

Investing in Boys and Girls: Schooling Decisions and Child Labor for Long-Run Microfinance Participants in India

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Research project

- Study the long-run evolution in the living standards of microfinance participants
 - **Self-Help Groups**: a large and interesting form of microfinance
 - Up to **7 years of detailed panel data** (observational)
 - Data on member, nonmember and control households
 - quantify and account for **selection and spillover effects**
 - estimate treatment effect at the level of villages (**ITT**) and participants (**ATT**)

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- This paper focuses on investments in children's education and underlying mechanisms
 - Evolution of **enrolment rates** and **child labor**
 - Supporting **mechanisms**

Indian Self-Help Groups: informal village “microbanks”

- largest model of microfinance in India with very deep outreach: about **8 million groups** and **>100 millions families** (NABARD, 2013)
- self-managed and self-owned informal institutions
- groups of **10-15 poor self-selected women** from same village
- democratic and rule-based functioning
- weekly meetings, mostly about **savings and credit** (but also...)
- **linked to commercial banks**, part of priority sectors
- loans from pool of savings, interest revenues and bank loans
 - for any purpose and without predetermined order
 - conditional on group's approval
 - usually 2% monthly interest rate
- annual dividend on savings
- promoted by an NGO (PRADAN) at an avg cost of 20\$ per member
- autonomous, **sustainable** and even profitable (CGAP 07, Baland et al. 11)

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 - In Constitution from 2002, enforced from 2010
- The educational system: (5+3)+(2+2)
 - 1 primary school (grades 1 to 5): 6 to 11 years
 - average GER: India 83.3%, Jharkhand 72.1% (DHS 2005-06)
 - 2 upper primary / middle school (grades 6 to 8): 12 to 14 years
 - low transition rate to middle school: India 65%, Jharkhand 46%
 - 3 lower secondary (grades 9 and 10): 15 to 16 years
 - 4 higher secondary (grades 11 and 12): 17 to 18 years
 - most important for **long-term poverty reduction and growth**
 - ... but only 40% nationally and **20% in rural areas**
 - ... and **persistent 10 p.p. gender gap** (World Bank, 2009)

Jharkhand has one of the lowest secondary GER

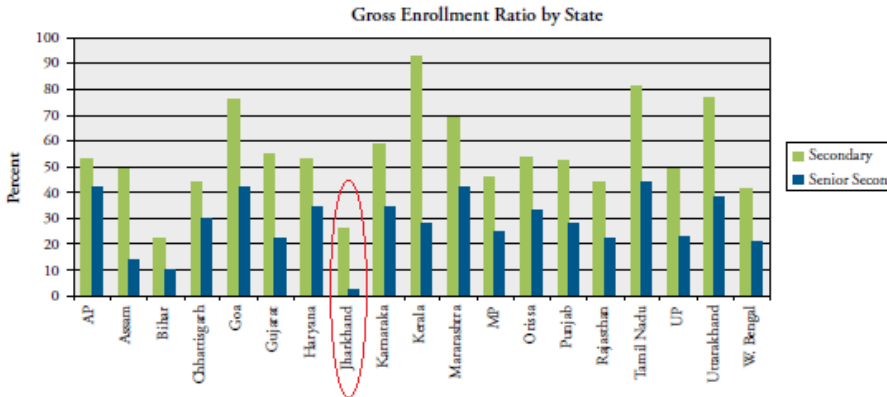
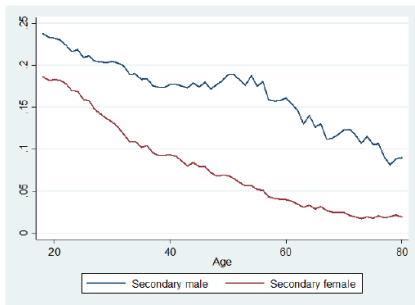


Figure: source: World Bank 2009 (data from DHS 2005-06)

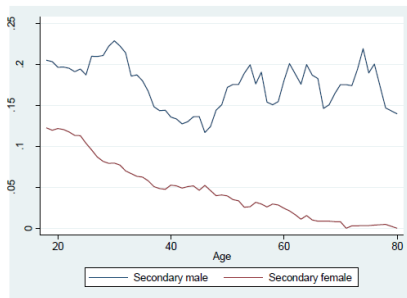
Slow improvement in completion rate and gender gap

Figure: Secondary completed (source: NSS 61st round, 2004)

