Tracking the Progress of a Child from Enrolment to Completion of Secondary Education in India

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Introduction

- In the presence of low public investment in education the educational attainment of an individual is mainly determined by parental investment, which is highly dependent on family's economic status.

- There are several costs associated with secondary education in India such as school fee, books, uniforms, and 'the transportation costs because of additional distance to access the nearest secondary school'.

- The private household expenditures are considerable on these school related items even for low socioeconomic status families, and also in case of government schools (Tilak, 2002). Both the low level of public expenditure and higher educational costs at secondary education increases the burden on the poor families as the child progresses from elementary to secondary education.

- Therefore, it makes hard for children from poor and uneducated families to obtain a secondary/higher secondary education. This in turn adversely affects their ability to improve their socioeconomic status and keeps future earnings low.

Literature Review

- The existing literature (Haveman & Wolfe, 1995; Buchmann & Hannum, 2001; Checchi, 2006; Nam & Huang, 2009; Huang et al., 2010; Bjorklund & Salvanes, 2010) indicates that family background, mainly parental education and household economic resources plays a crucial role in a child's educational attainment.

- With specific reference to India, there has been the persistence of large educational enrollment and attainment gap between rich and poor households (Duraisamy, 1998; Filmer & Pritchett, 1998; Sengupta & Guha, 2002; Srinivasan, 2010).

- Extending further, studies also found that the affiliation of caste and religion of an individual plays an important role in determining the educational inequality in India (Filmer & Pritchett, 1998; Borooah, 2001; Sengupta & Guha, 2002; Srinivasan, 2010; Lewin, 2011; Azam & Bhatt , 2012; Azam, 2016).

- There exists a significant association between the accessibility of educational resources and the socioeconomic background of an individual (Duncan & Murnane, 2011). It means that the family attributes mainly determines the educational attainment of an individual.

- After controlling the factors affecting the enrolment of a student, attending a private school is positively associated with the higher level of students achievement (Kingdon, 2007).

- By using IHDS data, White et. al. (2017), found that the time spent on private tuitions has a positive association with the learning of a child while the number of days absent in the school has a small negative association.

- Several research studies have pointed out that even after controlling for family's socioeconomic status, the use of computer at home or school is positively associated with the academic performance and learning of students at different levels of schooling (Battle, 1999; Kerawalla & Crook, 2002; Lee, Brescia & Kissinger, 2009).

- The literature highlights a persistent educational enrolment and attainment gaps (i.e. educational inequality) based on the gender, region, caste and religion, parental income and education, private educational expenditure, and the school related factors etc.

- There is lack of studies in case of India that jointly determines the association of both the demand side and school related factors with the completion of secondary level of education.

Research Questions

- Is the lower socioeconomic status of an individual still a barrier for progression through the secondary education even after accessing it or are there any other individual or school related factors that associated more or less with the completion of secondary education in India?

- Therefore, this study examines how in addition to family attributes the 'access to school resources' and 'learning activities' associated with the completion of secondary and higher secondary schooling after getting enrolled in secondary schools (i.e. 9th and 10th grade)?

- This study also examines if there exists any difference in the association of factors with the completion of both secondary and higher secondary level of schooling across gender (male and female) and the type of school (government and private) in which the child is studying?

Data & Methodology

- By using both rounds of Indian Human Development Survey (2004-05 and 2011-12) data, this study tracks the progress of a selected group of students from enrolment to completion of secondary education in India.

- The panel survey of IHDS makes the data suitable for tracking the progress of a selected group of children over the time period as the re-contact rate was 84% in 2011-12. Therefore, IHDS is preferred for this study.

- The study has selected the sample by choosing the group of children who were enrolled in secondary schools (9th and 10th grade) in 2004-05, and the information of these same children was also available in 2011-12.

- The outcome variable (Yi) takes the value '1' if the child has completed secondary or higher secondary school in 2011-12, otherwise '0'. But the outcome of higher secondary school completion consists of only those students who have completed their 10th class, i.e., only for eligible students.

