Impact of Female Labor Force Participation on Child Outcomes: Evidence from a Employment Guarantee Program

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Overview

- Does providing guaranteed employment to women impact child's educational outcomes?

- Introduction of an employment guarantee program in India used as a natural experiment

- Compare employment spillovers of participation of women in an employment guarantee program (policy employed mothers) vs. women employed in regular labor market (independently employed mothers).

Possible Mechanisms

Channels through which employment guarantee schemes influence schooling decisions of children of household (Afridi et al (2012); Li and Sekhri (2013); Das and Singh (2014); Mani et al. (2014)):

- **Income Effect**, increase in income would lead to more expenditure on child's education

- **Substitution Effect**, increased employment would lead to an increased burden on children's (especially girls) time to either work on farms or in the household.

Definitions

- **District**: An administrative division of an Indian state or territory.
  There are 713 districts in India

- **Gram Panchayat**: Basic village-governing institute in India. Democratic structure at the grass-roots level.
  There are about 250,000 Gram Panchayats in India.

Mahatma Gandhi National Rural Employment Guarantee Act

- Introduced by the Government of India in 2005. Largest employment guarantee scheme in the world.

- Guarantees "right to work" to every rural household at a minimum wage which is set by the Central Government. 100 days of guaranteed employment per household.

- Reservation of one-third work-days for women

- Child-care for all children below 6 years of age at job sites

- Work provided within 5 kms of the household.

Mahatma Gandhi National Rural Employment Guarantee Act

- Jobs focus on improvement in local infrastructure
- Wage to material ratio is 60:40
- No machinery allowed
- 2.68 billion person days of employment in 2018-19

Data

1. First and second round of Indian Human Development Survey (IHDS) conducted in 2004-05 and 2011-12
2. Nationally representative survey.
3. 41,554 households, 1503 villages and 971 urban neighbourhoods across India
4. App 83% households from IHDS-I re-interviewed

Data: Child Specific Characteristics

1. Children aged 8-11 completed short reading, writing and arithmetic tests

   ○ Test conducted in 13 languages

   ○ **Reading Test:** could not read at all-0 points. 1 point for letters; 2 points if they could read a word. Reading a paragraph 3 points and a story 4 points.

   ○ **Math Test:** could not identify numbers 0 points, 1 point identifying numbers; 2 points for subtraction and 3 points for division

   ○ **Writing Test:** 1 point if they could write a paragraph with 2 or less mistakes, and 0 points otherwise.

2. Hours spent at school every week- a self reported variable is also included.

Data: Parent and Household Specific Characteristics

1. Mother policy-employed or independently employed
2. Mother worked during first survey (2005).
3. Education of the mother and father
4. Household income and assets owned
5. Demographic and economic characteristics of household

Sample limited to married women in rural areas where data from both surveys is available.

Summary Statistics

Table 1: Summary statistics for working and non-working mothers

Variable	Working		Not Working
	MGNREGA	**Independent**	
Child Characteristics			
Test Score	4.65	5.03	5.44
	(2.74)	(2.73)	(2.66)
Sex (Male =0, Female=1)	.48	.48	.46
Age(Yrs)	9.51	9.50	9.52
	(1.12)	(1.11)	(1.11)
Distance to School(Kms)	1.76	1.93	2.10
	(4.55)	(2.30)	(2.62)
Hours in School/Week	34.22	33.11	32.37
	(7.80)	(7.34)	(7.96)
Mother's Characteristics			
Worked during IHDS-I	0.42	0.26	0.09
Age(Yrs)	34.51	34.48	34.32
	(5.88)	(5.70)	(5.46)
Education Completed	2.45	3.88	5.41
	(3.42)	(4.39)	(4.51)