All India



Jharkhand



Main findings

- Education outcomes are slow moving: effects become visible after 4 years
- Treated households limit drop-out of children at secondary-school level
- Child labor and school enrollment not substitutes
- Credit plays no direct role
- Effect stronger if
 - Village far from secondary school
 - Woman more aware
 - Presence of younger kids in household

Outline

- 1 Introduction
- 2 Literature
- 3 Data and empirical strategy
- 4 Results
 - Education
 - Child labor
 - Heterogeneity analysis and mechanisms
- 5 Conclusion
- 6 Appendix

The impact of microfinance

In general, difficult issue

- Great diversity of MFIs: location, objectives, institutional type...
- Many effects take time to materialize <> very few studies long-term
- Early literature (e.g. Pitt, Khandker, Morduch) generally finds positive impacts but often suffer from serious methodological flaws
- Recent RCTs (e.g. Duflo, Karlan) find much more limited impacts (if any) but suffer from little power, little external validity, short term

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In particular, mixed evidence about schooling

	Positive impact	No impact	Negative impact
RCTs	Karlan Zinman 2010 urban Philippines	Duflo et al. 2015a,b urban India + rural Morocco (ITT)	Augsburg et al. 2012 Bosnia
Others	Maldonado Gonzalez 2008 Bolivia	Kaboski Townsend 2012 Thailand	Wydict 1999 Guatemala

The conceptual role of SHGs: potential channels

- **Direct cost:** providing credit to pay for school expenditures (especially relevant at secondary level) + coordination (e.g. travel)
- **Wealth:** if economic situation of members improves, both direct and opportunity costs of schooling might decrease in relative terms
- **Opportunity cost:** if home business grows, child labor might increase to help at work and/or at home (especially for poorest)
- **Child care:** if adults need to migrate less, can devote more attention to enrolled children / need less help to look after toddlers
- **Insurance:** if SHGs allow to smooth income after negative shocks (Demont 2012), can avoid taking children out of school
- **Preferences:** education of children (girls) is often valued positively and discussed among SHG members
- **Bargaining power:** SHGs give a higher status and financial power to women
- **Public good provision:** SHGs could get involved in increasing the quality of the educational system

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Data

- Stratified random sampling: comparable treated and control villages from 4 geographical clusters [▶ village statistics](#)
- 4 rounds of own LSM survey: 2002 (baseline), 2004, 2006, 2009
 - round 1 used only for selection model in treated villages
 - analysis focuses on balanced sample from round 2 to round 4 - *if anything, lower bound of treatment effect*
- 1,080 households from 36 villages
 - 45% members, 35% nonmembers, 20% controls
- limited total attrition of 4% [▶ sample dynamics](#)
- non-compliance of 13% [▶ sample dynamics](#)
 - use original membership - *lower bound of treatment effect*

Econometric analysis: model

Compare evolution of average outcomes in member and control villages:
effect of village-level treatment (ITT)

$$Y_{ihvt} = \alpha + \beta T_v + \beta_3(T_v * R3_t) + \beta_4(T_v * R4_t) \\ + C'_{it}\gamma + H'_{ht}\eta + V'_v\nu + \psi S_{vt} + \lambda_t + \delta_v + \epsilon_{ihvt} \quad (1)$$

- T : time-invariant dummy = 1 if village v is a treated village
- $R3$ and $R4$: round (time) dummies
- C , H : vectors of pre-determined control variables at child (age, sex, rank) and hh. levels (land, size, age, composition, SC/ST, religion)
- V : pre-treatment village characteristics (size, road access, distance to market and schools, prop. SC and landless, 2001 avg literacy...)
- S : village-wide income shocks during 2 years before each round
- λ and δ : time and district / village fixed effects
- Std errors clustered at hh. level; obs. weighted by sampling proba.

Econometric analysis: model

Evolution of the impact of SHG membership over time for households who have decided to take part in the program (**ATT**)

$$Y_{ihvt} = \alpha + \beta SHG_h + \beta_3(SHG_h * R3_t) + \beta_4(SHG_h * R4_t) + C'_{it}\gamma + H'_{ht}\eta + V'_v\nu + \psi S_{vt} + \lambda_t + \delta_d + \epsilon_{ihvt} \quad (2)$$

