Investing in the Next Generation: The Long-Run Educational Impacts of a Liquidity Shock

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- For microentrepreneurs, impact of business growth on investments in children's human capital is ex-ante ambiguous:
  - Higher income from any source should encourage human capital investments
  - But, poor self-employed households may face trade-off between investing capital (and child labor) in own enterprise vs. children's education (Shah and Steinberg, 2017).

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  - But microenterprise productivity and household income of literate parents converges to their counterparts in the control
  - Children of illiterate parents 14 pp *less* likely to complete secondary school. More likely to be employed in hh business as children.
  - But microenterprises of illiterate parents still 45% more profitable than control group counterparts'.

Roadmap

1. Context
   - Sample
   - Experiment
   - The parent's investment choices
2. Data
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- only 1% of men or women attended college. 10% of men and 5% of women completed secondary schooling. Approx 20% of sample is illiterate.
- Study participants are working-age (on average, women are 34 and their spouses are 41 years old)

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- Sample: At baseline, over half the households had a school-going child.
- This paper: Findings from surveys 5 and 11 years after intervention.

▸ Balance Check ▸ Short Run Results

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- College has high up-front cost ($2685 PPP in control group), but graduates have 20-25% higher earnings in urban India (Montenegro and Patrinos, 2014; Rani, 2014).
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- Khanna (2023) exploits discontinuities in Indian district eligibility of a school expansion program and estimates causal earnings returns to a year of education of 13%.

▸ VFS Sample Edu ▸ Urban Trends Edu

Understanding Household Investment Decisions

In the control group:

- 23% percent of school-age children received some private schooling and 95% report private after-school tutoring in some (or all) academic subjects.
- Avg household spending (including school expenditures and after-school tutoring) was Rs.33,700 for secondary schooling.
- Spent Rs.8,300 per 10th grade child on school expenditures and after-school tutoring, amounting to 5% of average household income.
- Among secondary school graduates, an additional Rs.100,000 of after-school tutoring is associated with a 36 percentage point increase in college attendance.
- College-educated children aged 25 or older earn 25% more per month than those who attended secondary school alone.
- 84% of college graduate sons engage in salaried work, versus 33% of sons without a college degree.

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Understanding Household Investment Decisions

Household Enterprise Investment

- Micro-enterprises remain primary income-generating activity: in 2018, 85% of households report at least one operating business
- Access to capital reported as the number one constraint to business expansion.
- Despite high returns to capital, credit constraints hinder profitable investments: only 34% of respondents report sufficient resources on hand at business opening
- Continued wedge in profitability of businesses 11 years after intervention indicate the severity of credit constraints.

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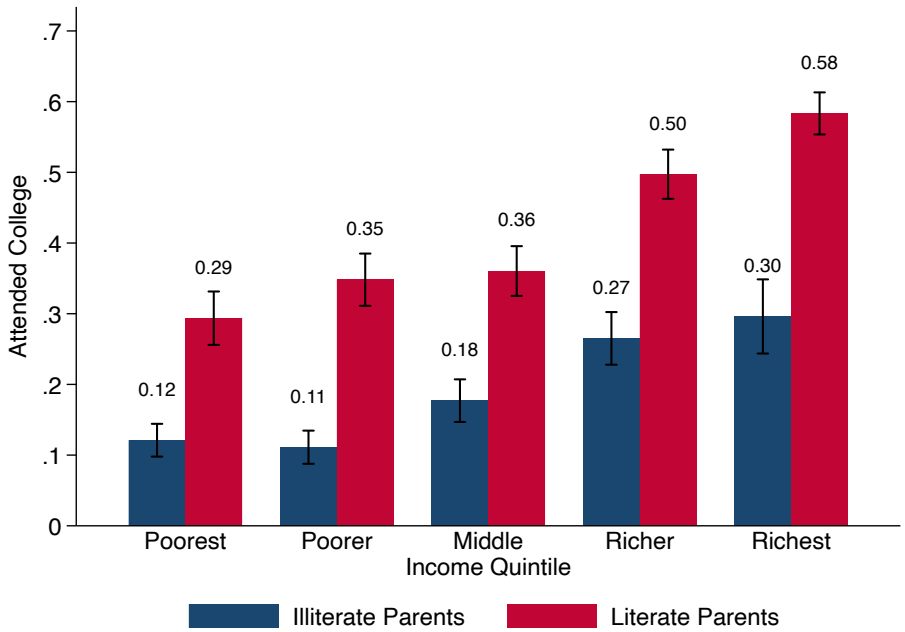

- Sons of literate parents are more likely to attend college in 2012 across all 2005 family income quintiles
- Gap rising with wealth
- In our control group sample, sons of literate parents are 114% more likely to have attended college than those of illiterate parents, conditional on household wealth.

Parental Education and Investment Decisions

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- Less educated parents perceive lower returns to schooling.
  - Evidence from low and high income countries - (Jensen (2010), Nguyen (2008), Avitabile and de Hoyos (2018) and Attanasio and Kaufmann (2014), Chakravarty and Agarwal (2021), Brown (2006), Boneva et al. (2021), Delavande and Zafar (2019))
  - Recent papers show that this underestimation extends to children's true ability (Dizon-Ross, 2019; Duhon, 2023).
- The children of less educated parents may have lower actual returns
  - Less able to assist their children in acquiring human capital accumulation, including schoolwork assistance (Todd and Wolpin, 2007; Banerji et al., 2017). May lack of subject matter knowledge or other skills like cognitive endurance (Brown et al., 2022). They also spend less time on child care (Guryan et al., 2008).
  - Less-educated parents may struggle to guide their children through the educational system due to limited exposure to successful pupils in their social circles (Sequeira et al., 2016).

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If they are poorer, then

- May have greater credit constraints
  - Higher returns to business investments
  - Greater need for liquid investments in case of negative shocks
- May have a higher discount rate (Jacoby and Skoufias, 1997).
- May be more subject to behavioral problems (Kaur et al., 2022).

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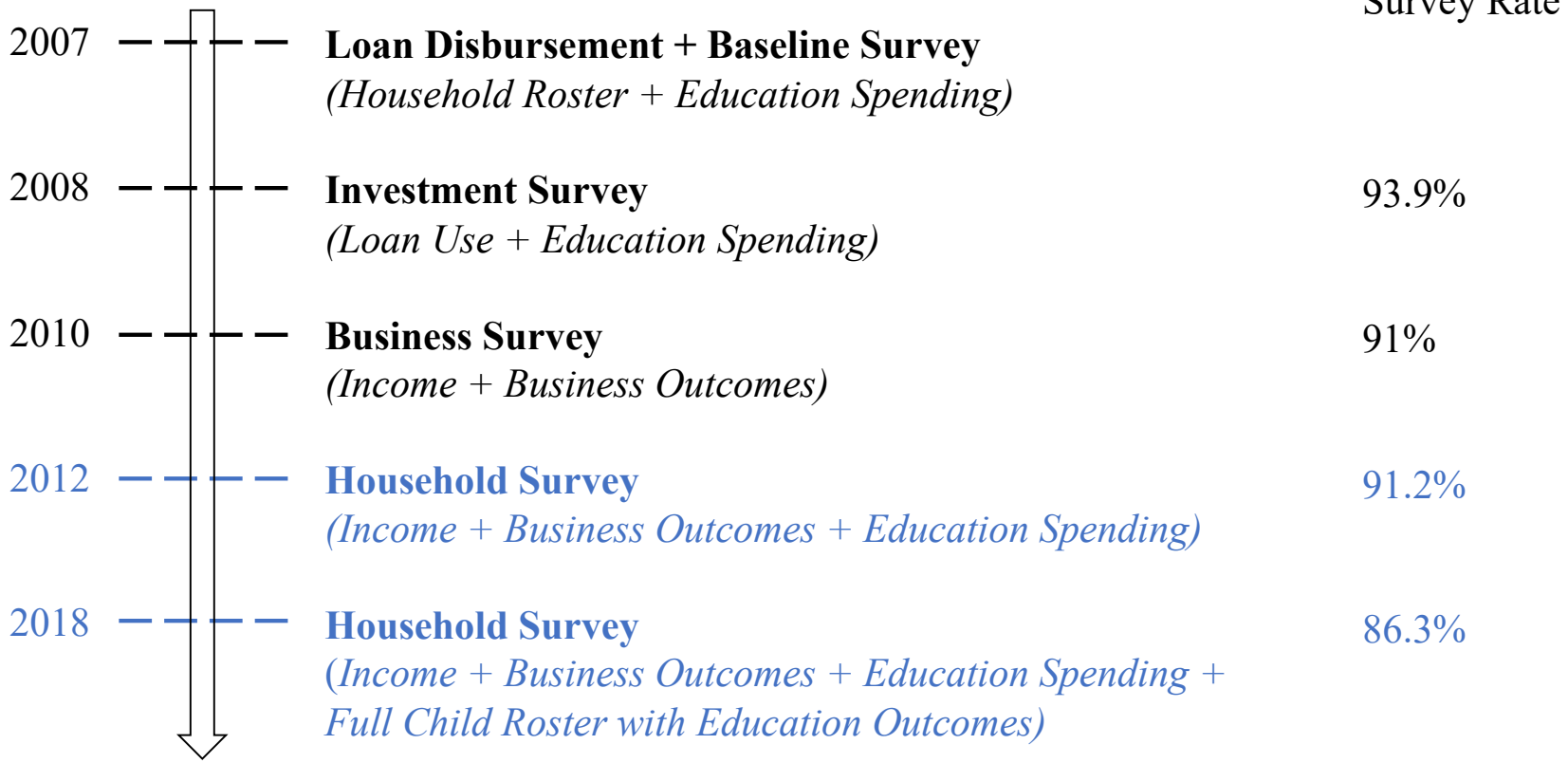

- Attrition rates do not differ by treatment status ▸ Results ▸ Attrition Breakdown 2018

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- Parental education - Classify 19% of households as illiterate, meaning that at least one parent is unable to read and write.

Empirical Strategy

For child i from household h in microfinance group g, we estimate:

$$Y_{ihg} = \alpha + \beta T_g + \theta_g + \phi_{ihg} + \gamma X_{ihg} + \epsilon_{ihg}. \quad (1)$$

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β_1 and β_2 capture treatment effects for children of literate- and illiterate-parent households, respectively, and π captures differences in educational outcomes between children of literate and illiterate control group households. We report the p-value testing $\beta_1 = \beta_2$.