- Due to the binary nature of the outcome variable all the regression analysis have been done by using **logit model.**

- Under a logit model: $P\,(Yi = 1) = e^{\,(\beta Xij)} / 1 + e^{\,(\beta Xij)}$

- After estimating the logit coefficients the average marginal effects and predicted probabilities have been calculated and reported in the empirical results section in the form of tables and graphs respectively.

Name of Variables (X)	Description	Definition of Variables
Social Group	Upper Castes	1, if an Individual is upper caste (Hindu or other minority religion such as Christian, Sikh, Jain etc. except SC & ST)
	OBC Hindus	2, if an Individual is OBC Hindu
	SCs (All)	3, if an Individual is SC
	STs (All)	4, if an Individual is ST
	Muslims	5, if an Individual is a Muslim
Type of School	Government or Aided	1, if an individual has studied in government or Aided
	Private	2, if an individual has studied in private school
	Others	3, if an individual has studied in other type of school
Highest Adult (21+) Education (HH)	Illiterate or BP	1, if the HH is illiterate or below primary
	Primary or UP	2, if the HH has completed primary or upper primary
	Secondary or Higher Sec	3, if the HH has completed 10th or 12th class
	Graduate or Above	4, if the HH is graduate or above graduate
Household Assets Index	Assets	Index made from 33 different household assets
Uses Computer	Yes	1, if an individual uses computer
	No	0, otherwise
Ever Repeated a class	Yes	1, if an individual has ever repeated a class
	No	0, otherwise
Private tuition hours	PTHPW	Time spending at private tuition (total hours/week)
Absenteeism	DAPM	No. of days absent in last month (Days/month)
Private educational expenditure (PEE)	ln (PEE)	Household expenditure on the education of a child (School fee + private tuition fee + Books/Bus/Uniform)

Categorical Variables	Description	Final Study Sample	Enrolled in 9th &10th
Gender	Male	**66.25**	**54.7**
	Female	**33.75**	**45.3**
Location	Rural	60.41	61.65
	Urban	39.59	38.35
Social Group	UC (Hindus & OMR)	29.89	30.48
	OBC	33.26	33.99
	SC	20.2	18.16
	ST	5.51	6.87
	Muslim	11.14	10.5
Type of School	Government & Aided	68.23	68.71
	Private	26.03	25.3
	Others	5.74	5.99
Highest Adult (21+)	Illiterate or BP	18.85	18.42
Education (Parental Edu)	Primary or UP	33.66	34
	Secondary or HS	33.15	32.3
	Graduate	14.34	15.28
Other Variables	**Description**	**Mean**	**Mean.**
Household Assets Index	Assets	14.15	14.16
Age of Student	Age	15.18	15.24
Private Tuition Hours	PTHPW	2.95	2.89
Days absent in a month	DAPM	2.52	2.57
ln (PEE)	PEE	7.47	7.45
Total Observations		**3327 (2011-12)**	**6276 (2004-05)**