- *SHG*: dummy indicating the original (time-invariant) membership status of household *h*
- Comparing members to controls only (or even to all hh.?)
- Weighting comparison observations according to their propensity score (Hirano et al. 03) and focusing on common support region:

$$w(SHG, X) = (1 - SHG) \frac{P(X)}{1 - P(X)} + SHG \frac{1 - P(X)}{P(X)}$$

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Enrollment rates: ITT estimates

	children aged 12-17				children aged 15-17			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
membervillage	-0.0851 (0.0619)		-0.0431 (0.0797)		-0.102 (0.0831)		-0.0464 (0.110)	
membervilXr3	0.0261 (0.0748)	0.0156 (0.0750)	0.00257 (0.0961)	-0.0198 (0.0969)	0.103 (0.106)	0.109 (0.106)	0.0652 (0.143)	0.0633 (0.141)
membervilXr4	0.178** (0.0780)	0.186** (0.0797)	0.198* (0.101)	0.191* (0.103)	0.250** (0.115)	0.262** (0.115)	0.298** (0.147)	0.287* (0.149)
femaleXmembervil			-0.112 (0.112)	-0.127 (0.113)			-0.138 (0.158)	-0.161 (0.162)
femaleXmvXr3			0.0727 (0.130)	0.0972 (0.131)			0.0932 (0.215)	0.102 (0.210)
femaleXmvXr4			-0.0591 (0.150)	-0.0200 (0.148)			-0.132 (0.201)	-0.0718 (0.200)
<i>N</i>	1704	1704	1704	1704	874	874	874	874
<i>R</i> ²	0.222	0.245	0.229	0.252	0.181	0.213	0.190	0.223
village controls	yes	no	yes	no	yes	no	yes	no
household controls	yes	yes	yes	yes	yes	yes	yes	yes
round FE	yes	yes	yes	yes	yes	yes	yes	yes
district FE	yes	no	yes	no	yes	no	yes	no
village FE	no	yes	no	yes	no	yes	no	yes

Std errors clustered at the household level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

Enrollment rates: ATT estimates

	children aged 12-17				children aged 15-17			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
SHG member	-0.154** (0.0705)		-0.105 (0.0898)		-0.0731 (0.103)		-0.188 (0.124)	
SHGXr3	0.269** (0.108)	0.239** (0.103)	0.201* (0.115)	0.162 (0.111)	0.176 (0.126)	0.106 (0.118)	0.352** (0.167)	0.232 (0.175)
SHGXr4	0.283*** (0.0832)	0.276*** (0.0861)	0.209* (0.113)	0.195* (0.112)	0.286** (0.138)	0.261** (0.122)	0.336* (0.182)	0.239 (0.166)
femaleXmembervil			-0.121 (0.122)	-0.111 (0.111)			0.252 (0.192)	0.134 (0.189)
femaleXSHGXr3			0.158 (0.153)	0.175 (0.149)			-0.365 (0.238)	-0.244 (0.241)
femaleXSHGXr4			0.148 (0.172)	0.173 (0.166)			-0.0964 (0.261)	0.0898 (0.249)
<i>N</i>	1066	1066	1066	1066	544	544	544	544
<i>R</i> ²	0.248	0.282	0.254	0.286	0.204	0.249	0.220	0.260
village controls	yes	no	yes	no	yes	no	yes	no
household controls	yes	yes	yes	yes	yes	yes	yes	yes
round FE	yes	yes	yes	yes	yes	yes	yes	yes
district FE	yes	no	yes	no	yes	no	yes	no
village FE	no	yes	no	yes	no	yes	no	yes

Std errors clustered at the household level in parentheses (* $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$)

School drop-out: ITT analysis

	Children aged 7-12 and enrolled in 2004				Children aged 10-12 and enrolled in 2004			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
membervilXr3	0.0594*		0.0290		0.0811		0.0375	
	(0.0359)		(0.0434)		(0.0586)		(0.0661)	
membervilXr4	-0.109*	-0.176***	-0.145*	-0.208**	-0.220*	-0.294**	-0.258	-0.337*
	(0.0556)	(0.0613)	(0.0786)	(0.0878)	(0.120)	(0.130)	(0.171)	(0.180)
femaleXmvr3			0.0666				0.0841	
			(0.0684)				(0.0852)	
femaleXmvr4			0.0899	0.0809			0.0707	0.0832
			(0.112)	(0.110)			(0.221)	(0.209)
<i>N</i>	1031	1031	1031	1031	447	447	447	447
<i>R</i> ²	0.161	0.185	0.166	0.190	0.285	0.323	0.290	0.327
village controls	yes	no	yes	no	yes	no	yes	no
household controls	yes	yes	yes	yes	yes	yes	yes	yes
round FE	yes	yes	yes	yes	yes	yes	yes	yes
district FE	yes	no	yes	no	yes	no	yes	no
village FE	no	yes	no	yes	no	yes	no	yes

Std errors clustered at the household level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

All equations control for the sex, age and birth rank of children, as well as the monsoon quality in year $t-1$.

