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A Study of Parents' Private-Public School Choice Post Enrollment in India

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A STUDY OF PARENTS' PRIVATE-PUBLIC SCHOOL CHOICE POST ENROLLMENT IN INDIA [1]

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This paper aims to identify the factors that lead to the inter-sectoral switch (switch from a private school to a public school or vice-versa) in primary schools, especially in the economically poor section of the society. The results show that children with higher cognitive ability scores are more likely to be shifted to a private school when the household does not have a strong credit constraint. Also, a strong negative gender bias against switching of female children to private schools is seen from the results. The paper contributes to the existing school choice debate by suggesting that parents perceive the quality of private schools to be better than that of public schools in India.

KEYWORDS: Inter-sectoral switch, School Choice, Cognitive ability.

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I. INTRODUCTION

The attainment of universal primary education has been a daunting task for the developing economies. So far, the governments' focus has been on the provision of education for all, but now they face a new challenge of providing quality education. The increasing number of private schools, especially the low-fee private schools, in recent times, has expanded the available choice set for the parents. Researchers argue that the growth in the private schooling sector indicates the parents' demand a greater choice as they grow increasingly dissatisfied with government school systems (Kingdon, 2007 [12]; Murlidharan & Kremer, 2006 [14]). This recent progression in Indian education has led to a growing interest in the private versus public school choice debate. However, the debate mainly centers on the quality and the equity concerns. Investment in quality education is usually seen to be an important contribution to the human capital, which is abundant in India due to the soaring population. This research is motivated by the pursuit of discovering the efficient use of the abundant dormant human capital in India.

Education providers in India can be broadly classified into two categories. One, public schools, funded by taxpayers' money and administrated by the state departments. These schools provide free and compulsory education for all at the primary level i.e., for children between age six and fourteen. The other category comprises of the private schools. These schools are usually established based on the local demand and are profit-oriented. Private schools charge a higher fee than the government schools. The private schools which charge a very low fee and are commonly referred to as 'Low-fee private schools' (LFPs), is a subset of this category. LFPs cater to the demand of the economically poor, living in semi-urban or rural areas. Most of the private schools that we focus on, in this paper are low-fee private schools.

The choice of schools in primary education is usually made with a very limited information set. More-so, if the participants are from an economically poor section of the society, the choice set is limited due to the financial constraints they face. The capacity of households to make choices for their children is shaped by multiple considerations: school availability; perceived quality; accessibility; and most importantly affordability, for one or more children in the household (James and Woodhead, 2014[11]).

This paper primarily aims to identify the factors that lead to the inter-sectoral switch in primary schools, especially in the economically poor section of the society. Inter-sectoral switch refers either to a switch from a private school to a public school or vice-versa. Analyzing the key contributing factors that lead to a switch between schools would enable a better understanding of parents' preferences, priorities, and challenges they face while deciding on a school. This understanding would facilitate the government in achieving the goal of providing quality education for all. Using the data form the Young Lives Study, we find the cognitive ability of the children play a significant role in the schooling decision taken by the parents. We also find that the schooling decisions are also strongly dependent on the gender of the child. Due to the constraints in the data set, we do not focus on the intra-sectoral switches, which is the switch between schools within either public or private sector.

The paper has been organized as follows. Section II discusses the literature background associated with this study. A report on the data and the empirical methodology has been explained in Section III. Section IV presents the results. A concluding remark along with a discussion on the scope of future research has been covered in section V.

II. LITERATURE REVIEW

The existing literature in this area has mostly contributed in the understanding of parents' initial choice of schooling for their children. In developing countries, the choice between private and public schools could be influenced by various factors that include the quality of schools, the socio-economic status of the household or the performance of the child. Alderman et al (2001)[1] have found that, in Pakistan, the high demand for private schools is mainly driven by the better performance of students in private schools than in government schools. The work by Chudgar & Quin (2012)[7] reports that for both rural and urban areas, private school students perform better than their public counterparts. The other stream that could possibly affect the school choice is the socio-economic status. Using a nationally representative data from rural India, the corollary of the result by Chudgar and Creed (2014)[6] indicates that the differences in the family attributes and child demographics impact the demand for private schools.

The ability or the performance of the child could influence the parents to make an informed decision on school enrollment. From our own probe into the past literature, we find that the direct impact of childrens' ability on the decisions made by the parents with regard to the education has been explored empirically by a very few. Bacolod and Ranjan (2008)[2] show theoretically that the wealth of the household and the child's ability are the most important determinants of the decision of sending the child to school. They have checked it by using data from Philippines. Glick and Sahn (2010)[9], after measuring the skills from early development and using a follow-up survey seven years later, point that, children who do not perform well at the earlier classes are more likely to be dropped out of school. This implies that parents invest more on child's education when they realize that the returns for such an investment is higher. Similar results by S Dendir (2014) [8] provide that higher ability children are more likely to be enrolled in school and are less likely to work, and conditional on the fact that they do work, they work fewer hours. However, the past literature suffers a lack of research in the area of school choice by parents, beyond their child's enrollment. The role of cognitive ability on the choice between public and private schools, conditional on the enrollment hasn't been explored yet. This paper attempts to contribute in filling up this gap in the literature.

