

SOCIAL CRISIS IN INDIA: IS EDUCATION A BURDEN ON THE URBAN POOR?

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Abstract : *This paper investigates the nature of expenditure on education by the urban poor using primary data. The paper seeks to establish that sizeable expenditures are incurred by poor households in their pursuit of quality education for their children. It delves into the dynamics of the relation between income and household expenditure on education; at the same time explores the functioning of the other determinants of per child expenditure on education, thus providing a holistic view of the current realities of private expenditure on education.*

In the first part of the paper we intend to study the relation between household expenditure on education and income of the household through an econometric analysis. The second part of the paper entails a critical analysis of the determinants of education expenditure per child. These include gender, female guardian's employment status, school type et cetera (The list is in no way exhaustive).

The paper is structured as follows: Section 2 contains an overview of the existing literature on private expenditure on education as well as factors affecting it. Section 3 explains the research methodology used in the paper. Section 4 comprises of the first regression relating household expenditure on education and income of the household, the result, and the attached interpretations. Section 5 contains the second regression with education expenditure per child and its determinants, the result, and the attached interpretations. Section 6 we discuss other findings, findings pertaining to the field visits and other qualitative findings. The final section discusses the conclusions of the paper.

Research Methodology

The target community of this research is the Urban Poor of New Delhi. The Delhi Urban Shelter Improvement Board released a list of 675 Jhuggi Jhopri (JJ) Clusters in the National Capital Territory in 2015¹. This list records all the slum clusters in Delhi including information regarding the number of households, overseeing authority and constituency. From this list, a random selection of 10 JJ Clusters

¹ The list can be found at <http://delhishelterboard.in/main/wp-content/uploads/2015/09/List-of-JJ-675-Clusters1.pdf>

was made using a complex computer algorithm seeded by the computer's clock to randomize the data². 10 households were covered from each JJ cluster, leading to a sample size of 100 households.

The focus of the research was on the expenditure incurred by households on the schooling of children. Thus, only households which had children belonging to the age group 4-20 years were covered, to account for drop-outs as well. The recall period for our survey was 1 year. Although the credibility of the income data is always questionable, confidence on its veracity can be drawn from the fact that the communities are found to be quite homogeneous in terms of employment and income. In fact, many communities were formed on the basis of employment i.e. majority of the people in a particular community were employed in similar jobs. For example, in Keshav Puram, most people were employed as 'mistri' or casual laborers and in Jhilmil, most were employed as industrial labor. The similarity of income as reported individually by the household in such communities indicates that the income data collected was to a large extent reliable.

In light of the fact that many households may underreport expenditure on education as they may not account for expenditure on books, notebooks, uniform etc, the education expenditure was categorized as amount spent on uniforms, transportation, books and stationary, private coaching and school fees. The expenditure was recorded separately for each child in a household. Data regarding the number of household members, gender of the child, employment status of female guardian, educational qualifications of guardians was also collected from 103 households, which had a total of 232 children of school going age.

It was observed that many households, which sent their children to Government schools, received grants from the government to cover expenses incurred on the education of their children. In order to account for the grant, the grant amount was foremost subtracted from the expenditure on school uniform and if the grant amount still remained then it was subtracted from the expenditure on books and stationery. In our experience, no household was encountered for which there was additional grant amount that remained unspent.

Household expenditure functions are regression equations that relate individual household regression to their determinants (Tilak 2002).

² The online website used to do this is <https://www.randomizer.org/>

In this paper, we run two regressions; the first uses the collected data to study how household expenditure on education varies as income of and number of children in a household change. The model is very simplified, nevertheless it offers valuable insights. The second regression is more extensive and relates per child expenditure on education to its determinants such as income of the household, gender of the child, the status of employment of the female guardian, level of education (primary, secondary or senior secondary) and the type of school the child is enrolled in (government or private school). To account for intra-household variation in distribution of expenditure on education- specifically due to gender discrimination- we collected data for each child of the household *separately* rather than taking aggregate expenditure of household divided by number of children. Therefore, in the rest of this paper, we refer to this data as ‘per child expenditure on education’ rather than ‘per capita expenditure on education’.