Explanatory Variables	SSC (10th)	HSSC (12th)	SSC	SSC	HSSC	HSSC
Sample	Full	10th Pass	Male	Female	Male	Female
Female (Ref. - Male)	0.0620***	0.0986***	--	--	--	--
	(0.0127)	(0.0160)				
Age	-0.00853**	-0.0192***	-0.00978*	-0.00795	-0.0202***	-0.0184**
	(0.00390)	(0.00519)	(0.00514)	(0.00545)	(0.00660)	(0.00829)
Urban (Ref. - Rural)	-0.0393**	0.0155	-0.0372*	-0.0389*	0.0137	0.0175
	(0.0161)	(0.0180)	(0.0217)	(0.0218)	(0.0246)	(0.0247)
Household Assets	**0.00424***	**0.00644***	**0.00193**	**0.00901***	**0.00562**	**0.00953***
	(0.00154)	(0.00181)	(0.00201)	(0.00227)	(0.00241)	(0.00259)
OBC Hindus (Ref.– UC)	**-0.0335**	**0.0236**	-0.0448**	-0.0196	0.0500**	-0.0342
	(0.0157)	**(0.0190)**	(0.0207)	(0.0208)	(0.0255)	(0.0264)
SC	**-0.0389**	**-0.00481**	-0.0424*	-0.0400*	0.0210	-0.0504*
	(0.0177)	**(0.0224)**	(0.0237)	(0.0228)	(0.0306)	(0.0297)
ST	**-0.0422**	**-0.00903**	-0.0306	-0.0509	0.0531	-0.0933*
	(0.0267)	**(0.0360)**	(0.0352)	(0.0353)	(0.0459)	(0.0547)
Muslims	**-0.0656***	**-0.0237**	-0.0688**	-0.0625**	-0.0282	-0.0123
	(0.0223)	(0.0279)	(0.0304)	(0.0277)	(0.0389)	(0.0338)
Primary or UP (Illiterate)	0.00875	0.0223	-0.000903	0.0360	0.0271	0.0389
	(0.0163)	(0.0233)	(0.0211)	(0.0241)	(0.0293)	(0.0392)
Secondary or Higher Sec	0.0439**	0.0404*	0.0678***	0.00503	0.0199	0.0887**
	(0.0173)	(0.0242)	(0.0222)	(0.0258)	(0.0311)	(0.0386)
Graduate	0.0733***	0.0919***	0.0683**	0.0814***	0.0960**	0.0994**
	(0.0241)	(0.0301)	(0.0342)	(0.0284)	(0.0405)	(0.0443)

Explanatory Variables	SSC	HSSC	SSC	SSC	HSSC	HSSC
Sample	Full	10th Pass	Male	Female	Male	Female
Private school	**0.0408*** **	**0.0337***	**0.0521*** **	0.00648	**0.0540*** *	-0.0107
	(0.0152)	(0.0192)	(0.0197)	(0.0248)	(0.0253)	(0.0299)
Other type of school	0.0591**	0.0523*	0.0919***	-0.00275	0.0318	0.0945***
	(0.0239)	(0.0293)	(0.0299)	(0.0349)	(0.0402)	(0.0340)
PTHPW	0.00361***	0.00144	0.00346*	0.00383*	0.00227	-0.000415
	(0.00139)	(0.00150)	(0.00179)	(0.00209)	(0.00199)	(0.00217)
DAPM	-0.000973	0.00181	-0.00111	-0.000985	0.00296	-0.00164
	(0.000987)	(0.00145)	(0.00135)	(0.00131)	(0.00187)	(0.00204)
ln (PEE)	0.0150***	0.000374	0.0145**	0.0125	-0.00321	0.00699
	(0.00505)	(0.00826)	(0.00677)	(0.00801)	(0.0115)	(0.0114)
Ever Repeat Grade (Ref. -No)	-0.0433***	-0.0268	-0.0471**	-0.0364	-0.0570**	0.0238
	(0.0160)	(0.0216)	(0.0204)	(0.0243)	(0.0288)	(0.0298)
Use Computer (Ref. - No)	**0.199*** **	**0.229*** **	**0.234*** **	**0.134*** **	**0.273*** **	**0.155*** **
	(0.0112)	(0.0165)	(0.0152)	(0.0137)	(0.0226)	(0.0215)
Log pseudo-likelihood	-1069.48	-1195.68	-815.92	-235.17	-858.58	-317.91
Pseudo - R^2	**0.21**	**0.17**	**0.19**	**0.29**	**0.15**	**0.20**
Observations	**3,143**	**2,654**	**2,086**	**1,057**	**1,697**	**957**

