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Reforms, Growth and Persistence of Gender Gap: Recent Evidence from Private School Enrolment in India

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ABSTRACT

Reforms, Growth and Persistence of Gender Gap: Recent Evidence from Private School Enrolment in India*

This paper examines the extent of gender gap in private school enrolment in India, an issue that has not been adequately addressed previously. Results based on individual level unit record data shows that a girl is less likely to be sent to private schools holding other factors constant and controlling for selection into school enrollment, and this disadvantage is particularly higher for younger girls in the family. The extent of gender bias in private school enrolment is double that of overall enrollment. Additionally, irrespective of policy reforms and overall economic growth, female disadvantage in rural private school enrolment appears to have increased over the decade 1993-94 to 2004-05. This can partly be attributed to the declining agricultural output as well as labour force participation rates among rural women over much of this period. Our results have important policy implications at a time when policy makers are eager to explore a potential role for private sector in delivering basic education.

JEL Classification: I25, O10, C21

Keywords: policy reforms, economic growth, private school choice, gender gap, India

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1: Introduction

It has increasingly been recognised that gender discrimination hinders growth and development (see Duflo, 2004 for a survey). Nevertheless, female disadvantage in school enrolment and attainment is prevalent in many developing and emerging economies though relatively little is known about gender gap in private school enrolment. In this context, we examine the nature of gender gap in private school enrolment and also its persistence, if any, over time, in India's emerging economy.

Female disadvantage in child schooling in India has been well-established in the literature (see Pal, 2004; Bhaskar and Gupta, 2007 among others), though there is evidence that points to declining female disadvantage in literacy in the recent years (Kingdon, 2007). The obvious question is whether a similar trend is observed in private school enrolment. India launched the pro-market reforms back in 1991 and since then has experienced significant economic growth. This period has also witnessed a number of other constitutional/policy reforms (including the 73rd constitutional amendment to reserve seats for women at the village council, the modification of Hindu Succession Act of 1956 to ensure women's inheritance rights in all Indian states) to ensure women's rights, resources and voices. However, India's overall success story in the post-reform period seems to hide its persistent problem of addressing gender relations in the country. For example, a recent Times of India article (3 November 2011) suggests that 'India's abysmal gender inequality statistics seem to have taken a turn for the worse. New data shows the country's Gender Inequality Index (GII) worsened between 2008 and 2011, and India now ranks 129 out of 146 countries on the GII, better only than Afghanistan in south Asia.' Further Bhalla and Kaur (2010) argued that India still has one of the lowest labour force participation rates among urban women, which hovers around 25% for about last 25 years.

Recent reforms in India have given rise to a rapid growth of private schools around the country. It is in this context that we examine if there is any female disadvantage in private

school enrolment among 7 – 18 year olds in India's emerging economy. It is interesting to explore not only the extent of gender gap in private school enrolment at a given point in time, but also its evolution, if any, in private school enrolment during a period of rapid reforms and economic growth in India. This is an important but rather unexplored issue in the literature perhaps because parental ability to choose between private and government schools is of relatively recent origin, being facilitated by the recent growth of private schools around the country. Given the state of failing government schools across India (Drèze and Kingdon, 2001), there have been increasing attempts among policy makers to explore the scope of private sector in delivering basic education in India (Tooley and Dixon, 2003; Tooley, 2004). It has often been argued that their greater market orientation makes private schools and teachers more accountable to children and parents; they are more sensitive to input costs and are perceived to be more efficient.

The dismal state of the state schools in India has induced many households (including poor households) to take advantage of the newly emerging private schools in order to meet their educational needs (Drèze and Kingdon, 2001).[1] The latter has further been facilitated by the use of English as the medium of instruction in many private fee-paying schools especially in urban areas. Munshi and Rosenzweig (2006) argue that the returns to English based education has increased rapidly in India's new economy. Using two rounds of All India School Education Survey (AISES) data, Pal and Kingdon (2010) highlighted the rapid growth of private schools (especially at the secondary level) across the Indian districts. Our analysis using the India Human Development Survey data too highlights the pronounced growth of private school enrolment in rural areas over 1993-94 to 2004-05. Private school enrolment rates among 7 – 18 year old children in the rural sector had more than doubled (increased from 8 percent in 1993-94 to 19 percent in 2004-05)

[1]While there are no fees to attend government schools, it is not the case that government schools are free. Parents incur substantial costs (such as expenditure on books, stationery, travel, and school uniforms) even when they send their children to government schools. For instance, the PROBE report found that, in rural north India, parents spend about Rs 318 per year on each child who attends government (i.e., tuition-free) school, so that an agricultural laborer in Bihar with three such children would have to work for about 40 days of the year just to send the children to primary school. See Kingdon (2005).

We address two questions in this paper. First, for a given year, what is the extent, if any, of gender bias in private school enrolment? This is analysed using the recent 2004-05 India Human Development Survey (IHDS) data. One can envisage two opposing effects of private school growth on gender gap in private school enrolment. Private schools are fee-paying schools and parents may choose to send only boys to private schools: if returns to boys' private schooling are higher and/or parents have son preference because of underlying economic, social or religious reasons.[2] Rise of private schools may however mitigate gender differences in school choice by satisfying differentiated demand for girls' schooling (especially for adolescent girls) in different ways: (i) providing access to local schools in close vicinity; (ii) providing schools with access to girls' toilet and other infrastructural facilities; (iii) instruction in English in most private schools may also entail a marriage market premium for private school educated girls in India's new economy (Munshi and Rosenzweig, 2006). Finally, private schools may be chosen for their greater efficiency by more educated parents who might be more enlightened and therefore more likely to send both boys and girls to such schools (provided they can afford paying private school fees). The net effect of private school growth on gender gap is therefore likely to be ambiguous and we explore it empirically in this paper.

Further, family composition might be an important consideration here. Whether a child belongs to a mixed (with both boys and girls) or a single (only girls or only boys) gender household can have important implications for parental investment in private schools. Parents who choose to send daughters to private schools might not be a random subset of the population of all parents; they are likely to be more enlightened in terms of attitudes to gender equality and might behave in a more altruistic manner than the rest.[3] First in an

[2] Sons may be preferred over daughters for a number of economic, social and religious reasons, including financial support, old age security, property inheritance, dowry, family lineage, prestige and power, birth and death rituals and beliefs about religious duties and salvation.

[3] The existing empirical literature however does not appear to have any clear consensus on how important altruism is in affecting parental behaviour. For example, Rosenzweig and Schultz (1982) in analyzing parental allocations in response to differential boy-girl survival data from rural India, conclude that compensating parental investment is not the dominant behaviour, but rather parents act to reinforce initial differences. Behrman and Wolfe (1982) however conclude that parents care about

environment where there are both boys and girls, altruistic parents might not be willing to exhibit open discrimination and this is likely to benefit girls from mixed-gender (as opposed girl-only) households (see Dasgupta, 1987 and Butcher and Case, 1994). Second, there is a growing literature (mainly from developed countries) that argues that gender of the children may also influence parental preferences. Warner (1991) and Warner and Steel (1999) have shown that policies designed to address gender equity is greater among parents with daughters in America and Canada. Oswald and Powdthavee (2010) find that parents with girls are more likely to support left-wing parties in the US. Extending this argument to the context of South Asia, it is possible that parents who have girls might be less discriminating and hence may be willing to invest more in girls; this can influence gender gap in parental human capital investment. A further possibility pertains to an income effect (perceived or otherwise). The potential lifetime income of households is higher in the presence of a boy (they are likely to co-reside when adults, provide old age security to parents and so on) and this makes households *think* that they are richer. To the extent that investing in girls' schooling is a normal good, parents with boys may be more likely to invest in girls' schooling by sending them to private school. In other words, the effect of gender composition of children on private school enrolment is an empirical issue to be examined.

