

# Does International Migration Impact the Education and Child Labor Outcomes of Left-Behind Children?

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Evidence from Rural Bangladesh

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# Motivation

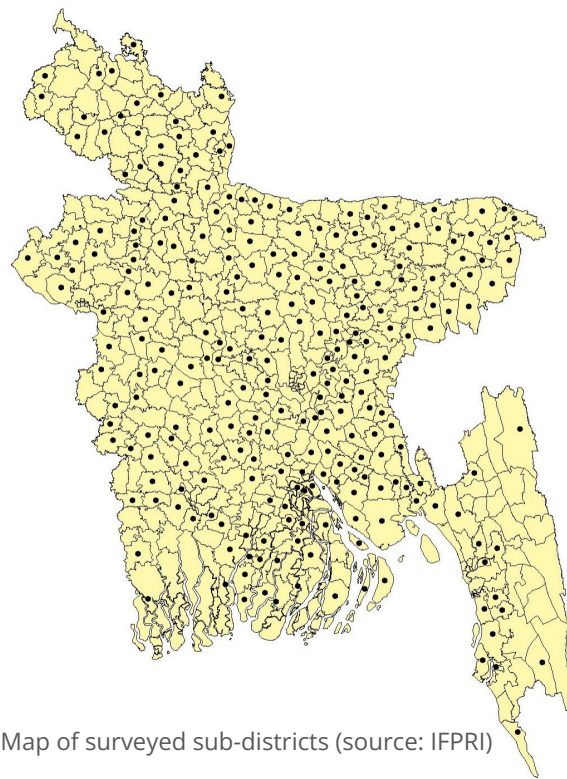
- International migrants contribute significantly to Bangladesh's economy
  - ~ 7.4 million Bangladeshi migrants live and work abroad
  - Remittances comprised 5-10% of the GDP during 2005-2022
- 2.26 million children left behind in rural migrant households face complex, competing influences on their education
  - Education offers a path to upward mobility
  - Remittances may allow households to invest more in education
  - However, migration imposes steep financial and social costs on households
- Understanding outcomes can guide targeted policies

## Research questions

- Does living in a migrant household affect education and child labor outcomes?
  - School enrollment (ages 6-17)
  - Years of education attained (ages 12-17)
  - Average weekly hours worked in economic activities (ages 6-17)
- Do outcomes vary by sex? By age?
- What might explain the observed outcomes?

# This is the first comprehensive study of child outcomes in migrant vs. non-migrant Bangladeshi households

- Analyzes new, high-quality, nationally representative survey data (BIHS 2015-2019)
  - 14,539 children from 8,313 rural households in all 64 districts
- Estimates outcomes after addressing the endogeneity of migrant status
  - Recursive bivariate probit for school enrollment
  - Conditional (recursive) mixed process estimator for education attained
  - IV 2SLS for average weekly hours worked



Map of surveyed sub-districts (source: IFPRI)

## Findings

- Boys aged 15-17 are 20.3 percentage points less likely to be enrolled in school, and on average work 12.7 more hours per week
- Girls of all ages work slightly fewer (0.75-2.77) hours per week
- Girls' school enrollment is not affected
- No effect on years of education attained for boys or girls

## Empirical Strategy: Recursive Bivariate Probit for Enrollment

$$z^* = \alpha' \mathbf{w} + \epsilon_1, \quad z = \begin{cases} 1 & \text{if } z^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

$$y^* = \beta' \mathbf{x} + \delta z + \epsilon_2, \quad y = \begin{cases} 1 & \text{if } y^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (2)$$

- Equation (1): household's migrant status (probit)
- Equation (2): probability of a child being enrolled (probit)
- Identification strategy
  - 2005 division-level migration rate is a strong instrument for migrant status
  - IV 2SLS is inaccurate for a nonlinear regression with binary treatment and outcome variables
  - Joint estimation via recursive model applies an exclusion strategy and accounts for correlation between error terms