III. DATA AND EMPIRICAL METHODOLOGY

Data Description

The data in the paper has been drawn from the Young Lives Survey (YLS). Young Lives is an international two cohort longitudinal study of childhood poverty following the changing lives of 12,000 children in Ethiopia, Peru, Vietnam, and India (in the states of Andhra Pradesh and Telangana) for 15 years. In Andhra Pradesh, Young Lives covers three agro-climatic regions Coastal Andhra, Rayalaseema and Telangana. The research is further carried out across 20 sentinel sites in six districts and the capital, Hyderabad. In India, It follows the lives of 3000 children and their families in two age cohorts: a younger cohort of 2000 children born in 2001-02 and an older cohort of 1000 children born in 1994-95.

The Young Lives sample is selected to be pro- poor and hence excludes the richer section of the society with extensive resources determining the choice of school. The research looks at full-sample household and child surveys carried out in multiple rounds in the years 2002, 2006-07, 2009, 2013 and

2016. The data for the first three rounds, i.e., 2002-2009 is available for the researchers. The surveys have extensive information on enrollment, children's performance in school, factors determining the health of the index child and his/her family, household's socio-economic conditions, and various other government schemes. In our research, the main focus has been given to the Older Cohort which consists of 1008 children aged 8-9 years. The study of the sample in Round 2 of the household survey provides evident results that approximately 1.4% of the children surveyed in 2002 were either missing or had moved, reducing the total count to 994. In Round 3, there was a further increase in the attrition rate. The final count dropped to 976, with attrition rate 1.8%. Upon analyzing the reason behind the attrition, there was no centrality of any conceivable reasons.

The three survey years during which the data was collected are 2002, 2006 and 2009, were when the index children of the Older Cohort aged 8, 12, and 15, respectively. The fact that this is a longitudinal study, with data made available in every 3-4 years from 2002-2009, a switch in school can take place in two time frames. The first time frame is 2002-06 and the second is 2006-09. We call these time frames Action Space 1 and Action Space 2 respectively. Table 1 and Table 2 below give the summary statistics of the switches that took place in the given action spaces.

TABLE I

SWITCHING SCHOOLS FROM ROUND 1 TO ROUND 2(ACTION SPACE-1)

Type of Switch	Number of Students	Percentage
Public-Private	83	9.52
Private-Public	70	8.03
Public-Public	564	64.7
Private-Private	155	17.8
Total	872	100

TABLE II

SWITCHING SCHOOLS FROM ROUND 2 TO ROUND 3(ACTION SPACE-2)

Type of Switch	Number of Students	Percentage
Public-Private	78	10.41
Private-Public	34	4.54
Public-Public	443	59.15
Private-Private	194	25.9
Total	749	100

From the figures, we see that in action space 1, out of the 872 students who were enrolled both in the first two rounds, 9.5% switched from public schools to a private one and 8% switched the other way around. Similarly, in action space 2, out of 749 students enrolled in both, rounds 2 and 3, we observed a 10.4% switch from public schools to private ones and 4.5% switched the other way around. Given the possibility that switching schools may have some cost attached to it, especially for the poor section of the society, these numbers urge us to probe into the causal factors that lead to such actions. These reasons will be discussed in the upcoming sections.

Next, let's take an insight at the dropout rates in each action space. Of 985 children attending school in Round 1, approximately 11.1% dropped out of school in Round 2 and around 12.5% dropped in Round 3. There were a few cases where children who were not enrolled into a school in Round 1 or

Round 2, enrolled in schools in the consecutive round. For example, 1% of the children who were not going to school in Round 1 enrolled in a school in Round 2, while around 0.7% joined a school in Round 3 of the survey conducted.