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- Standard errors are clustered by loan group.
- Report p-values from randomization inference.
- Calculate sharpened q - values to correct for multiple hypothesis testing (Benjamini et al., 2006; Anderson, 2008)

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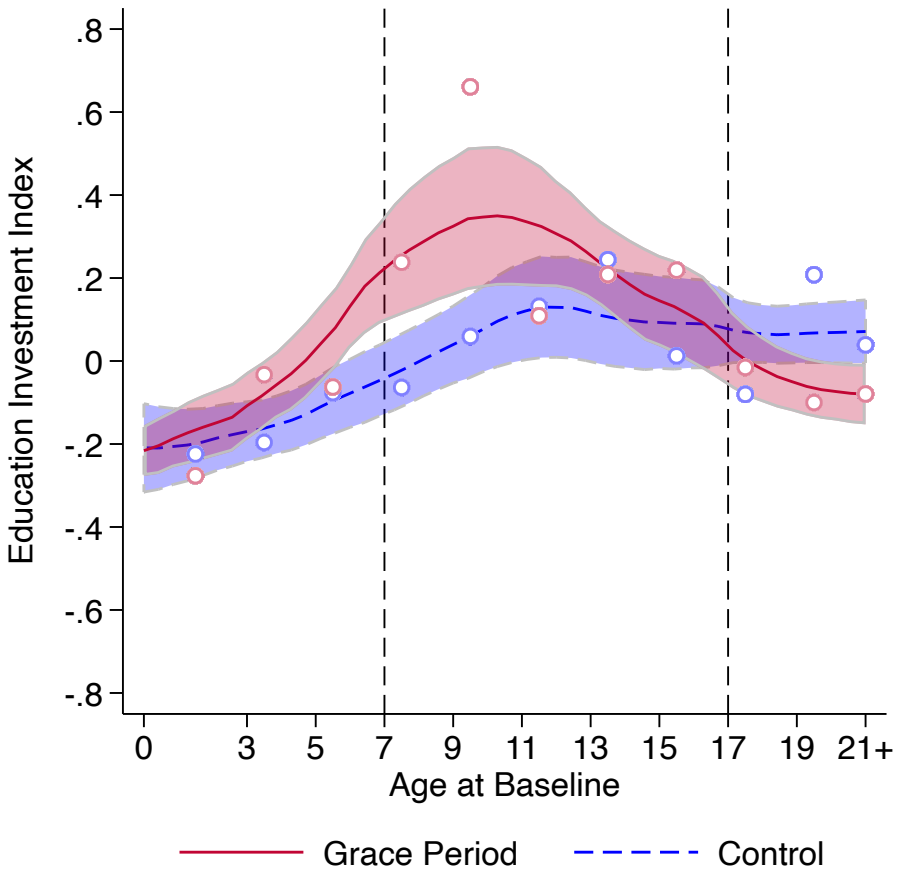
Schooling Investments Index



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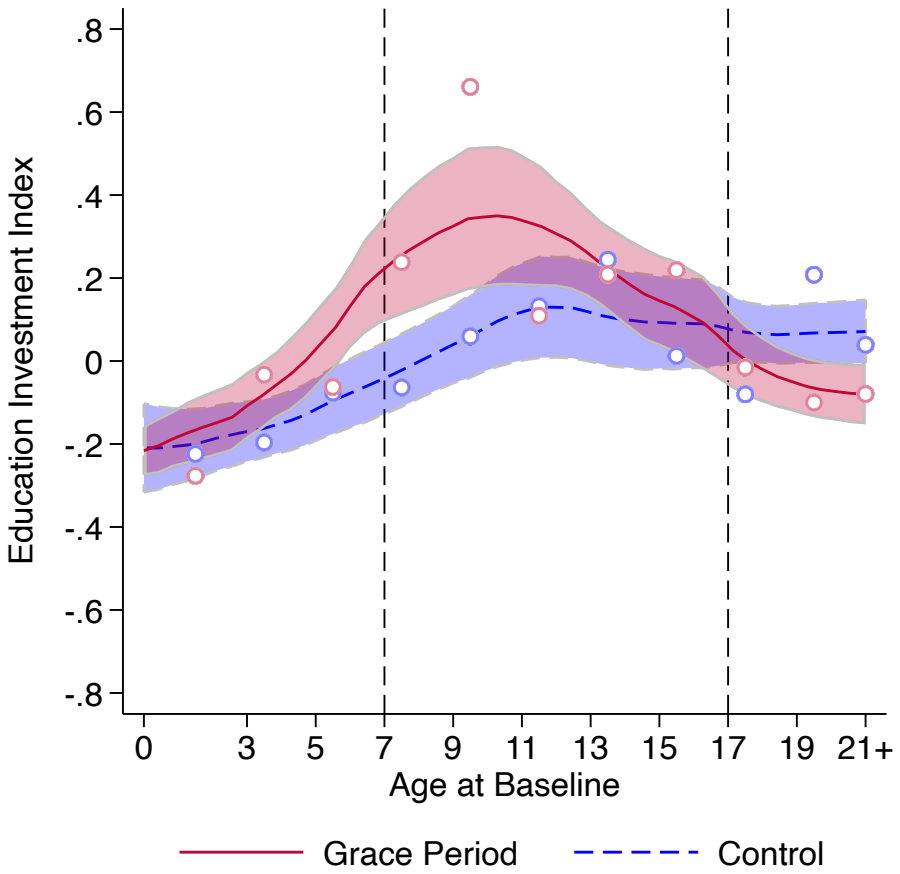

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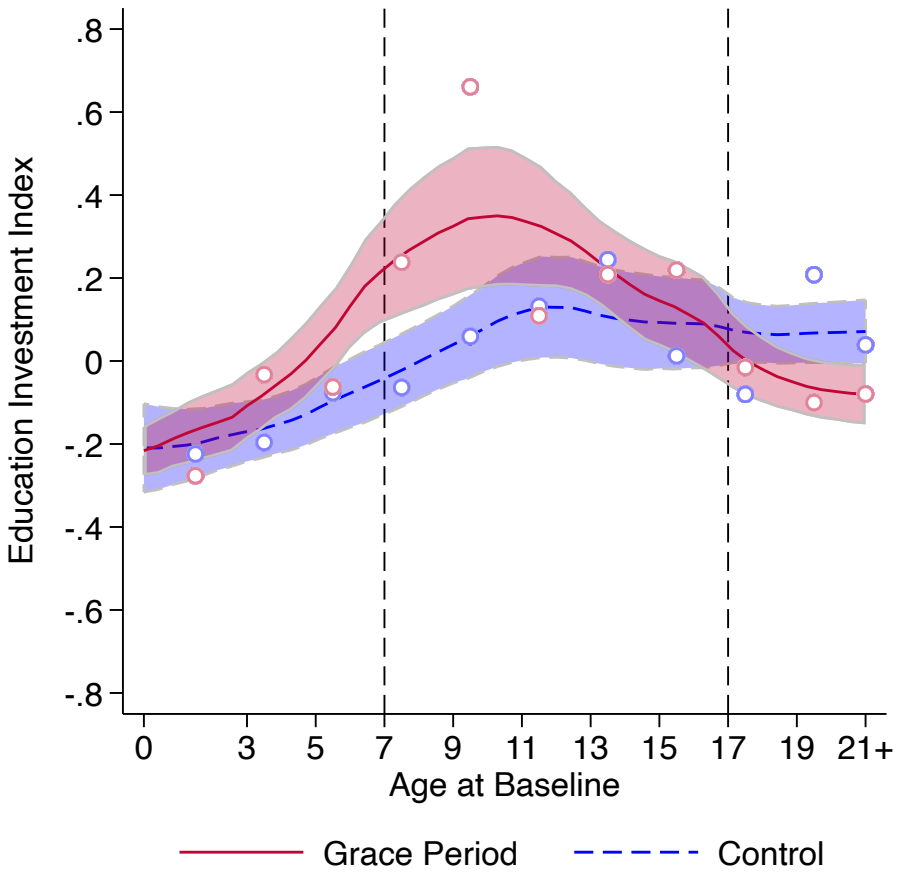

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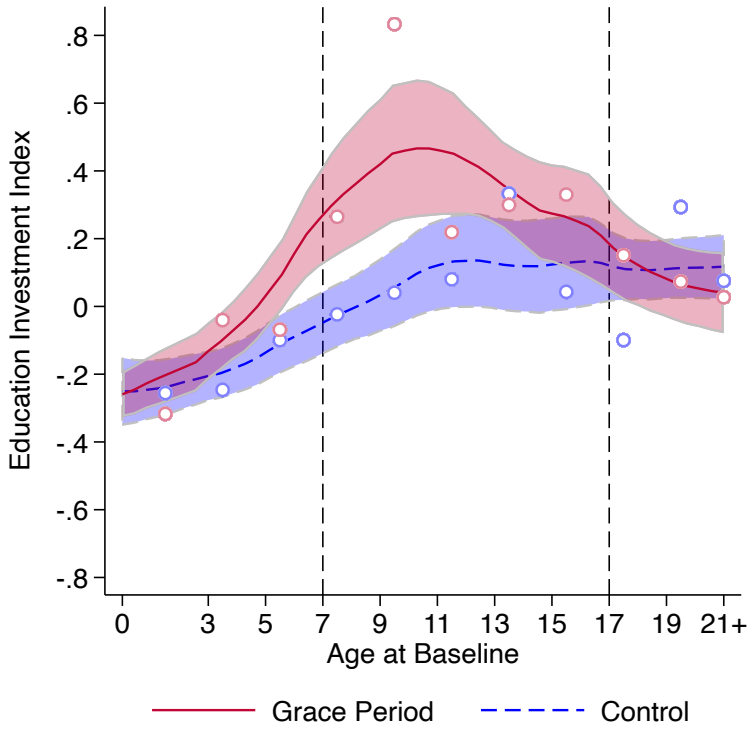
- Treatment effects grow in magnitude with cohort age from baseline ages 0-11 due to decline in the rate of censoring of schooling outcomes with child age.
- Treatment effects are significantly less pronounced for children who were old enough to be in secondary school at baseline (ages 14-18)

Investment index - normalized expenditures on primary school, secondary school, and college, expenditures on after-school tutoring, and private school attendance.

Schooling Investments Difference Driven by Literate Parents



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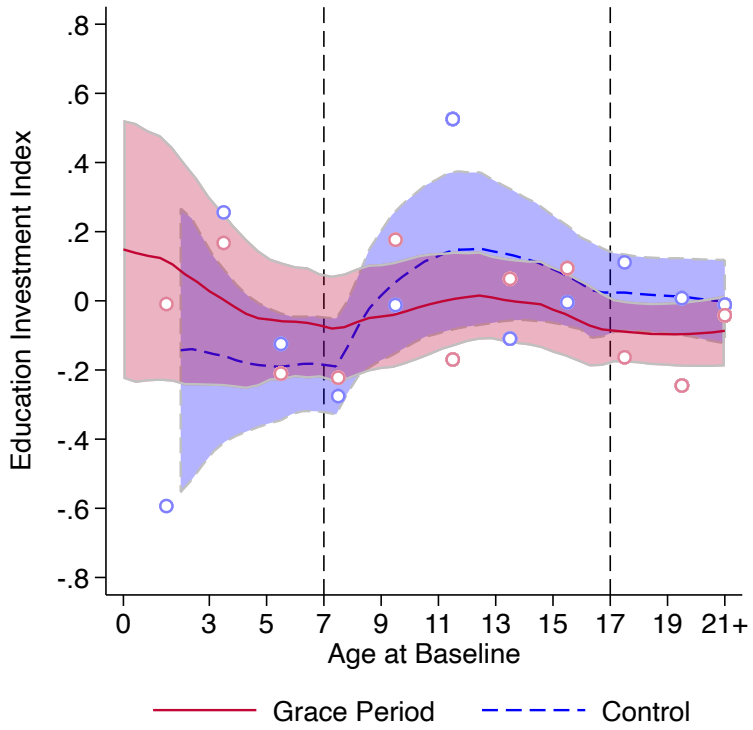

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Grace Period Led to Large Increases in Education Spending

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Grace Period	0.18**	0.10	0.25***	0.15*			
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- Positive but not significant effect on primary school investments.