# Empirical Strategy: Years of Education Attained

$$z^* = \alpha' \mathbf{w} + \epsilon_1, \quad z = \begin{cases} 1 & \text{if } z^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

$$y^* = \gamma' \mathbf{x} + \delta z + \epsilon_2, \quad y = \begin{cases} 1 & \text{if } y^* \leq \tau_1 \\ 2 & \text{if } \tau_1 < y^* \leq \tau_2 \\ \vdots & \vdots \\ K & \text{if } y^* > \tau_{K-1} \end{cases} \quad (2)$$

- Jointly estimated conditional mixed process models
  - Equation (1): household's migrant status
  - Equation (2): education attained by a child with robust standard errors
- Identification strategy
  - Adapts IV censored ordered probit framework seen in prior literature

## Empirical Strategy: Average Weekly Hours Worked

$$z^* = \alpha' \mathbf{w} + \epsilon_1, \quad z = \begin{cases} 1 & \text{if } z^* > 0 \\ 0 & \text{otherwise} \end{cases} \quad (1)$$

$$y^* = \gamma' \mathbf{x} + \delta z + \epsilon_2 \quad (2)$$

- Equation (1): household's migrant status (probit)
- Equation (2): average weekly hours worked by a child (WLS)
- Identification strategy
  - Second stage (2) uses the predicted values from first stage (1) in place of the instrument
  - Nonlinear first stage no longer introduces bias, and estimates are more precise than for a Linear Probability Model (Wooldridge 2010)

