendance at school more robustly, taking care to protect the livelihoods of any families who still feel that they have to depend on child labour. The state would also

have to ensure that schools were genuinely accessible for all, perhaps by providing free or subsidised public transport in the most remote areas.

As far as we can tell, for those attending mainstream public or private schools, there is no difference in the basic skills outcomes by age 8 for children of equivalent backgrounds. Without access to data on prior attainments it is not possible to conduct a fuller value-added or progress analysis. But these findings are consistent with prior studies that use contextual factors only, as here (Gorard 2000). The major difference between schools that explains any differences in outcomes is the nature of their student intake (and it must be recalled that many private schools select or screen for admittance). This means that in terms of effectiveness both types of school could be increased in order to help towards universal participation for young children in Pakistan.

However, this does not mean that all types of schools should contribute to equity in the long-term. Madrasahs seem to have very poor outcomes in terms of simple skills, and perhaps should not be permitted to be used *instead* of mainstream settings. The private schools available include high cost chains of schools concentrated in the urban centres as well as low cost schools opened in almost all regions. Each of these school types would tend to deal with different social income groups. Nevertheless, private schools, by definition, cost money and so tend to be used by the relatively richer families in any area. But for the longer term benefit of society it is better perhaps to trumpet the truth that it really does not make much difference, in terms of attainment, whether a school is private or public. In this way, richer families can be encouraged to use their local public schools more (as some already do). The benefits for social cohesion, and in terms of role models for aspiration and subsequent participation, could be profound.

A second issue for equity concerns individual differences in child background and their likelihood of achieving good outcomes at school. This kind of stratification is encountered in all analyses in all countries. A child's success is linked to their parents' attendance at school or not. This would presumably be eliminated or at least greatly lessened in future generations once schooling was near universal, as it is in developed countries. A child's success is also linked the socio-economic status of their family – a link that universal state-funded education is also intended to weaken.

Perhaps the biggest avoidable problem for equity in Pakistan concerns the education of girls. Even those girls who do attend schools are slightly behind boys, on average, in terms of the three proficiency measures of reading, English and maths. This is unusual. In all developed countries, and most others for whom there is data, girls do at least as well as boys at school (Gorard 2004). And this inequality also carries over generations, with the children of more educated mothers more likely to succeed in tests for 8-year-olds (again slightly more so than for educated fathers). Parents who have no extra means to afford a school fee could not choose single-sex private schools and those who do not favour education for girls would never send their girls to school anyway. Establishing more private schools cannot change this situation. The state must enforce the child's right to education, regardless of sex, just as the constitution claims it will. The purpose of a state governed school system is to maintain equal standards of education services for all and provide equal life chances to children irrespective of their sex or background characteristics. Currently, the state is failing in that duty.

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