Note: Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$

Explanatory Variables	SSC	SSC	HSSC	HSSC
Sample	Government	Private	Government	Private
Female (Ref. -Male)	0.0762***	0.0390**	0.103***	0.0632**
	(0.0168)	(0.0193)	(0.0213)	(0.0260)
OBC (Ref.- Upper caste)	-0.0424**	-0.0347	-0.00735	0.0582**
	(0.0205)	(0.0251)	(0.0253)	(0.0290)
SC	-0.0749***	0.0341	-0.0163	-0.0248
	(0.0242)	(0.0254)	(0.0296)	(0.0393)
ST	-0.0716**	0.0311	-0.0564	0.0567
	(0.0357)	(0.0355)	(0.0473)	(0.0500)
Muslims	-0.117***	0.0275	-0.00105	-0.0582
	(0.0309)	(0.0274)	(0.0383)	(0.0410)
Use Computer (Ref. - No)	**0.224***	**0.141***	**0.249***	**0.173***
	(0.0142)	(0.0218)	(0.0206)	(0.0310)
Free Books or Uniform (Ref. - No)	0.0254	-	0.00570	-
	(0.0182)	-	(0.0233)	-
Scholarship (Ref. - No)	-0.0239	-	**0.0577**	-
	(0.0229)	-	(0.0284)	-
Control for Other Variables	**Yes**	**Yes**	**Yes**	**Yes**