Observations weighted in order to account for the different sampling probabilities.

Schooling and credit

Table: Borrowing behavior in households with children aged 12-17

	Control villages	Member villages	Member households	Enrolled child	Non enrolled child
Credit 1 year	4325.8	3792.1	3405.5 *	4309.7	3278.1 **
Credit dummy 1 year	0.540	0.675 ***	0.752 ***	0.645	0.660
Credit August-October	363.4	518.2	548.3 *	513.7	457.8
Credit dummy August-October	0.186	0.264 ***	0.316 ***	0.250	0.250

Stars indicate a significant difference with control villages (left) or enrolled children (right) using a two-sided t-test (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

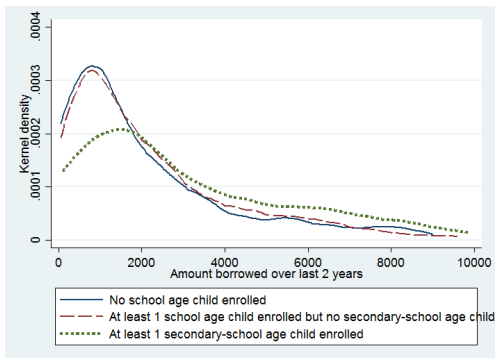
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Figure: Credit in SHG households as a function of children schooling



Effect of credit on school enrollment: ITT analysis

	children aged 12-17		children aged 15-17		children aged 12-17		children aged 15-17	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
membervillage	-0.0861 (0.0608)		-0.0989 (0.0812)		-0.111* (0.0641)		-0.134 (0.0845)	
membervilXr3	0.0214 (0.0747)	0.0122 (0.0749)	0.0902 (0.105)	0.0985 (0.106)	0.0248 (0.0753)	0.0132 (0.0755)	0.0868 (0.106)	0.100 (0.107)
membervilXr4	0.181** (0.0774)	0.190** (0.0792)	0.247** (0.112)	0.264** (0.112)	0.161** (0.0789)	0.164** (0.0805)	0.223* (0.115)	0.236** (0.115)
loanamount	0.000374** (0.000187)	0.000362** (0.000175)	0.000540*** (0.000189)	0.000538*** (0.000184)	0.000364 (0.000255)	0.000364 (0.000234)	0.000547** (0.000244)	0.000576** (0.000234)
memberhh					0.0467 (0.0397)	0.0341 (0.0412)	0.0593 (0.0500)	0.0593 (0.0501)
loanXmemberhh					0.00000236 (0.000313)	0.0000179 (0.000300)	0.0000396 (0.000322)	-0.0000428 (0.000314)
<i>N</i>	1704	1704	874	874	1663	1663	851	851
<i>R</i> ²	0.226	0.248	0.189	0.221	0.229	0.254	0.191	0.229
village controls	yes	no	yes	no	yes	no	yes	no
household controls	yes	yes	yes	yes	yes	yes	yes	yes
round FE	yes	yes	yes	yes	yes	yes	yes	yes
district FE	yes	no	yes	no	yes	no	yes	no
village FE	no	yes	no	yes	no	yes	no	yes

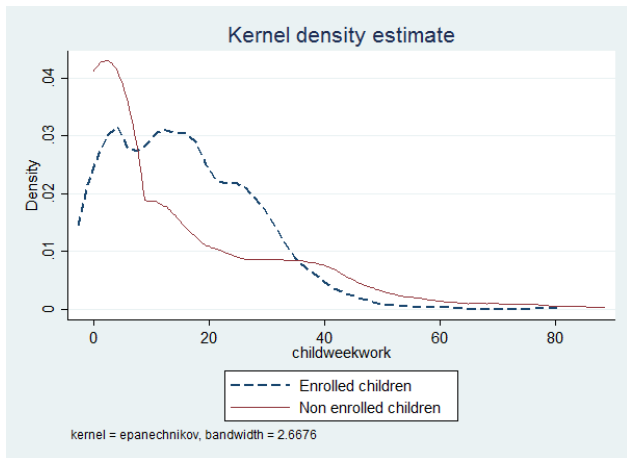
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All equations control for the age and birth rank of children, and the monsoon quality in year $t-1$.

Observations weighted in order to account for the different sampling probabilities.