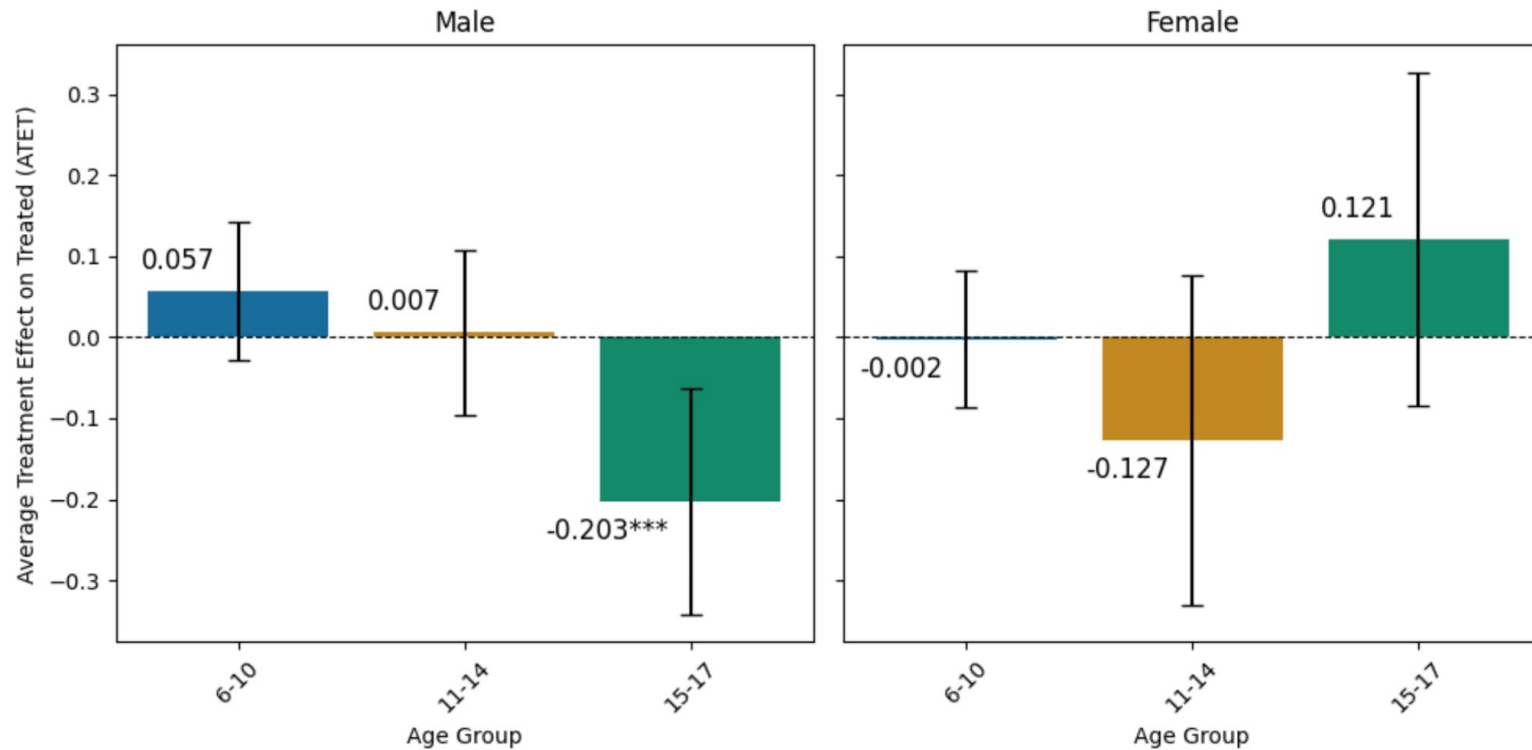


# Summary Statistics: Migrant vs Non-Migrant Households

Variable	Obs.	Migrant		Non-Migrant		t-statistic	p-value
		Mean	S.D.	Mean	S.D.		
<i>Household-level</i>							
Female-headed	8313	0.52	0.50	0.14	0.35	23.783	0.000
Head's education (years)	8313	4.38	3.82	3.43	3.92	7.650	0.000
Dependency ratio	8313	0.82	0.55	0.67	0.39	8.694	0.000
Annual non-food expenditure per capita (Tk)	8313	6,194.56	6,102.82	5,000.89	4,874.34	6.175	0.000
Annual food expenditure per capita (Tk)	8313	38,138.82	65,274.19	16,500.35	20,771.93	10.877	0.000
Asset value per capita (Tk)	8313	43,937.77	75,454.55	23,969.90	29,148.37	8.652	0.000
Has savings	8313	0.74	0.44	0.80	0.40	-3.976	0.000
Has loans	8313	0.65	0.48	0.74	0.44	-5.891	0.000
Food insecure	8313	0.02	0.15	0.05	0.21	-4.460	0.000
<i>Community-level</i>							
Metalled road present	8313	0.54	0.50	0.45	0.50	5.802	0.000
Secondary school present	8313	0.24	0.43	0.29	0.45	-3.176	0.002
<i>Child-level</i>							
Enrolled in school	14539	0.91	0.28	0.86	0.34	6.495	0.000
Weekly hours worked	14539	1.64	8.10	2.92	10.55	-6.157	0.000

*The T statistic is computed for difference in means between migrant and non-migrant households*