Summary Statistics

Father's Characteristics			
Education Completed	4.93	6.47	7.71
	(4.34)	(4.66)	(4.76)
Work	.98	.99	.93
Household Characteristics			
Household Size	5.95	6.48	6.77
	(1.91)	(2.42)	(2.92)
Assets owned by the HH	11.21	12.87	15.88
	(4.77)	(5.91)	(6.14)
# of Children in the HH	2.86	2.99	2.98
	(1.19)	(1.37)	(1.48)

Empirical Strategy- Sample of Working Mothers

$$Y_i = \alpha + \beta_1 MGNREGA_i + \beta_2 \ X_i + \gamma_1 Parent_i + \gamma_2 HH_i + \epsilon_i,$$
(1)

Y_i: Test scores of children

$MGNREGA_i$: Indicator for whether the child i's mother is policy-employed or independently-employed.

X_i is a vector of child specific characteristics like age, sex, and distance to school.

Dummies for states and the caste of the family. Standard Errors

$Parent_i$ includes the mother's work force participation during time period t-1 (2005), education of parents.

HH_i includes household size, assets owned (in levels), and number of children in the household.

Propensity Score Matching

- PSM to compare across the two groups - policy employed mothers vs independently employed mothers and controlling for the observable differences.

- Standard discrete choice models- logit and probit.

- Score calculated based on the model:

  $MGNREGA_i = \alpha + \beta_1 X_i + \gamma_1 Parent_i + \gamma_2 HH_i + \epsilon_i$

Results: Impact of Mother's Participation in MGNREGA on Child's Test Scores- OLS

Table 2: Determinants of Child Test Score using OLS

	Dependent variable: Test Score				
	(1)	(2)	(3)	(4)	(5)
Mother Working under	-0.42**	-0.62***	-0.29*	-0.32*	-0.17
MGNREGA	(0.13)	(0.14)	(0.13)	(0.13)	(0.13)
Child's Sex		-0.33**	-0.33***	-0.30**	-0.27**
		(0.10)	(0.10)	(0.10)	(0.10)
Child's Age		0.59***	0.61***	0.60***	0.60***
		(0.05)	(0.04)	(0.04)	(0.04)
Distance To School (Kms)		0.34***	0.18**	0.20***	0.12*
		(0.06)	(0.06)	(0.06)	(0.06)
Mother Worked during 2005			0.02	-0.01	0.06
			(0.12)	(0.12)	(0.12)
State Dummies	N	Y	Y	Y	Y
Caste Dummies	N	N	Y	Y	Y
Observations	2427	2427	2427	2427	2427
R^2	0.004	0.16	0.26	0.27	0.29

Results based on Propensity Score Matching

Table 4: Treatment Effects based on Test Scores Using Propensity Score Stratification

Methodology	Child Controls	Child, Parent Controls	Child, Parent and HH Controls	Obvs
	(1)	(2)	(3)	(4)
Logit propensity estimation	-0.51 (0.14)	-0.14 (0.17)	-0.17 (0.16)	2427
Logit propensity estimation Keep if prop score 0.01-0.99	–	–	-0.16 (0.16)	2260
Probit based score	-0.51 (0.16)	-0.13 (0.17)	-0.17 (0.13)	2427
Linear probability score	-0.47 (0.14)	-0.18 (0.17)	-0.19 (0.17)	2427
Linear Regression	-0.62 (0.14)	-0.29 (0.13)	-0.32 (0.13)	2427

Main Results

- Test scores of children with policy employed mothers are 6.4% lower

- PSM based on logit regression show that children with policy-employed mothers have 10.2% lower test scores.

Secondary Results

- Female children have 6% lower test scores compared to the male children.

- Female education has a positive impact on the child's educational outcome as posited in previous literature and found here. Female literacy in rural areas is 59%.

Conclusion

- Compared policy-employed mothers to independently employed mothers, decision to join labor force impacts educational outcomes of children.

- Implies substitution effect stronger for policy employed mothers.

- Reinforces the idea that the negative spillovers of employment opportunities, especially for women need to be factored into the formulation of public programs.

Thank you for listening!

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