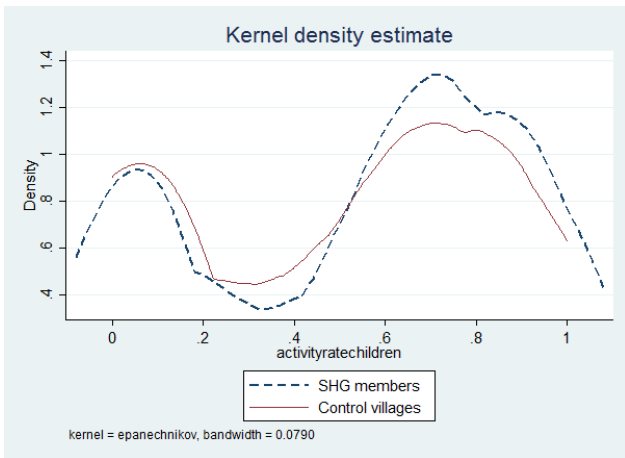
Child labor and schooling enrollment

Figure: Hours of total labor and enrollment of children



SHG and child activity

Figure: Activity rate of children



Child labor

	Total labor			Productive labor			Domestic labor		
	hours (1)	work dummy (2)	hours if >0 (3)	hours (4)	work dummy (5)	hours if >0 (6)	hours (7)	work dummy (8)	hours if >0 (9)
membervilXr3	0.927 (2.963)	0.0573 (0.0772)	-1.615 (2.967)	1.030 (1.566)	0.0719 (0.0806)	-2.293 (3.145)	-0.104 (2.096)	-0.0300 (0.0943)	-0.296 (2.158)
membervilXr4	-0.339 (2.665)	0.0789 (0.0735)	-4.020 (2.948)	-0.672 (1.669)	0.0874 (0.0740)	-6.278* (3.196)	0.333 (1.829)	0.0167 (0.0904)	-0.323 (1.969)
female	5.723*** (0.949)	0.128*** (0.0223)	4.315*** (0.885)	-2.230*** (0.500)	0.00950 (0.0291)	-3.937*** (0.713)	7.953*** (0.747)	0.291*** (0.0277)	5.579*** (0.723)
<i>N</i>	1704	1704	1306	1704	1704	954	1704	1704	1097
<i>R</i> ²	0.126	0.171	0.180	0.105	0.216	0.218	0.217	0.215	0.258

Std errors clustered at the household level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

All equations include village and round fixed effects, household controls, the age and birth rank of children, and the monsoon quality in year $t-1$.

Observations weighted in order to account for the different sampling probabilities.

Child labor and enrollment

	Total labor			Productive labor			Domestic labor		
	hours (1)	work dummy (2)	hours if >0 (3)	hours (4)	work dummy (5)	hours if >0 (6)	hours (7)	work dummy (8)	hours if >0 (9)
enrolled	3.479*** (0.917)	0.289*** (0.0255)	-3.856*** (1.027)	-1.567*** (0.553)	0.0992*** (0.0295)	-4.586*** (0.969)	5.046*** (0.685)	0.288*** (0.0321)	1.094 (0.752)
membervilXr3	0.872 (2.918)	0.0528 (0.0728)	-1.502 (2.950)	1.055 (1.566)	0.0703 (0.0798)	-1.911 (3.047)	-0.183 (2.008)	-0.0345 (0.0900)	-0.304 (2.152)
membervilXr4	-0.986 (2.637)	0.0252 (0.0677)	-3.287 (2.841)	-0.381 (1.651)	0.0690 (0.0736)	-5.049 (3.077)	-0.605 (1.778)	-0.0369 (0.0849)	-0.452 (1.974)
female	5.910*** (0.918)	0.144*** (0.0225)	4.008*** (0.903)	-2.314*** (0.509)	0.0148 (0.0286)	-4.255*** (0.720)	8.223*** (0.704)	0.306*** (0.0278)	5.711*** (0.702)
<i>N</i>	1704	1704	1306	1704	1704	954	1704	1704	1097
<i>R</i> ²	0.136	0.257	0.193	0.110	0.224	0.249	0.258	0.282	0.260

Std errors clustered at the household level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

All equations include village and round fixed effects, household controls, the age and birth rank of children, and the monsoon quality in year $t-1$.

Observations weighted in order to account for the different sampling probabilities.

