Subjective Household Income Risks and Schooling Investment in Rural India

Dr. Alok Kumar*

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Abstract

This paper analyzes effects of household income risk on schooling investment using a unique primary survey data eliciting schooling indicators and subjective income distribution from households in twelve villages in Bihar, India. It finds that household income risk has a significant negative effect on schooling expenditure and time-spent by children on tuition and homework, particularly of female children. It has significantly larger negative effect on schooling expenditure of low income households and time-spent by their children on tuition and homework relative to higher income households. These findings suggest that income risk faced by poorer households is an important reason for the persistence of low educational achievement and outcomes in India, particularly for female children. Government policies which reduce income risks such as provision of health insurance, unemployment insurance, old age pension scheme and easier availability of consumer credit targeted towards poor households, are likely to have significant positive effect on schooling. Microfinance institutions and NGOs can play an important role in the provision of insurance and labor market information. Public investment in irrigation and better weather information can reduce income risk and encourage schooling investment.

Keywords: subjective income distribution, household income risk, schooling expenditure, time-spent on schooling

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Address: *Department of Economics, University of Victoria, Victoria, British Columbia, Canada, V8W2Y2, E-Mail: kumara@uvic.ca

Section 1: Introduction

Incomes and earnings are more volatile in developing countries than in developed countries. At the same time credit and insurance markets are inadequately developed in developing countries. Most households in developing countries live in an environment with limited access to formal credit and insurance markets, reducing their opportunities to diversify income risks (Dercon 2005). There is a substantial theoretical and empirical literature which shows that income risks have a significant negative effect on the productive investment of poor households and their welfare in developing countries.

Empirical evidence shows that the returns from schooling in developing countries are relatively high (Peet et. al. 2015). However, schooling attainment and investment are low. One important issue is whether household income risks induce poor households to underinvest in schooling of their children. In developing countries, income risks can be a major factor affecting household schooling decisions for an additional reason. Due to inadequate development and coverage of public pension schemes, many old parents rely on income support from adult children. Old-age income support provided by children is one of the most important motives for investment made by parents in schooling of their children (Lillard and Willis 1997). In India, it is a social norm that parents rely on male children for income-support rather than on female children. Given the social norm, parents may perceive schooling investment in their female children as an inferior risk-sharing instrument than schooling investment in their male children.

There is a vast empirical literature which has examined causes and determinants of low educational attainment and investment in developing countries (see Orazem and King 2007 for a review). However, relatively little is known about the effects of income risks on schooling. This paper is an attempt to fill this gap in the literature. Its main contribution is to examine the effects of income risks on schooling investment in rural Bihar, India using a unique primary household survey.

Bihar is one of the poorest states in India with its per-capita income being just 40% of the all-India average (GOB 2017). Schooling in Bihar faces several challenges. In 2015-16 the age-specific enrollment rate for 14-15 years old and 16-17 years old in Bihar were 69.35% and 32.57% respectively as against the all-India average of 77.83% and 47.97% (NUEPA 2017). The other significant issue is low and stagnant learning outcomes. A recent report (ASER 2016) finds that

only 41.8% of children in grade 5 can read grade 2 level text in 2016, and this percentage shows declining trend over time. Similar is the case with respect to learning outcomes for mathematics.

Schooling and learning outcomes critically depend on household investment: both in terms schooling expenditure and time-spent by children studying in school and outside. This paper addresses following questions: Can household income risk reduce schooling investment? Does income risk have a differential effect on schooling investment of male and female children? Is the response of poor households to income risks different from richer households? It separately examines the effects of income risk on three indicators of schooling investment: household schooling expenditure, time-spent by children in school and time-spent by children studying outside school hours (doing school homework and tuition etc.).

Income risks are not directly observed. One major issue is to derive a measure income risk. In the paper, variance of future income is used as an indicator of income risk similar to other studies (Dercon 2005 and Hartog and Diaz-Serrano 2013). There are two approaches to derive income expectation and variance. One can use retrospective data on realized incomes to derive them. The alternative is to use subjective expectation data which directly elicits probabilistic expectations about future income from households. This paper follows this alternative approach. The reason is that deriving income expectation and variance from realized income data requires strong assumptions such as rational expectation and complete knowledge of the information set of households, which are not realistic particularly in the context of developing countries (Dominitz 2001 and Delvande 2014). This is one of the first papers to use subjective income distribution data to analyze the effects income risks on schooling in a developing country.