Methodology

While we are primarily interested in the results from action space-1, we have also conducted the regression analysis for the action space-2. We conducted this analysis to better understand the pattern of choice, with time. We also compare our findings with the existing body of literature. The decision of switching between a public and private school for each child, in the first action space, is believed to be based on the socio-economic factors captured in Round 1. And similarly for the second action space, this decision is based on the factors captured in Round 2 of the YLS data, which was collected in the year 2006. This could be a plausible assumption because, the data for both these rounds was collected in the months of September to December, which means that the children were already enrolled in schools for those academic years. This implies that the decision, of the school that the child would be enrolled in, had already been taken by the parents/ caregivers of the children. Since the decision making is a long-term process, the probability that the parents plan the switch for their child by a year or more in advance, is high. This gives the base for our assumption that the decision of switching schools in each action space is attributed to the socio-economic factors of each of the preceding two rounds. Henceforth, for the two derived sub-samples, the covariates from Young Lives Round 1 and Round 2 will be used. Ideally, exploiting the panel nature of the young lives data would have controlled for the individual fixed effects and helped us draw robust conclusions. But, the existence of different types of switch, both from public to private and the other way around, remained to be a challenge for us. In the context of India, the literature on schooling choice lacks a clarity about the superiority of the direction of switch, i.e., a clear distinction of whether a public to private switch is better than a private to a public switch, could not be made. Hence, this has forced us to use a cross-sectional data rather that a panel data. Even though the results from different cross-sections cannot be compared with each other directly, it will give an insight towards how such choices are being made by the parents.

The first section of the paper estimates the main contributing factors towards switching from a public to a private school in action space 1. A sub-sample which consists only of those students who started with a public school in the year 2002 was derived from the Young Lives data and has been used for this analysis. We used various socioeconomic factors such as, sanitation quality, housing quality, quality of drinking water, and various other variables, through a statistical procedure the Principal Components Analysis (PCA) to construct the *wealth index*[1]. A 98% correlation was found between the index we created and the index that was created by the Young Lives Study. This index of wealth has been used in all our estimations. Also, any positive or negative event that is unexpected by the household could reflect in the educational decisions made for the children. In order to control for such shocks, we created a shock index with all the available information. We used PCA to create a *shock index* of all negative shocks[2].

Rational educational choices for children would, in most cases, depend upon parents' motivational

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[1]The factor weights have been shown in Table 11, in the appendix
[2]Since the survey didn't capture the positive shocks, we created an index for negative shocks alone

level and the perception towards education. Since motivational level could not be quantified and captured in the data, we use the fraction of *out-of-school* children in the household as a proxy variable for parents' perception towards education. The children referred here are the siblings of the index child, and the index child is not included in this calculation. We define a sibling to be *out-of-school* if he/she is within the age bracket of 6 to 17 years, but is currently not enrolled in any school. Hence, by our calculations, the higher the value of the fraction calculated, lower is the perception and the motivation of the parents to provide quality education to their children. We employ a Linear Probability Model to derive our estimates. The basic estimating equation is:

$$\text{Switch}_i = \alpha + \beta_1 \text{Wealth}_i + \beta_2 \text{TestScore}_i + \beta_3 \text{Wealth} * \text{TestScore}_i + \beta_4 \text{Gender}_i$$
$$+ \beta_5 \text{Gender} * \text{TestScore}_i + \beta_6 \text{X}_i + \epsilon$$

where, X_i consists of all the other controls like household characteristics which includes, mother's education, father's education, household size, birth order, caste, working status of the child, cognitive social capital, Urban/Rural dummy, and gender of household head, supply-side effects like number of private and public schools, and also cluster dummies. The dependent variable is a binary variable that takes 1 if the child switched from a public to a private school in the action space 1 and 0 otherwise. The explanatory variables used in this study are described as follows. (*Test score*) is a standardized score of the Raven's Progressive Matrices taken by the index child. Raven's Progressive Matrices are a series of multiple-choice items of abstract reasoning. The variable *mother's education* denotes the number of years of education attained by the mother of the index child. *Father's education* similarly denotes the number of years of education attained by the father of the index child. Caste (*caste_SC, caste_ST*) are dummy variables that take value 1 if the child belongs to the Scheduled Caste, and Scheduled Tribe, respectively, and 0 otherwise. *Gender* of the index child is again a dummy variable taking value 0 if the child is male and 1 if female. Gender of the head of the household (*Gender of HH Head*) is a dummy variable taking values 0 and 1 for male and female, respectively. Household size (*HHsize*) is a count of the number of members in each household. The variable *Urban/Rural* denotes whether the index child resided in an urban or a rural area, taking value 1 for Urban and 0 for Rural. Working status of the index child (*Work Status*) is a dummy variable that takes value 1 if the index child is involved in any type of an informal work and 0 otherwise. Controlling for the number of public and private schools in the given geographical location controls for the possible supply side effects. The variables *No. of Private Schools* & *No. of Public Schools* measures the count of the available private and public respectively. *Cognitive Social Capital* is a measure of the social capital of the household in the community. It takes value 1 if the households social capital is high and 0 otherwise. The variable *Birth order* is assigned value 1 if the index child is the first born child of the household. Sentinel Site (*clustid*) gives a dummy for each sentinel site providing geographical controls. For the descriptive statistics please refer to Table 3 and Table 4 below.

