

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

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Motivation of the Paper

- Examine how childhood educational outcomes are impacted by the mother's participation in the labor force.
- Targets on mothers participating in an employment guarantee program versus mothers employed in the regular workforce in India.
- Focus on the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) 2005.
- Use survey data from India Human Development Survey I and II

- 2 main channels through which employment guarantee schemes influence schooling decisions of children of household¹:
 - ① direct impact via the **income effect**, i.e. an increase in income would lead to more expenditure on the education of the children
 - ② indirect **substitution effect**, where increased employment would lead to an increased burden on children's time to either work on farms or in the household.
- Multiple studies focused on impact of MGNREGA on targeted households with conflicting results².
- I use multivariate analysis and propensity score matching and I add information about mother's work status during 2005, which accounts for endogeneity associated with willingness to participate in labor force.

¹Li and Sekhri (2014)

²Afridi et al (2012); Li and Sekhri (2013); Das and Singh (2014); Mani et al. (2014)

- **District:** It is an administrative division of an Indian state or territory. There are 713 districts in India
- **Gram Panchayat:** It is an old system of local government still followed in India. Panchayati Raj Act (73rd Amendment) in 1992 which involved 1) 3 tier Panchayati Raj for states with population over 2 million, 2) elections every 5 years, 3) reservations for backward classes and women. Local government bodies

Background: MGNREGA

- Largest employment guarantee scheme in the world and was introduced by Government of India in 2005
- Guarantees "right to work" to every rural household at a minimum wage
- 100 days of guaranteed employment per household at minimum wage
- Reservation of one-third work-days for women
- Provides child-care for all children below 6 years of age at job sites
- Work provided within 5 kms of where the household resides

Background: MGNREGA

- Household applies for job card, which identifies households as beneficiaries.
- Household member applies for job (to the Gram Panchayat), supposed to receive work within 15 days or are entitled to unemployment benefits.
- Focus of projects undertaken under the Act is improvement of local infrastructure
- Wage to material ratio is 60:40 and no machinery allowed
- Minimum wage rate set by the Central Government of India which also provides the funds (budget for 2018-19 was app \$7 billion)
- State government takes care of the unemployment allowance in case jobs are not available
- Generated 2.68 billion person days of employment in 2018-19

- ➊ First and second round of Indian Human Development Survey (IHDS) conducted in 2004-05 and 2011-12
- ➋ Nationally representative, multi-topic survey of 41,554 households in 1503 villages and 971 urban neighbourhoods across India
- ➌ Approximately 83% of households from IHDS-I were re-interviewed
- ➍ Interviews covered topics concerning health, education, employment, economic status, marriage, fertility, gender relations, social capital, village infrastructure, wage levels etc.
- ➎ Survey divided into modules: 1) interview with household head, 2) tests administered to children 8-11, 3) Interview with ever married women aged 15-49, 4) Assessment of village infrastructure, 5) Facilities of one public and one private school in the area

Data: Child Specific Characteristics

- ① Children aged 8-11 completed short reading, writing and arithmetic tests (which is my main variable of interest)
 - 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 Data about whether mother is policy-employed or independently employed, if mother worked during first survey (2005).
- ② Education of the mother and father
- ③ Household income and assets owned
- ④ Demographic and economic characteristics of household

Final sample of 2427 children with corresponding information about the mother and household from both surveys.

Summary Statistics of Variables Used

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

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

Summary Statistics of Variables Used

<i>Father's Characteristics</i>			
Education Completed	4.93 (4.34)	6.47 (4.66)	7.71 (4.76)
Work	.98	.99	.93

<i>Household Characteristics</i>			
Household Size	5.95 (1.91)	6.48 (2.42)	6.77 (2.92)
Assets owned by the HH	11.21 (4.77)	12.87 (5.91)	15.88 (6.14)
# of Children in the HH	2.86 (1.19)	2.99 (1.37)	2.98 (1.48)

Results: Impact of Mother's Participation in MGNREGA on Child's Schooling Outcomes- Test Score

Table 2: Determinants of Child Test Score using OLS

	<i>Dependent variable: Test Score</i>				
	(1)	(2)	(3)	(4)	(5)
Mother Working under MGNREGA	-0.42** (0.13)	-0.62*** (0.14)	-0.29* (0.13)	-0.32* (0.13)	-0.17 (0.13)
Child's Sex		-0.33** (0.10)	-0.33*** (0.10)	-0.30** (0.10)	-0.27** (0.10)
Child's Age		0.59*** (0.05)	0.61*** (0.04)	0.60*** (0.04)	0.60*** (0.04)
Distance To School (Kms)		0.34*** (0.06)	0.18** (0.06)	0.20*** (0.06)	0.12* (0.06)
Mother Worked during 2005			0.02 (0.12)	-0.01 (0.12)	0.06 (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: Impact of Mother's Participation in MGNREGA on Child's Schooling Outcomes- Time Spent at School

Table 3: Determinants of Time spent at School using OLS

	<i>Dependent variable: School Hours/Week</i>				
	(1)	(2)	(3)	(4)	(5)
Mother Working under MGNREGA	1.32*** (0.37)	0.65 (0.40)	0.61 (0.40)	0.60 (0.40)	0.53 (0.40)
Child's Sex		0.41 (0.28)	0.39 (0.29)	0.40 (0.29)	0.39 (0.29)
Child's Age		0.21 (0.13)	0.17 (0.13)	0.17 (0.13)	0.17 (0.13)
Distance To School (Kms)		-0.25 (0.20)	-0.22 (0.20)	-0.22 (0.20)	-0.18 (0.20)
Mother Worked during 2005			1.18** (0.37)	1.17** (0.37)	1.14** (0.38)
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- Test Scores

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

Results based on Propensity Score Matching- Hours Spent in School Per Week

Table 5: Treatment Effects Based on School Hours/week Using Propensity Score Stratification

Methodology	Child Controls	Child, Parent Controls	Child, Parent and HH Controls	Obvs
	(1)	(2)	(3)	(4)
Logit propensity estimation	0.73 (0.50)	0.71 (0.50)	0.66 (0.52)	2427
Logit propensity estimation Keep if prop score 0.01-0.99	—	—	0.69 (0.38)	2260
Probit based score	0.73 (0.48)	0.70 (0.55)	0.65 (0.55)	2427
Linear probability score	0.82 (0.46)	0.72 (0.48)	0.70 (0.47)	2427
Linear Regression	0.65 (0.40)	0.61 (0.40)	0.60 (0.40)	2427

Conclusion

- Compared policy-employed mothers to independently employed mothers, decision to join labor force impacts educational outcomes of children.
- Found substitution effect to be stronger.
- Reinforces the idea that the negative spillovers of employment opportunities, especially for women need to be factored into the formulation of public programs.

The End