Our second hypothesis pertains to whether gender gap in private school enrolment has changed over a decade of rapid economic growth and policy reforms during the 1990s. How do we expect economic (and indeed legislative and judicial) reforms and the associated economic growth to affect the gender gap in private school enrolment? First, economic growth is likely to improve the well being of everyone, but disproportionately more for women who lag behind men in many respects. Policy reforms directly targeted at women (for example, constitutional reforms to reserve seats for women in local councils or gradual

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children's earnings inequality and tend to provide additional resources to the less able child than is consistent with an investment model. More recently, Li, Rosenzweig and Zhang (2010) find evidence of multiple motivations at work in China, providing evidence of altruism, favouritism and guilt, towards the children (one of the twins) who experienced more years of rustication following Mao's Mass Send-down Movement in the 1960's and 1970's. These children received higher parental transfers despite having higher earnings.

modification of the Hindu Succession Act of 1956 so that all women have rights to inherit) would empower women by ensuring their rights, resources and voice - the result could be a decline in gender gap.[4] The positive effects of growth/policy reforms could however be negated somewhat if counter forces may set in as a result of these reforms and growth. First, the agricultural sector in India experienced a dramatic contraction during the 1980s and 1990s in India. Bardhan (2005) argues that India's economic liberalisation has been driven by growth in the service sector at the cost of the agricultural sector. The result has been declining output/income and higher poverty in the rural sector. Second, Chamarbagwalla (2006) argues that trade in manufactures has lowered the skilled wages for women in India while trade in services has increased it during the post reform period so that the total effect of liberalisation and reform on skilled wages for women may be ambiguous. Finally, using National Sample Survey (NSS) data, Bhalla and Kaur (2010) show that labour force participation rates of rural women aged 15 – 59 have declined from 53 percent in 1993-94 to 45 percent in 2004-05. Female labour force participation rates among urban women is considerably lower and has not changed much for the last 25 years with an average of about 23 percent. Taken together, these adverse developments, especially for the rural sector, may induce lower investment in girls and hence a rising gender gap over this period despite higher economic growth and other policy reforms favouring women. Access to two rounds of IHDS data for 1993-94 and 2004-05 (IHDS1 and IHDS2 respectively) for the rural sector gives us a unique opportunity to explore if the gender gap in private school enrolment has been increasing over the eventful decade 1993-94 to 2004-05.[5]

For the purposes of this paper, we restrict ourselves to children aged 7 – 18 years in households with at least two children in this age group and provide selectivity corrected

[4] Greater inheritance rights may affect human capital investment of girls at least in two possible ways. First, it can increase the marriage market premium for women, therefore inducing greater parental investment in girls' education. Second, greater inheritance rights may also induce women to take greater interest in household property management, thus encouraging the complementarity between inheritance rights and education. Both of these are likely to result in parents' investing more in daughters' education.

[5] While this data allows us to trace changes in gender gap in parental school choice over this decade, if any, we are unable to identify the causal effects of these economic/legal/constitutional reforms. We hope future research will address this shortcoming.

estimates of private school enrolment. Our results suggest that relative to boys, 7 – 18 year old girls (irrespective of whether they are from single gender or mixed gender households) tend to have more than six percentage point lower likelihood of private school enrolment. Further, relative to 1993-94, this female disadvantage is significantly higher (by about 5 percentage points) in 2004-05 among rural girls; this higher female disadvantage prevalent in 2004-05 may be attributed to the adverse effects of the reforms on the rural sector, declining skilled wage for women and/or falling labour force participation rates among rural women during this decade. There is a significant inter-state variation in the degree of female disadvantage in private school enrolment: compared to the southern and the western states, the extent of female disadvantage is significantly higher in the large north Indian states. Finally the gender gap vanishes for 15 – 18 year old girls from girl-only households, which perhaps reflects the aspect of differentiated demand for girls' private schooling in this age group; though it could also be facilitated by older boys' withdrawal from the private schools for participation in the job market, for example.

Existing literature on private schools focuses on relative efficiency of public and private school (Kingdon, 1996; Muralidharan and Kremer, 2006), location choice of private schools (Pal, 2010) and also the effect of private school growth on universal literacy (Pal and Kingdon, 2010). While Munshi and Rosenzweig (2006) analysed the case of female advantage for enrolment in English Medium schools for a small low-caste community in Mumbai,[6] what is missing is a systematic analysis of gender gap in private school enrolment across the country. The present paper not only bridges this gap in the literature, but also provides some new insights pertaining to the change of gender gap over time. We find that there is gender gap in private school enrolment just as there is gender gap in any school enrolment; however more importantly, female disadvantage in private school enrolment (about 6 percentage points) is almost double the size of that of in any school enrolment (3

[6] Munshi and Rosenzweig (2006) argued that boys are sent to local language state schools to boost network advantage despite significant increase in returns to English-medium education in the post reform period. Girls are free from such network links and parents were free to send them to private English medium schools.

percentage points). Second, there is evidence that gender gap in private school enrolment is significantly higher among younger children (relative to the oldest ones) in the households. Further analysis highlights favourable effect of mother's schooling on lowering female disadvantage in private school enrolment; we also explore the inter-state variation in the extent of female disadvantage. Finally we find that the gender gap in private school enrolment in the rural sector is significantly higher in 2004-05 (relative to 1993-94). This can be attributed to the declining rural income and output, declining labour force participation rates among rural women as well as declining skilled wage for female in India during much of this period.

2. Data and Selected Descriptive Statistics

There are three broad types of recognized schools in India, namely government schools, private aided schools and private unaided schools. Government and private aided schools are typically government recognized, i.e., they have the government stamp of approval. They are similar in many respects since private aided schools are almost entirely financed by the government and have little control over staffing (hiring/firing decisions) and fee levels, despite being nominally private managed. In our analysis we do not distinguish between government and private aided schools, instead we combine them under the broad umbrella of government schools. Private unaided schools (whether recognized or not) enjoy more autonomy compared to private aided schools and are typically self-funded out of fee income. Thus the private unaided schools are the truly private schools in India.[7] Private unaided (henceforth private) schools typically offer instructions in English. Table 1 compares selected characteristics of private and government schools over the period 1992 – 2002. The biggest difference between private and government schools is in terms of infrastructure and pupil-teacher ratios. As of 2002, 71 percent of the private schools have a toilet, compared to 41 percent of government schools; 91 percent of private school have drinking water facilities

[7] Private unaided schools can be further categorized into religious and non-religious schools, though for the purposes of this paper we do not make this distinction as few children in our sample attend religion schools.

compared to 78 percent of government schools. The pupil-teacher ratio in government schools is often twice that in private schools. All of this suggests that private schools offer a better quality of education in India (Kingdon, 1996). Other differences between private and government schools include the fact that compared to government schools, a greater proportion of teachers in private schools are women and are likely to be of a higher caste. This is possibly because as of 2002, the private sector, even the private educational sector, was not constrained by caste based affirmative action (reservation) policies.

This paper primarily uses data from the Indian Human Development Survey 2005 (IHDS2 data set). This is a nationally representative, multi-topic survey of 41,554 households in 1,503 villages and 971 urban neighbourhoods across India collected by the National Council of Applied Economic Research and the University of Maryland. The survey collected information on health, education, employment, economic status, marriage, fertility, gender relations, and social capital. The survey was conducted between November 2004 and October 2005 with a response rate of more than 90 percent. We also compare the results of the IHDS2 survey with the IHDS1 survey conducted in 1993-94 (available only for the rural sample). This comparison will allow us to explore if there has been any change in the gender bias in school choice over the decade. To analyze the issue of gender bias in a specific year, we restrict ourselves to using the IHDS2 data. The choice of this data set is primarily driven by the fact that this survey has a broader coverage (it includes both rural and urban households) compared to the IHDS1 data.

Figure 1 presents the enrolment rates by age and gender for the IHDS2 data set. Two observations are worth noting. First, the enrolment rates are very high (more than 80 percent) for children aged 7 – 11; they start falling beyond the age of 11, going down to 25 percent for boys and 20 percent for girls by age 18. This drop in the later years is possibly a reflection of boys leaving schools in search of employment and girls leaving school because they have attained the age of marriage. Second, the enrolment rates for girls are consistently lower compared to that of boys and this difference persists over the entire age range. Figure 2 presents the average enrolment in private schools by age and gender, conditional on

enrolment. For children aged 7 – 15 (but not so for those aged more than 15), the private school enrolment rate for boys is consistently higher than that of girls; beyond age 15 however the gender gap appears to reverse in favour of girls. Figure 3 presents private school attendance by age and gender, categorized by household type. Boys aged 7 – 15 (irrespective of the household type) are more likely to be enrolled in a private school compared to girls (again irrespective of the household type). Boys aged 7 – 15 belonging to single gender households are more likely to be enrolled in a private school compared to boys belonging to mixed gender households. For girls aged 7 – 15 there is no persistent household type effect. Interestingly for both boys and girls aged more than 15 there is no persistent pattern in private school enrolment by household type.

Table 2 presents both overall school enrolment rates and private school enrolment rates (conditional on enrolment) by gender for different sub-samples of the population. There is a systematic pro-male bias of about 6 percentage points for private school enrolment for the whole sample; while the pro-male bias in private school enrolment exits for all sub-groups, they are lower for certain subgroups like Muslims. While children belonging to backward castes are not particularly less likely to be enrolled in school (compared to the overall sample average), private school enrolment rates of children belong to backwards castes is significantly lower. Second, both enrolment rates and private school enrolment rates are monotonically increasing over expenditure quantiles and this is true for both boys and girls but pro-male bias in private school enrolment increases monotonically as we move up from the lowest to the highest expenditure quartile. Third, there is a big drop in enrolment rate for the 15 – 18 year olds: the drop is 47 percent for the full sample and is 50 percent for the sample of females. Conditional on enrolment, private school enrolment rates are fairly consistent across the different age categories. It is here that we find less evidence of pro-male bias.