TABLE III

Summary statistics for dichotomous variables (Round 1)

Variable	Mean	Std. Dev.	Min.	Max.	N
Switch	0.128	0.335	0	1	647
Gender	0.509	0.5	0	1	1008
Gender of HH Head	0.078	0.269	0	1	1008
Birth Order	0.346	0.476	0	1	1008
Caste (SC)	0.21	0.408	0	1	1008
Caste (ST)	0.108	0.311	0	1	1008
Work Status	0.33	0.471	0	1	1008
Cognitive Social Capital	0.955	0.207	0	1	1008
Urban/Rural	0.249	0.433	0	1	1008

TABLE IV

Summary statistics for continuous variables (Round 1)

Variable	Mean	Std. Dev.	Min.	Max.	N
Wealth Index	0	2.775	-4.297	7.199	1008
Test Score	0	1	-4.321	2.435	1003
Wealth*Test Score	0.553	2.804	-16.414	14.393	1003
Mother's Education	2.415	3.955	0	15	981
Father's Education	4.026	4.961	0	15	922
Gender*Test Score	-0.001	0.711	-3.383	2.435	1003
HH Size	5.545	2.035	2	24	1008
Out of School Ratio	0.301	0.561	0	4	835
Shock Index	0	1.65	-1.168	8.676	1008
No. of Private Schools	194.596	45.823	155	319	1008
No. of Public Schools	119.341	34.122	33	159	1008

IV. RESULTS

Switch from Public to Private

Table 5 below presents the estimation results of the switches being made in Action Space 1.

TABLE V

Estimation results for Public to Private Switch (Round 1 to Round 2, Action Space 1)

Variable	Coefficient	(Std. Err.)
Wealth Index	0.015	(0.010)
Test Score	0.031	(0.021)
Wealth*Test Score	0.021***	(0.007)
Mother's Education	0.003	(0.006)
Father's Education	0.010**	(0.005)
Gender	-0.086***	(0.029)
Gender*Test Score	0.032	(0.029)
Gender of HH Head	-0.087**	(0.040)
Birth Order	0.084**	(0.041)
HH Size	-0.002	(0.007)
Out of School Ratio	-0.015	(0.018)
Caste (SC)	-0.037	(0.032)
Caste (ST)	0.091	(0.071)
Work Status	-0.060*	(0.033)
Shock Index	-0.010	(0.011)
Cognitive Social Capital	0.053	(0.046)
No. of Private Schools	0.000	(0.001)
No. of Public Schools	0.001	(0.001)
Urban	-0.005	(0.107)
Constant	0.037	(0.253)

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$.

Note: The results for the 20 regional dummy variables has not been reported in the table above.

Gender takes value 1 if female and 0 otherwise.

Gender of the HH Head takes value 1 if female and 0 otherwise.

Urban takes 1 for urban areas and 0 otherwise.

Principal Component Analysis was used to construct the Shock Index and Wealth Index.

In our results we find that the wealth of a household had a positive and statistically significant[3] relation with the probability of the child switching from a public to a private school. The probability of a student switching from a public to a private school increases with an increase in the wealth of the household, this could be because private schools are more expensive than their public counterparts. Analysis shows that even the poorest households use private schools extensively and that utilization increases with income (Alderman 2001)[1]. Also, for the children from less wealthy households, the opportunity cost of going to a private school might impact the household's income directly and hence their propensity to shift to a private school could be lower than the children from wealthy households. The study by J. Harma (2011) [10] shows that the equity effects of the market in education are negative and that it is the wealthier families who possess the choice of exiting to the private sector.

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[3]$p < 0.15$

The government sector, on the contrary, has become an option of last resort for the poorest and most marginalized. Another interesting result was the test scores from the cognitive ability test, which had a significant positive effect on the probability of switching schools, implying that the child with a high score had higher chances of moving from a public to a private school. This reflects the perception of parents towards the private schools. When we notice the trend of students of higher ability being shifted to private schools, it could indicate that parents' consider the investment into private schools to be a good investment. Similar result from a study by S Dendir (2014) [8] provides a strong evidence of reinforcing parental investment − higher ability children are more likely to be enrolled in school and less likely to work and, conditional on participation, also work fewer hours.

The statistically significant beta coefficient on the test scores, when interacted with the wealth, stands out as the key result of our study. The importance of the result is emphasized because we are dealing with a pro-poor sample. This term is an interaction between the wealth and the test scores of the index child. The test score had a positive but a less significant impact one the switch. Hence, one can interpret that the score itself is not sufficient to determine this switch. Along with a good score, the household in which the child belongs to should not have a credit constraint that it is bound to. The behavior that is being showcased here is that, wealthier parents, even though initially had enrolled their children in a public school, decide to shift their children to a private school, once the ability of the kid is made visible to them. That is, better performing students are more likely to be shifted to a private school if they started with a public school when they do not face a credit constraint. This implicates that children with high cognitive abilities and from wealthier households have a higher probability of making the switch. If we concur with the rational choice theory, the switch of better performing students also indicates that given the resources, parents bear the cost of sending the child to a private school with an expectation of a higher return from the education acquired in a private school. That is, this behavior of parents might indicate that they consider a switch from a public school to a private school to be a positive drift. This result could be a key contribution of this study to the literature. This adds parents' revealed preferences about school choice to the literature's question of superiority of private schools over public schools.