Distance to secondary school: ITT analysis

	Villages close to secondary school				Villages far from secondary school			
	Enrollment		Total labor		Enrollment		Total labor	
	12-17 (1)	15-17 (2)	hours (3)	dummy (4)	12-17 (5)	15-17 (6)	hours (7)	dummy (8)
membervilXr3	-0.0258 (0.105)	0.0347 (0.143)	0.546 (3.416)	0.0811 (0.101)	0.0313 (0.136)	-0.0760 (0.212)	3.827 (5.263)	0.0924 (0.0998)
membervilXr4	0.176 (0.113)	0.114 (0.165)	-1.054 (3.603)	-0.0231 (0.0953)	0.399*** (0.133)	0.578*** (0.195)	5.900 (4.105)	0.313** (0.131)
<i>N</i>	748	375	748	748	843	435	843	843
<i>R</i> ²	0.279	0.227	0.147	0.183	0.237	0.235	0.152	0.189

Std errors clustered at the household level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

All equations include village and round fixed effects, as well as household controls.

All equations control for the age and birth rank of children, and the monsoon quality in year $t-1$.

Observations weighted in order to account for the different sampling probabilities.

Emancipation indicators of females: ITT analysis

	Awareness score		No trip out of village last month	
	with 12-17 kids (1)	with 15-17 kids (2)	with 12-17 kids (3)	with 15-17 kids (4)
membervilXr3	0.00896 (0.396)	0.214 (0.478)	-0.249*** (0.0889)	-0.230** (0.105)
membervilXr4	0.616 (0.376)	0.845** (0.429)	-0.190** (0.0967)	-0.0777 (0.111)
<i>N</i>	1679	865	1707	876
<i>R</i> ²	0.371	0.413	0.189	0.242

Std errors clustered at the household level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

All equations include village and round fixed effects, household controls and monsoon quality in t-1.

Observations weighted in order to account for the different sampling probabilities.

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Conclusion

- Households in SHG villages invest in both boys' and girls' education
 - through higher survival at secondary-school age
 - takes time (grade dependance, norms...)
 - positive externalities (esp. for boys)
- SHGs increase activity rate of children, including labor
- SHGs facilitate quick access to cheap credit, BUT this is not the main channel for the impact on schooling
- Important channels seem to be the empowerment of women and the coordination within village

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Baseline agricultural profile and child labor: ITT analysis

	Less agricultural households				More agricultural households			
	tot (1)	any (2)	totprod (3)	anyprod (4)	tot (5)	any (6)	totprod (7)	anyprod (8)
membervilXr3	0.0986 (4.504)	0.0613 (0.112)	1.170 (2.597)	-0.0372 (0.127)	1.847 (4.503)	0.0701 (0.110)	1.008 (2.329)	0.188 (0.114)
membervilXr4	-3.737 (4.695)	-0.0327 (0.130)	-1.042 (2.844)	-0.192* (0.115)	-0.305 (3.582)	0.117 (0.0918)	-1.634 (2.299)	0.228** (0.0971)
female	6.955*** (1.251)	0.179*** (0.0353)	-1.568* (0.810)	0.0384 (0.0485)	3.831*** (1.429)	0.0800*** (0.0302)	-3.311*** (0.745)	-0.0403 (0.0381)
<i>N</i>	741	741	741	741	861	861	861	861
<i>R</i> ²	0.175	0.209	0.127	0.276	0.175	0.226	0.168	0.252

Std errors clustered at the household level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

All equations control for the age and birth rank of children, and the monsoon quality in year $t-1$.

Observations weighted in order to account for the different sampling probabilities.

Baseline agricultural profile and enrollment: ITT analysis

	Less agricultural households				More agricultural households			
	midsec_cont (1)	midsec_vfe (2)	sec_cont (3)	sec_vfe (4)	midsec_cont (5)	midsec_vfe (6)	sec_cont (7)	sec_vfe (8)
membervillage	-0.160 (0.106)		-0.288** (0.138)		-0.0135 (0.0807)		0.00258 (0.113)	
membervilXr3	-0.0245 (0.119)	0.0105 (0.120)	0.107 (0.156)	0.114 (0.154)	0.0992 (0.0949)	0.0823 (0.0959)	0.169 (0.144)	0.156 (0.154)
membervilXr4	0.185 (0.138)	0.176 (0.142)	0.232 (0.218)	0.162 (0.226)	0.137 (0.0983)	0.132 (0.0993)	0.255* (0.142)	0.250* (0.145)
<i>N</i>	741	741	367	367	861	861	456	456
<i>R</i> ²	0.276	0.321	0.294	0.349	0.239	0.268	0.205	0.247

Std errors clustered at the household level in parentheses (* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$).

All equations control for the age and birth rank of children, and the monsoon quality in year $t-1$.

Observations weighted in order to account for the different sampling probabilities.