Table 3 presents the sample averages for the variables used in the analysis. Column (1) presents the averages for the IHDS2 all households. 48 percent of children in the sample are girls. Mothers are in gender less educated compared to fathers; 30 percent of the sample

resides in urban areas; 79 percent of children are Hindus and 30 percent belong to lower castes; 73 percent belong to mixed gender households.

In order to analyse the nature of gender gap in private school enrolment, we not only consider the gender of the child, but also distinguish between single and mixed gender households. Table 4 summarises the selected characteristics by household type. Interestingly there is no difference in private school enrolment rates between mixed and single gender households. Conditional on being a multi-child household, 73 percent of households are mixed gender households. For the full IHDS2 sample, the average size of households is 7.04; mixed gender households are slightly larger (7.3 members on an average) compared to single gender households (6.3 members on an average). Fathers are more educated compared to mothers – 5.3 years on average, compared to 2.8 years (see Table 3), the educational attainment of fathers and mothers is higher in single gender households compared to mixed gender households. While the full sample average number of children (defined as the average number of individuals less than or equal to 18) in the household is 2.9, it is 3.03 in mixed gender households and 2.56 in single gender households. Single gender households tend to be richer as highlighted in per capita household consumption expenditure. This is possibly because on the one hand the single gender households are smaller in size and on the other the educational attainment (therefore the income levels) are higher in single gender households.

3. Methodology

While the primary focus of this paper is on school choice and in particular private school enrolment of Indian children, one needs to remember that school choice is conditional on school enrolment in the first place. This selection issue is important as more than 27 percent of children aged 7 – 18 are not enrolled in school at the time of the survey. Define S_{ij}^{*} as the propensity of the i^{th} child from the j^{th} household is enrolled in a private unaided (henceforth private) school at the time of the survey. This propensity is determined by the following equation:

$$S_{ij}^{*} = \beta' X_{ij} + \varepsilon_{ij} \quad (1)$$

Now S_{ij}^{*} (the propensity of the child attending private school) is not observed; what we observe instead is a binary variable $S_{ij} = 1$ if the i^{th} child from the j^{th} household is enrolled in a private school at the time of the survey and 0 otherwise.

Private school enrolment S_{ij} is observed only if the i^{th} child from the j^{th} household is enrolled in school at the time of the survey $(E_{ij} = 1)$. In estimating equation (1) we therefore have to account for a selection problem where the selection equation is defined by:

$$E_{ij}^{*} = \gamma' W_{ij} + u_{ij} \quad (2)$$

where E_{ij}^{*} (the propensity to attend school) is not observable. We only observe E_{ij} where $E_{ij} = 1$ if $E_{ij}^{*} > 0$; $E_{ij} = 0$ otherwise.

Given the binary nature of both the enrolment (E) and private school choice (S) variables, we use a bivariate probit model with selection correction to estimate equation (1). X and W are the two sets of explanatory variables in equations (1) and (2) respectively and ε and u are IID error terms. The set of explanatory variables X and W in equations (1) and (2) include some common variables like age categories, gender of the child, age of the household head, whether the household head reads newspapers regularly, years of schooling of the mother and father, religion (Hindu, Muslim, Christian) and expenditure quartiles,[8] urban/rural residence and state of residence to capture all other unobserved characteristics including policy effects. We also compare the uncorrected private school enrolment equation with the corrected ones to see the extent of the bias, if we do not correct for the potential selection bias.

For the first stage enrolment (selection) equation to be identified, we need at least one variable that affects the probability of enrolment but not that of the school choice decision. In this respect, we choose the total number of schools per 1000 children in the district, which is included in the enrolment equation only. It is expected that access to schools would directly affect the probability of enrolment, but not the private school choice.

[8] Given the potential endogeneity problem associated with household income, we use expenditure quartiles, which have the added advantage of specifying some ranges rather than the actual values of the expenditure.

Following Muralidharan and Kremer (2006) and Pal (2010) we assume that private school choice is a reflection of the state of state schools rather than the total number of schools in the district of residence. This is further confirmed by re-estimating the school choice equation by including this variable (total number of schools per 1000 children in the district) in the set of explanatory variables (X). This variable is not statistically significant in the school choice regression and the other results remain qualitatively unchanged.[9] Finally we include the availability of private unaided schools in the district (number of private unaided schools per 1000 children) in the school choice regression only; this accounts for the access to private schools in the district and is likely to be directly important for the choice between public and private schools.

The most conventional way of testing gender bias in the private school choice regression is to include a gender dummy (*GIRL*) in the school choice regression (equation (1)). However that gives us the average effect across all households and the effects will be contaminated by the fact that there are some single child households that are likely to be different in many ways from multiple children households. In order to fully understand the extent of gender bias within each household we need to restrict the sample to multiple children households. One added advantage of focusing on multiple children households is that it allows us to control for household level unobserved heterogeneity or household level unobserved characteristics that affect enrolment (first stage) and private school choice (second stage) of all children in the household that would otherwise bias the estimates. All standard errors are clustered at the household level.

Within the restricted realm of multiple children households, it is likely that the gender composition of children matters. It has been argued that a girl child will be worse off if it belongs to a girl-only household. For example, Dasgupta (1987) argues that girls are nutritionally worse-off if they come from girl-only households (also see Pal, 1999 for the case of West Bengal in India). Butcher and Case (1994) highlight the educational advantage

[9] We also exploit the non-linear nature of the likelihood function to identify the index equation for private school enrolment (without any exclusion restriction). The results are very similar (see Table 6). Our results are therefore not driven by the specific exclusion restrictions.

of girls in the US if they have male siblings. We define single gender households as those where all children aged 18 or below are of the same gender: boy only in the case of all boys and girl only in the case of all girls. To examine how gender composition of siblings affects the school choice (and indeed enrolment decisions) and also gender bias within the household, we include a mixed household dummy (*MIXED*) and also an interaction term *GIRL* × *MIXED*). This allows us to examine whether girls from mixed gender households enjoy (suffer) any advantage (disadvantage) relative to girls from single gender households. Thus the augmented school choice equation can be rewritten as follows:

$$S_{ij}^{*} = \beta_0 + \beta_1 GIRL + \beta_2 MIXED + \beta_3 (GIRL \times MIXED) + \gamma' X_{ij} + \varepsilon_{ij} \quad (3)$$

Where β_3 captures the differential private enrolment effects of girls from mixed gender households. Other control variables (X) in equation (3) include a set of age dummies (reference category age = 18), parental educational attainment, rural/urban residence, religion (Hindu, Muslim, Christian), caste (SC/ST), per capita expenditure, total private schools in the district and a set of state dummies (to account for any other unobserved policies that might affect the likelihood of choice of school). We also examine the robustness of the selectivity corrected baseline regression results for private school choice (as in equation (3) above) in a number of ways. This includes assessing the role of context child's birth order as well as each parent's education and household expenditure (as a proxy of household wealth) on female disadvantage in private school. We also explore the variation in female disadvantage not only across the Indian states, but also across various sub-samples including Muslim, SC/ST and rural households.

Our second hypothesis pertains to a change in gender bias in school choice, if any, as a result of the on-going process of reforms and growth in India. To examine this we pool the data from the IHDS1 and the rural sample of the IHDS2 data to estimate the following regression:

$$\begin{aligned} S_{ij}^{*} \quad &= \alpha_0 + \alpha_1 GIRL + \alpha_2 MIXED + \alpha_3 (GIRL \times MIXED) + \alpha_4 IHDS2 \\ &+ \alpha_5 (GIRL \times IHDS2) + \alpha_6 (GIRL \times MIXED \times IHDS2) + \gamma' X_{ij} + \varepsilon_{ij} \end{aligned} \quad (4)$$

The coefficients of interest for us are the estimated values of α_5 and α_6, which highlight the differential effects of *GIRL* and *GIRL* × *MIXED* for IHDS2 sample.

4. Empirical Findings

4.1 Gender bias in 2004-05 (IHDS2)

Table 5 presents the first stage (current) enrolment estimates and Table 6 presents the corresponding selectivity corrected estimates for the private school enrolment equation.[10] In both cases we present the marginal effects, which are much more easily interpreted. We present results corresponding to a number of different specifications. In Specification 1 we only include the gender of the child (*GIRL*). Specification 2 in addition controls for the mixed gender household type (*MIXED*). Specification 3 allows for outcomes to be different across mixed and single gender households by including the interaction term *GIRL* × *MIXED*.[11] Column (4) of Table 6 also shows the non-selectivity corrected estimates of private school enrolment (corresponding to specification 3). It is worth specifying the interpretation of the three variables in specification 3. Here the *GIRL* dummy captures the relative (dis)advantage of a girl in a single gender household (relative to a boy in a single gender household). The *MIXED* household dummy captures the mixed household (dis)advantage of boys, relative to a boy in a single gender household. Finally the *GIRL* × *MIXED* interaction term captures the differential effect of girls from mixed gender households relative to those in single gender households.[12]

Table 5 presents the marginal effects from a probit regression of school enrolment decision. It follows that a girl from a single gender household is 3 percentage points less

[10] The full sets of estimates corresponding to Tables 5 and 6 are presented in Tables A1 and A2 respectively.