Studies have extensively shown that parents' educational level is an essential factor in child's education. Our results indicate that father's education has more impact than mother's education in the decision of choosing the type of school. The standard literature suggests that households with educated mothers show a positive approach towards health and education related decisions made in the family.But the result found during the course of this research, is not consistent with the existing literature. This might be influenced by the economic condition of the overall sample and the prevalence of patriarchy in this section of the society. Correspondingly, the father being the head of the household had a positive significant impact on the probability of switching the children between public and private schools. In such poor households, it could be plausible that the mothers aren't involved in the decision making process. The only households where the mothers possibly make a unanimous decision is when the father isn't alive or when the father does not stay with the family. This number is just 2% of the sample. If we take an insight from the existing literature, the results are consistent with the studies performed in rural areas. But as we move onto the urban areas the results could be the exact opposite. Woldehanna et al. 2009[15], in their study on educational choice in Ethiopia, found that, only in urban

areas, the influence of a mother's education had a positive and statistically significant effect on the probability of a child being in school.

It is not surprising that parents have a bias against the female child with regard to the enrollment in private schools. In our study as well, we find that female children are being withheld from attaining private school education. In the Indian context, there is evidence that private schooling may be demanded disproportionately for male children (eg. Chudgar and Creed, 2014[6]). We can say that the result is consistent with the situation in the rural households. The female child is often asked to stay at home and assist their mother's in performing household chores. Parents favour boys' education also because they see it as an investment for high financial returns. Particularly, the return on investment from son's education is highly beneficial, as the son remains at home even after marriage, while the daughter moves out, entailing that the investment on the daughter cannot be retained by the parents. Authors from this school of thought argue that parents consider the net benefit they gain from children's enrollment by looking at the trade-offs between earning income in the future and losing income now (Woldehanna et. al. 2009)[15].

Moving on to the next covariate, the interaction between the past test scores and the gender of the index child gives a positive effect on the switch from a public to a private school but with a very low significance level. This could imply that even though the child performed well on her cognitive abilities, the gender of the child would still be a hindrance in the decision of sending him/her to a private school in the given scenario. This reflects the magnitude of discrimination that is persistent in the rural-poor society, at least, in India. The cluster dummies act as a control for possible geographical effects. These effects include the local availability of transport facilities to reach school, provision of electricity, local health and sanitation facilities, and seasonal employment determining the wages. By adding the number of available public and private schools in the district of the index child, we have controlled for the supply-side effects, which could determine the possibility of a switch. This data was extracted from DISE statistics, 2015 and is at the district level. However, these variables are not statistically significant implying the fact that the switching choice is not influenced by the availability of schools.

The result from our study shows a positive change in the probability of sending the child to a private school if the index child is a first born. This implies that the first born children in the household draw a higher investment from the parents than the latter ones. Literature on the birth order, also suggests that the first born children are usually given higher preference among the pool of children in a household. Booth and Kee (2009)[3], in their study on birth order find that the shares are decreasing with birth order. Ceteris paribus, children from larger families have less education, and the family size effect does not vanish when we control for birth order. Looking at the working status of the index child, households who claim that children perform regular chores show a negative change in the probability of switching to a private school. Apart from these, we have also controlled for caste groups, rural-urban areas, household size, and cognitive social capital for which the results were not statistically significant. Julio, Caceres-Delpiano (2006)[5] finds that an exogenous increase in the number of children generated by a multiple births reduces the probability of attending a private school by approximately 1.2 percentage point for children who live in families with two or more children. Using the shock index

that we formulated [4], we find that the households that face some kind of a shock, have a negative impact on the probability of shifting the child to a private school. This result, though, is statistically insignificant.

Possibility of Reverse Causality:

The data set has been constructed in such a way that it rules out the possibility of reverse causality. The dependent variable in our linear probability model is a future event and the explanatory variables have been collected at an instant in the past. Henceforth implying that the expected future choice of the type of school the child attends cannot affect any of our explanatory variables.

Switch from Private to Public

Similar estimation of switches from a private school to a public school did not yield any significant pattern from both the rounds in our regression[5]. This could be because, switch of this type is more nuanced than a switch from a public to a private school. This could also be based on the behavioural patterns of the parents or it could be due to some sudden shocks faced by the household. If the parents decide to shift the student to a different school due to the quality of the school, then the options available for them in the private sector are by and large better than the public schools. On the other hand, if the switch is being made due to the shock, the shock variable used here is not sufficient, and thus, cannot capture the entire reason behind such a pattern of choice. Drawing significant results for a switch from a private to public switch would demand a more precise information set than what we have right now, and hence we do not conclude anything for this type of switch.