Results:

Income and expenditure on education: We regress total household expenditure on education, on income of the household and number of school going children. We use a linear regression model (lin-lin) of the following form:

$$EXP = C_1INC + C_2NUM + cons$$

Where C_1 is the regression coefficient for annual income of the household (INC) and C_2 is the regression coefficient for number of school going children (NUM). We take household expenditure on education (EXP) to be dependent on income and number of school-going children. We expect a positive relation between total expenditure on education and income as well as with the number of school-going children in the household.

The results of the linear regression are depicted in the table below:

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. reg EXP INC NUM
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Source	SS	df	MS	Number of obs	=	102
Model	8.3984e+09	2	4.1992e+09	F(2, 99)	=	15.65
Residual	2.6562e+10	99	268301840	Prob > F	=	0.0000
				R-squared	=	0.2402
				Adj R-squared	=	0.2249
Total	3.4960e+10	101	346141691	Root MSE	=	16380

EXP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
INC	.0612499	.0149167	4.11	0.000	.0316519	.090848
NUM	4468.953	1376.366	3.25	0.002	1737.944	7199.961
_cons	-1978.593	3819.266	-0.52	0.606	-9556.845	5599.658

We used Heteroscedasticity Consistent Standard Errors in our regression model in order to circumvent the possibility of heteroscedasticity and other violations of assumptions by the underlying data generating process.

We find that, C_1 is positive with a value 0.0612 which means that with one point increase in income, mean household expenditure on education increases by 0.0612, given that the number of school going children is constant. That is, when the income increases by 1000 rupees the mean household expenditure on education increases by 61 rupees. The data corroborates our expectations of the sign of the coefficient to be positive. The coefficient is significant even at 1 percent level of significance, which proves that income is an important determinant of household expenditure on education.

C_2 is positive with a value of 4468 which means that with one point increase in the number of school-going children the mean household education expenditure increases by 4468. That is, mean household expenditure increases by 4468 rupees with an additional school going child. The sign of the coefficient is positive as expected. Also, the coefficient is significant even at 1 percent level of significance.

R^2 is 24.02 percent, which denotes that 24.02% of the variation in household education expenditure is explained collectively by the number of school going children and household income. The low value of R^2 is fathomable due to the plethora of factors that might influence household expenditure on education. What is of importance to us is whether R^2 is significant or not. The data shows that R^2 is highly significant (even at 1 percent level of significance) with an F-value of 15.65 i.e we strongly reject the null hypothesis that states that the independent variables have no effect on the dependent variable.

Determinants of per-child expenditure on education: For this regression we take education expenditure per child (EXP) as the dependent variable and income, gender of the child, female guardian's employment status, level of schooling (primary, secondary, senior secondary), and school type (private, government) as independent variables. The regression equation takes the form:

$$EXP = C_1INC + C_2type2 + C_3lev3 + C_4lev2 + C_5 motheremp3 + C_6gen2 + C_7F_EDU + cons$$

Where

EXP – Per child expenditure on education

INC – Annual Income of the household

type2 – Dummy variable for school type; Government = 1, Otherwise = 0

lev3 – Dummy variable for level of schooling that the child is enrolled in; Enrolled in Senior Secondary school = 1, Otherwise = 0

lev2 – Dummy variable for level of schooling that the child is enrolled in; Enrolled in Secondary school = 1, Otherwise = 0

motheremp3 – Dummy variable for female guardian's employment status; Female Employed = 0, Otherwise = 1

gen2 – Dummy variable for gender of the child; Male = 1, Female = 0

F_EDU – Years of father's education

We again use a Linear regression model (lin-lin) to study the partial effect of individual independent variables on per child expenditure on education. This regression covers individual expenditure data of 221 children based in 103 households. The regression results have been discussed in the following page.