[11] In all specifications we control for the age of the child, parental educational attainment, rural/urban residence, household size, whether anyone in the household reads newspapers regularly, age of the head of the household, expenditure quartile and a set of province dummies.

[12] To be specific the coefficient estimate associated with the *GIRL* × *MIXED* interaction term gives: (average private school enrolment of girls in mixed gender households – average private school enrolment of boys in mixed gender households) – (average private school enrolment of girls in girl only households – average private school enrolment of boys in boy only households). Since girl only and boy only households are by definition single gender households, the D-I-D estimate can be interpreted as (Average gender difference in private school enrolment in mixed gender households) – (Average gender difference in private school enrolment in single gender households).

likely to be enrolled in school; however the differential effect of girls from mixed gender households (captured by the marginal effect associated with the interaction term *GIRL* × *MIXED*) is positive and it is significant at the 10 percent level of significance. If we add up the two estimated coefficients, the total gender effect, ceteris paribus, is still found to be negative for enrolment decisions in our sample. This implies that girls from mixed gender households are discriminated less, though the total gender effect continues to be negative.

Table 6 presents the estimates of private school choice for the different specifications. The marginal effects corresponding to the *GIRL* variable in Specifications 1 and 2 presented in Table 6 imply that there is significant female disadvantage as the girl dummy is negative and significant. The marginal effects corresponding to the *MIXED* dummy in Specifications 2 and 3 however remain insignificant. Further, the coefficient estimate of *GIRL* × *MIXED* in specification (3) turns out to be statistically not significant. In other words, there is no evidence from our analysis that there is a significantly differential effect on girls from mixed gender households relative to that in single gender households. Overall girls are almost 6 percentage points less likely to attend private school compared to boys, controlling for a full set of other individual and household characteristics and for selection into enrolment. The corresponding uncorrected estimates shown in column (4) shows similar results; the extent of gender gap is slightly higher at 7 percentage points. Not accounting for selection into enrolment then slightly over estimates the gender bias.

Table 6 also presents the results for the selectivity corrected private school enrolment without any exclusion restriction (column 5) and the selectivity corrected models for private school enrolment for the full sample including single child households (column 6). The estimates in column 5 are almost identical to those presented in column 3; in other words non-linearity of the likelihood function appears to be sufficient to identify the index equation. When we include single child households, girl disadvantage is slightly less but interestingly the single child dummy is now positive and statistically significant. This implies that single children are more likely to attend private schools. This is possibly a manifestation of

household resources, though it should be noted this this single child effect persists even after we have controlled for the permanent income of the household.

4.2 Robustness

Table 7 presents the selectivity corrected estimates of private school enrolment where we assess the role of father's education, mother's education and household per capita income (proxied by per capita expenditure). The years of schooling attained by the father and mother are categorized into four quartiles and three dummies for quartiles 2, 3 and 4 (Q2, Q3, Q4) are included as additional covariates (with Q1 dummy being used as the reference category). In addition, we also include quartile dummies (Q2, Q3 and Q4) for household expenditure as additional controls (to capture the household income/resource availability effect). The differential effect of parental education and wealth on girl enrolment in private school is captured by including interaction of the education and wealth quantiles with the *GIRL* dummy. These interaction terms with the gender dummy account for the differential gender effects of each parent's education and also household resources on private school enrolment in our sample. The likelihood of private school enrolment increases monotonically for girls as we move from second to third and third to fourth quartiles for mother's education (the interaction terms between mother's schooling quartiles and the girl dummy are statistically significant); in contrast, the differential effect of father's education on private school enrolment of girls remains insignificant in our sample. In particular, the differential likelihood of a girl to be enrolled in private schools increases by about 4-5 percent points in households as mother's education increases from Q1 to Q2, Q3 or Q4. This result is consistent with existing evidence (Schultz, 2002) in the literature, which suggests that mother's education is crucial for female school enrolment.

Ceteris paribus, the estimates presented in Table 7 show a monotonically increasing positive effect of wealth on enrolment for both boys and girls (4.3 percentage points, 7.7 percentage points and 19 percent points at Q2, Q3 and Q4 respectively) and a significant differential effect for girls only at Q3 of expenditure. Thus for households in Q3 quantile (upper middle class) female discrimination in enrolment is lower by 3.3 percent.

In a society with a pronounced preference for male children as in India, the significance of the birth order cannot be ignored. Dasgupta (1987) and Pal (1999) find that in India relative to the eldest girl, younger (or higher order) girls suffer from significant nutritional disadvantage. We seek to examine whether this result holds in terms of private school enrolment as well. In order to examine this, instead of the *GIRL* dummy, we include two dummies to capture the birth order of girls: *ELDEST* and *HIGHER_ORDER* and also include interactions of these two dummies with the mixed gender household dummy (*MIXED*). Table 8 presents the corresponding birth order effects for the selectivity corrected private school choice decision. For the full sample, the eldest girl is 3.7 percentage points less likely to attend private school while an younger (higher order) girl is 6 percentage point less likely to do so. The differential effect of girls from mixed gender households although positive is not statistically significant. It therefore follows that a higher order girl is significantly more disadvantaged compared to the eldest girl and this finding is compatible with what Dasgupta (1987) observed for intra-household allocation of nutrition.

In Table 9 we present the marginal effects from the state-level probit regressions for private school enrolment.[13] There is indeed a great deal of variation across the different provinces. In particular the pro-male bias in private school enrolment is more pronounced in the northern states of Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Rajasthan, Uttar Pradesh and Madhya Pradesh and considerably weaker in the southern and western states. The *GIRL* dummy is not statistically significant for Gujarat and Maharashtra in western India and for the southern states of Kerala and Tamil Nadu.[14] For Gujarat, Kerala and Tamil Nadu, there is no evidence that girls are less likely to be enrolled in private schools relative to boys, irrespective of whether the girls belong to single gender or mixed gender households. The greater female disadvantage in the large north Indian states can perhaps be explained by the relatively more pronounced effect of Sanskritization (Berreman, 1993) in

[13] Here the sample is restricted to the set of enrolled children only. We are unable to explicitly account for selection because of convergence problems in many of the cases.
[14] Our results for the state of Maharashtra are therefore compatible with those of Munshi and Rosenzweig (2006).

these north Indian states (relative to the southern and western states of India). Additionally the lack of land reform, greater caste-hierarchy and inequality in the northern states, which hinder socio-political and economic development can potentially explain the heterogeneity across the Indian states.

Table 10 examines the robustness of these results across different sub-samples and population groups by examining the selectivity corrected estimates for private school attendance for different sub-samples: Muslim households (column 1), low caste SC/ST households (column 2), rural and urban households (columns 3 and 4 respectively) and also for age groups 10 – 14 and 15 – 18 (columns 5 and 6 respectively).[15] As with the baseline regression estimates for private school choice (Table 6), these results confirm that, relative to boys, girls are always disadvantaged (see test of $GIRL + GIRL \times MIXED = 0$). However the strength of the effect varies across the different subsamples: in particular the bias is weak for children aged 15 – 18. In this age category girls from single gender households are treated no differently compared to boys, the interaction term $GIRL \times MIXED$ is however negative indicating a worse total effect for girls.

4.3 Change in Gender Gap over 1993-94 – 2004-04

To start with, we compare the average trends in our data for the two years 1993-94 and 2004-05 (IHDS1 and IHDS2 respectively). The descriptive statistics presented in columns 2 and 3 in Table 3 allow a preliminary comparison across the two survey years. First the school enrolment rate has increased significantly – from 54 percent in 1993-94 to 71 percent in 2004-05. The private school enrolment rates have increased from 9 to 18 percent over the corresponding period and the increase is quite systematic across all population sub-groups. The smallest effect is for the poorest (Q1) households, though even here the effect is positive. There is evidence of improvement in school infrastructure and school quality over the period,

[15] This however assumes that different data generating processes drive the results for the different sub-samples. To examine whether this assumption is crucial to our analysis, instead of running regressions on the different sub-samples, we included interaction terms within the full sample. The results were however very similar and therefore for ease of understanding and explanation we present and discuss the results for the different sub-samples.

particularly in terms of lower pupil-teacher ratios in upper primary and secondary schools (see Table 1).