## Results: School Enrollment (ATET)



## Results: Years of Education Attained

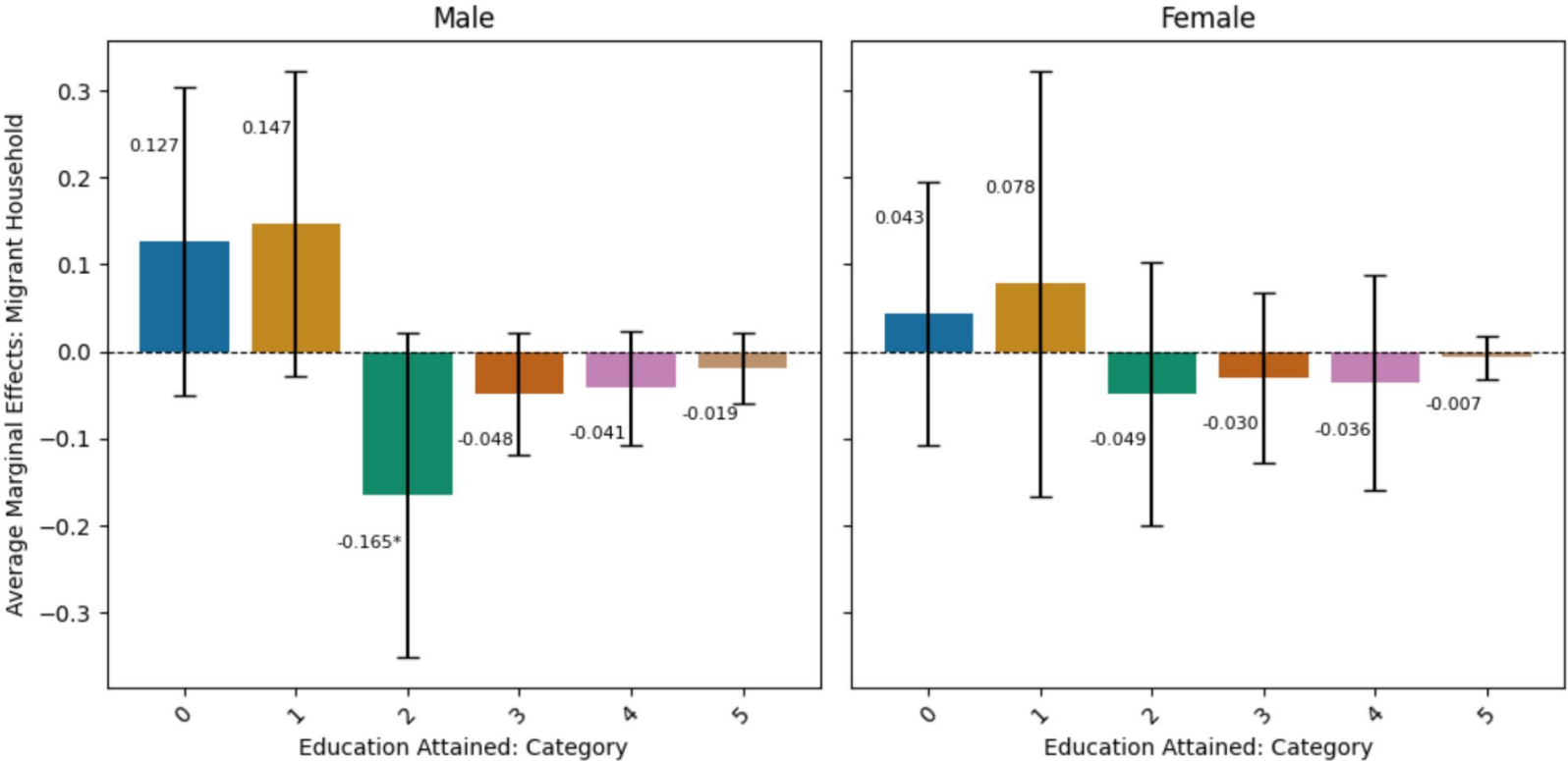
For boys and girls aged 12-14 or 15-17, the household's migrant status has no effect on attaining any level of education

Category	Description
0	0 years
1	1-5 years (completed Class 5)
2	6-8 years (completed Class 8)
3	9 years (SSC candidate or completed Class 9)
4	10 years (HSC candidate or completed Class 10 or completed TVET)
5	11 or more years completed