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. reg EXP INC type2 lev3 lev2 motheremp3 gen2 F_EDU
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Source	SS	df	MS	Number of obs	=	221
				F(7, 213)	=	12.66
Model	4.8576e+09	7	693944777	Prob > F	=	0.0000
Residual	1.1677e+10	213	54819961.2	R-squared	=	0.2938
				Adj R-squared	=	0.2706
Total	1.6534e+10	220	75155750.8	Root MSE	=	7404.1

EXP	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
INC	.0152551	.0043085	3.54	0.000	.0067624	.0237479
type2	-9961.87	1607.815	-6.20	0.000	-13131.14	-6792.604
lev3	7553.4	1721.318	4.39	0.000	4160.401	10946.4
lev2	3733.137	1069.973	3.49	0.001	1624.045	5842.228
motheremp3	-2458.663	1224.115	-2.01	0.046	-4871.594	-45.73167
gen2	595.7952	1038.123	0.57	0.567	-1450.516	2642.106
F_EDU	41.27081	75.06205	0.55	0.583	-106.6888	189.2304
_cons	13127.46	2072.698	6.33	0.000	9041.829	17213.08

C₁, the partial regression coefficient for income is positive with a value of 0.015 which means that mean per child education expenditure goes up by 0.015 per unit increase in income. That is, if the income of the household increases by 1000 rupees then the mean education expenditure per child will go up 15 rupees. The difference between the coefficients given in regression 1 and here (regression 2) is mainly due to the fact that regression 1 takes household expenditure on education whereas regression 2 deals with education expenditure per child. The discrepancy may also arise because the income coefficient might capture the effects of variables influencing household expenditure on education other than income and number of school-going children. The coefficient is significant even at 1 percent level of significance.

C₂, the coefficient for school type is negative which means that education expenditure per child decreases for government schools. This, too, follows intuitively since private schools involve huge expenditures. The coefficient is highly significant at 1 percent level of significance.

The regression coefficients for lev2 (secondary school) and lev3 (senior secondary school) are positive and the respective values increase as the level of schooling increases, implying that per child expenditure on education increases as the schooling level increases, which is logically coherent. Both coefficients are statistically significant at 1 percent level of significance.

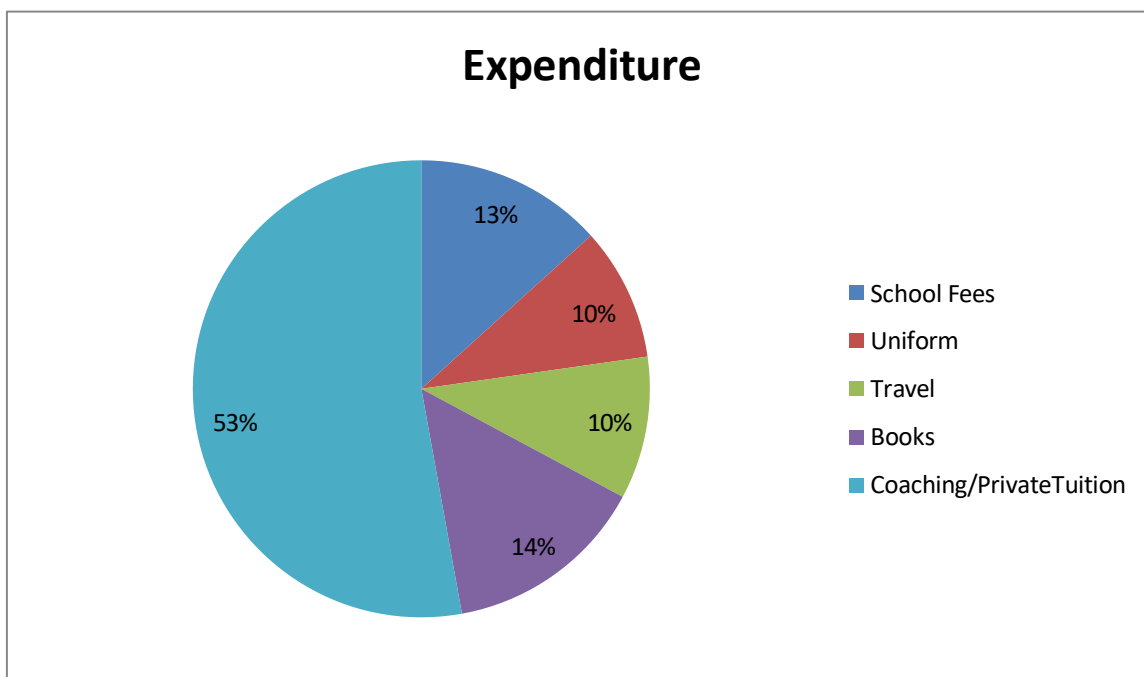
C₅, the coefficient for female guardian's employment status, is negative. This implies that if the female guardian is employed then the per child expenditure on education increases. This may be indicative of both increased enrollment as well as increased participation of the children in their education. This variable was included to study whether employment of the female guardian leads to more emphasis on education in household decisions and the coefficient is significant with at 5 percent level of significance.