Table 11 presents the selectivity corrected estimates for the pooled IHDS1 and IHDS2 data sets for the rural households only. Column (1) presents the results for the full sample while columns (2) and (3) those for the sample of 10 – 14 and 15 – 18 year olds respectively. Overall private school enrolment is significantly higher in 2004-05, relative to 1993-94; in particular, the marginal effect of IHDS2 is 14.8 percentage points. However, the estimated coefficient of $GIRL \times IHDS2$ is negative and statistically significant while the coefficients involving mixed gender households remain insignificant. In other words, girls are 4.6 percentage point less likely to be enrolled in private schools in 2004-05. Taken together, the total effect of IHDS2 turns out to be 0.148 - 0.046 = 0.102; therefore, relative to 1993-94, there is a 10.2 percentage point higher private school enrolment in 2004-05, net of 4.6 percentage point increased discrimination against girls. There is however no evidence that this has happened for 15 – 18 year old girls in our sample. In other words, despite the beneficial effects of various reforms (including the ones directly targeted at women) and economic growth, female disadvantage in private school enrolment in rural India is significantly higher in 2004-05 (compared to 1993-94) and this effect seems to be dominated by adverse impact on the 7 – 14 year old children in our sample.

5: Conclusion

Gender gap in different walks of life in India is well established. It also appears that despite decades of development gender gap is rather persistent in the country. The present paper focuses on a particular aspect of the gender gap – the gender gap in private school enrolment that remains rather unexplored partly because private school choice has been facilitated by the recent liberalisation reforms in India.

School choice is a central theme in contemporary strategies for education reform. By giving parents more choices about the schools their children attend, and opening up the education system to competition from new actors including the private sector, policymakers

hope to make existing public and private schools more efficient and more effective. Our results suggest that ceteris paribus there is evidence of significant female disadvantage in private school enrolment; the gender gap in private school enrolment is not only higher than that for any school enrolment, but also that this gender gap in private school enrolment in the rural sector is significantly higher in 2004-05 (relative to 1993-94). These results confirm the fear of the critics of school privatisation that it may increase segregation, and have adverse effects on disadvantaged students, for example, females or those from poorer socio-economic background (see Cullen, Jacob and Levitt, 2005).

From a policy point of view this is a relevant and timely study. Politicians and policy makers are eager to explore a potential role for private sector in delivering basic education. While growth and poverty reduction can help everyone including women, it appears that growth and poverty reduction is not sufficient for fighting gender gap in private school enrolment in our sample. In addition to the efforts to improve the quality of government schools through decentralisation and local autonomy of public service providers, direct policies seeking to provide incentives for girls' school participation and attainment, improved labour market opportunities and also enhanced returns to women's skills are likely to go a long way to redress female disadvantage in schooling, which may otherwise grow in an era of growing austerity in public spending.

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Figure 1: Enrolment Rates by Age and Gender (IHDS2)

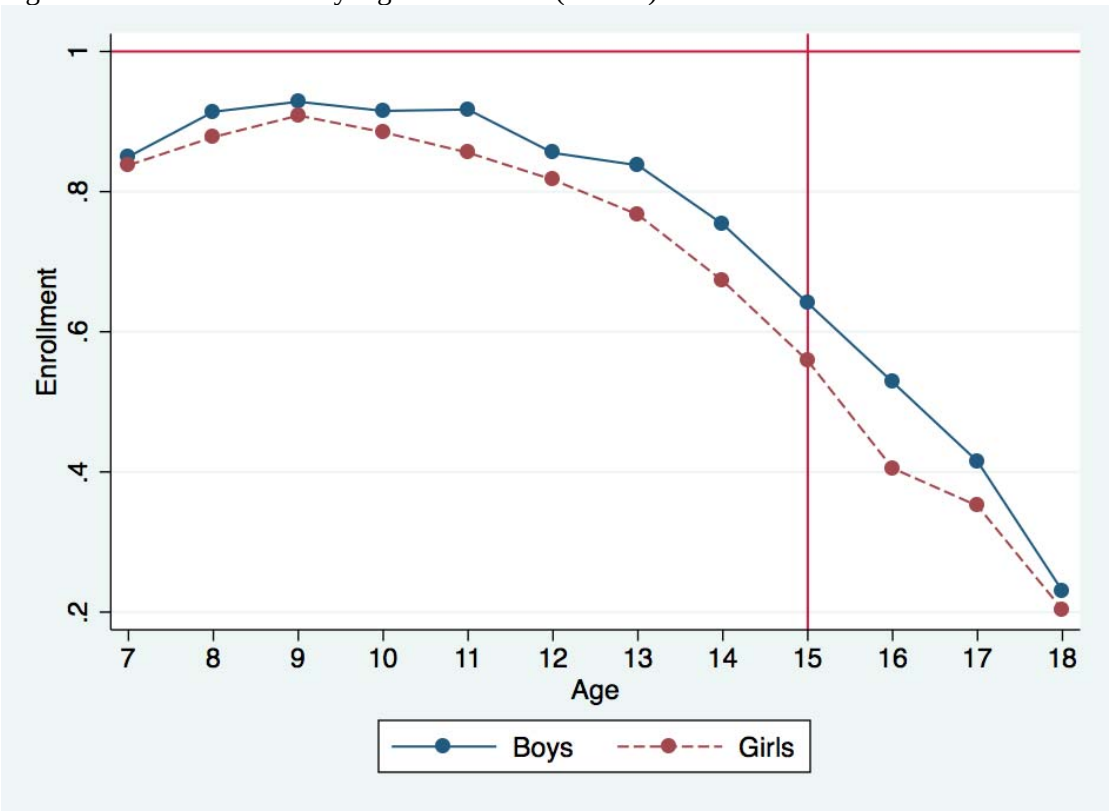

Figure 2: Enrolment in Private School by Age and Gender (IHDS2)

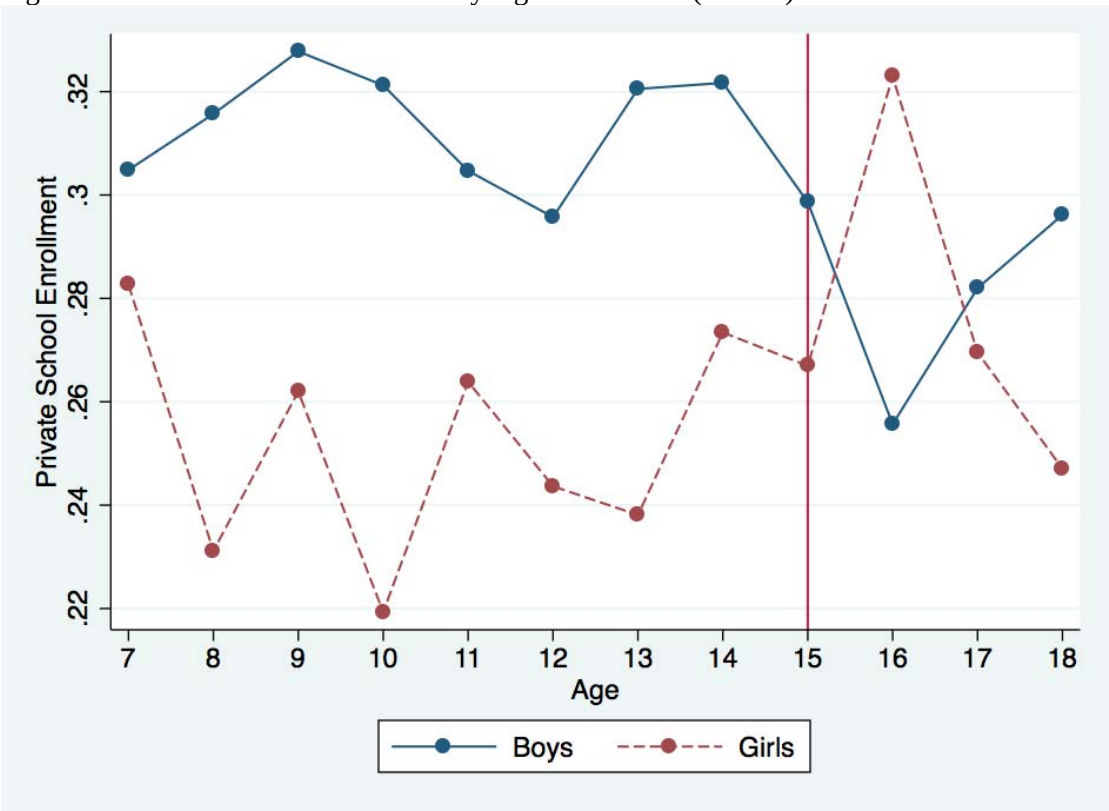

Figure 3: Enrolment in Private School by Age, Gender and Household Type (IHDS2)