The data comes from a household survey undertaken from January to March 2017 in twelve villages in Bihar. The sample consisted of 659 households with 1365 children in the age group of 5-17 years. The survey collected detailed information on schooling indicators including school enrollment, annual household expenditure on schooling for each child, and time-spent by a child in school and time-spent by a child studying (doing tuition and school homework etc.) outside school hours in a week. It also contained a module designed to elicit information on the cumulative probability distribution of next year income of household. Using this information, household-specific variance of next year income is derived.

This paper finds that household income risk has a significant negative effect on schooling expenditure and time-spent by children studying outside school hours, particularly for female children. It has a significantly larger negative effect on schooling expenditure of low income households and time-spent by their children studying outside school hours relative to higher income households. However, income risk has an insignificant effect on time-spent by a child in school. These finding suggest that income risk faced by poorer households is an important reason for the persistence of low schooling achievement and outcomes in rural Bihar, particularly for female children.

This paper relates to a small but growing empirical literature which has examined the effects of household income risks on schooling in developing countries (Kazianga 2012 and Foster and Gehrke 2017). Kazianga (2012) studies effects of income risk on schooling outcomes in rural Burkina Faso. He finds that household income risk has a significant negative effect on school enrollment, education expenditure and years of education completed particularly of female children.

Foster and Gehrke (2017) examine the effects of household consumption risk on school enrollment and time spent by female children in school in rural India using a cross-section data for 2005-06. They find that consumption risk has a significant negative on school enrollment, but not on the time-spent in school. Both studies use realized income data to derive measure of income risk. As such, this paper complements these studies.

The rest of the paper is structured as follows. Section 2 provides details of survey. Section 3 discusses the pattern and characteristics of schooling expenditure and time use by children. Section 4 discusses calculation of income expectation and income risks. Section 5 analyzes effects of income risks on schooling expenditure and time-spent in school and outside studying. This is followed by conclusion.

Section 2: Survey

The primary household survey funded by the International Growth Centre, United Kingdom, was undertaken from January to March 2017 in twelve villages in six districts (two villages in each district) of Bihar. These districts are located in three distinct regions of Bihar: North Bihar (three districts), Central Bihar (one district), and South Bihar (two districts). The sample consisted of 659

households with 1365 children in the age group of 5-17 years. The survey was administered to households having children in the age group of 5-17 years.

The survey consisted of a questionnaire for each 5 to 17-year-old child in the household and a family questionnaire. The questionnaire for children was designed to elicit information on schooling indicators such as enrollment, household schooling expenditure and its component, time-spent by children studying in school and outside. Detailed discussion of the survey, its methodology, and sample is given in the companion paper titled "Subjective Income Expectations and Risks in Rural India'' (Kumar 2018 *forthcoming JDA*).

The survey provides information on annual schooling expenditure by household for each child in Indian Rupees (INR) on five components (i) books, uniforms and other material, (ii) school fees, (iii) expenditure on private tuition, (iv) transportation, and (v) miscellaneous items. I combine expenditure on all these components to derive annual household schooling expenditure.

The survey asked two questions regarding time-spent by children studying. How much time does the child normally spend in school in a week (in hours)? How much time does the child normally spend studying, doing homework, or tuition outside school hours in a week (in hours)? I use information from these two questions to examine the effect of income risk on time-spent in school and time-spent studying outside schooling hours.

The family questionnaire collected detailed information on parental and household characteristics such as income, education level, family size, and their main sources of income. The questionnaire contained a module designed to elicit information on household's distribution of next year income **(Income Expectation Module).** In each household, an adult member (at least 18 years) was asked its subjective expectation about next year's household income.

The module was designed to elicit the (conditional) cumulative distribution function of the future household income. The questionnaire was similar to ones used in previous studies (e.g. Dominitz 2001, Attanasio and Augsburg 2016). The module began with two preliminary questions to assess whether respondents understood the concept of probability and their responses to high and low probability events. After that respondents were asked about the previous year household income (year 2016) and the maximum and minimum income for the next year (year 2017). After establishing the range of next period income, respondents were asked what was the percentage

chance that the next year income would be higher than the previous year household income and the mid-point of the maximum and minimum of next year income (calculated by the interviewer and read to the respondent).