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	(0.08)	(0.08)	(0.08)	(0.08)			
	[0.03]	[0.22]	[0.00]	[0.09]			
Control Group Mean	-0.00	0.00	0.00	-0.00			
Observations	543	543	543	543			

- Treatment children score 0.18 sd units higher on educational investment index.
- Positive but not significant effect on primary school investments.
- 0.25 sdu higher on secondary school investments and 0.15 sdu higher on college investments.

Driven by Secondary School and College Expenditures

	Primary School Investment Subindex Components			Secondary School Investment Subindex Components			
	Private School	Total School Fees	Total After-School Tutoring	Private School	Total School Fees	Total After-School Tutoring	College Spending
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: School-Age Child Sample (7-17 Years at Baseline), Pooled							
Grace Period	0.07*	1359.53	143.46	0.06***	2120.23	5006.49***	1650.37*
	(0.04)	(1151.43)	(814.43)	(0.02)	(1538.57)	(1849.84)	(931.34)
	[0.12]	[0.25]	[0.87]	[0.00]	[0.15]	[0.02]	[0.10]
Control Group Mean	0.23	6573.27	8155.80	0.02	10993.63	23411.48	3827.34
Observations	543	518	542	543	513	535	531

Driven by Secondary School and College Expenditures

	Primary School Investment Subindex Components			Secondary School Investment Subindex Components			
	Private School	Total School Fees	Total After-School Tutoring	Private School	Total School Fees	Total After-School Tutoring	College Spending
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: School-Age Child Sample (7-17 Years at Baseline), Pooled							
Grace Period	0.07*	1359.53	143.46	0.06***	2120.23	5006.49***	1650.37*
	(0.04)	(1151.43)	(814.43)	(0.02)	(1538.57)	(1849.84)	(931.34)
	[0.12]	[0.25]	[0.87]	[0.00]	[0.15]	[0.02]	[0.10]
Control Group Mean	0.23	6573.27	8155.80	0.02	10993.63	23411.48	3827.34
Observations	543	518	542	543	513	535	531

- Treatment children are three times as likely to attend private secondary school

Driven by Secondary School and College Expenditures

	Primary School Investment Subindex Components			Secondary School Investment Subindex Components			
	Private School	Total School Fees	Total After-School Tutoring	Private School	Total School Fees	Total After-School Tutoring	College Spending
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: School-Age Child Sample (7-17 Years at Baseline), Pooled							
Grace Period	0.07*	1359.53	143.46	0.06***	2120.23	5006.49***	1650.37*
	(0.04)	(1151.43)	(814.43)	(0.02)	(1538.57)	(1849.84)	(931.34)
	[0.12]	[0.25]	[0.87]	[0.00]	[0.15]	[0.02]	[0.10]
Control Group Mean	0.23	6573.27	8155.80	0.02	10993.63	23411.48	3827.34
Observations	543	518	542	543	513	535	531

- Treatment children are three times as likely to attend private secondary school
- Parents spend an additional Rs.5,006 per child on after-secondary-school tutoring

Driven by Secondary School and College Expenditures

	Primary School Investment Subindex Components			Secondary School Investment Subindex Components			
	Private School	Total School Fees	Total After-School Tutoring	Private School	Total School Fees	Total After-School Tutoring	College Spending
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: School-Age Child Sample (7-17 Years at Baseline), Pooled							
Grace Period	0.07*	1359.53	143.46	0.06***	2120.23	5006.49***	1650.37*
	(0.04)	(1151.43)	(814.43)	(0.02)	(1538.57)	(1849.84)	(931.34)
	[0.12]	[0.25]	[0.87]	[0.00]	[0.15]	[0.02]	[0.10]
Control Group Mean	0.23	6573.27	8155.80	0.02	10993.63	23411.48	3827.34
Observations	543	518	542	543	513	535	531

- Treatment children are three times as likely to attend private secondary school
- Parents spend an additional Rs.5,006 per child on after-secondary-school tutoring
- 43% higher college expenditures

Grace Period Led to Increase in Educational Attainment

		Investment Index Components					
	Investment Index	Primary School Investment Subindex	Secondary School Investment Subindex	College Spending (Standard-ized)	Completed Secondary School	Attended College	Years of Education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: School-Age Child Sample (7-17 Years at Baseline), Pooled							
Grace Period	0.18**	0.10	0.25***	0.15*	0.05	0.10***	0.34
	(0.08)	(0.08)	(0.08)	(0.08)	(0.04)	(0.04)	(0.29)
	[0.03]	[0.22]	[0.00]	[0.09]	[0.27]	[0.02]	[0.29]
Control Group Mean	-0.00	0.00	0.00	-0.00	0.42	0.27	10.49
Observations	543	543	543	543	543	541	543

Grace Period Led to Increase in Educational Attainment

		Investment Index Components					
	Investment Index	Primary School Investment Subindex	Secondary School Investment Subindex	College Spending (Standard-ized)	Completed Secondary School	Attended College	Years of Education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: School-Age Child Sample (7-17 Years at Baseline), Pooled							
Grace Period	0.18**	0.10	0.25***	0.15*	0.05	0.10***	0.34
	(0.08)	(0.08)	(0.08)	(0.08)	(0.04)	(0.04)	(0.29)
	[0.03]	[0.22]	[0.00]	[0.09]	[0.27]	[0.02]	[0.29]
Control Group Mean	-0.00	0.00	0.00	-0.00	0.42	0.27	10.49
Observations	543	543	543	543	543	541	543

- 27% of control group kids go to college

Grace Period Led to Increase in Educational Attainment

		Investment Index Components					
	Investment Index	Primary School Investment Subindex	Secondary School Investment Subindex	College Spending (Standard-ized)	Completed Secondary School	Attended College	Years of Education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: School-Age Child Sample (7-17 Years at Baseline), Pooled							
Grace Period	0.18**	0.10	0.25***	0.15*	0.05	0.10***	0.34
	(0.08)	(0.08)	(0.08)	(0.08)	(0.04)	(0.04)	(0.29)
	[0.03]	[0.22]	[0.00]	[0.09]	[0.27]	[0.02]	[0.29]
Control Group Mean	-0.00	0.00	0.00	-0.00	0.42	0.27	10.49
Observations	543	543	543	543	543	541	543

- 27% of control group kids go to college
- Treatment increases the rate of college attendance by 38%

Grace Period Led to Increase in Educational Attainment

		Investment Index Components					
	Investment Index	Primary School Investment Subindex	Secondary School Investment Subindex	College Spending (Standard-ized)	Completed Secondary School	Attended College	Years of Education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: School-Age Child Sample (7-17 Years at Baseline), Pooled							
Grace Period	0.18**	0.10	0.25***	0.15*	0.05	0.10***	0.34
	(0.08)	(0.08)	(0.08)	(0.08)	(0.04)	(0.04)	(0.29)
	[0.03]	[0.22]	[0.00]	[0.09]	[0.27]	[0.02]	[0.29]
Control Group Mean	-0.00	0.00	0.00	-0.00	0.42	0.27	10.49
Observations	543	543	543	543	543	541	543

- 27% of control group kids go to college
- Treatment increases the rate of college attendance by 38%
- Duflo et al. (2021) find that secondary school scholarships in urban Ghana increase the likelihood of enrolling in college by 29%. In Chile, Solis (2017) finds that providing access to a loan for college education increases college enrollment by 50%.

Effects Driven by Literate Parents

		Investment Index Components					
	Investment Index	Primary School Investment Subindex	Secondary School Investment Subindex	College Spending (Standard-ized)	Completed Secondary School	Attended College	Years of Education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel B: School-Age Child Sample (7-17 Years at Baseline), Heterogeneity by Parental Literacy							
Grace Period × Literate Parents	0.27***	0.11	0.34***	0.26**	0.12**	0.15***	0.85**
	(0.09)	(0.09)	(0.10)	(0.12)	(0.05)	(0.05)	(0.35)
	[0.00]	[0.23]	[0.00]	[0.04]	[0.05]	[0.01]	[0.05]
Grace Period × Illiterate Parents	0.03	0.05	0.02	-0.13	-0.14**	-0.02	-1.04**
	(0.11)	(0.11)	(0.09)	(0.13)	(0.06)	(0.06)	(0.47)
	[0.74]	[0.68]	[0.78]	[0.29]	[0.03]	[0.80]	[0.04]
p-value: Grace Period × Literate Parents = Grace Period × Illiterate Parents	0.08	0.63	0.01	0.03	0.00	0.04	0.00
	[0.08]	[0.64]	[0.02]	[0.03]	[0.00]	[0.04]	[0.00]
Control Group Mean (Literate Parents)	0.07	0.07	0.07	0.04	0.46	0.31	10.76
Control Group Mean (Illiterate Parents)	-0.22	-0.22	-0.21	-0.11	0.32	0.15	9.63
Observations	543	543	543	543	543	543	543

Effects Driven by Literate Parents

		Investment Index Components					
	Investment Index	Primary School Investment Subindex	Secondary School Investment Subindex	College Spending (Standard-ized)	Completed Secondary School	Attended College	Years of Education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel B: School-Age Child Sample (7-17 Years at Baseline), Heterogeneity by Parental Literacy							
Grace Period × Literate Parents	0.27***	0.11	0.34***	0.26**	0.12**	0.15***	0.85**
	(0.09)	(0.09)	(0.10)	(0.12)	(0.05)	(0.05)	(0.35)
	[0.00]	[0.23]	[0.00]	[0.04]	[0.05]	[0.01]	[0.05]
Grace Period × Illiterate Parents	0.03	0.05	0.02	-0.13	-0.14**	-0.02	-1.04**
	(0.11)	(0.11)	(0.09)	(0.13)	(0.06)	(0.06)	(0.47)
	[0.74]	[0.68]	[0.78]	[0.29]	[0.03]	[0.80]	[0.04]
p-value: Grace Period × Literate Parents = Grace Period × Illiterate Parents	0.08	0.63	0.01	0.03	0.00	0.04	0.00
	[0.08]	[0.64]	[0.02]	[0.03]	[0.00]	[0.04]	[0.00]
Control Group Mean (Literate Parents)	0.07	0.07	0.07	0.04	0.46	0.31	10.76
Control Group Mean (Illiterate Parents)	-0.22	-0.22	-0.21	-0.11	0.32	0.15	9.63
Observations	543	543	543	543	543	543	543

- Treatment children of literate parents score 0.27 sd units higher on educational investment index.