C₆, the coefficient for gender of the child, is positive which means that there is a bias towards boys, i.e. higher expenditure on education for a male child. However, it is seen that the coefficient is statistically insignificant indicating that such a bias may not exist. Therefore, this sample challenges a deeply rooted view that claims the existence of such a bias. We see that households in our data do not discriminate significantly between the expenditure incurred on the education of girls and boys.

R², which gives the explanatory power of our model, is 0.2938. This means that 29.38% of the variation in per child expenditure is explained by our model. The high F value and its corresponding low p value prove that the explanatory power of our model is indeed significant.

Other Observations: While a quantitative analysis of the data is necessary, studies on socio-economic factors are inconclusive without considering some interesting qualitative data which may not have been represented well in numbers. There are several such observations from the field as well as inferences from the data. First, consider the heads under which expenditure on education is divided. Of the components of expenditure on education, the expenditure on private tuition/coaching forms the major portion, forming 53% of the total expenditure. This is consistent with the field experience, where it was observed that parents were eager to send their children to private tuition centers located in the slums, often run by girls and boys who had completed their senior secondary education. It is worth noting that Tilak (2007) found that the proportion of expenditure on private tuitions by rural households was 7% in all schools. However, we believe that this difference is representative of the variation in the system and framework of provision of education in rural and urban areas. Specifically, in urban areas, there exists a divide between teachers and community members that may not exist in close-knit village communities. This can make parents unsure about their children's performance in school, prompting them to send children to private tuitions. A strong peer effect is also expected, if some parents send their children to such tuitions, more parents are induced to do so. Finally, there is a significant supply of such services in JJ clusters as it provides educated young girls and boys an ideal profession. The success of such private

tuitions remains to be examined. We also observed the provision of free tuition by the government in one of the communities (Peera Garhi). We speculate that given that about half the expenditure on education is spent on private tuitions, such initiatives have the potential to significantly lower the household expenditure on education. On the following page, we have presented a pie chart depicting the distribution of expenditure under different heads.



Second, it is worthwhile to note that a lot of households, covered in our study, received grants from the government. These grants, meant to cover the expenditure of stationery and uniform, were only available to children going to government schools. However, the grant provided to cover the books and uniform expenses are inadequate in most, and inaccessible or unavailable to some in the urban poor. There was no uniform way of distributing grants across the communities. Some schools deposited the grant directly into the bank accounts of the children, which can be withdrawn only after the child becomes 21 years or older. This made the grant inaccessible to parents when required and they had to shell out a portion of their current income in order to purchase the required material. In some communities, the grant was awarded before the expenditure was made, while in others it was provided after. Some schools handed over the grant money only to parents, others gave them to students directly and still others did not transfer it to households at all. Such variations across schools raise serious concern about the efficiency of government policies to encourage education.

Third, enrollment across school types can be seen by the following table:

School Type	Frequency	Percentage
Government	199	88.44
Private	26	11.56

We see that households have to spend a considerable amount on education, with those enrolled in government school spending as much as an average of Rs. 6100 per year. Out of this, an average of Rs. 600 is spent on school fees. Households sending their children to government schools spend an average of Rs. 3360 on private tuitions. On the other hand, those enrolled in private schools spend an average of Rs. 15775 annually as expenditure on education. Such households spend an average of Rs. 8215 on private tuitions. It might be argued that according to the general perception that quality of education is better in private schools; the expenditure on private tuitions by this group should be lesser. However, there is little evidence of the quality of education being significantly better in low-income private schools as compared to government schools. Parents able to afford private schools generally have higher income and thus, are also able to afford higher private tuition fees. It is worth noting that the main reason given for not sending their children to private tuitions was financial constraint. Thus, enrollment in schools is relatively inelastic with respect to income, while availing private tuition services is more elastic.