Section 3: Schooling

Data shows that the overwhelming majority of children in the 5-17 years age-group (89.7%) were enrolled in school, with the percentage of female children enrolled being marginally higher (90.89%) than of male children (88.27%). The average starting age of schooling for both male and female children was 6 years. Majority of children were enrolled in government schools (87.05%) with significantly greater percentage of female children (91.7%) being enrolled in the government schools than male children (82.5%). Only 11.2% of children were enrolled in private schools. The percentage of male children enrolled in private schools (15.78%) was more than double of female children (6.25%).

Table 1 shows school enrollment by age and gender. It shows that school enrollment of female children was marginally higher than of male children. More than 90% of children were enrolled in school in the age-group 5-14 years. However, school enrollment declines significantly for both male (77.69%) and female children (79.31%) in the age-group 15-17 years. Table 2 displays the distribution of children over grade they were currently attending.

Time Spent on Education

Table 3 shows the distribution of average time-spent by children in school. It shows that majority of children spent between 21-30 hours in school. Little over quarter of children spent more than 30 hours in school in a week. The pattern for both male and female children are similar. The average time-spent in school in a week by children was 26.67 hours. Male children spent marginally more hours in school (26.87) than female children (26.40).

Table 4 shows average time-spent by children in studying, doing homework or tuition outside schooling hours. Around 37% of children spent less than 10 hours studying outside schooling hours in a week. Plurality of children spent between 11-20 hours studying outside schooling hours in a week. The average time-spent studying outside schooling hours in a week by children was 13.21 hours. Male children spent more hours studying outside schooling hours (14.09) than female

children (12.31). In addition, around 42% of female children spent 10 hours or less studying outside schooling hours. The corresponding figure for male children was 32%.

Household Schooling Expenditure

Table 5 shows average annual schooling expenditure and its main components. The average annual schooling expenditure was INR 5834, which was about 6% of average household income. Data suggests that the expenditure on uniform and teaching material (INR 2248.37), private tuition cost (INR 1546) and fees (INR 1364.5) were the three most important components. The table shows that annual average schooling expenditure for male children was much higher (INR. 7505) than for female children (INR 4163). The average spending on books, uniform and other teaching material for male children (INR 3264) was more than two and half times than for female children (INR 1233).

Overall, evidence suggests that there is a clear gender bias against female children in schooling investment. Such gender differences are not captured by other indicators of schooling such as school enrollment.

Section 4: Income Expectation and Risks

In this section, I briefly describe the derivation of income expectation and income risks using the subjective expectation data and its pattern. The detailed results, methods, and their validity are discussed in Kumar (2018).

The survey provides information on current income (year 2016), the support of future income distribution (for year 2017), the maximum future income and minimum future income, and the probability mass to the right of mid-point of the support and current income. Out of 659 households 6 households did not provide answers to income expectation module questions (response rate 99%). Out of 653 responses 152 violated laws of probability (24%). The most common type of violation was violation of monotonicity (117).

In the calculation and analysis of expected future income and risk, the households whose respondents violated laws of probability were excluded. Thus, the overall sample consists of 501 households and 917 children. One important concern is that whether excluded households are systematically different from included households. This will lead to selection bias. Kumar (2018)

estimates an OLS model and a LOGIT model to check whether violation of laws of probability is related to household and respondent characteristics. It finds that excluded households are not systematically different from included households.

Table 6 provides summary statistics of current income, the support of future income distribution, the maximum future income and minimum future income, and the probability mass to the right of mid-point of the support and the current income of households included in the analysis. From this information to calculate household-specific expected future income and income risk, one needs to make distributional assumptions. Kumar (2018) assumes a piece-wise uniform probability distribution similar to Attanasio and Augsburg (2016).

Section 5: Income Risks and Schooling Investment

To examine effects of income risks on schooling investment, I estimate versions of following model using the Ordinary Least Square method:

$$\log(S_i) = \alpha_1 \log(\text{Mean})_i + \alpha_2 \log(\text{Var})_i + \alpha_3 \log(\text{Var})_i * \log(\text{Current Income})_i + \beta' X_i + u_i \quad (1)$$

where $\log(S_i)$ is the (natural) log of schooling investment of ith household. As discussed earlier, I use three indicators of schooling investment: schooling expenditure, time-spent in school in a week, and time-spent studying outside schooling hours in a week. Since the estimate of log (Var) is available for only 501 households, I only use schooling investment for children belonging to these households in the estimation. The overall sample consists of 917 children.