Effects Driven by Literate Parents

		Investment Index Components					
	Investment Index	Primary School Investment Subindex	Secondary School Investment Subindex	College Spending (Standardized)	Completed Secondary School	Attended College	Years of Education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel B: School-Age Child Sample (7-17 Years at Baseline), Heterogeneity by Parental Literacy							
Grace Period × Literate Parents	0.27***	0.11	0.34***	0.26**	0.12**	0.15***	0.85**
	(0.09)	(0.09)	(0.10)	(0.12)	(0.05)	(0.05)	(0.35)
	[0.00]	[0.23]	[0.00]	[0.04]	[0.05]	[0.01]	[0.05]
Grace Period × Illiterate Parents	0.03	0.05	0.02	-0.13	-0.14**	-0.02	-1.04**
	(0.11)	(0.11)	(0.09)	(0.13)	(0.06)	(0.06)	(0.47)
	[0.74]	[0.68]	[0.78]	[0.29]	[0.03]	[0.80]	[0.04]
p-value: Grace Period × Literate Parents = Grace Period × Illiterate Parents	0.08 [0.08]	0.63 [0.64]	0.01 [0.02]	0.03 [0.03]	0.00 [0.00]	0.04 [0.04]	0.00 [0.00]
Control Group Mean (Literate Parents)	0.07	0.07	0.07	0.04	0.46	0.31	10.76
Control Group Mean (Illiterate Parents)	-0.22	-0.22	-0.21	-0.11	0.32	0.15	9.63
Observations	543	543	543	543	543	543	543

- Treatment children of literate parents score 0.27 sd units higher on educational investment index.
- Treatment leads to a 12 percentage point increase in the likelihood of secondary school completion, an almost 50% increase in college attendance, and an increase in treated children's total years of schooling of 0.85 years

Effects Driven by Literate Parents

		Investment Index Components					
	Investment Index	Primary School Investment Subindex	Secondary School Investment Subindex	College Spending (Standard-ized)	Completed Secondary School	Attended College	Years of Education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel B: School-Age Child Sample (7-17 Years at Baseline), Heterogeneity by Parental Literacy							
Grace Period × Literate Parents	0.27***	0.11	0.34***	0.26**	0.12**	0.15***	0.85**
	(0.09)	(0.09)	(0.10)	(0.12)	(0.05)	(0.05)	(0.35)
	[0.00]	[0.23]	[0.00]	[0.04]	[0.05]	[0.01]	[0.05]
Grace Period × Illiterate Parents	0.03	0.05	0.02	-0.13	-0.14**	-0.02	-1.04**
	(0.11)	(0.11)	(0.09)	(0.13)	(0.06)	(0.06)	(0.47)
	[0.74]	[0.68]	[0.78]	[0.29]	[0.03]	[0.80]	[0.04]
p-value: Grace Period × Literate Parents = Grace Period × Illiterate Parents	0.08 [0.08]	0.63 [0.64]	0.01 [0.02]	0.03 [0.03]	0.00 [0.00]	0.04 [0.04]	0.00 [0.00]
Control Group Mean (Literate Parents)	0.07	0.07	0.07	0.04	0.46	0.31	10.76
Control Group Mean (Illiterate Parents)	-0.22	-0.22	-0.21	-0.11	0.32	0.15	9.63
Observations	543	543	543	543	543	543	543

- Treatment children of literate parents score 0.27 sd units higher on educational investment index.
- Treatment leads to a 12 percentage point increase in the likelihood of secondary school completion, an almost 50% increase in college attendance, and an increase in treated children's total years of schooling of 0.85 years
- Relative to control group peers, treatment children with illiterate parents are 14 percentage points less likely to complete secondary schooling and have 1.04 fewer total years of education

Driven by Secondary School and College Expenditures

	Primary School Investment Subindex Components			Secondary School Investment Subindex Components			
	Private School	Total School Fees	Total After-School Tutoring	Private School	Total School Fees	Total After-School Tutoring	College Spending
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: School-Age Child Sample (7-17 Years at Baseline), Pooled							
Grace Period	0.07*	1359.53	143.46	0.06***	2120.23	5006.49***	1650.37*
	(0.04)	(1151.43)	(814.43)	(0.02)	(1538.57)	(1849.84)	(931.34)
	[0.12]	[0.25]	[0.87]	[0.00]	[0.15]	[0.02]	[0.10]
Control Group Mean	0.23	6573.27	8155.80	0.02	10993.63	23411.48	3827.34
Observations	543	518	542	543	513	535	531
Panel B: School-Age Child Sample (7-17 Years at Baseline), Heterogeneity by Parental Literacy							
Grace Period × Literate Parents	0.09	1749.36	-15.86	0.08***	3665.05**	5837.69**	2876.40**
	(0.05)	(1443.67)	(946.16)	(0.03)	(1858.24)	(2344.72)	(1335.40)
	[0.14]	[0.26]	[0.99]	[0.00]	[0.06]	[0.02]	[0.04]
Grace Period × Illiterate Parents	0.04	206.48	417.13	-0.01	-2291.61	1835.23	-1502.33
	(0.05)	(946.17)	(1642.45)	(0.01)	(1531.79)	(3129.76)	(1451.19)
	[0.55]	[0.82]	[0.79]	[0.41]	[0.14]	[0.60]	[0.28]
p-value: Grace Period × Literate Parents = Grace Period × Illiterate Parents	0.51	0.33	0.82	0.00	0.01	0.31	0.03
	[0.56]	[0.34]	[0.81]	[0.00]	[0.01]	[0.33]	[0.03]
Control Group Mean (Literate Parents)	0.29	7456.41	7951.28	0.02	12033.33	24982.54	4223.05
Control Group Mean (Illiterate Parents)	0.03	3735.66	8807.13	0.00	7652.95	18403.70	2603.68
Observations (Literate Parents)	399	379	398	399	378	393	388
Observations (Illiterate Parents)	144	139	144	144	135	142	143

Downstream Impacts on Children

- No differential impacts on education for sons and daughters

Downstream Impacts on Children

- No differential impacts on education for sons and daughters
- Literate treatment
  - More likely to still be in college in 2018
  - Daughters less likely to be married and less likely to be engaged in domestic production.

Downstream Impacts on Children

- No differential impacts on education for sons and daughters
- Literate treatment
  - More likely to still be in college in 2018
  - Daughters less likely to be married and less likely to be engaged in domestic production.
- Too early to look at earnings.

▸ By Sex

Robustness Checks

1. Placebo check - children older than 18 at baseline see no differences in schooling investments or outcomes. ▸ Older Kids
2. Varying the age cut offs ▸ Varying Age
3. Including all children in the sample (not just 7-17 at baseline) ▸ All Kids
4. Multiple hypothesis tests corrections
5. Alternative definitions of parental education: ▸ Alternative Definitions
   - Using the full distribution of parental years of education
   - Alesina et al. (2021) intergenerational mobility measure - primary school completion.

Roadmap

1. Context
   - Sample
   - Experiment
   - The parent's investment choices
2. Data
3. Results
   - Child Education
   - Household Economic Outcomes
   - Mechanisms
4. Intergenerational Education and Earnings Mobility

Grace Period Increased Economic Outcomes in Short-Run

	2010 Survey				2018 Survey			
		Index Components				Index Components		
	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Pooled								
Grace Period	0.29**	0.51***	0.25*	0.11				
	(0.12)	(0.18)	(0.15)	(0.12)				
	[0.01]	[0.01]	[0.08]	[0.34]				
Control Group Mean	0.00	-0.00	0.00	-0.00				
Observations	363	363	363	363				

▸ Outcomes in Rupees

Grace Period Increased Economic Outcomes in Short-Run

	2010 Survey				2018 Survey			
		Index Components				Index Components		
	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Pooled								
Grace Period	0.29**	0.51***	0.25*	0.11				
	(0.12)	(0.18)	(0.15)	(0.12)				
	[0.01]	[0.01]	[0.08]	[0.34]				
Control Group Mean	0.00	-0.00	0.00	-0.00				
Observations	363	363	363	363				

▸ Outcomes in Rupees

- Treatment households score 0.29 sdu higher on economic index in 2010.

Grace Period Increased Economic Outcomes in Short-Run

	2010 Survey				2018 Survey			
		Index Components				Index Components		
	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Pooled								
Grace Period	0.29**	0.51***	0.25*	0.11				
	(0.12)	(0.18)	(0.15)	(0.12)				
	[0.01]	[0.01]	[0.08]	[0.34]				
Control Group Mean	0.00	-0.00	0.00	-0.00				
Observations	363	363	363	363				

▸ Outcomes in Rupees

- Treatment households score 0.29 sdu higher on economic index in 2010.
- Monthly profits of treatment households are Rs.711 (59%) higher in 2010. 19% higher household income.

Grace Period Increased Economic Outcomes in Short-Run

	2010 Survey				2018 Survey			
		Index Components				Index Components		
	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Pooled								
Grace Period	0.29**	0.51***	0.25*	0.11	0.10	0.08	0.19	0.02
	(0.12)	(0.18)	(0.15)	(0.12)	(0.06)	(0.07)	(0.15)	(0.03)
	[0.01]	[0.01]	[0.08]	[0.34]	[0.12]	[0.22]	[0.20]	[0.41]
Control Group Mean	0.00	-0.00	0.00	-0.00	-0.22	-0.24	-0.12	-0.31
Observations	363	363	363	363	381	381	381	381

▸ Outcomes in Rupees

- Treatment households score 0.29 sdu higher on economic index in 2010.
- Monthly profits of treatment households are Rs.711 (59%) higher in 2010. 19% higher household income.

Grace Period Increased Economic Outcomes in Short-Run

	2010 Survey				2018 Survey			
		Index Components				Index Components		
	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Pooled								
Grace Period	0.29**	0.51***	0.25*	0.11	0.10	0.08	0.19	0.02
	(0.12)	(0.18)	(0.15)	(0.12)	(0.06)	(0.07)	(0.15)	(0.03)
	[0.01]	[0.01]	[0.08]	[0.34]	[0.12]	[0.22]	[0.20]	[0.41]
Control Group Mean	0.00	-0.00	0.00	-0.00	-0.22	-0.24	-0.12	-0.31
Observations	363	363	363	363	381	381	381	381

▸ Outcomes in Rupees

- Treatment households score 0.29 sdu higher on economic index in 2010.
- Monthly profits of treatment households are Rs.711 (59%) higher in 2010. 19% higher household income.
- Profits, capital, and income decline over time (economic crises, retirement).