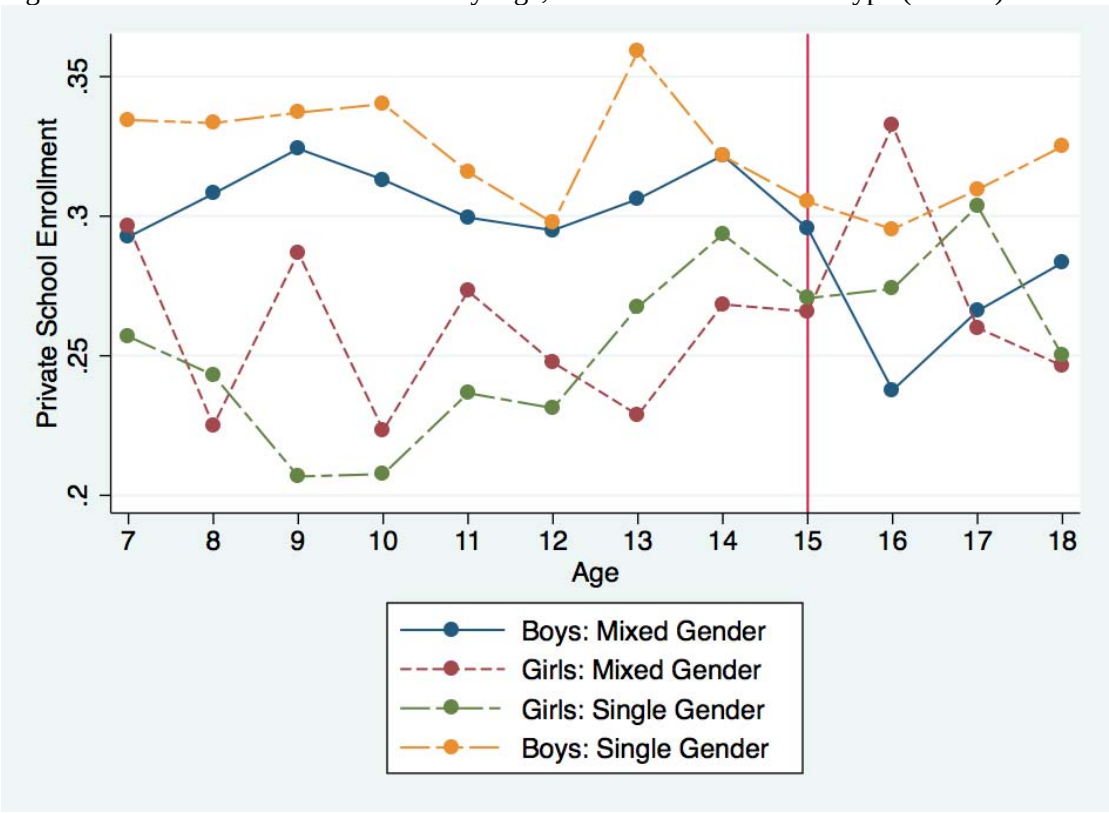

Table 1: A comparison of government and private unaided schools, 1992-2002

	Private schools		Government schools	
	1992	2002	1992	2002
	Mean (SD)	Mean (SD)	Mean (SD)	Mean (SD)
Percentage of female teachers in total				
Primary	0.55 (0.26)	0.55 (0.24)	0.35 (0.23)	0.38 (0.15)
Upper primary	0.50 (0.27)	0.50 (0.24)	0.30 (0.21)	0.32 (0.17)
Secondary	0.45 (0.26)	0.44 (0.22)	0.28 (0.20)	0.24 (0.19)
Percentage of low caste teachers				
Primary	0.09 (0.13)	0.11 (0.13)	0.22 (0.19)	0.24 (0.19)
Upper primary	0.08 (0.13)	0.10 (0.12)	0.17 (0.14)	0.23 (0.17)
Secondary	0.07 (0.11)	0.08 (0.08	0.15 (0.13)	0.17 (0.12)
Percentage of schools with pucca building	0.78 (0.17)	0.77 (0.39)	0.66 (0.24)	0.79 (0.34)
Percentage of schools with lavatory	0.66 (0.23)	0.71 (0.22)	0.33(0.26)	0.41 (0.27)
Percentage of schools with drinking water	0.84 (0.17)	0.91 (0.13)	0.58 (0.24)	0.78 (0.17)
Pupils per teacher				
Primary	30.7 (12.5)	34.3 (31.6)	39.1 (16.2)	67.1 (70.5)
Upper Primary	30.8 (11.2)	20.6 (50.0)	31.5 (11.5)	35.3 (58.3)
Secondary	29.1 (10.9)	13.7 (23.0)	28.1 (8.4)	29.7 (19.1)

Source: Pal and Kingdon (2010)

Note: Government schools do not include private aided schools

Table 2: Enrolment and Private school enrolment rates: IHDS2 All

	Enrolment			Private School Enrolment, conditional on Enrolment		
	All	**Females**	**Males**	**All**	**Females**	**Males**
Sample Average	0.73	0.70	0.75	0.28	0.25	0.31
Rural	0.71	0.68	0.74	0.19	0.15	0.21
Urban	0.76	0.75	0.77	0.50	0.47	0.53
Hindu	0.76	0.73	0.78	0.27	0.24	0.29
Muslim	0.56	0.53	0.58	0.36	0.35	0.37
SC/ST	0.68	0.66	0.70	0.17	0.14	0.19
Father's Education (Q1)	0.54	0.50	0.56	0.16	0.13	0.18
Father's Education (Q2)	0.67	0.65	0.69	0.29	0.26	0.32
Father's Education (Q3)	0.77	0.75	0.79	0.28	0.24	0.34
Father's Education (Q4)	0.87	0.85	0.89	0.40	0.37	0.42
Mother's Education(Q1)	0.60	0.57	0.63	0.20	0.16	0.23
Mother's Education (Q2)	0.74	0.73	0.74	0.43	0.39	0.46
Mother's Education (Q3)	0.78	0.75	0.80	0.32	0.31	0.34
Mother's Education (Q4)	0.90	0.89	0.90	0.38	0.35	0.41
Q_1 (Poorest Households)	0.61	0.59	0.63	0.15	0.13	0.18
Q2	0.68	0.65	0.70	0.21	0.19	0.23
Q3	0.75	0.73	0.77	0.28	0.26	0.29
Q4 (Richest Households)	0.85	0.83	0.86	0.43	0.40	0.46
Single Gender Household	0.76	0.76	0.75	0.29	0.24	0.32
Mixed Gender Household	0.71	0.69	0.74	0.28	0.26	0.30
Age 7 – 9	0.88	0.87	0.89	0.29	0.26	0.32
Age 10 – 14	0.83	0.80	0.85	0.28	0.24	0.31
Age 15 – 18	0.44	0.40	0.47	0.28	0.28	0.28

Table 2b: Enrolment and Private school enrolment rates: IHDS1 All

	Enrolment			Private School Enrolment, conditional on Enrolment		
	All	**Females**	**Males**	**All**	**Females**	**Males**
Sample Average	0.53	0.47	0.59	0.08	0.07	0.10
Rural	1.00	1.00	1.00	1.00	1.00	1.00
Urban	0.00	0.00	0.00	0.00	0.00	0.00
Hindu	0.54	0.46	0.61	0.07	0.07	0.08
Muslim	0.45	0.42	0.48	0.13	0.11	0.15
SC/ST	0.44	0.37	0.51	0.06	0.04	0.07
Q_1 (Poorest Households)	0.47	0.39	0.54	0.06	0.04	0.07
Q2	0.48	0.41	0.54	0.08	0.07	0.09
Q3	0.55	0.49	0.60	0.09	0.09	0.10
Q4 (Richest Households)	0.65	0.61	0.69	0.10	0.10	0.11
Single Gender Household	0.54	0.49	0.58	0.09	0.08	0.10
Mixed Gender Household	0.53	0.46	0.60	0.08	0.07	0.09
Age 7 – 9	0.63	0.56	0.70	0.08	0.06	0.10
Age 10 – 14	0.60	0.51	0.69	0.08	0.07	0.08
Age 15 – 18	0.35	0.28	0.39	0.11	0.14	0.10

Table 2c: Enrolment and Private school enrolment rates: IHDS2 Rural

	Enrolment			Private School Enrolment, conditional on Enrolment		
	All	**Females**	**Males**	**All**	**Females**	**Males**
Sample Average	0.70	0.67	0.73	0.18	0.15	0.21
Rural	1.00	1.00	1.00	1.00	1.00	1.00
Urban	0.00	0.00	0.00	0.00	0.00	0.00
Hindu	0.73	0.70	0.76	0.17	0.14	0.20
Muslim	0.51	0.48	0.53	0.21	0.21	0.22
SC/ST	0.68	0.66	0.70	0.11	0.08	0.13
Q_1 (Poorest Households)	0.61	0.59	0.64	0.07	0.05	0.10
Q2	0.65	0.62	0.69	0.14	0.11	0.16
Q3	0.72	0.70	0.74	0.16	0.14	0.18
Q4 (Richest Households)	0.82	0.79	0.84	0.31	0.28	0.34
Single Gender Household	0.72	0.72	0.72	0.19	0.14	0.22
Mixed Gender Household	0.70	0.66	0.74	0.18	0.16	0.21
Age 7 – 9	0.87	0.85	0.89	0.18	0.15	0.21
Age 10 – 14	0.81	0.78	0.84	0.18	0.15	0.22
Age 15 – 18	0.40	0.35	0.44	0.19	0.18	0.19