Results from Action Space-2

The regression results from the action space 2 show a similar pattern in the educational choices as in action space 1[6]. However, the statistical significance of the results from this regression aren't as strong as the results from action space 1. The interaction term between cognitive score and wealth, even though has an expected positive sign, isn't statistically significant, faintly implying that it might not be the cognitive scores that draw the switch. While the scores played a major role when the students were young, it doesn't seem to matter anymore with the switch decisions when they are into higher grades. There could be other reasons as well, which weren't captured in the data that could be driving the switches in the higher grades. From our results, we can conclude that the only variable that could possibly explain the pattern of the switch from a public school to a private school is the wealth of the household.

Results from the whole Sample

So far, we have seen the results from the derived subsamples suggesting the strong role of children's ability in the switching choice made by the parents. In this section, as a check for robustness, we present

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[4]Refer Table 12 in the appendix for the shocks included

[5]Refer Table 6 in the appendix for the regression estimates

[6]Refer tables 7 & 8 in the appendix for regression estimates

the results of the same question being answered with the entire sample. We include all the children from our sample, to identify the deterministic factors of switching choices made by the parents, for the primary school going children. The independent variable in the regression takes the value 1 if the child belongs to the category of switch that is of concern, and 0 otherwise. Using dummy variables, children who belong to other categories of switch are being controlled for, in the regression. In first part of this test, we focus on the switch from public to private, using the entire sample. Among the explanatory variables for this regression , the category of students who belong to public-public group is used as the base group. The estimation result has been presented in table 9 below.

These estimation results correspond to the earlier results. It indicates that the wealth of the household, the interaction term between wealth and the cognitive scores and gender of the child play an important role in the decisions made about the school. The supply side effects are still not driving the decisions made by the parents. In the second part, we look at the switch from a private to a public school. The category of students who belong to private-private group is used as the base group for the regression. Table 10 below presents the results. The interaction term between wealth and the cognitive scores is significant at 85% level indicating that, children with low cognitive scores and from a less wealthy household are more likely to switch from a private school to a public school. One other important issue that is highlighted from this regression is that female children are more likely to be switched back from a private school to a public school. This reflects the discrimination against females, even at the level of primary schooling. Again, the results that we get from this regression are consistent with our earlier claims.

V. CONCLUSION

Our results show that children with higher cognitive ability are being shifted from a public to a private school, given that the household does not face any credit constraint. There is a vast literature on test scores gaps between children enrolled in private versus those enrolled in public schools. The results from such studies state that children in private school have superior test score performance, even after controlling for family and school characteristics (Muralidharan and Kremer, 2008)[14].

A possible reason for this significant gap in the learning outcome of children attending public versus those attending private schools, could be due to the shift of better performing students from a public to a private school. From our results, we can presume that children with higher cognitive ability could self-select themselves into private schools. Now, if this process goes on for year after year, then this switch between schools could explain the significant drop in the total performance or the average learning outcomes of the children in public schools, which is seen in the ASER survey report [16], a reference to the same was made in the introduction. Hamilton & James (2001 [13], in their study refer to this phenomenon as 'bright flight or academic cream-skimming'. The results also suggest that the probability of a female child going to a private school is low. We found that father's education has a higher impact than the mother's education in the decision of switching the child's school. These results are again only for the switch from a public to a private school. Controlling for household size, gender of the head of the household, and other household level attributes, we found that male household

heads who have a smaller household size have a higher probability of sending their child to a private school. The results for household size was though, statistically insignificant. It shall be noted that we are suspecting a possible selection bias in the way the subsamples have been selected. That is, in order to understand the switch in a particular direction, we are looking only at the students who start from a public school in a 'public to private switch' and not the entire sample. This fact ignores the initial choice made by the parents between public and private school at the time of child's enrollment. Nevertheless, this issue could be countered if we understand that the choices are well separated by time and are independent. We are currently working on addressing this issue.

There are a number of implications that can be made from our results. First, efforts to improve the quality of primary education in public schools in India should be made. The government along with constructing schools in order to achieve the goal of universal primary education, should also invest resources in providing appropriate facilities required for better quality education. The need for such improvements is felt because the parents' respond to school quality. They perceive the quality of education in private schools to be much superior than that in public schools, which could be the main reason why parents of children with better cognitive skills, switch their child from a public to a private school. Also, it is justified to assume that response to quality measures is due to the presumption that better quality leads to improved educational outcomes and higher returns on investments. Second, policies to bridge the gap between public and private elementary schools in rural areas could be considered. Bridging the gap between public and private school education could help to solve the debate over the equity concerns. A voucher system or a public subsidy could be implemented in order to get the two sectors together for the attainment of better quality of primary education. A significant amount of research papers have pondered upon similar issues relating to voucher systems (eg. Buddin, Corbes and Kirby 1998)[4]. In conclusion, this study argues to either raise the quality of primary education in public schools or to promote the participation of private schools in providing improved quality of education to the poor section of the society.