X_i is the matrix of other explanatory variables including constant, β' is the associated vector of coefficients and $u_i \sim N(0, \sigma^2)$ is the normally distributed error term. The main objects of interest are co-efficients associated with $\log(\text{Var})_i$, α_2, and the interaction term, $\log(\text{Var})_i * \log(\text{Current Income})_i$, α_3. α_3 captures the differential effect of income risk across household current income level. Since, I use logarithmic function, these coefficients provide an estimate of the elasticity of schooling investment with respect to income risk.

First, models for all children are estimated. Then to capture gender differential effects of income risk, I estimate these models separately for male and female children. In all models, standard errors are clustered at household level to account for correlations in error term within households. All

regressions include village fixed-effects to control for the effects of unmeasured village characteristics such as village level wages, job opportunities, and infrastructure which may affect both income distribution and schooling investment. Regressions also include month fixed-effects to control for effect of seasonality.

Explanatory variables include demographic characteristics of child: gender (1 if male, 0 otherwise), age (in years), whether child is first-born (1 if yes, 0 otherwise), whether he/she is a direct relative of household head (1 if yes, 0 otherwise), parental characteristics: education levels of mother and father (1 if have primary education or more, 0 otherwise) and the labor status of mother (1 if domestic or unpaid family worker, 0 otherwise), demographic characteristics of households: size of household, number of children 5 years and below, number of school going age children in the household other than the child, number of adults 61 years and above, whether household has migrant members (1 if yes, 0 otherwise), gender of household head (1 if male, 0 otherwise) and caste/religion of household. A child is taken to be the direct relative if he/she is son or daughter, niece or nephew, grand-son or grand-daughter, spouse, or brother or sister of the household head. I use indicator variables to capture caste and social hierarchies (1 if yes, 0 otherwise): upper caste households, intermediate caste households, backward caste households, and Muslim households. Schedule caste and tribe households are taken as the base group.

The survey provides information on the primary source of income of households. I use indicator variables to capture the primary source of household income (1 if yes, 0 otherwise): whether primary source of household income is self-employment in agriculture, self-employment in non-agricultural sector, casual employment in non-agriculture sector, regular/salaried employment, and non-employment income such as pension, interest, rent, and remittances. Households whose primary source of income is casual employment in agriculture are taken as the base group.

Other indicators of economic conditions included are whether household is landless (1 if yes, 0 otherwise) and whether household has bank account (1 if yes, 0 otherwise). The survey also provides information about the perception of households on whether their economic conditions have significantly deteriorated in the last five years. This variable allows us to capture past negative economic shocks which can potentially affect both schooling investment and income risks, particularly if current income risk is correlated with past shocks. Households which did not

experience significant deterioration in their economic conditions in the last five years are taken as the base group. The summary statistics of explanatory variables are given in Table 7.

Table 8 displays regression results for all children. It shows that income risk has a significant negative effect on schooling expenditure and time-spent studying outside schooling hours. It also shows that the interaction term between current household income and income risk is significantly positive for schooling expenditure and time-spent studying outside schooling hours. However, the effect of income risk on time-spent in school is insignificant.

One potential reason for the insignificant effect of income risk on time-spent in school can be that since August, 2009 following the implementation of **Right to Education Act,** schooling is free and **compulsory** in India for children between 6 and 14 years. Thus, parents and children may have more freedom in adjusting their schooling expenditure and time-spent studying outside schooling hours rather than time-spent in school. Overall these results suggest that income risks negatively affect schooling expenditure and time-spent studying outside schooling hours of children particularly from lower income households.

Regression results also show that first-born male and children having father with primary education and more have significantly higher schooling expenditure and time-spent studying outside schooling hours. Households whose primary source of income is regular/salaried employment have significantly higher schooling expenditure and their children spend more time studying outside schooling hours. Caste continues to be an important factor in determining schooling investment. Children belonging to upper, intermediate, and other backward castes have significantly higher schooling investment (all three indicators) than children belonging to schedule castes and tribes.

Tables 9 and 10 show regression results for female and male children respectively. Results show that household income risk has a significant negative effect on the schooling expenditure and time-spent studying outside schooling hours for female children. It has an insignificant effect on time-spent in school. In addition, the negative effects of income risk on schooling expenditure and time-spent studying outside schooling hours are significantly larger for female children belonging

to poorer households. Results show that household income risk has an insignificant effect on all indicators of schooling investment for male children. Overall, these results suggest that income risk negatively impacts schooling investment of female children, particularly of poorer households.