Grace Period Increased Economic Outcomes in Short-Run

	2010 Survey				2018 Survey			
		Index Components				Index Components		
	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Pooled								
Grace Period	0.29**	0.51***	0.25*	0.11	0.10	0.08	0.19	0.02
	(0.12)	(0.18)	(0.15)	(0.12)	(0.06)	(0.07)	(0.15)	(0.03)
	[0.01]	[0.01]	[0.08]	[0.34]	[0.12]	[0.22]	[0.20]	[0.41]
Control Group Mean	0.00	-0.00	0.00	-0.00	-0.22	-0.24	-0.12	-0.31
Observations	363	363	363	363	381	381	381	381

▸ Outcomes in Rupees

- Treatment households score 0.29 sdu higher on economic index in 2010.
- Monthly profits of treatment households are Rs.711 (59%) higher in 2010. 19% higher household income.
- Profits, capital, and income decline over time (economic crises, retirement).
- Point estimates in 2018 positive, but much smaller and not significant

Grace Period Increased Economic Outcomes in Short-Run

	2010 Survey				2018 Survey			
		Index Components				Index Components		
	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
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Grace Period	0.29**	0.51***	0.25*	0.11	0.10	0.08	0.19	0.02
	(0.12)	(0.18)	(0.15)	(0.12)	(0.06)	(0.07)	(0.15)	(0.03)
	[0.01]	[0.01]	[0.08]	[0.34]	[0.12]	[0.22]	[0.20]	[0.41]
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Illiterate Grace Period HHs Outperform Control in Long-Run

	2010 Survey				2018 Survey			
		Index Components				Index Components		
	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)	Economic Index	Profits (Standardized)	Capital (Standardized)	Household Income (Standardized)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel B: Heterogeneity by Parental Literacy								
Grace Period × Literate Parents	0.26**	0.44**	0.26	0.09	0.05	0.03	0.11	0.01
	(0.13)	(0.19)	(0.17)	(0.13)	(0.07)	(0.08)	(0.17)	(0.03)
	[0.04]	[0.02]	[0.12]	[0.52]	[0.52]	[0.74]	[0.54]	[0.78]
Grace Period × Illiterate Parents	0.39*	0.66*	0.29	0.21	0.26**	0.24**	0.46*	0.09**
	(0.20)	(0.38)	(0.23)	(0.23)	(0.11)	(0.11)	(0.24)	(0.04)
	[0.12]	[0.21]	[0.41]	[0.35]	[0.04]	[0.04]	[0.07]	[0.04]
p-value: Grace Period × Literate Parents = Grace Period × Illiterate Parents	0.60	0.61	0.92	0.61	0.11	0.10	0.23	0.11
	[0.68]	[0.71]	[0.94]	[0.60]	[0.15]	[0.14]	[0.26]	[0.17]
Control Group Mean (Literate Parents)	0.04	0.03	0.06	0.03	-0.20	-0.22	-0.09	-0.29
Control Group Mean (Illiterate Parents)	-0.16	-0.12	-0.25	-0.12	-0.32	-0.36	-0.24	-0.38
Observations	363	363	363	363	381	381	381	381

▸ Outcomes in Rupees ▸ Labor Outcomes

- Both types of households experience earnings gains in the short-run.

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- Both types of households experience earnings gains in the short-run.
- Illiterate treatment households score 0.26 sdu higher on economic index in 2018. No difference for literate treatment households relative to control counterparts.
- Illiterate treatment households double their use of household labor in enterprise. Literate treatment households reduce use of household labor by a third.

Child Labor

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- Parents' stated primary reason is categorized as: economic considerations (money reasons, a good work opportunity, or the perception that school was not worthwhile); child ability (child disliked school or had low test scores); or marriage (dropout for marriage or pregnancy).

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- No treatment impact on reason for school dropout for literate-parent children.
- For children of illiterate parents, treatment children are more than twice as likely to report dropping out of school due to economic considerations

▸ Labor Outcomes

Roadmap

1. Context
   - Sample
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   - The parent's investment choices
2. Data
3. Results
   - Child Education
   - Household Economic Outcomes
   - Mechanisms
4. Intergenerational Education and Earnings Mobility

Differences in Expected Returns to the Business?

- VFS chooses clients who have an existing enterprise, own their home, and on ability to repay a loan – comparable on many observable dimensions of liquidity.
  - Equally likely to own a home, own an enterprise, have experienced a recent economic shock
- Comparable loan amounts and rates of default
- Represented in similar types of businesses at baseline
- Comparable levels of investments and distribution of investments
- Cannot reject equal rates of return to capital in 2010

	Education Outcomes				Economic Outcomes	
	Investment Index	Completed Secondary School	Attended College	Years of Education	2010 Economic Index	2018 Economic Index
	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Parental Literacy Only						
Grace Period × Literate Parents	0.25*	0.25***	0.16**	1.93***	-0.15	-0.22*
	(0.13)	(0.08)	(0.08)	(0.60)	(0.23)	(0.13)
	[0.06]	[0.01]	[0.04]	[0.00]	[0.62]	[0.13]
Panel C: Additional Individual Characteristics						
Grace Period × Literate Parents	0.22*	0.25***	0.15*	1.62**	-0.06	-0.23*
	(0.12)	(0.09)	(0.09)	(0.77)	(0.22)	(0.12)
	[0.04]	[0.00]	[0.03]	[0.00]	[0.92]	[0.13]
Grace Period × Socio-Economic Index	0.02	0.00	0.02	0.11	-0.11	-0.00
	(0.09)	(0.03)	(0.03)	(0.26)	(0.10)	(0.06)
	[0.77]	[0.86]	[0.56]	[0.61]	[0.23]	[0.62]
Grace Period × Household Size	0.03	-0.00	0.02	0.08	0.06	-0.01
	(0.07)	(0.03)	(0.03)	(0.21)	(0.06)	(0.05)
	[0.45]	[0.62]	[0.39]	[0.21]	[0.39]	[0.69]
Grace Period × Wage Earner	0.24	0.01	0.03	0.08	-0.43*	-0.21*
	(0.16)	(0.08)	(0.08)	(0.60)	(0.23)	(0.12)
	[0.17]	[0.88]	[0.90]	[0.77]	[0.11]	[0.09]
Grace Period × Impatient	-0.01	0.14	0.02	0.69	-0.22	-0.03
	(0.16)	(0.08)	(0.08)	(0.67)	(0.23)	(0.12)
	[0.34]	[0.14]	[0.70]	[0.82]	[0.56]	[0.67]
Grace Period × Empowered Mother	-0.05	-0.18	-0.05	-0.70	-0.08	-0.24
	(0.20)	(0.11)	(0.10)	(0.70)	(0.22)	(0.16)
	[0.95]	[0.23]	[0.86]	[0.72]	[0.73]	[0.15]
Control Group Mean	-0.00	0.42	0.27	10.49	0.00	-0.22
Observations	543	543	541	543	363	381

- Proxies for credit constraints – baseline hh size at baseline (shadow cost of labor), baseline wealth, and whether the household had a wage earner at baseline – do not explain differences in investment patterns.
- Business owner impatience and client's level of empowerment also do not affect differences in outcomes.

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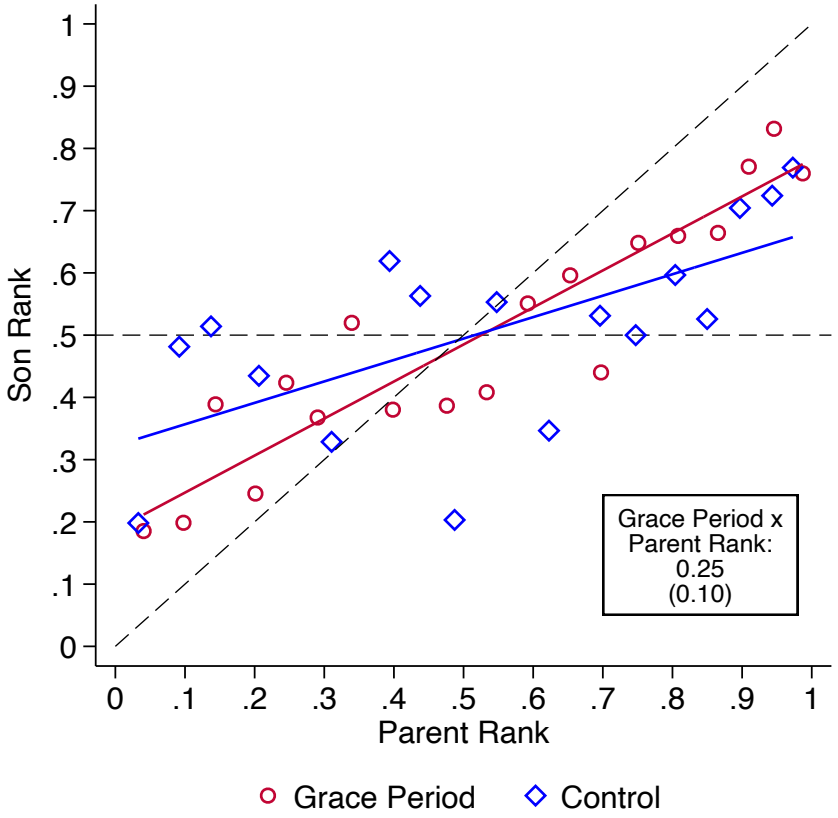
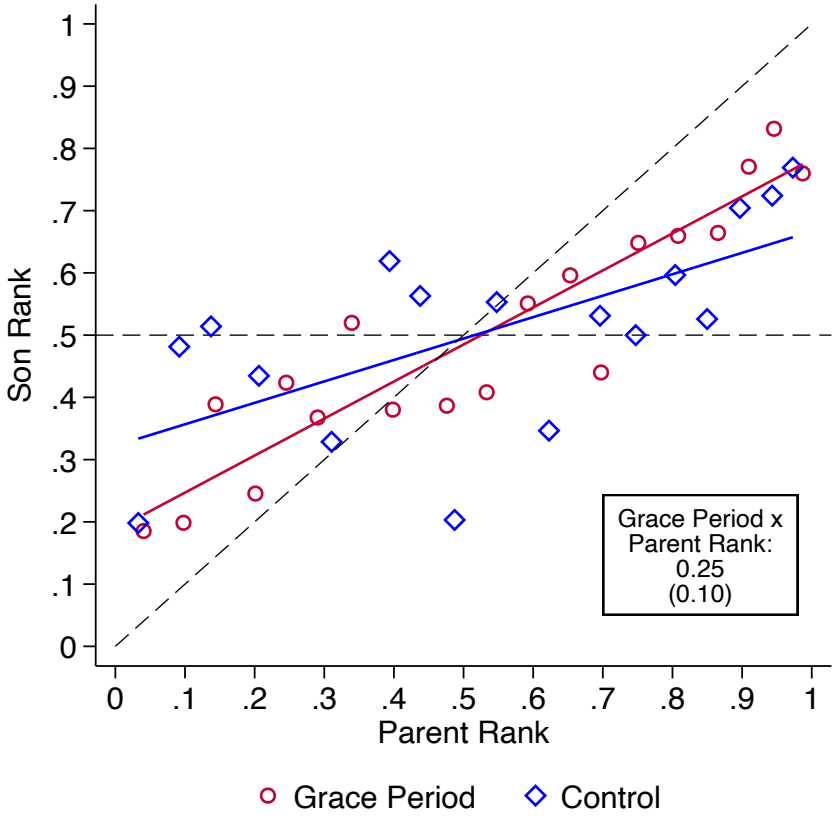
Relative Educational Mobility