Table 3: Selected characteristics of IHDS1 and IHDS2 samples

	IHDS2 All		IHDS1 Rural		IHDS2 Rural	
Variable	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**	**Mean**	**Std. Dev.**
Female	0.48	0.50	0.46	0.49	0.48	0.50
Household Size	7.04	3.00	7.32	3.01	7.26	3.14
Number of Children	2.90	1.81	3.29	1.24	3.04	1.87
Number of Adults	2.94	1.56	3.55	8.69	3.03	1.62
Per Capita HH Consumption Expenditure	721.64	609.32	N/A	N/A	643.58	553.50
Per Capita HH Income	7671.31	9656.27	4176.03	5458.73	6222.94	7702.98
Age	12.37	3.24	12.35	3.29	12.33	3.24
Years of Schooling Father	5.30	4.67	N/A	N/A	4.63	4.43
Years of Schooling Mother	2.79	4.02	N/A	N/A	2.01	3.40
Urban	0.30	0.46	0.00	0.00	0.00	0.00
Hindu	0.79	0.41	0.81	0.39	0.83	0.37
Muslim	0.15	0.36	0.13	0.34	0.11	0.32
SC/ST	0.29	0.46	0.33	0.47	0.32	0.47
Head: Reads newspaper regularly	0.60	0.76	0.10	0.30	0.46	0.67
Head Age	46.08	10.99	45.65	9.68	46.61	11.34
Enrolled	0.73	0.45	0.53	0.49	0.71	0.45
Enrolled in Private School	0.28	0.45	0.08	0.28	0.19	0.39
Mixed Gender Household	0.73	0.44	0.72	0.44	0.74	0.44

Table 4: Sample Characteristics by Household Type

	IHDS2 All		IHDS1		IHDS2 Rural	
	Mixed Gender Households	Single Gender Households	Mixed Gender Households	Single Gender Households	Mixed Gender Households	Single Gender Households
Female	0.50	0.43	0.48	0.39	0.50	0.43
Household Size	7.29	6.34	7.64	6.47	7.53	6.51
Number of Children	3.03	2.56	3.53	2.64	3.17	2.67
Number of Adults	2.98	2.84	3.43	3.14	3.08	2.90
Per Capita Consumption Expenditure (Rs.)	703.81	769.58	N/A	N/A	632.53	674.58
Per Capita HH Income (Rs.)	7453.27	8280.60	4145.90	4256.38	6183.41	6338.24
Age	12.46	12.15	12.39	12.19	12.40	12.13
Years of Schooling Father	5.19	5.61	N/A	N/A	4.56	4.81
Years of Schooling Mother	2.61	3.26	N/A	N/A	1.90	2.30
Urban	0.29	0.32	0.00	0.00	0.00	0.00
Hindu	0.78	0.82	0.80	0.82	0.82	0.85
Muslim	0.16	0.13	0.14	0.11	0.12	0.10
SC/ST	0.29	0.30	0.33	0.34	0.32	0.32
Head: Reads newspaper regularly	0.59	0.65	0.10	0.10	0.45	0.47
Head Age	46.30	45.48	46.19	44.21	46.87	45.86
Enrolled	0.71	0.76	0.53	0.54	0.70	0.73
Enrolled in Private School	0.28	0.29	0.08	0.09	0.19	0.19
Mixed Gender Household	1.00	0.00	1.00	0.00	1.00	0.00

Table 5: Marginal effects from Probit Estimation of Current Enrolment

	Specification 1	Specification 2	Specification 3
Girl	-0.061***	-0.061***	-0.034***
	(0.004)	(0.004)	(0.010)
Mixed Gender Household		-0.000	-0.036***
		(0.006)	(0.014)
Girl × Mixed Gender Household			0.016*
			(0.010)
Observations	28917	28917	28917
Test of (Girl + Girl × Mixed Gender Household) = 0			177.04***

Notes:
Regressions control for age of the child, parental educational attainment, rural/urban residence, household size, whether any acquaintance of the household is a teacher, whether any one in the household reads newspaper regularly, age of the household head, expenditure quartile, number of schools in the district and a set of state dummies. Full set of results presented in Table A1.
Robust standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 6: Selectivity Corrected Marginal Effects of Private School Choice. Baseline Regressions

	Selectivity corrected			Uncorrected	Corrected No Exclusion	Corrected Full Sample
	Specification 1	**Specification 2**	**Specification 3**	**Specification 4**	**Specification 5**	**Specification 6**
Girl	-0.051***	-0.051***	-0.057***	-0.067***	-0.057***	-0.049***
	(0.006)	(0.006)	(0.014)	(0.016)	(0.013)	(0.010)
Mixed Gender Household		-0.000	0.008	-0.003	-0.002	-0.001
		(0.008)	(0.017)	(0.013)	(0.010)	(0.012)
Girl × Mixed Gender Household			-0.003	0.006	0.008	0.002
			(0.011)	(0.019)	(0.015)	(0.010)
One Child						0.035***
						(0.011)
Observations	28917	28917	28917	20981	28917	33703
Number Enrolled	20981	20981	20981			
Test of (Girl + Girl × Mixed Gender Household) = 0			80.39***	62.30***	177.04***	112.02***
Wald Test of Independent equations: $(\rho = 0; \chi^2(1))$	19.61***	19.54***	20.20***			

Notes:
Regressions control for age of the child, parental educational attainment, rural/urban residence, household size, whether anyone in the household reads newspaper regularly, age of the household head, expenditure quartile and a set of state dummies. Full Set of results presented in Table A2.
Robust standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 7. Selectivity corrected marginal effects of private school enrolment: Effects of parental aspirations and wealth

Variables	Marginal effects
Effect of Mother's education and interactions	
Mother's edu_Q2	-0.003
	(0.020)
Mother's edu_Q3	0.025*
	(0.014)
Mother's edu_Q4	0.090***
	(0.016)
Mother's_edu_Q2× Girl	0.044*
	(0.025)
Mother's_edu_Q3× Girl	0.047***
	(0.017)
Mother's_edu_Q4× Girl	0.050***
	(0.018)
Effect of Father's education and interactions	
Father's edu_Q2	0.043***
	(0.015)
Father's edu_Q3	0.052***
	(0.015)
Father's edu_Q4	0.077***
	(0.016)
Father's_edu_Q2× Girl	-0.001
	(0.017)
Father's_edu_Q3× Girl	0.001
	(0.018)
Father's_edu_Q4× Girl	-0.003
	(0.010)
Effect of Household wealth and interactions	
Expenditure_Q2	0.043***
	(0.016)
Expenditure_Q3	0.077***
	(0.016)
Expenditure_Q4	0.190***
	(0.019)
Expenditure_Q2× Girl	0.012
	(0.020)
Expenditure_Q3× Girl	0.033*
	(0.020)
Expenditure_Q4× Girl	0.004
	(0.018)
Wald Test of Independent Equations: $(\rho = 0; \chi^2(1))$	11.51***
Observations	28,917

Notes:
Regressions control for girl, girl× mixed, mixed household, age of the child, rural/urban residence, household size, whether anyone in the household reads newspaper regularly, age of the household head, and a set of state dummies. Robust standard errors are in parentheses;
*** p<0.01, ** p<0.05, * p<0.1

Table 8: Birth order effects. Selectivity corrected marginal effects of private school enrolment

	Private School
Eldest girl	-0.037**
	(0.016)
Higher order girl	-0.064***
	(0.013)
Eldest girl × Mixed Gender Household	0.006
	(0.019)
Higher order girl × Mixed Gender Household	0.009
	(0.017)
Mixed Gender Household	-0.003
	(0.011)
Observations	28917
Number enrolled	20981
Test of (Eldest girl + Eldest girl × Mixed Gender Household = 0)	25.76***
Test of (Higher order girl + Higher order girl × Mixed Gender Household =0)	77.27***
Wald Test of Independent equations: $(\rho = 0; \chi^2(1))$	9.93***

Notes:
Regressions control for age of the child, parental educational attainment, rural/urban residence, household size, whether anyone in the household reads newspaper regularly, age of the household head, expenditure quartile and a set of state dummies
Robust standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 9: Marginal effects of private school choice by state