Previously, effects of income risks on schooling investment were examined. However, income risks can potentially affect school participation. To examine this issue, LOGIT models have also been estimated. Results (not reported due to space constraint) show that income risk has a significant negative effect on school enrollment of female children and it affects low-income households significantly more than high income households. These results are consistent with previous results.

Section 6: Conclusion

This paper analyzed effects of income risk on schooling in rural Bihar. It finds that household income risk has a significant negative effect on schooling investment of female children. It has significantly larger negative effect on schooling investment of low income households. These findings suggest that income risk faced by poorer households is an important reason for the persistence of low educational achievement and gender inequities in Bihar. Government policies which reduce income risks such as provision of health insurance, unemployment insurance, old age pension scheme and easier availability of consumer credit targeted towards poor households, are likely to have significant positive effect on schooling, particularly of female children. Microfinance institutions and NGOs can play an important role in the provision of insurance and labor market information. Public investment in irrigation and better weather information can reduce income risk and encourage schooling investment. Minimum wage can reduce wage inequality (Kumar 2008), and have a positive effect on schooling.

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Table 1: Enrollment by age group

Age (Years)	Male	Female	Total
5-9	89.66	94.23	92.01
10-14	91.73	94.11	93.01
15-17	77.69	79.31	79.31

Number of Children: 1365

Table 2: Distribution of Children over Grade Attending (in percentage)

Grade	Male	Female	Total
No Grade / LKG/UKG/Nursery	3.33	1.25	2.39
Grade 1	8.94	9.54	9.18
Grade 2	12.56	11.89	12.27
Grade 3	10.52	13.77	12.04
Grade 4	10.98	10.32	10.50
Grade 5	10.04	9.38	9.65
Grade 6	8.47	6.89	7.64
Grade 7	7.37	8.92	8.10
Grade 8	8.16	8.61	8.41
Grade 9	7.54	9.07	8.26
Grade 10 and above	12.09	10.32	11.50

Number of Children: 1365

Table 3: Average Time Spent in School in a Week (in percentage)

Hours	Male	Female	Total
<10 hours	4.06	5.47	4.93
11-20	10.95	11.89	11.25
21-30	58.68	55.55	57.05
31-40	25.97	26.44	26.29
>40	0.31	0.62	0.46
Average Hours Spent (in hours)	26.87	26.40	26.67

Number of Children:1365

Table 4: Average Time Spent Studying outside Schooling Hours in a Week (in percentage)

Hours	Male	Female	Total
<10 hours	31.87	41.78	36.82
11-20	47.03	42.41	44.68
21-30	18.13	13.62	15.94
31-40	1.87	1.56	1.69
>40	1.09	0.62	0.84
Average Hours Spent (in hours)	14.09	12.31	13.21

Number of Children: 1365

Table 5: Annual Average Expenditure on Education (in INR)

	Male	Female	Total
Spent on books, uniforms and other material	3263.74	1233	2248.37
Private Tuition	1720	1372	1546
Fees	1787	942	1364.5
Transport	337	268	302.5
Miscellaneous	394	344	369
Total average expenditure	7505	4163	5884

Number of Children: 1365

Table 6

Summary Statistics of Responses (Income Expectation Module)

Variable	Mean	S.D.	Minimum	Maximum
Current Income (in Rs.)	93399.2	82897.4	6000	900000
Mid-Point of Future Income (in Rs.)	90620.2	83578.5	5500	900000
Maximum Future Income (in Rs.)	113098.6	95908.12	8000	990000
Minimum Future Income (in Rs.)	68141.7	73550.6	0	850000
Probability Mass to the Right of Current Income (in %)	13.41	13.71	0	100
Probability Mass to the Right of Mid-Point of Future Income (in %)	15.18	14.08	0	100

Number of observations 501.