Note: Standard errors in parentheses; *** $p<0.01$, ** $p<0.05$, * $p<0.1$

The probabilities of SSC and HSSC by Social Groups and Household Assets

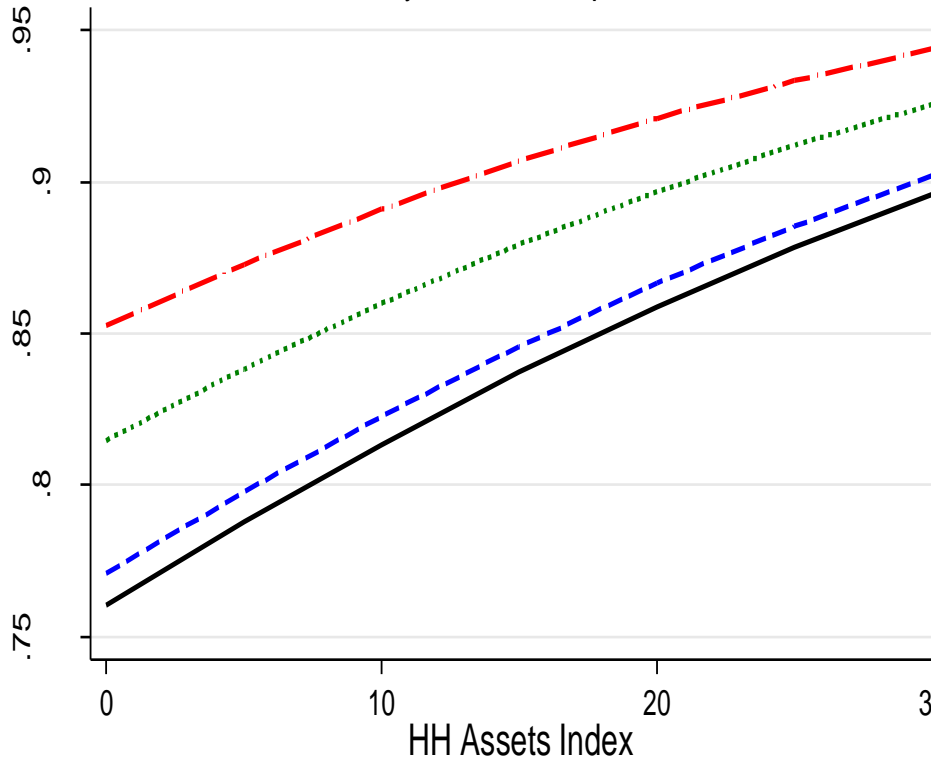Probabilities of Secondary School Completion across SGs
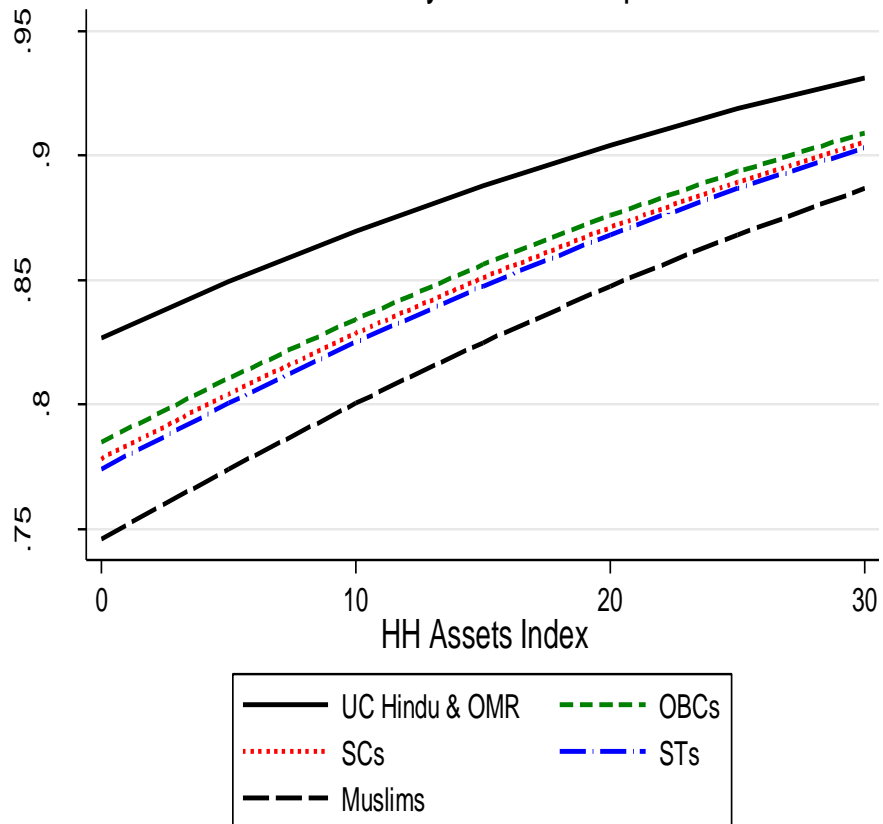
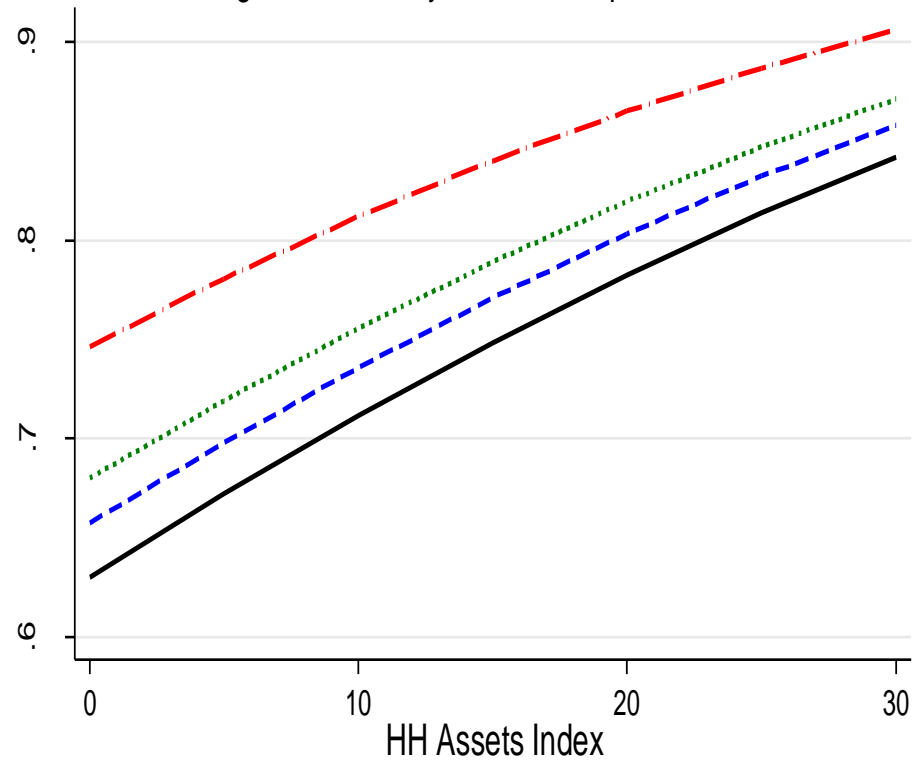Probabilities of Higher Secondary School Completion across SG