Another interesting observation is regarding the scheme started by Delhi Government under which all private schools are obligated to reserve 25% of their seats for children from economically weaker section. These seats would be 'free' i.e. no school fee can be charged on such seats. In our field survey, we encountered 5 children enrolled in private schools under EWS scheme. Such students had to bear heavy financial burden. Though they were exempted from paying school fee, they had to spend a lot on books, stationary and uniform which, according to school rules, could only be bought from shops within the school premises. Such expenditure threatens the perceived gains of this scheme. We suggest that this problem be looked into and policies strengthened so as to benefit the poor.

Fourth, in our study, we encountered very few dropouts. This can be seen in the following table:

Enrollment	Frequency	Percentage
No	18	7.4

Yes	225	92.6
Total	243	100

We encountered only one case where the dropouts were necessitated by financial constraints. In all other cases the children dropped out after 9th grade or above i.e. having completed elementary education as guaranteed by RTE. The primary reason stated for dropping out was that the child was uninterested in studies. While much can be said about the quality of education which fails to cater to the needs of the students, it is clear that the reason for discontinued education is in most cases not the costs of education as borne by the households.

Policy Implications

Huge amounts of funds are allocated to the provision of free textbooks and uniforms for children studying in Government Schools; yet, their utilization leaves a lot to be desired. The plight of Government Schools is well known. During our field work we observed the presence of huge disparities in the manner in which grants for uniforms were made available to the households. Many parents were unaware of the presence of a grant, while some complained about it being a ‘token move’ of the government which didn’t actually help them since they were unable to access it. However, a common complaint across both cases was the insufficient amount of money given as grants. Most households end up shelling out money over and above the grant sum to cover the expenses incurred. There is a need for **transparent guidelines with regard to the distribution of grants**. This information should be readily made available to the households that send their children to government schools, as they are the intended beneficiaries of this scheme.

Section 12 of the Right to Education Act states that “Private unaided institutions and special category schools shall provide free and compulsory education to at least 25% children belonging to disadvantaged groups and weaker sections admitted to class I or pre-primary classes”, this is popularly referred to as the EWS Scheme. These students are randomly selected from a lot of applications. During our field visits, we encountered several households which had one (or more) child enrolled in a private school via the EWS scheme. These households are exempted from paying the school fee; however they receive no grants for the other expenditures incurred. It comes as no surprise that the required expenditures on uniforms, stationery and co-curricular activities are humongous in Private schools and this imposes a burden on poor households. Parents complained of the numerous projects and frequent

changes in uniform designs, amongst other things. A PIL was filed recently, seeking the grant of free books and uniforms to students admitted to Private unaided schools under this scheme. The creation of a grant of this sort will be very beneficial given that it is implemented properly, it will help placate the high cost of private education and will bridge the 'class divide' between the EWS and general students.

Conclusion

The findings of this paper question some of our deeply rooted beliefs. It is seen that the provision of free education in government schools is merely a myth. The existence of 'free' education is not noticed in our sample as household expenditures on education are sizeable. While grants were introduced to cover these expenditures, in most cases these were not in tune with the level of high prices seen in a metropolitan city like New Delhi. It should also be noted that households aren't hesitant in spending on the education of children and try to spend as much as their income permits. This can be seen from the average expenditure on education incurred by households in our data, which stands at Rs.16275 per annum. This is a positive sign as it implies that poor households are increasingly attaching more value to the importance of education.