Table 7
Summary Statistics of Dependent and Explanatory Variables

	Mean	Std. Dev.	Min	Max
Log School Expenditure (INR)	7.84	1.22	2.40	12.11
Log Time-Spent in School (Hours)	3.28	0.28	1.10	3.74
Log Time-Spent in Tuition (Hours)	2.52	0.53	0.00	3.91
School Enrollment (10 Years and Above)	0.89	0.31	0.00	1.00
Participation in Home Production (10 Years and Above)	0.59	0.49	0.00	1.00
Participation in Market work (10 Years and Above)	0.25	0.43	0.00	1.00
Log Current Income (INR)	11.31	0.60	8.29	13.71
Log Expected Future Income (INR)	11.15	0.58	8.56	13.66
Log Variance of Future Income (INR)	17.67	1.43	13.44	24.66
Children Characteristics				
Gender of Child	0.50	0.50	0.00	1.00
First Born	0.47	0.50	0.00	1.00
Log Age of Child (Years)	2.34	0.31	1.61	2.83
Direct Relative of Head	0.98	0.14	0.00	1.00
Father's Education (Primary and Higher)	0.64	0.48	0.00	1.00
Mother's Education (Primary and Higher)	0.34	0.47	0.00	1.00
Mother: Domestic or Unpaid worker	0.80	0.40	0.00	1.00
Primary Source of Income				
Self-Employment- Agriculture	0.21	0.41	0.00	1.00
Self-Employment- Non-Agriculture	0.13	0.33	0.00	1.00
Casual Worker- Non-Agriculture	0.28	0.45	0.00	1.00
Regular/Salaried Employment	0.13	0.34	0.00	1.00
Non-Employment	0.10	0.31	0.00	1.00
Other Household Characteristics				
Upper Caste	0.25	0.43	0.00	1.00
Intermediate Caste	0.16	0.37	0.00	1.00
Other Backward Caste	0.25	0.43	0.00	1.00
Muslim	0.10	0.30	0.00	1.00
Landless	0.55	0.50	0.00	1.00
Bank- Account	0.86	0.35	0.00	1.00
Deterioration in Economic Condition	0.09	0.28	0.00	1.00
Size of Household	7.50	3.49	2.00	29.00
Migrant Worker	0.56	0.50	0.00	1.00
No. of Child Below 5 Years	0.77	1.07	0.00	5.00
No. of Other School Going Age Children	0.83	0.96	0.00	5.00
No. of Old Above 60 Years	0.38	0.66	0.00	3.00
Gender of Household Head	0.91	0.28	0.00	1.00

Number of Households 501. Number of Children 917.

Table 8
Income Risks and Schooling Investment: All Children

	Schooling Expenditure	Time-Spent in School	Time-Spent Studying Outside Schooling Hours
(log) Expected Income	-0.0640	0.0264	-0.0640
	(0.235)	(0.0680)	(0.110)
(log) Variance	-0.381**	0.0679	-0.153**
	(0.158)	(0.0413)	(0.0728)
(log) Current Income* (log) Variance	0.0347**	-0.00352	0.0130**
	(0.0137)	(0.00367)	(0.00610)
Male	0.347*	0.0208	0.102*
	(0.0623)	(0.0181)	(0.0333)
(log) Child Age	1.061*	0.00920	0.360*
	(0.135)	(0.0397)	(0.0656)
First Born	0.196**	-0.00358	0.111*
	(0.0764)	(0.0203)	(0.0387)
Direct Relative of Head	-0.248	0.133	-0.0159
	(0.235)	(0.150)	(0.126)
Father's Education (Primary or More)	0.244*	0.0443**	0.0954**
	(0.0787)	(0.0215)	(0.0403)
Mother's Education (Primary or More)	0.0551	-0.0598**	-0.0170
	(0.0860)	(0.0281)	(0.0414)
Mother's Labor Status (Domestic or Unpaid Worker)	0.213**	0.00564	-0.00423
	(0.0838)	(0.0235)	(0.0458)
Self-Employment Agriculture	0.247***	0.0280	0.0650
	(0.136)	(0.0392)	(0.0698)
Self-Employment Non-Agriculture	0.172	0.0247	0.0839
	(0.133)	(0.0382)	(0.0730)
Casual Worker: Non-Agriculture	-0.116	-0.0583	-0.0231
	(0.117)	(0.0386)	(0.0668)
Regular/Salaried Employment	0.285**	-0.0285	0.142**
	(0.142)	(0.0456)	(0.0720)
Non-Employment Income	0.00248	-0.00225	-0.00774
	(0.164)	(0.0458)	(0.0803)
Landless Household	-0.136	0.0263	0.0167