Table: Probability of joining SHG: Logit household-level regression

	(1)		(2)	
	Round1		Marginal effects after Logit	
scheduled caste household	1.025***	(0.388)	0.156***	(0.0575)
tribal household	0.347	(0.275)	0.0527	(0.0418)
head male	-1.445***	(0.552)	-0.220***	(0.0840)
head married	1.644***	(0.429)	0.250***	(0.0665)
head no schooling	-0.525*	(0.314)	-0.0799*	(0.0472)
years of education of head	-0.206**	(0.105)	-0.0314**	(0.0157)
schooling of head squared	0.0120	(0.00854)	0.00182	(0.00129)
head self-employed	0.209	(0.325)	0.0318	(0.0492)
head salaried occupation	0.823	(0.572)	0.125	(0.0863)
head casual wage occupation	0.674**	(0.320)	0.102**	(0.0476)
head unemployed	-0.450	(0.613)	-0.0685	(0.0931)
IAY benefit	-0.975***	(0.361)	-0.148***	(0.0531)
landless	0.138	(0.463)	0.0209	(0.0704)
land owned	0.146**	(0.0721)	0.0222**	(0.0107)
land owned squared	-0.00253	(0.00206)	-0.000385	(0.000309)
age average in household	-0.0328	(0.0219)	-0.00498	(0.00332)
nb of rooms in house	-0.465***	(0.175)	-0.0706***	(0.0262)
nb of rooms squared	0.0380***	(0.0144)	0.00578***	(0.00215)
nb of bicycles per productive adult (15-50)	0.511	(0.438)	0.0777	(0.0664)
domestic assets	0.131	(0.126)	0.0199	(0.0191)
extreme poor consumption (<p25)	-0.992***	(0.342)	-0.151***	(0.0511)
poor consumption (<p50)	0.376	(0.276)	0.0571	(0.0418)

Table: Probability of joining SHG: Logit household-level regression (ctd)

	(1)		(2)	
	Round1		Marginal effects after Logit	
food shortage during ≥ 1 month last year	0.210	(0.263)	0.0319	(0.0401)
nb of loans taken during last 2 years	0.299**	(0.125)	0.0454**	(0.0189)
total credit taken during last 2 years	-0.0000227	(0.0000215)	-0.00000345	(0.00000325)
nb of boys primary age enrolled	0.292	(0.359)	0.0444	(0.0546)
nb of girls primary age enrolled	0.156	(0.336)	0.0237	(0.0511)
nb of boys middle age enrolled	2.137***	(0.814)	0.325***	(0.123)
nb of girls middle age enrolled	-0.360	(0.609)	-0.0547	(0.0926)
nb of children secondary age enrolled	0.251	(0.861)	0.0381	(0.131)
nb of children 0-5 years	0.125	(0.149)	0.0190	(0.0225)
nb of boys primary age	-0.204	(0.333)	-0.0309	(0.0506)
nb of girls primary age	0.0400	(0.287)	0.00608	(0.0436)
nb of boys middle age	-2.074***	(0.757)	-0.315***	(0.114)
nb of girls middle age	0.495	(0.504)	0.0753	(0.0766)
nb of children secondary age	0.642**	(0.276)	0.0976**	(0.0411)
nb of adults ≥ 18	-0.194*	(0.109)	-0.0294*	(0.0163)
adult participation in Lok Sabha elections	0.00170	(0.00289)	0.000259	(0.000439)

Observations: 537 ; Pseudo R^2 : 0.185 ; Proba. of accurate classification: 78.3%

Robust standard errors in parentheses; * ($p < 0.10$), ** ($p < 0.05$), *** ($p < 0.01$).

[▶ back to econo](#)

[▶ back to main findings](#)

Figure: Distribution of propensity scores by SHG membership, member vs. other households [▶ back to econo](#)

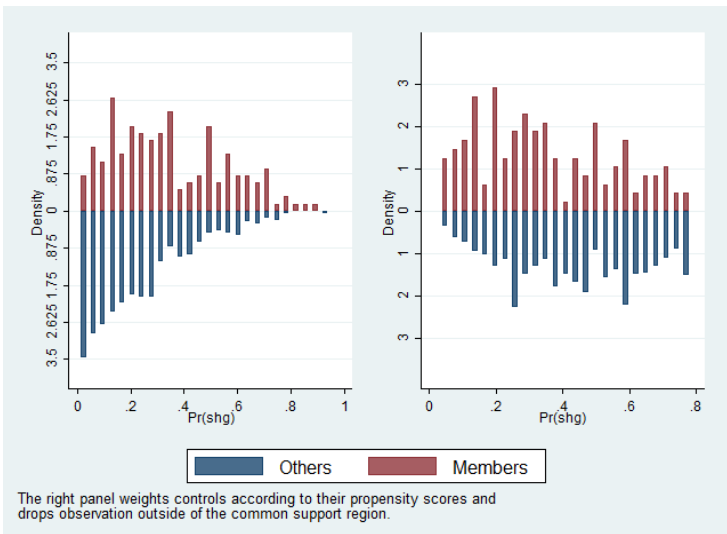


Table: Baseline characteristics of treated and control villages and balance check