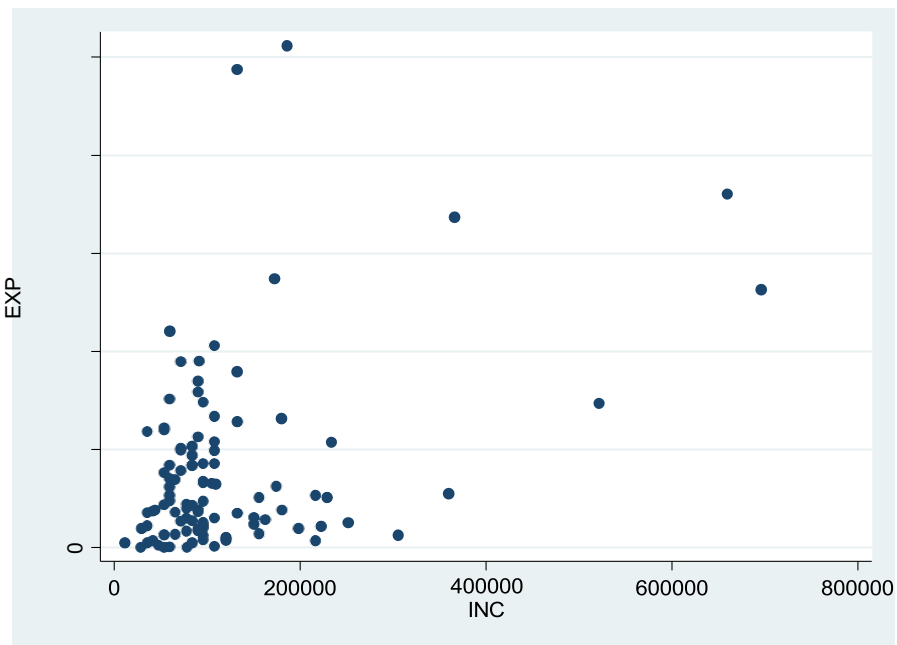
Through the first regression, we see how income is a significant factor in determining the affordability and quality of education. We encountered many households which would prefer to send their children for tuitions or to private schools but were not able to do so due to financial constraints. The skyrocketing cost of attending private schools has kept them out of reach of the urban poor, and we see that close to 88% of our sample of 225 enrolled students, were being educated in government schools. We find amongst our target group the will to educate their children, but unfortunately there is no way and burdened by the myriad of constraints that they face they are forced to settle for the cheapest option.

The second regression lends valuable insight into the importance of various factors in determining how much is spent on the education of a child. We see that as the level of education increases, the expenditure rises. The type of school is an important determinant of per child expenditure on education. As noted above, this amount is significantly higher for private schools than government schools. This study debunks the existence of a bias towards boys when it comes to expenditure on education, as we see through the second regression that such a bias is highly insignificant. Families want their daughters to be educated as much as their sons and the severity of discrimination is now falling. Such findings have been corroborated by similar studies carried across rural India (Tilak 2002).

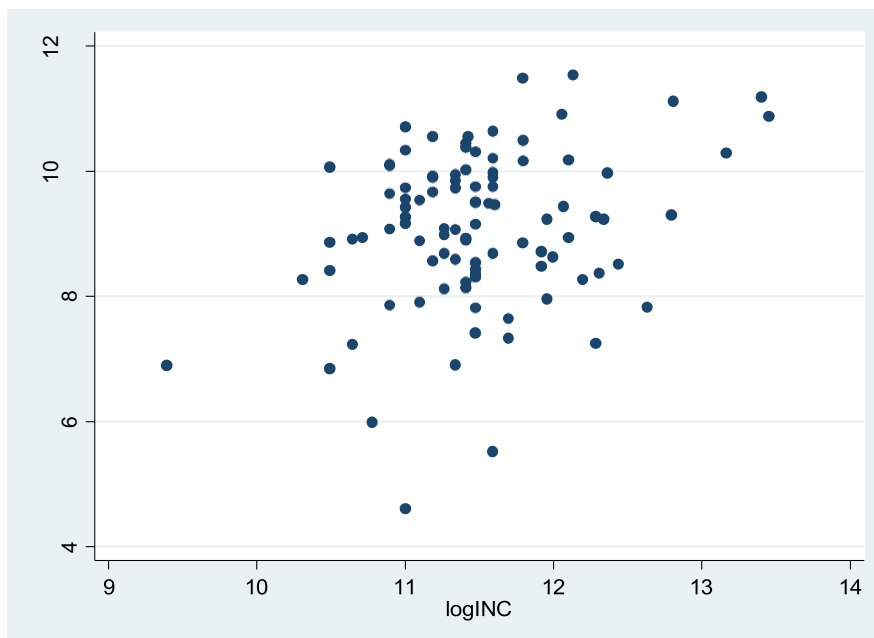
Lastly, it is not claimed that the models attempted here are complete. There is scope for improvement with the inclusion of several other household and contextual variables.

Appendix: Summary of regression variables and descriptive statistics

- Scatter Plot of Income and Household Expenditure on Education



- Scatter Plot of log of Income and Household Expenditure on Education



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