In-Sample

Relative Educational Mobility



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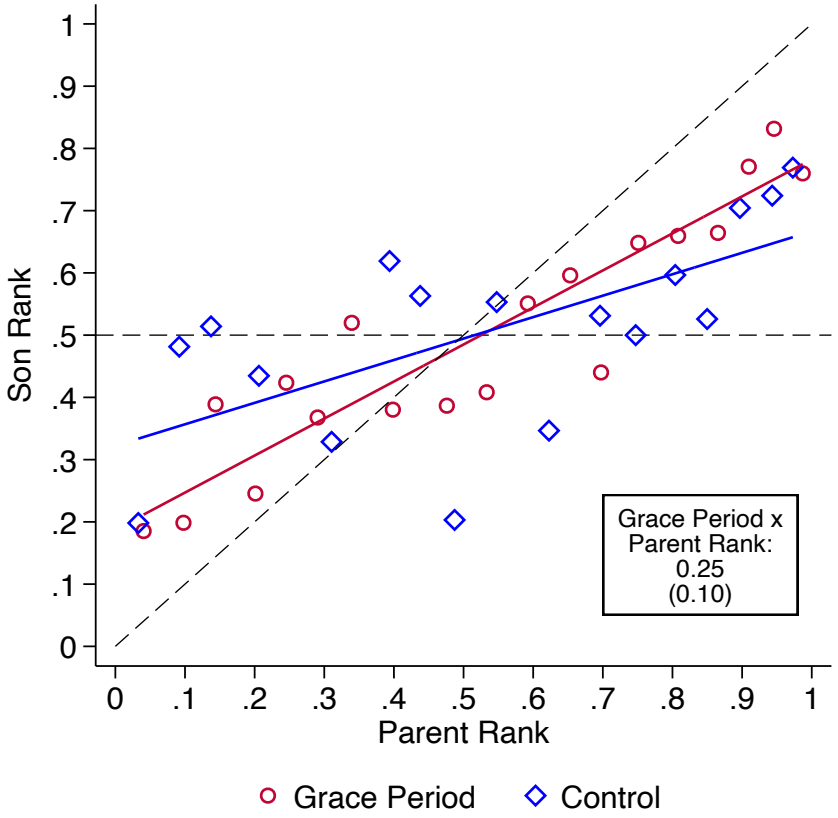

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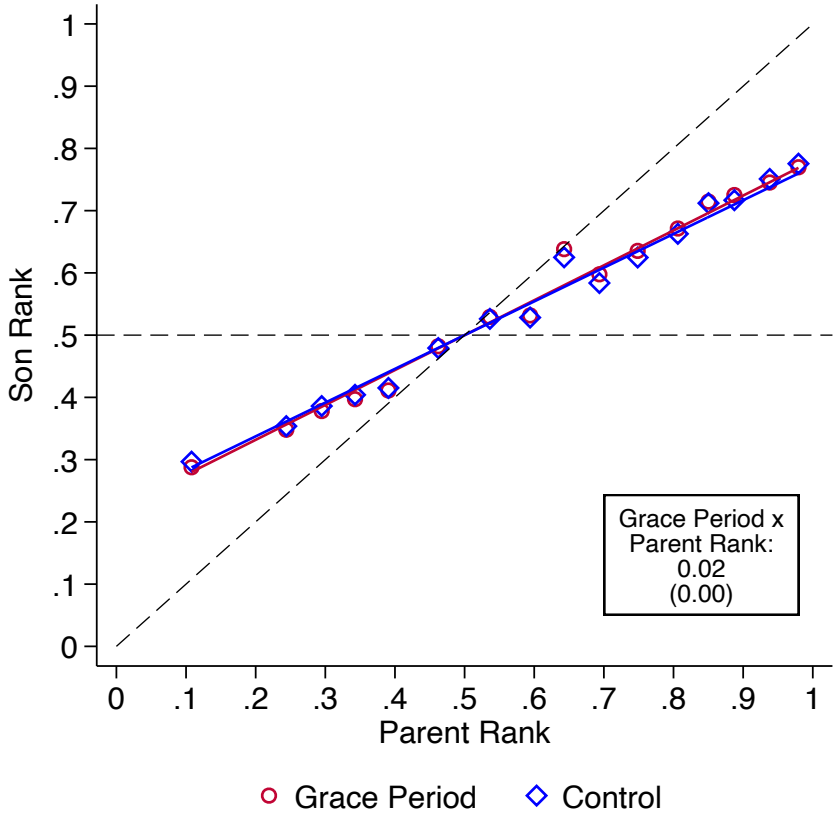

Population-Level (IHDS)

- **One pp increase in parent education rank is associated with a 0.36 percentage point increase in child's rank in control households**
- **Treatment increases relationship by 0.25 percentage points**

Earnings Inequality?

Does treatment, which entails a decline in schooling, make children from illiterate households less wealthy in the long-run, notwithstanding possible bequest gains?

- Back-of-the envelope calculation of the transfer size from illiterate treatment parents to their sons necessary to compensate for reduced earnings from lower educational attainment, in both absolute (compared to illiterate sons in the control group) and relative terms (compared to treated sons of literate parents).
- Obtain monthly earning estimates from 2012 IHDS, causal estimates for returns to education from Khanna (2023)
- At age 30, illiterate treatment sons require monthly transfers of Rs.307 to be as wealthy as illiterate control sons, and monthly transfers of Rs.1,336 to be fully compensated for treatment-induced differences in earned income between themselves and children of literate parents.
- Assuming constant profit difference from treatment (at their 2018 level), treatment illiterate households would earn an extra Rs.1,294 in monthly profits over and above their control group counterparts.

Conclusion

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  - But microenterprise productivity and household income of literate parents converges to their counterparts in the control
  - Children of illiterate parents 14 pp *less* likely to complete secondary school. More likely to be employed in hh business as children.
  - But microenterprises of illiterate parents still 45% more profitable than control group counterparts'.
- Argue that divergence in investment patterns is due to differences in real or perceived returns to education rather than differences in expected returns from the enterprise.

Conclusion

Thank you!

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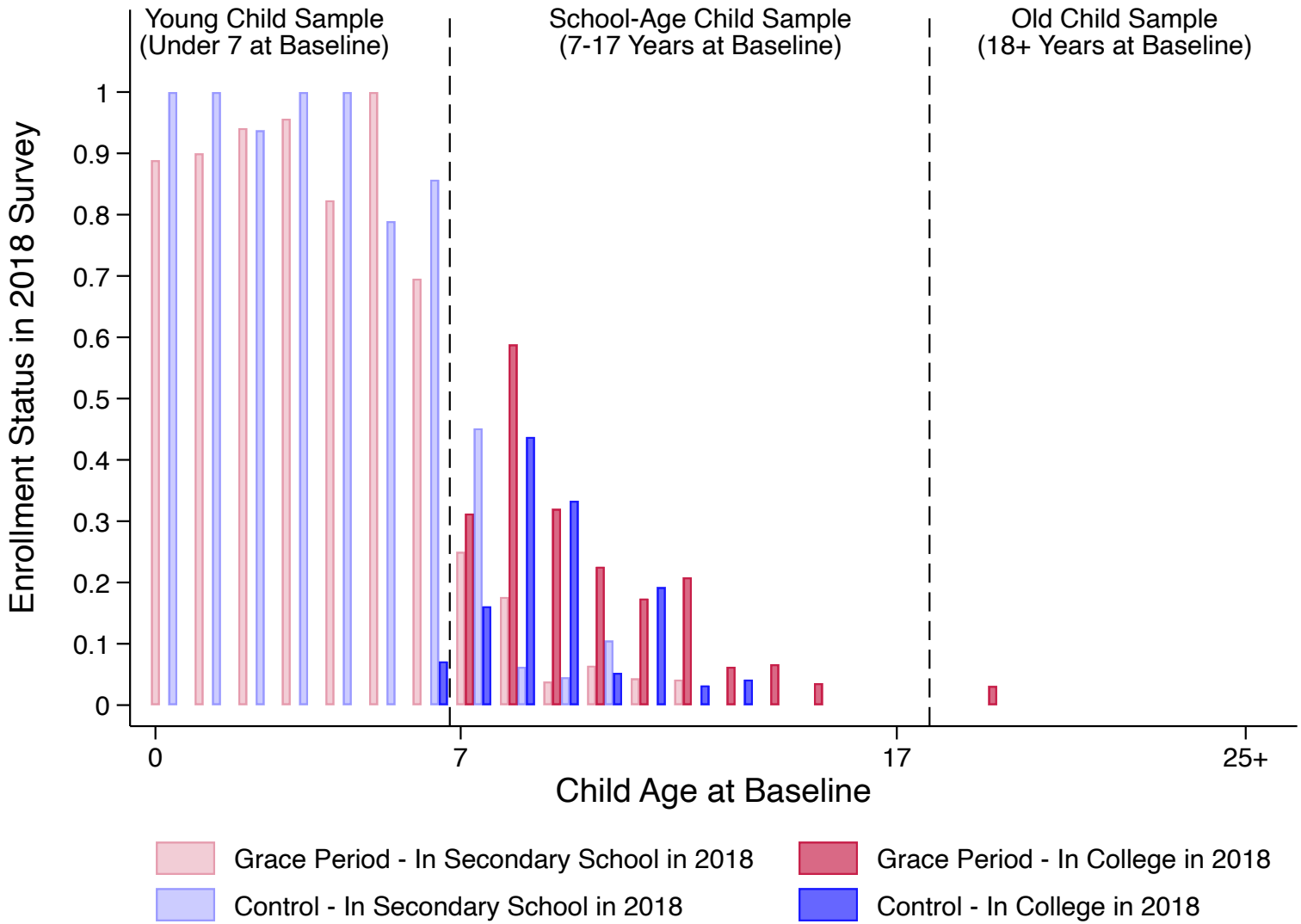
- **Placebo sample**: adult children (18+ at baseline, 35% of sample).
- **Partial education sample**: Examine impacts on children (under 7) who are still too young for college.
- No significant difference in likelihood of belonging to main, placebo sample or partial education sample based on treatment assignment. ▸ Back