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APPENDIX

TABLE VI

Estimation results for Private to Public Switch (Round 1 to Round 2)

Variable	Coefficient	(Std. Err.)
Wealth Index	-0.03	(0.024)
Test Score	0.032	(0.072)
Wealth*Test Score	-0.008	(0.014)
Mother's Education	-0.014	(0.010)
Father's Education	-0.001	(0.010)
Gender	0.194***	(0.064)
Gender*Test Score	-0.037	(0.065)
Gender of HH Head	-0.058	(0.134)
Birth Order	-0.007	(0.037)
HH Size	0.028	(0.018)
Out of School Ratio	0.109	(0.088)
Caste (SC)	0.35***	(0.120)
Caste (ST)	-0.246*	(0.142)
Work Status	-0.041	(0.074)
Shock Index	-0.006	(0.032)
Cognitive Social Capital	0.225*	(0.114)
No. of Private Schools	0.001	(0.002)
No. of Public Schools	-0.001	(0.002)
Urban	0.188*	(0.104)
Constant	-0.172	(0.359)

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

Note: The results for the 20 regional dummy variables has not been reported in the table above.

Gender takes value 1 if female and 0 otherwise.

Gender of the HH Head takes value 1 if female and 0 otherwise.

Urban takes 1 for urban areas and 0 otherwise.

Principal Component Analysis was used to construct the Shock Index and Wealth Index.

TABLE VII

Estimation results for Public to Private Switch (Round 2 to Round 3)

Variable	Coefficient	(Std. Err.)
Wealth Index	0.031***	(0.012)
Test Score	0.05	(0.044)
Wealth*Test Score	0.006	(0.011)
Mother's Education	0.006	(0.006)
Father's Education	0.006	(0.004)
Gender	-0.053	(0.033)
Gender*Test Score	-0.039	(0.039)
Gender of HH Head	-0.059	(0.042)
Birth Order	-0.011	(0.020)
HH Size	-0.001	(0.010)
Out of School Ratio	0.005	(0.027)
Caste (SC)	-0.033	(0.043)
Caste (ST)	-0.064	(0.076)
Work Only	-0.005	(0.058)
Mix Work and School	-0.054	(0.046)
Shock Index	0.002	(0.010)
No. of Private Schools	-0.002	(0.001)
No. of Public Schools	0	(0.002)
Urban	-0.246*	(0.147)
Constant	0.751*	(0.392)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: The results for the 20 regional dummy variables has not been reported in the table above.

Gender takes value 1 if female and 0 otherwise.

Gender of the HH Head takes value 1 if female and 0 otherwise.

Urban takes 1 for urban areas and 0 otherwise.

Principal Component Analysis was used to construct the Shock Index and Wealth Index.

TABLE VIII

Estimation results for Private to Public Switch (Round 2 to Round 3)

Variable	Coefficient	(Std. Err.)
Wealth Index	-0.058**	(0.023)
Test Score	-0.08	(0.077)
Wealth*Test Score	0.033	(0.021)
Mother's Education	-0.009	(0.007)
Father's Education	-0.005	(0.009)
Gender	0.034	(0.078)
Gender*Test Score	-0.032	(0.096)
Gender of HH Head	0.083	(0.139)
Birth Order	-0.088***	(0.028)
HH Size	-0.011	(0.012)
Out of School Ratio	-0.017	(0.098)
Caste (SC)	0.244*	(0.130)
Caste (ST)	-0.134	(0.111)
Work Only	0.024	(0.139)
Mix Work and School	0.094	(0.205)
Shock Index	0.005	(0.023)
No. of Private Schools	0	(0.002)
No. of Public Schools	-0.002	(0.001)
Urban	0.417**	(0.204)
Constant	0.599	(0.555)

$^{***}p < 0.01$, $^{**}p < 0.05$, $^{*}p < 0.1$.

Note: The results for the 20 regional dummy variables has not been reported in the table above.

Gender takes value 1 if female and 0 otherwise.

Gender of the HH Head takes value 1 if female and 0 otherwise.

Urban takes 1 for urban areas and 0 otherwise.

Principal Component Analysis was used to construct the Shock Index and Wealth Index.