	(0.0884)	(0.0207)	(0.0397)
Bank Account	0.0445	-0.0203	0.0961
	(0.105)	(0.0354)	(0.0620)
Experienced Deterioration in Economic Condition	0.0839	-0.0176	0.0914
	(0.122)	(0.0374)	(0.0591)
Upper Caste	0.528*	0.0669***	0.232*
	(0.130)	(0.0364)	(0.0742)
Intermediate Caste	0.351*	0.138*	0.292*
	(0.132)	(0.0354)	(0.0681)
Other Backward Caste	0.499*	0.0619**	0.184*
	(0.103)	(0.0298)	(0.0618)
Muslim	0.0785	-0.0184	0.0675
	(0.147)	(0.0465)	(0.0719)
Size of Household	0.00314	-0.00918	-0.0214**
	(0.0195)	(0.00619)	(0.0102)
Household with Migrant Worker	0.197**	-0.0160	0.0172
	(0.0784)	(0.0215)	(0.0401)
Number of Child Below 5 Years	-0.0981**	0.0259**	-0.0172
	(0.0485)	(0.0132)	(0.0261)
Number of Other Children in School Going Age	-0.0811***	0.00879	0.0146
	(0.0468)	(0.0150)	(0.0238)
Number of Members More than 60 Years	-0.0721	0.00398	-0.00882
	(0.0606)	(0.0142)	(0.0303)
Gender of Head	-0.144	-0.0227	-0.0670
	(0.116)	(0.0348)	(0.0532)
Constant	4.301***	1.904*	2.003
	(2.568)	(0.729)	(1.288)
R^2	0.459	0.117	0.266
Observations	910	900	875

Standard errors in parentheses*** $p < 0.1$, ** $p < 0.05$, * $p < 0.01$.

Table 9
Income Risks and Schooling Investment: Female Children

	Schooling Expenditure	Time-Spent in School	Time-Spent Studying Outside Schooling Hours
(log) Expected Income	-0.310	0.0225	-0.271
	(0.420)	(0.104)	(0.183)
(log) Variance	-0.451***	0.0814	-0.280**
	(0.293)	(0.0579)	(0.123)
(log) Current Income* (log) Variance	0.0423***	-0.00454	0.0246**
	(0.0263)	(0.00554)	(0.0105)
(log) Child Age	1.260*	0.0781	0.357*
	(0.182)	(0.0609)	(0.103)
First Born	-0.00291	-0.0211	0.0501
	(0.0938)	(0.0319)	(0.0536)
Direct Relative of Head	-0.508*	0.0792	0.00776
	(0.165)	(0.163)	(0.153)
Father's Education (Primary or More)	0.239**	0.0556***	0.0334
	(0.114)	(0.0310)	(0.0590)
Mother's Education (Primary or More)	-0.201***	-0.0989**	-0.0752
	(0.113)	(0.0442)	(0.0657)
Mother's Labor Status (Domestic or Unpaid Worker)	0.141	0.0552	0.0630
	(0.131)	(0.0413)	(0.0743)
Self-Employment Agriculture	0.238	0.0612	0.153
	(0.165)	(0.0570)	(0.111)
Self-Employment Non-Agriculture	-0.00770	0.0758	0.114
	(0.188)	(0.0544)	(0.116)
Casual Worker: Non-Agriculture	-0.0730	-0.0432	0.0392
	(0.157)	(0.0580)	(0.121)
Regular/Salaried Employment	0.216	0.0215	0.165
	(0.195)	(0.0703)	(0.131)
Non-Employment Income	-0.290	0.00865	0.0862
	(0.216)	(0.0763)	(0.126)
Landless Household	-0.0337	0.0395	0.102***
	(0.118)	(0.0317)	(0.0610)
Bank Account	0.176	-0.0667	0.183**
	(0.138)	(0.0443)	(0.0900)

Experienced Deterioration in Economic Condition	0.0763	0.0344	0.139***
	(0.149)	(0.0414)	(0.0801)
Upper Caste	0.732*	0.0985***	0.403*
	(0.172)	(0.0592)	(0.115)
Intermediate Caste	0.529*	0.200*	0.463*
	(0.179)	(0.0558)	(0.109)
Other Backward Caste	0.526*	0.0579	0.252*
	(0.136)	(0.0469)	(0.0950)
Muslim	0.0555	-0.0813	0.194***
	(0.203)	(0.0691)	(0.113)
Size of Household	0.0107	-0.0121	-0.0207
	(0.0275)	(0.00806)	(0.0155)
Household with Migrant Worker	0.224**	0.0137	0.0435
	(0.101)	(0.0293)	(0.0575)
Number of Child Below 5 Years	-0.0879	0.0291	0.00886
	(0.0635)	(0.0178)	(0.0395)
Number of Oher Children in School Going Age	-0.158*	0.00365	0.00358
	(0.0608)	(0.0202)	(0.0352)
Number of Members More than 60 Years	-0.0218	0.00855	-0.0131
	(0.0844)	(0.0203)	(0.0423)
Gender of Head	-0.0906	-0.0628	-0.0797
	(0.174)	(0.0406)	(0.0820)
Constant	6.903	1.779***	4.132***
	(4.527)	(1.062)	(2.149)
R^2	0.499	0.213	0.289
Observations	451	441	425