Enrollment Status by Child Age at Baseline



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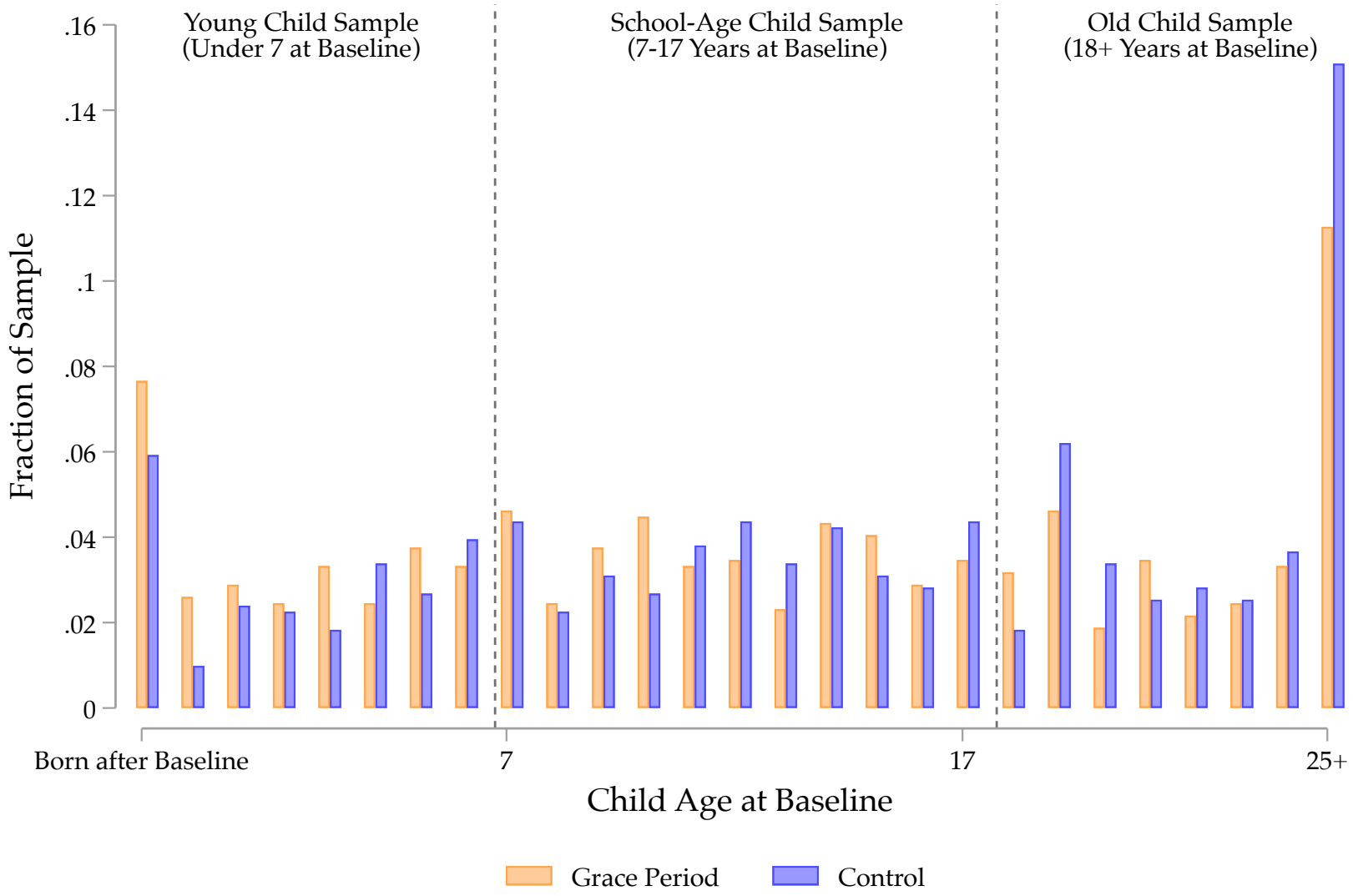
Child Age Distribution by Treatment



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Grace Period Increased Economic Outcomes in Short-Run

	2010 Survey				2018 Survey			
	Economic Index Components				Economic Index Components			
	Profits	Capital	Household Income	Log Household Income	Profits	Capital	Household Income	Log Household Income
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Pooled								
Grace Period	711.32***	16053.79*	2461.38	0.19*	99.15	12529.33	517.02	0.10
	(255.76)	(9440.17)	(2524.60)	(0.10)	(99.94)	(10043.02)	(627.52)	(0.07)
	[0.01]	[0.08]	[0.34]	[0.07]	[0.33]	[0.21]	[0.42]	[0.14]
Control Group Mean	1204.30	28747.84	14441.38	9.05	874.44	21253.05	7746.82	8.73
Observations	355	361	363	351	346	351	378	378

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Illiterate Grace Period HHs Outperform Control in Long-Run

	2010 Survey				2018 Survey			
	Economic Index Components				Economic Index Components			
	Profits	Capital	Household Income	Log Household Income	Profits	Capital	Household Income	Log Household Income
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Pooled								
Grace Period	711.32***	16053.79*	2461.38	0.19*	99.15	12529.33	517.02	0.10
	(255.76)	(9440.17)	(2524.60)	(0.10)	(99.94)	(10043.02)	(627.52)	(0.07)
	[0.01]	[0.08]	[0.34]	[0.07]	[0.33]	[0.21]	[0.42]	[0.14]
Control Group Mean	1204.30	28747.84	14441.38	9.05	874.44	21253.05	7746.82	8.73
Observations	355	361	363	351	346	351	378	378
Panel B: Heterogeneity by Parental Literacy								
Grace Period × Literate Parents	618.56**	16563.34	1838.85	0.13	21.46	7660.12	220.77	0.06
	(275.58)	(10869.25)	(2808.23)	(0.11)	(115.96)	(11823.21)	(729.89)	(0.07)
	[0.02]	[0.12]	[0.52]	[0.25]	[0.88]	[0.52]	[0.78]	[0.44]
Grace Period × Illiterate Parents	901.64*	18309.41	4573.12	0.40*	323.50**	27620.24*	1865.53**	0.28**
	(525.90)	(14894.56)	(4897.48)	(0.22)	(163.90)	(16509.49)	(850.52)	(0.13)
	[0.22]	[0.41]	[0.35]	[0.07]	[0.06]	[0.12]	[0.04]	[0.05]
p-value: Grace Period × Literate Parents = Grace Period × Illiterate Parents	0.63	0.92	0.61	0.25	0.12	0.31	0.11	0.13
	[0.73]	[0.94]	[0.60]	[0.27]	[0.18]	[0.35]	[0.19]	[0.18]
Control Group Mean (Literate Parents)	1238.49	32282.73	15013.05	9.10	909.36	23012.86	8110.76	8.77
Control Group Mean (Illiterate Parents)	1046.18	12787.27	11842.90	8.82	717.26	13696.20	6212.34	8.55
Observations	355	361	363	351	346	351	378	378

▸ Outcomes in Rupees

	Household Sample		Child Sample			
				Whether dropped out due to		
	Number of Household Workers	Number of Non-Household Workers	Ever Self-Employed Under 18	Economic Considerations	Child Ability	Marriage
	(1)	(2)	(3)	(4)	(5)	(6)
Panel B: Heterogeneity by Parental Literacy						
Grace Period × Literate Parents	-0.11*	-0.16*	-0.02	-0.04	-0.02	-0.03
	(0.06)	(0.16)	(0.02)	(0.04)	(0.04)	(0.03)
	[0.08]	[0.37]	[0.32]	[0.38]	[0.76]	[0.35]
Grace Period × Illiterate Parents	0.17*	0.50**	0.06**	0.20**	-0.04	0.06
	(0.10)	(0.23)	(0.03)	(0.08)	(0.08)	(0.05)
	[0.09]	[0.07]	[0.07]	[0.05]	[0.65]	[0.31]
p-value: Grace Period × Literate Parents = Grace Period × Illiterate Parents	0.02	0.02	0.01	0.01	0.77	0.12
	[0.02]	[0.04]	[0.02]	[0.03]	[0.77]	[0.17]
Control Group Mean (Literate Parents)	0.35	0.62	0.03	0.22	0.17	0.11
Control Group Mean (Illiterate Parents)	0.19	0.13	0.00	0.15	0.34	0.11
Observations	725	724	540	533	533	532

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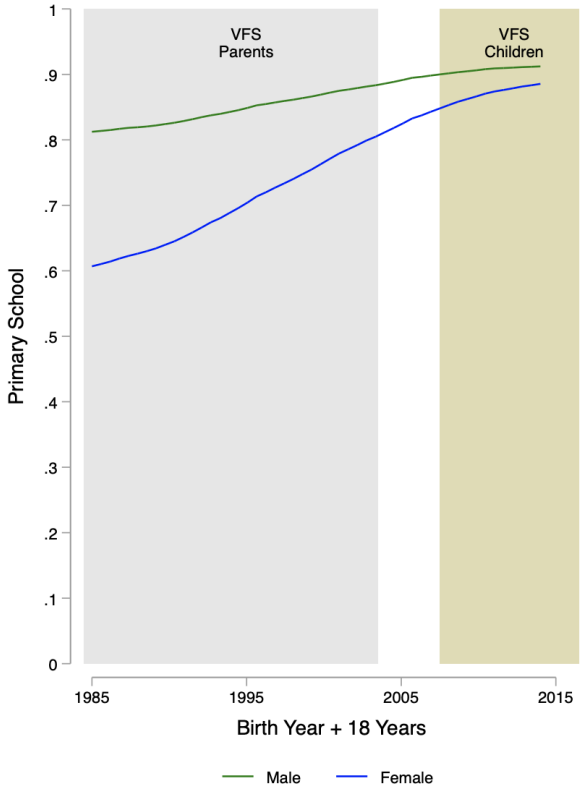
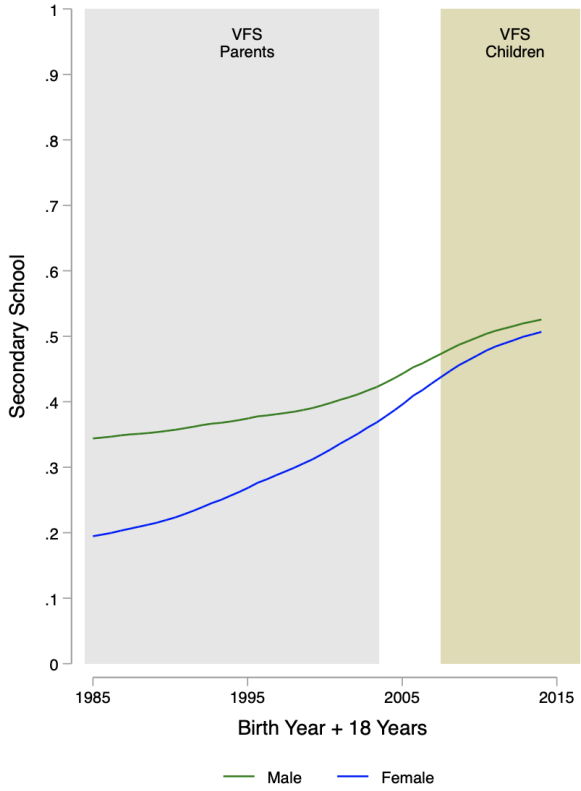
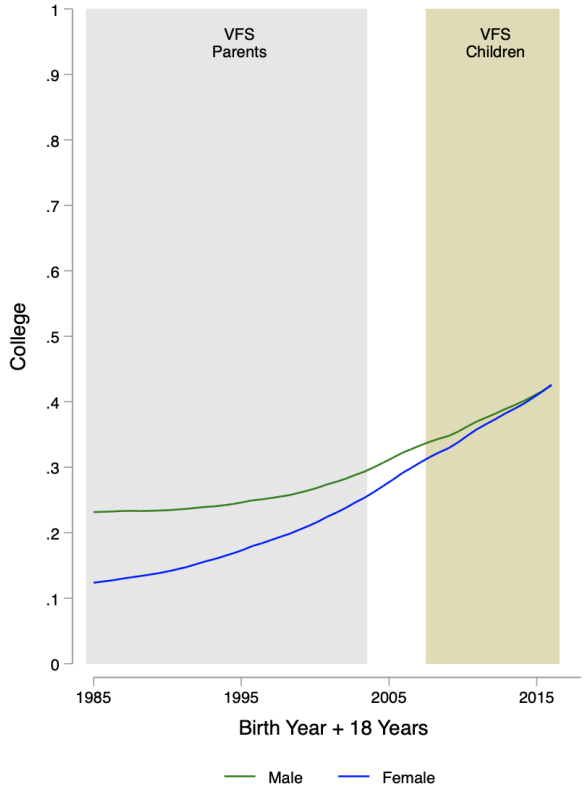
Educational Trends in India NFHS-4 (2015-16)