TABLE IX

ESTIMATION RESULTS FOR PUBLIC-PRIVATE SWITCH IN ACTION SPACE 1 (ENTIRE SAMPLE)

Variable	Coefficient	(Std. Err.)
Wealth Index	0.019**	(0.008)
Test Score	0.014	(0.017)
Wealth*Test Score	0.007*	(0.004)
Mother's Education	-0.001	(0.004)
Father's Education	0.007*	(0.004)
Gender	-0.064***	(0.021)
Gender*Test Score	0.023	(0.022)
Gender of HH Head	-0.076**	(0.030)
Birth Order	0.052*	(0.029)
HH Size	-0.004	(0.005)
Out of School Ratio	-0.018	(0.015)
Caste (SC)	-0.037	(0.026)
Caste (ST)	0.055	(0.053)
Work Status	-0.035	(0.024)
Shock Index	-0.007	(0.009)
Cognitive Social Capital	0.032	(0.036)
No. of Private Schools	0	(0.001)
No. of Public Schools	0.001	(0.001)
Urban	-0.028	(0.075)
Private-Public	-0.196***	(0.032)
Private-Private	-0.323***	(0.045)
Constant	0.093	(0.189)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: The results for the 20 regional dummy variables has not been reported in the table above.

Gender takes value 1 if female and 0 otherwise.

Gender of the HH Head takes value 1 if female and 0 otherwise.

Urban takes 1 for urban areas and 0 otherwise.

Principal Component Analysis was used to construct the Shock Index and Wealth Index.

TABLE X

Estimation results for Private-Public Switch in Action Space 1 (Entire Sample)

Variable	Coefficient	(Std. Err.)
Wealth Index	-0.007	(0.006)
Test Score	0	(0.011)
Wealth*Test Score	-0.005	(0.003)
Mother's Education	-0.01***	(0.004)
Father's Education	-0.001	(0.002)
Gender	0.053***	(0.019)
Gender*Test Score	-0.008	(0.017)
Gender of HH Head	0	(0.048)
Birth Order	-0.017	(0.022)
HH Size	0.011**	(0.005)
Out of School Ratio	-0.013	(0.018)
Caste (SC)	0.054**	(0.022)
Caste (ST)	0.015	(0.040)
Work Status	-0.018	(0.024)
Shock Index	0.001	(0.006)
Cognitive Social Capital	0.062	(0.039)
No. of Private Schools	0	(0.000)
No. of Public Schools	-0.001	(0.001)
Urban	0.004	(0.055)
Public-Public	-0.438***	(0.047)
Public-Private	-0.356***	(0.042)
Constant	0.301**	(0.124)

*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Note: The results for the 20 regional dummy variables has not been reported in the table above.

Gender takes value 1 if female and 0 otherwise.

Gender of the HH Head takes value 1 if female and 0 otherwise.

Urban takes 1 for urban areas and 0 otherwise.

Principal Component Analysis was used to construct the Shock Index and Wealth Index.

TABLE XI

Factor Score from Principal Component Analysis for Wealth Indicators

Variable	Factor Score
Room per person	0.1422
Type of wall material	
Brick/ Concrete	0.2216
Adobe/Mud	-0.1665
Wood/ Branches	-0.0432
Matting	-0.0483
Other	-0.0768
Type of roof material	
Straw/ thatch	-0.172
Earth/ Mud	-0.0268
Wood/ Planks	-0.0113
Galvanised Iron	0.0381
Concrete/ Cement	0.1519
Tiles/ Slates	0.0009
Other	0.0076
Type of floor material	
Earth/ Mud	-0.2409
Wood	0.0217
Stone/Brick	0.0854
Cement/ Tile	0.1606
Other	0.0105
Assets	
Radio	0.0746
Fridge	0.1463
Bike	0.1326
TV	0.2443
Motor	0.1568
Car	0.0332
Tractor	-0.0018
Pump	-0.1013
Mobile Phone	0.0701
Phone	0.1506
Sewing Machine	0.1065
Fan	0.2498
Almirah	0.2591
Clock	0.1929
Bullock Cart	-0.0018
Thresher	-0.0144
Owns Land	-0.1264
Electricity	0.1683
Source of Water Supply	
Piped into dwelling	0.1407
Tubewell in dwelling	0.0804
Public pipe	-0.1117
Unprotected Well	-0.0529
Sanitation Facility	
Flush Toilet	0.2393
Pit Latrine	0.1186
None	-0.2843
Cooking Fuel	
Wood	-0.2905
Kerosene	0.0905
Gas or Electricity	0.2639

TABLE XII

Factor Score from principal component analysis for Shock Variables

Variable	Factor Score
Natural Disaster	0.3615
Fall in Food Avail.	0.1489
Livestock Died	0.2311
Crops Failed	0.3575
Livestock Stolen	0.1529
Crops Stolen	0.2823
Death of HH Mem	0.0827
Loss of Job	0.0582
Severe Injury	0.3474
Victim of Crime	0.2418
Divorce	0.2299
Birth/New HH Mem	0.2203
Paying for Child's Edu	0.4151
Migrated	0.3154
Others	0.0172