Standard errors in parentheses *** $p < 0.1$, ** $p < 0.05$, * $p < 0.01$.

Table 10
Income Risks and Schooling Investment: Male Children

	Schooling Expenditure	Time-Spent in School	Time-Spent Studying Outside Schooling Hours
(log) Expected Income	0.208	0.0755	0.0370
	(0.349)	(0.0948)	(0.146)
(log) Variance	-0.215	0.0758	-0.127
	(0.226)	(0.0606)	(0.101)
(log) Current Income* (log) Variance	0.0227	-0.00473	0.0100
	(0.0188)	(0.00506)	(0.00832)
(log) Child Age	0.907*	-0.0426	0.384*
	(0.194)	(0.0522)	(0.0907)
First Born	0.426*	0.00317	0.187*
	(0.122)	(0.0268)	(0.0557)
Direct Relative of Head	0.242	0.239	0.146
	(0.379)	(0.246)	(0.163)
Father's Education (Primary or More)	0.184	0.0237	0.154*
	(0.117)	(0.0316)	(0.0562)
Mother's Education (Primary or More)	0.272**	-0.00324	0.00632
	(0.134)	(0.0306)	(0.0579)
Mother's Labor Status (Domestic or Unpaid Worker)	0.211***	-0.0407	-0.0809
	(0.119)	(0.0279)	(0.0618)
Self-Employment Agriculture	0.230	-0.0190	0.0252
	(0.215)	(0.0587)	(0.0925)
Self-Employment Non-Agriculture	0.287	-0.0564	0.0927
	(0.189)	(0.0532)	(0.0975)
Casual Worker: Non-Agriculture	-0.194	-0.0796	-0.0497
	(0.173)	(0.0541)	(0.0817)
Regular/Salaried Employment	0.400***	-0.0808	0.154***
	(0.212)	(0.0603)	(0.0918)

Non-Employment Income	0.262	-0.00811	-0.0572
	(0.246)	(0.0592)	(0.107)
Landless Household	-0.217***	0.0211	-0.0416
	(0.127)	(0.0288)	(0.0541)
Bank Account	-0.0993	0.00391	0.0567
	(0.170)	(0.0612)	(0.0890)
Experienced Deterioration in Economic Condition	0.105	-0.114***	0.0358
	(0.201)	(0.0620)	(0.0917)
Upper Caste	0.344***	0.0309	0.100
	(0.200)	(0.0438)	(0.101)
Intermediate Caste	0.184	0.0753	0.132
	(0.200)	(0.0501)	(0.0910)
Other Backward Caste	0.532*	0.0788***	0.161***
	(0.168)	(0.0428)	(0.0858)
Muslim	0.0409	0.0381	-0.0635
	(0.221)	(0.0635)	(0.0987)
Size of Household	-0.00770	-0.00379	-0.0217
	(0.0303)	(0.00927)	(0.0137)
Household with Migrant Worker	0.164	-0.0691**	0.00586
	(0.130)	(0.0323)	(0.0589)
Number of Children Below 5 Years	-0.0855	0.0267	-0.0366
	(0.0745)	(0.0208)	(0.0356)
Number of Other Children in School Going Age	0.0285	0.00546	0.0251
	(0.0791)	(0.0239)	(0.0330)
Number of Members More than 60 Years	-0.106	-0.00843	-0.0136
	(0.0885)	(0.0206)	(0.0452)
Gender of Head	-0.0986	0.0452	-0.00690
	(0.169)	(0.0572)	(0.0736)
Constant	-0.131	1.739	0.422
	(3.882)	(1.079)	(1.667)
R^2	0.457	0.132	0.303
Observations	459	459	450

Standard errors in parentheses *** $p < 0.1$, ** $p < 0.05$, * $p < 0.01$.