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Downstream Impacts on Children

	Investment Index	Completed Secondary School	Attended College	Years of Education	Married	Any Children	Housewife
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A: School-Age Child Sample (7-17 Years at Baseline), Heterogeneity by Gender							
Grace Period × Male	0.20*	0.05	0.10**	0.44	0.01	0.05	
	(0.11)	(0.06)	(0.05)	(0.37)	(0.05)	(0.04)	
	[0.08]	[0.41]	[0.07]	[0.29]	[0.77]	[0.20]	
Grace Period × Female	0.17	0.04	0.10	0.31	-0.05	-0.05	-0.12
	(0.09)	(0.06)	(0.06)	(0.40)	(0.06)	(0.06)	(0.06)
	[0.08]	[0.45]	[0.09]	[0.49]	[0.43]	[0.38]	[0.08]
p-value: Grace Period × Male = Grace Period × Female	0.78	0.93	0.99	0.81	0.33	0.14	
	[0.79]	[0.94]	[0.99]	[0.83]	[0.33]	[0.14]	
Panel B: School-Age Child Sample (7-17 Years at Baseline), Heterogeneity by Gender & Parental Literacy							
Grace Period × Literate Parents × Male	0.30**	0.08	0.14**	0.78*	-0.06	0.01	
	(0.14)	(0.07)	(0.06)	(0.42)	(0.05)	(0.04)	
	[0.04]	[0.26]	[0.04]	[0.10]	[0.27]	[0.76]	
Grace Period × Illiterate Parents × Male	0.02	-0.03	-0.01	-0.67	0.18	0.18	
	(0.15)	(0.09)	(0.07)	(0.77)	(0.11)	(0.09)	
	[0.90]	[0.78]	[0.88]	[0.41]	[0.14]	[0.06]	
Grace Period × Literate Parents × Female	0.24	0.14	0.15	0.87	-0.10	-0.10	-0.16
	(0.11)	(0.07)	(0.07)	(0.47)	(0.07)	(0.07)	(0.07)
	[0.04]	[0.06]	[0.05]	[0.11]	[0.17]	[0.20]	[0.04]
Grace Period × Illiterate Parents × Female	0.05	-0.26	-0.02	-1.46	0.03	0.08	-0.05
	(0.14)	(0.10)	(0.11)	(0.71)	(0.10)	(0.11)	(0.13)
	[0.75]	[0.01]	[0.86]	[0.06]	[0.76]	[0.49]	[0.70]
p-value: Grace Period × Literate Parents × Male = Grace Period × Literate Parents × Female	0.74	0.52	0.92	0.88	0.60	0.16	
	[0.75]	[0.56]	[0.92]	[0.90]	[0.63]	[0.20]	
p-value: Grace Period × Illiterate Parents × Male = Grace Period × Illiterate Parents × Female	0.86	0.10	0.96	0.48	0.26	0.47	
	[0.85]	[0.09]	[0.95]	[0.51]	[0.27]	[0.50]	
Control Group Mean (Male, Literate Parents)	0.09	0.48	0.30	10.66	0.20	0.09	
Control Group Mean (Male, Illiterate Parents)	-0.19	0.27	0.17	9.27	0.23	0.10	
Control Group Mean (Female, Literate Parents)	0.05	0.44	0.32	10.87	0.62	0.47	0.55
Control Group Mean (Female, Illiterate Parents)	-0.25	0.37	0.14	9.94	0.86	0.69	0.69
Observations (Male, Literate Parents)	205	205	205	205	204	204	
Observations (Male, Illiterate Parents)	69	69	69	69	69	69	
Observations (Female, Literate Parents)	194	194	192	194	195	195	195
Observations (Female, Illiterate Parents)	75	75	75	75	75	75	75

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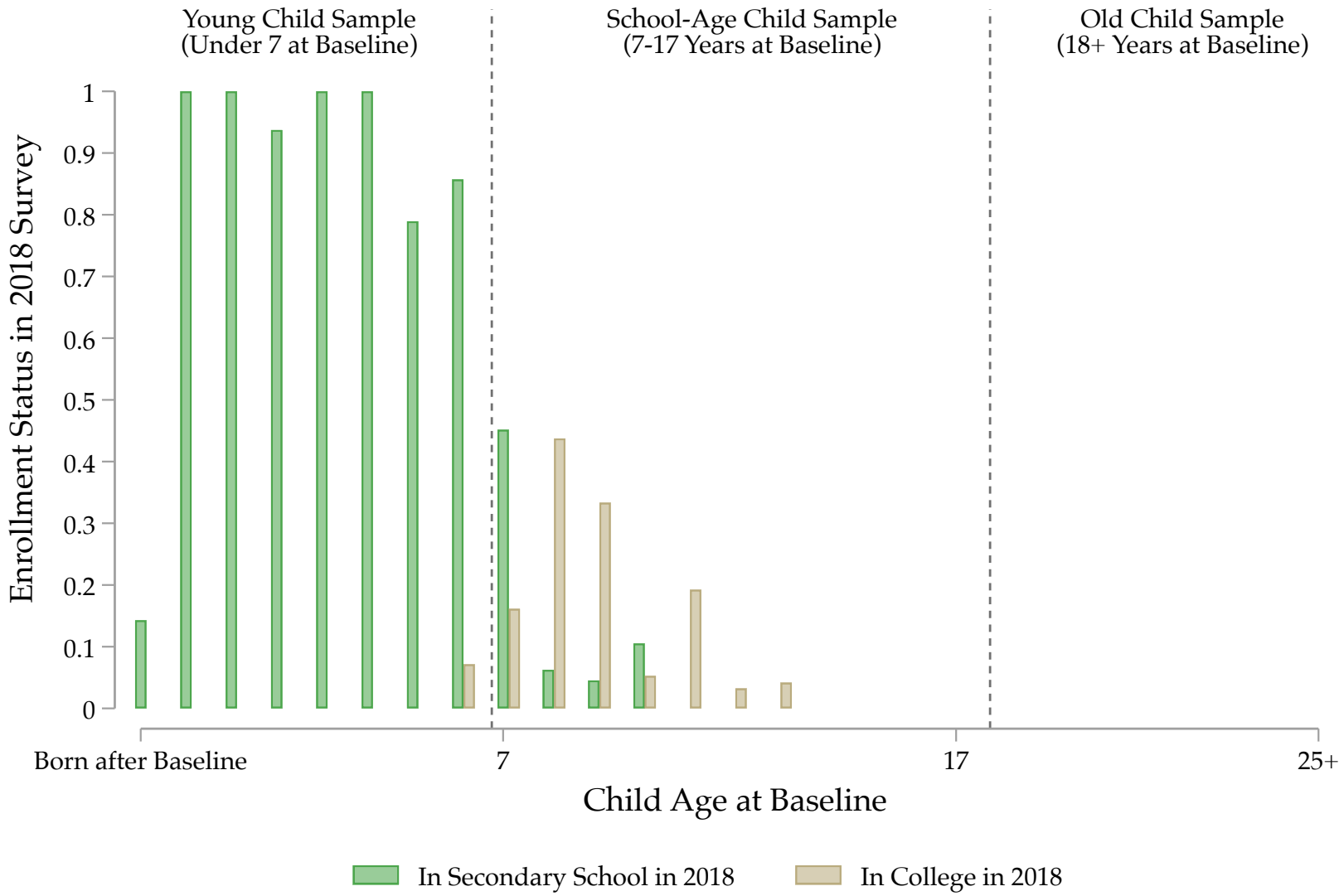
Old Kids

		Investment Index Components					
	Investment Index	Primary School Investment Subindex	Secondary School Investment Subindex	College Spending (Standard-ized)	Completed Secondary School	Attended College	Years of Education
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel D: Old Child Sample (18+ Years at Baseline), Heterogeneity by Parental Literacy							
Grace Period × Literate Parents	-0.04	-0.14	-0.04	-0.02	0.04	0.04	0.23
	(0.10)	(0.09)	(0.10)	(0.12)	(0.06)	(0.04)	(0.43)
	[0.71]	[0.17]	[0.67]	[0.89]	[0.50]	[0.33]	[0.58]
Grace Period × Illiterate Parents	-0.06	0.04	-0.07	-0.13	-0.02	-0.02	-0.52
	(0.08)	(0.09)	(0.07)	(0.08)	(0.04)	(0.03)	(0.61)
	[0.51]	[0.70]	[0.35]	[0.12]	[0.59]	[0.40]	[0.47]
p-value: Grace Period × Literate Parents = Grace Period × Illiterate Parents	0.87 [0.88]	0.14 [0.17]	0.79 [0.81]	0.46 [0.48]	0.36 [0.39]	0.21 [0.21]	0.29 [0.33]
Control Group Mean (Literate Parents)	0.11	0.07	0.12	0.06	0.26	0.16	9.69
Control Group Mean (Illiterate Parents)	-0.28	-0.17	-0.29	-0.16	0.06	0.04	6.83
Observations (Literate Parents)	308	308	308	308	308	308	308
Observations (Illiterate Parents)	184	184	184	184	184	184	184

▸ Back

Control Group Enrollment By Age



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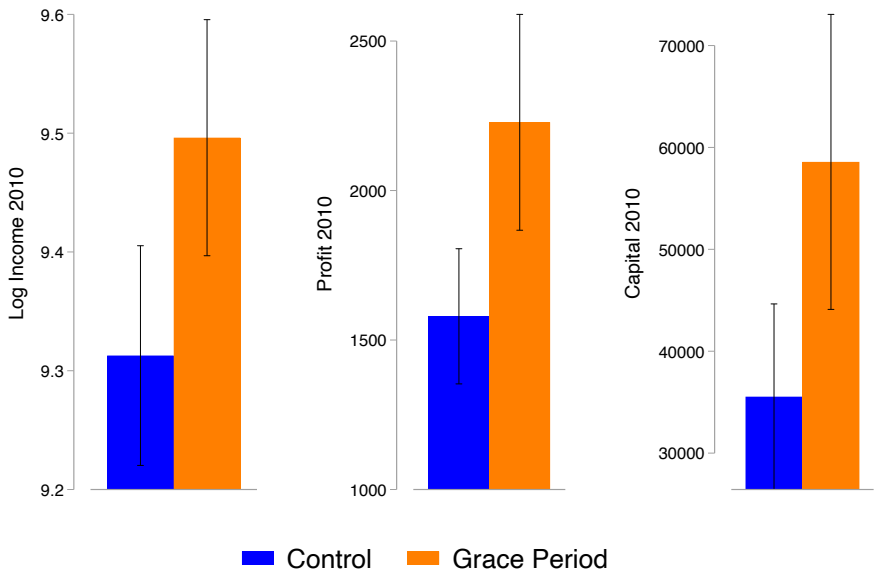
Economic Impacts After 3 Years (Field et al., 2013)



- 20% ↑ in HH income and large gains in business investment and profits (returns to capital between 6-13%).
- Twice as likely to start new business and more likely to report taking risk.
- Effects concentrated among households with a business and those with greater need/preference for flexibility.

▸ Back - Experimental Design