# The probabilities of SSC and HSSC by Parental Education and Household Assets

The probabilities of SSC and HSSC for male and female by Household Assets

Probabilities of SSC and HSSC by Gender across HH Assets

Legend:
- Males (SSC)
- Male (HSSC)
- Females (SSC)
- Females (HSSC)

x-axis: HH Assets Index
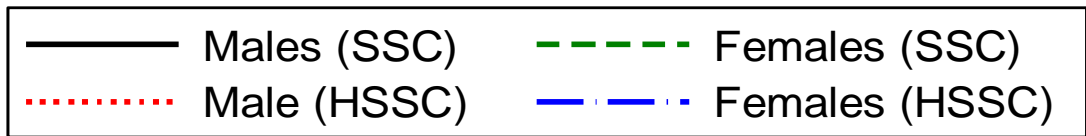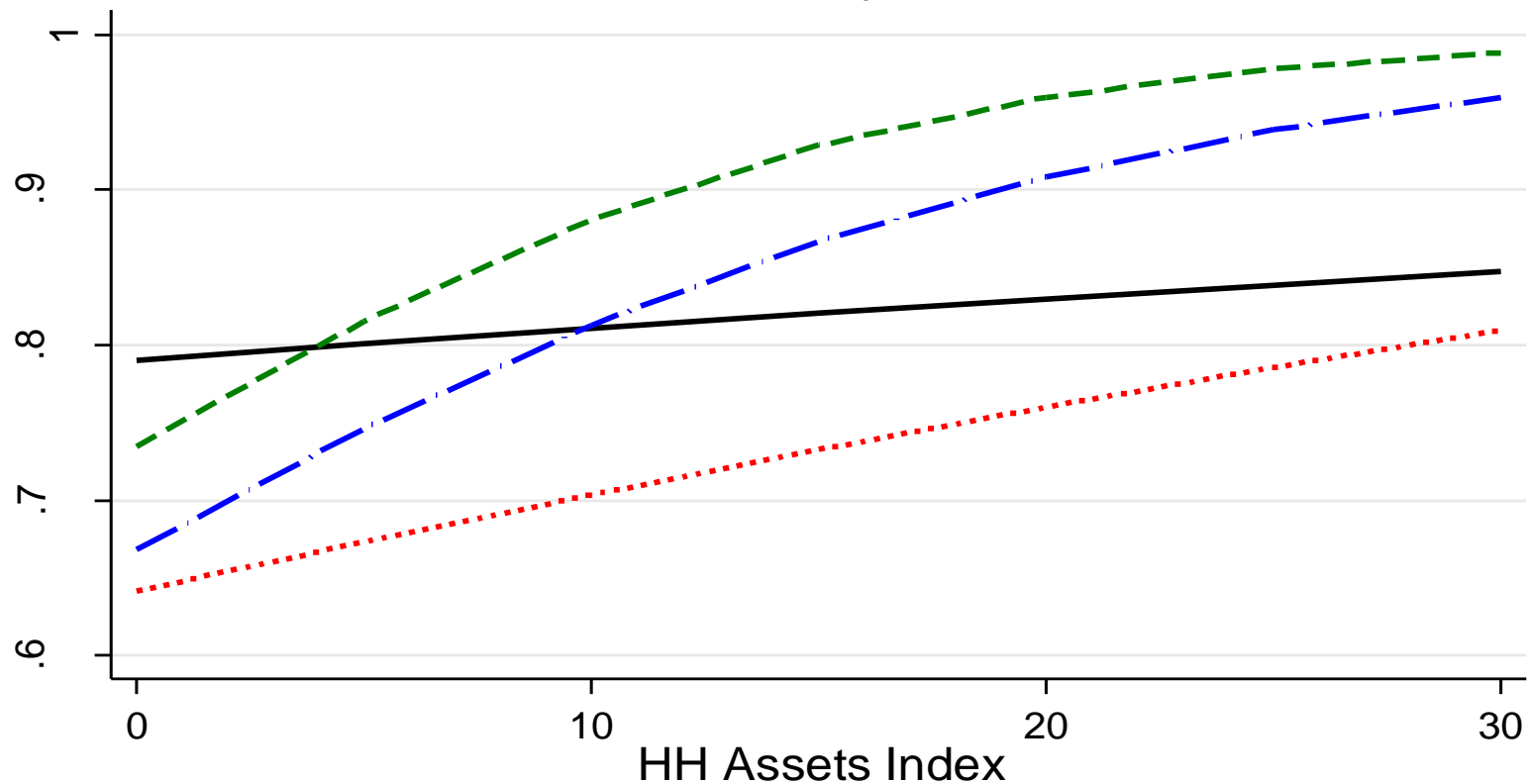
The probabilities of SSC and HSSC for 'Private' and Government School students by Household Assets