[↩ back to main findings](#) [↩ back to data](#)

	Entire sample			Restricted sample		
	control	treated	p-value treated = control	control	treated	p-value treated = control
Population (# households) ¹	167.4	166.4	0.977	175.0	166.6	0.846
SC population(%) ¹	0.107	0.114	0.891	0.135	0.116	0.784
ST population(%) ¹	0.473	0.464	0.958	0.387	0.486	0.612
Landless population (%) ¹	0.246	0.300	0.577	0.364	0.303	0.589
Illiterate population (%) ¹	0.663	0.642	0.589	0.684	0.649	0.430
Female illiterate population (%) ¹	0.774	0.767	0.862	0.783	0.774	0.825
Farming population (%) ¹	0.352	0.366	0.892	0.235	0.353	0.232
Working gender-parity index ¹	0.472	0.512	0.785	0.352	0.493	0.387
Unemployment (%) ¹	0.408	0.353	0.591	0.495	0.365	0.272
Female unemployment (%) ¹	0.588	0.560	0.850	0.703	0.579	0.441
Caste / tribe fractionalization ^{2, 4}	0.583	0.512	0.504	0.592	0.522	0.580
Language fractionalization ^{2, 4}	0.347	0.358	0.888	0.347	0.352	0.957
Religious fractionalization ^{2, 4}	0.402	0.298	0.246	0.379	0.299	0.446
Hinduism is main village religion ³	0.637	0.596	0.761	0.685	0.612	0.645
All-weather road reaches village ³	0.266	0.196	0.586	0.306	0.158	0.281
Electricity available in village ³	0.403	0.439	0.840	0.500	0.413	0.683
Irrigated land (%) ³	13.33	13.34	0.999	10.92	13.50	0.670
Distance to nearest bank (km) ³	6.028	7.284	0.506	4.875	7.357	0.238
Distance to nearest primary health center (km) ³	5.083	5.909	0.551	5.375	5.929	0.745
Distance to nearest fair price shop (km) ³	2.611	4.509	0.272	2.583	4.724	0.314
Distance to nearest market (km) ³	5.111	5.727	0.628	5.458	5.726	0.861
Distance to nearest rail station (km) ³	23	20	0.780	14.50	20.90	0.553
Presence of a bus stop in village ³	0.278	0.205	0.655	0.250	0.214	0.852
Distance to nearest bus stop (km) ³	2.917	3.557	0.587	2.500	3.643	0.399
Presence of a primary school in village ³	0.778	0.773	0.973	0.833	0.762	0.667
Presence of a middle school in village ³	0.278	0.364	0.592	0.250	0.381	0.476
Presence of a secondary school in village ³	0	0.0455	0.366	0	0.0476	0.452
Distance to nearest secondary school (km) ³	8.333	7.182	0.559	8.917	7.262	0.501
observations	12	24		9	22	

Sources of data: ¹ Census of India 2001; ² round 2 of our household survey; ³ our village survey. ⁴ Probability that two randomly-drawn individuals belong to different groups (commonly known as ethno-linguistic fractionalization index): $f = 1 - \sum_{i=1}^n s_i^2$, where s_i refers to the sample share of the i th group. Std errors in parentheses.

Table: Sample dynamics, by survey round

	round 2	round 3	round 4
<i>With respect to the previous round:</i>			
% attrition (average) [†]	7.5 (3.8)	4.6 (4.4)	7.4 (4.4)
% attrition (SHG members) [†]	7.6 (4.6)	1.9 (1.8)	5.4 (1.8)
% change of treatment status (SHG members) [‡]	0	10.9	17.1
% change of treatment status (non members) [‡]	0	17.0 (14.5)	8.0 (6.0)

[†] Figures in parentheses exclude the two entire villages that had to be dropped for security reasons.

[‡] Figures in parentheses indicate new groups.

[▶ back to data](#)