VARIABLES	Girl	Mixed Gender Household	Girl × Mixed Gender Household	Observations	Test of (Girl + Girl × Mixed Gender Household = 0)
Jammu and Kashmir	-0.127	0.082	0.084	488	0.77
	(0.099)	(0.101)	(0.108)		
Himachal Pradesh	-0.114**	-0.102*	0.070	917	8.89***
	(0.047)	(0.056)	(0.054)		
Punjab	-0.201*	0.030	0.114	935	8.40***
	(0.107)	(0.072)	(0.119)		
Haryana	-0.115*	0.008	0.019	1,475	8.97***
	(0.070)	(0.041)	(0.068)		
Rajasthan	-0.175***	-0.053	0.068	1,967	12.25***
	(0.041)	(0.038)	(0.054)		
Uttar Pradesh	-0.113**	0.030	0.020	2,820	20.44***
	(0.047)	(0.035)	(0.055)		
Orissa	0.008	0.047	-0.031	921	1.13
	(0.047)	(0.033)	(0.048)		
Madhya Pradesh	-0.064*	-0.008	-0.029	2,410	23.43***
	(0.037)	(0.027)	(0.042)		
Gujarat	0.042	0.037	-0.060	1,281	1.66
	(0.046)	(0.030)	(0.045)		
Maharashtra	-0.001	-0.007	-0.033	2,092	5.90**
	(0.039)	(0.026)	(0.043)		
Andhra Pradesh	-0.178***	-0.030	0.075	1,287	20.47***
	(0.055)	(0.047)	(0.062)		
Karnataka	-0.088***	-0.062**	0.052	2,195	3.00*
	(0.033)	(0.030)	(0.042)		
Kerala	0.021	0.015	0.026	771	2.66
	(0.067)	(0.050)	(0.083)		
Tamil Nadu	0.033	0.079**	-0.035	917	0.06
	(0.041)	(0.039)	(0.042)		

Table 10. Selectivity corrected marginal effects of private school enrolment, various sub-samples

	Muslim (1)	SCST (2)	Rural (3)	Urban (4)	Age 10 – 14 (5)	Age 15 – 18 (6)
Girl	-0.013	-0.036*	-0.040***	-0.060**	-0.063***	-0.037
	(0.028)	(0.020)	(0.010)	(0.030)	(0.018)	(0.029)
Mixed Gender Household	0.001	-0.001	0.011	-0.006	-0.005	0.039
	(0.031)	(0.023)	(0.011)	(0.041)	(0.023)	(0.031)
Girl × Mixed Gender Household	0.001	-0.013	-0.005	0.010	0.003	-0.019
	(0.020)	(0.011)	(0.007)	(0.021)	(0.014)	(0.022)
Observations	4431	8483	20319	8598	14092	8443
Number Enrolled	2463	5792	14421	6560	11652	3684
Test of (Girl + Girl × Mixed Gender Household = 0)	5.15**	28.23***	73.17***	18.53***	72.72***	3.75*
Wald Test of Independent equations: $(\rho = 0; \chi^2(1))$	0.64	5.98**	9.55**	8.19**	2.70	2.78*

Notes:
Regressions control for age of the child, parental educational attainment, rural/urban residence, household size, whether anyone in the household reads newspaper regularly, age of the household head, expenditure quartile and a set of state dummies
Robust standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table 11. Gender gap over time: Marginal effects estimates of private school enrolment, pooled rural IHDS1 and IHDS2 samples

	Full Sample	10 – 14	15 – 18
Girl	-0.007	-0.029	0.057
	(0.012)	(0.022)	(0.118)
Girl × Mixed Gender Household	-0.006	0.019	-0.037
	(0.013)	(0.028)	(0.082)
Mixed Gender Household	-0.008	-0.015	0.002
	(0.008)	(0.024)	(0.019)
Girl × IHDS2	-0.046***	-0.029	-0.119
	(0.013)	(0.053)	(0.264)
Girl × Mixed Gender Household × IHDS2	-0.005	0.006	-0.023
	(0.010)	(0.014)	(0.052)
Mixed Gender Household × IHDS2	0.027	-0.011	0.129
	(0.019)	(0.024)	(0.226)
IHDS2	0.148***	0.188	0.241
	(0.038)	(0.154)	(0.445)
Observations	43779	21204	12520

Notes:
Regressions control for age of the child, parental educational attainment, rural/urban residence, household size, whether anyone in the household reads newspaper regularly, age of the household head, expenditure quartile and a set of state dummies
Robust standard errors are in parentheses; *** p<0.01, ** p<0.05, * p<0.1

Table A1: Full set of results for first stage school enrolment

VARIABLES	enrolled
Girl	-0.037***
	(0.013)
Mixed Gender HH	-0.036***
	(0.014)
Girsl X Mixed Gender HH	0.016*
	(0.009)
School Acquaintance	0.002***
	(0.000)
7 Years Old (Dummy)	0.227***
	(0.004)
8 Years Old (Dummy)	0.230***
	(0.004)
9 Years Old (Dummy)	0.228***
	(0.004)
10 Years Old (Dummy)	0.258***
	(0.005)
11 Years Old (Dummy)	0.225***
	(0.004)
12 Years Old (Dummy)	0.251***
	(0.005)
13 Years Old (Dummy)	0.226***
	(0.005)
14 Years Old (Dummy)	0.213***
	(0.005)
15 Years Old (Dummy)	0.189***
	(0.005)
16 Years Old (Dummy)	0.151***
	(0.006)
17 Years Old (Dummy)	0.102***
	(0.009)
Father's years of schooling	0.020**
	(0.008)
Mother's Year of Schooling	0.050**
	(0.022)
Urban (Dummy)	-0.108***
	(0.027)
Hindu	0.042
	(0.033)
Muslim	-0.038***
	(0.008)
Christian	0.014***
	(0.001)
SC/ST	0.015***

	(0.001)
Reads Newspaper regularly	-0.001*
	(0.000)
Age of HH head	-0.153***
	(0.014)
Per capita expenditure (1st quartile)	-0.089***
	(0.012)
Per capita expenditure (2nd quartile)	-0.052***
	(0.011)
Per capita expenditure (3rd quartile)	0.060***
	(0.006)
Jammu Kashmir	0.113***
	(0.013)
Himachal Pradesh	0.118***
	(0.012)
Punjab	-0.056**
	(0.025)
Haryana	0.027*
	(0.016)
Rajasthan	-0.042***
	(0.015)
Bihar	-0.603***
	(0.037)
Assam	-0.563***
	(0.062)
West Bengal	-0.339***
	(0.034)
Orrisa	-0.046***
	(0.017)
Madhya Pradesh	0.060***
	(0.011)
Gujarat	-0.066***
	(0.017)
Maharashtra	0.037***
	(0.013)
Andhra Pradesh	0.007
	(0.016)
Karnataka	0.049***
	(0.012)
Kerala	0.123***
	(0.015)
Tamil Nadu	0.076***
	(0.014)
Observations	28917

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A2: Full set of results for Specification 3 Second stage private school enrolment

VARIABLES	Full Sample
Girl	-0.057***
	(0.014)
Mixed Gender HH	-0.003
	(0.011)
Girsl X Mixed Gender HH	0.008
	(0.017)
Total Private Schools	0.015***
	(0.003)
7 Years Old (Dummy)	0.170***
	(0.034)
8 Years Old (Dummy)	0.166***
	(0.033)
9 Years Old (Dummy)	0.175***
	(0.034)
10 Years Old (Dummy)	0.153***
	(0.031)
11 Years Old (Dummy)	0.170***
	(0.035)
12 Years Old (Dummy)	0.130***
	(0.028)
13 Years Old (Dummy)	0.124***
	(0.027)
14 Years Old (Dummy)	0.134***
	(0.027)
15 Years Old (Dummy)	0.093***
	(0.020)
16 Years Old (Dummy)	0.066**
	(0.026)
17 Years Old (Dummy)	0.027
	(0.025)
Father's years of schooling	0.006***
	(0.001)
Mother's Year of Schooling	0.009***
	(0.001)
Urban (Dummy)	0.243***
	(0.013)
Hindu	-0.024
	(0.023)
Muslim	-0.018
	(0.023)
Christian	0.018
	(0.035)
SC/ST	-0.071***
	(0.008)

Reads Newspaper regularly	0.040***
	(0.006)
Age of HH head	-0.000
	(0.000)
Per capita expenditure (1st quartile)	-0.126***
	(0.009)
Per capita expenditure (2nd quartile)	-0.099***
	(0.009)
Per capita expenditure (3rd quartile)	-0.069***
	(0.006)
Jammu Kashmir	-0.014
	(0.019)
Himachal Pradesh	-0.175***
	(0.006)
Punjab	-0.001
	(0.020)
Haryana	-0.032*
	(0.017)
Rajasthan	-0.075***
	(0.009)
Bihar	-0.146***
	(0.021)
Assam	-0.101**
	(0.052)
West Bengal	-0.191***
	(0.006)
Orrisa	-0.154***
	(0.010)
Madhya Pradesh	-0.090***
	(0.008)
Gujarat	-0.151***
	(0.007)
Maharashtra	-0.169***
	(0.008)
Andhra Pradesh	-0.097***
	(0.012)
Karnataka	-0.124***
	(0.009)
Kerala	-0.160***
	(0.006)
Tamil Nadu	-0.156***
	(0.008)
Observations	28917

Note: Robust standard errors in parentheses:
*** p<0.01, ** p<0.05, * p<0.1