Probabilities of SSC and HSSC by Govt. and Pvt. Schools
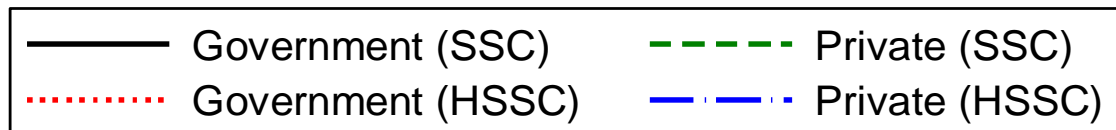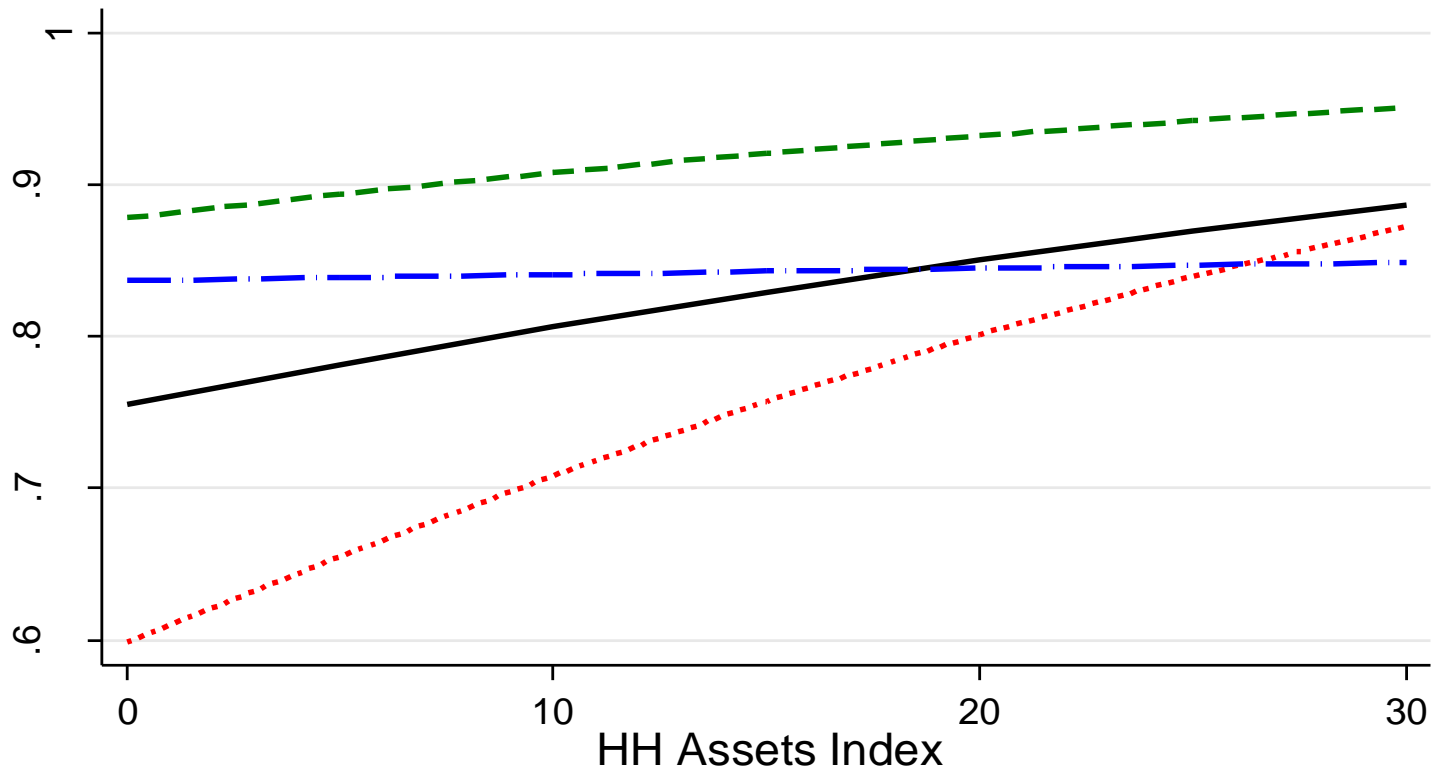
Conclusion & Policy Recommendations