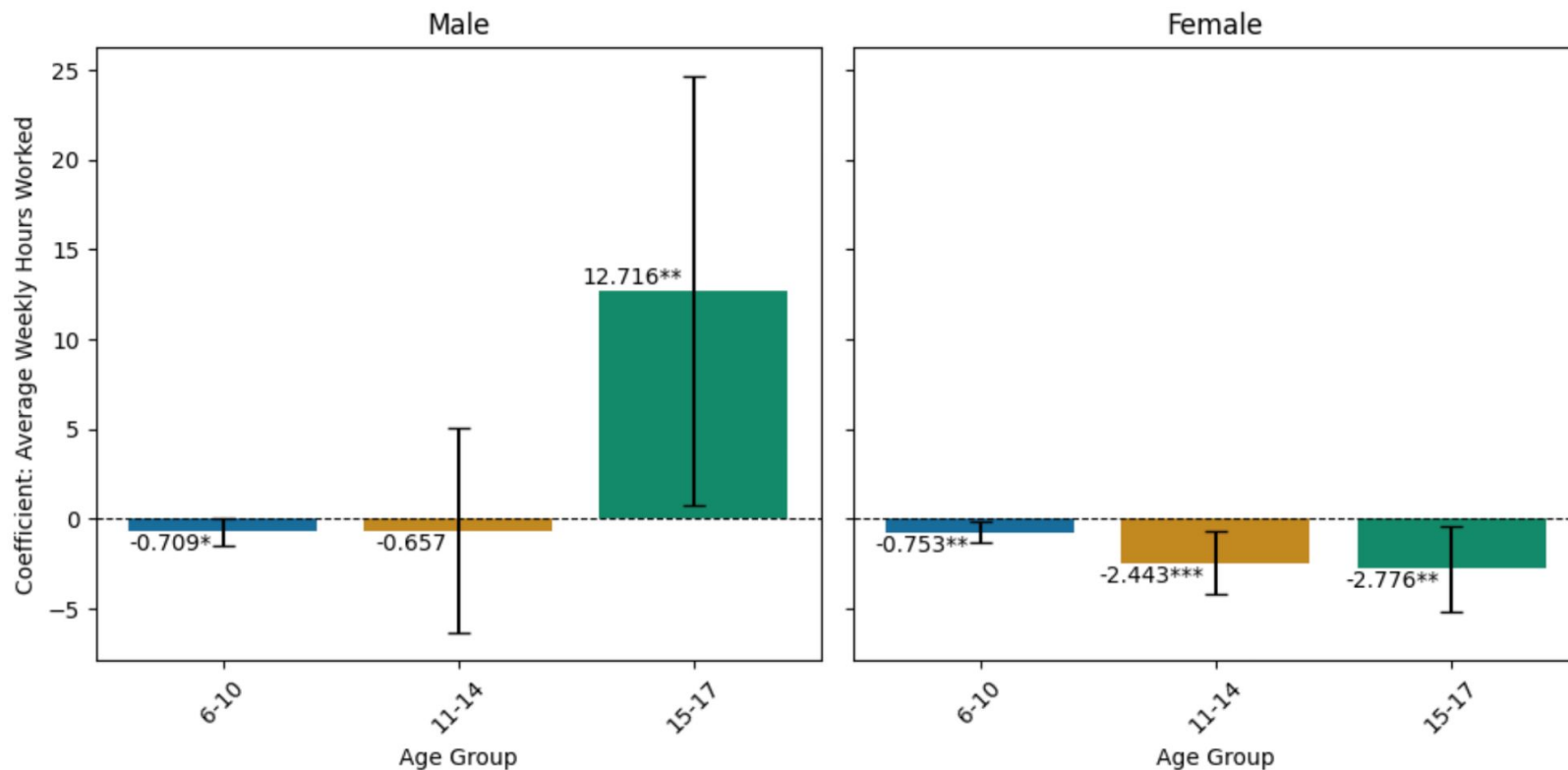
Possible explanations:

- Data is right-censored, i.e. some children are still in school
- This may make it harder to model older children for higher levels of education attained
- Interrupted education may not affect final attainment, e.g. if children later catch up

# Results: Years of Education Attained (Children Aged 15-17)



## Results: Child Labor (Average Weekly Hours Worked)



## Research Limitations

**Models** are unable to control for:

- Migrant characteristics (e.g. relationship to child, year of migration, occupation, education level)
- Pre-migration household characteristics (e.g. wealth, safety net access)

**Survey data** often omit information regarding what children do or plan to do outside of school, which has policy implications

## Conclusion

- Migration and remittances benefit the economy and households, but may potentially limit the human capital boys attain
  - Increased financial responsibilities due to the absence of an adult family member
  - Households may not emphasize secondary and tertiary education if boys plan to become low-skilled migrants
- Further research is needed to understand adulthood socioeconomic outcomes of children growing up in migrant households

## Policy Implications

- Skilled workers are necessary for Bangladesh's growth goals (2030-2040)
- Even if older boys work to support their families or plan to migrate, they might benefit from additional educational opportunities:
  - Technical and vocational education for those exiting formal education
  - Developing new programs that assist returning to formal education