- Parental education and household assets are the major determinants of secondary and higher secondary school completion. This suggest that the chances of achieving high educational attainment are more for those children who belong to well-off and educated families as compared to those with poor and less educated families.

- This study found that the major barrier for the disadvantaged sections of the society such as 'SC/ST' and 'Muslims' lies at the secondary level of schooling, particularly in government schools. However, caste and religion of an individual does not make a significant difference in higher secondary school completion but based on the condition that these students have completed their secondary schooling (i.e. 10th class).

- Girls have higher chances of completing secondary education as compared to boys once a child gets enrolled/reach the secondary education level. Therefore, government policies should focus more on increasing the enrolment and continuation of the education of girls from elementary to secondary education so that gender inequality in education can be minimized at secondary level and thereafter.

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- In addition to this, scholarship received by a student studying in government schools improves his chances of completion of higher secondary school. Therefore, the government should lend out more scholarships to government school students so that they can leapfrog or at least have equal chances with private schools' counterpart in the completion of secondary education.

- These results suggest that if government can reduce the financial constraints for the children from poor and uneducated families (particularly for the girl child). It will lead to their higher chances of completing secondary education.

- Several schemes launched by the government of India to promote the education of the girl child at secondary and higher secondary level suffers from short sightedness.

- The most important and yet unimplemented policy recommendation till now is that of the National Commission to Review the Working of the Constitution (2002). It recommended that article 21A should be modified- to include the right to free education for girls and for the members of 'SC & ST' community until they attain the age of 18 years.

- Therefore, this study suggest to implement the universalization of secondary education in India because the financial constraints due to increasing cost at secondary level affects the marginalized sections of the society most.

Thank You