Perverse Consequences of Well-Intentioned Regulation

Evidence from India’s Child Labor Ban

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Child Labor in the World

- 168 million child laborers worldwide, 85 million in hazardous conditions (, 2013)
- Child labor not a new problem, but now concentrated in developing countries
- 28 million working children in India (2011)

—Average 21 hours of work per week (2013)

Child Labor Bans

Often used policy: child labor bans

- Minimum age restrictions for work in developed countries
  - In the US: State and industry-specific laws from mid-1800s; national act in 1938
- Bans on child labor across the world
  - ILO Minimum Age Convention ratified by 166 countries (various age restrictions; does currently include India)

Child Labor Bans

Lots of debate, yet very little empirical evidence on effectiveness of child labor bans in developing countries

[Edmonds & Shrestha (2012)]

- Unintended consequences of laws a central concern of economic analysis

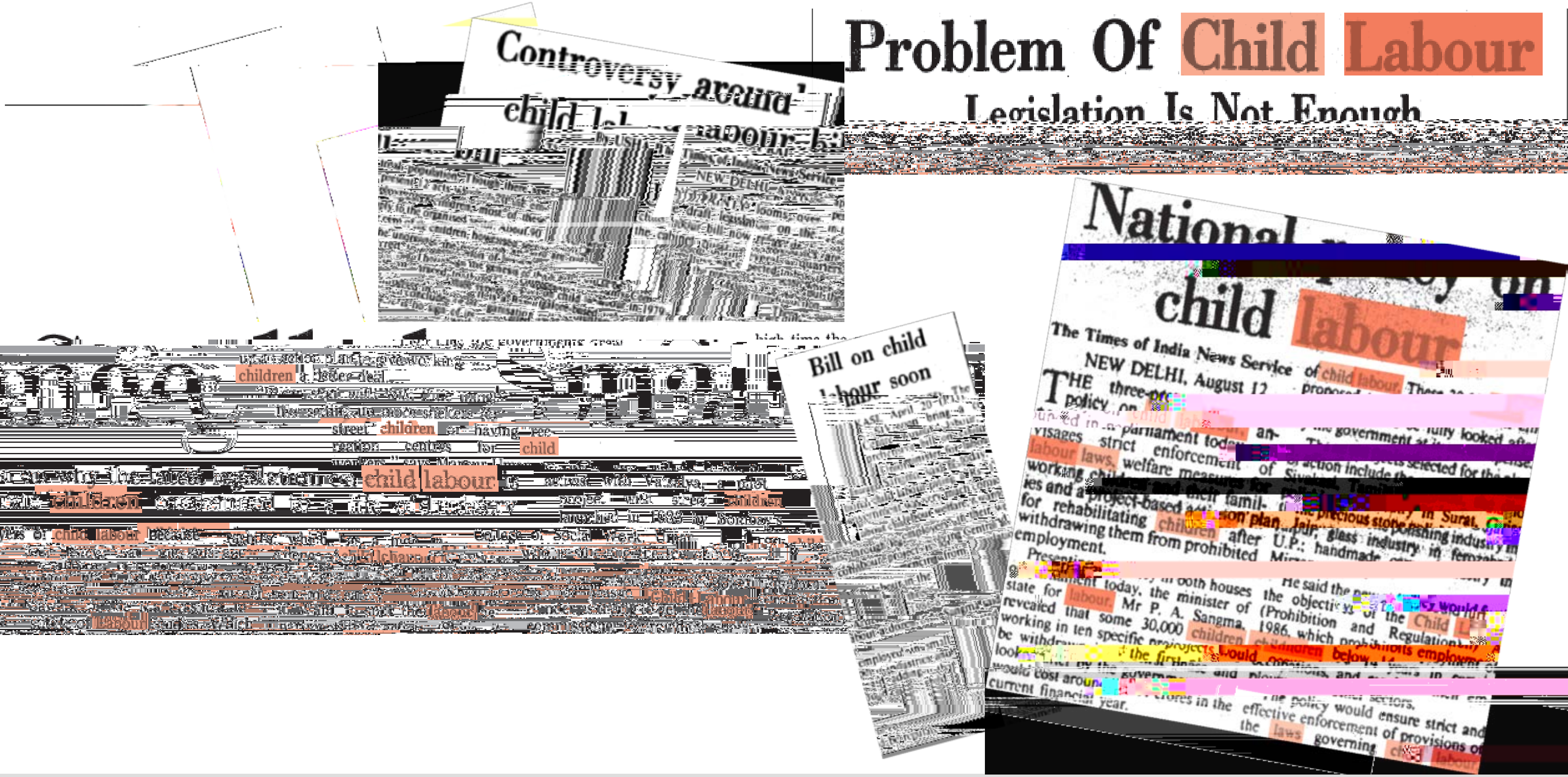
Empirical overview

- Major national law change in 1986
  - —All under 14 banned from working in various occupations/processes
- Data: NSS employment surveys (1983-1993/4)
- Difference-in-difference strategy
  - —Compare age ineligible (<14) to age eligible (>=14), before and after 1986
  - —Use sibling age eligibility to tie empirical results to theory
  - —Geographic and household heterogeneity

Preview of results

- Relative increases in child employment after the ban
  - Children with under the legal working age are more likely to work after the ban
  - No consistent evidence of schooling effects
- Geographic and household heterogeneity
  - Effects stronger in areas where ban is likely to have greater impact
  - Larger effects among poorer households
- Decreases in child wages a likely mechanism
- Household outcomes
  - Usually difficult to make a welfare claim
  - Small in expenditure and other measures of wellbeing

Child Labor Act of 1986



Controversy around child labour bill

Problem Of Child Labour

Legislation Is Not Enough

Bill on child labour soon

National policy on child labour

The Times of India News Service

NEW DELHI, August 12

Child Labor Act of 1986

- Ban implemented in December 1986
- Multiple child labor laws before 1986, but only for specific jobs
  - Not coordinated across occupations
- Main draw of 1986 law: uniformity in age restriction
  - Under 14 not allowed to work in certain industries, occupations and processes
  - Ban applied to mostly non-agricultural jobs (transportation, mines, construction, manufacturing, etc.)

Child Labor Act of 1986

- Major caveat: no ban on agricultural work or work in household businesses
  - Act did lay out regulations for forms of child labor
- Penalties
  - Imprisonment for “not less than three months” or
  - Fine of “not less than 10,000 rupees” or both
  - Harsher punishment for repeat offenders

Child Labor Act of 1986

- From 1997 to 2005, over 2.34 million inspections turned up more than 144,000 violations ( )
  - —Yet few prosecutions (less than 30% of violations from 2002-2008)
- Weak enforcement, though widespread awareness
  - —Busts make national news
  - —

Model highlights

[Basu and Van (1998), Basu (1999), Basu 2005)]

- Assumptions
  - Firms: child and adult labor are (imperfect) substitutes
  - Households: supply child labor only if adult wage is below subsistence levelncs—Ew -5n.5(f6(a60.6(l)3..017)11.3(t)9m(nl)3en)-1(i00237

Data

Source: Employment surveys collected by National Sample Survey Organization (NSS)

- 1983, 1987-8, 1993-4 (employment rounds)
- Estimation sample: children ages 10-17

Time allocation information

- —Available for ages 6+
- —Extensive margin only
- —Categories: paid and unpaid economic activity (by industry), unpaid household services, and school attendance
- —Linked expenditure and consumption data

Results: Overall Effects on Time Allocation

Overall Effects of Ban on Child Time Allocation (Ages 10-17)

	Any Economic Activity (1)	Any Economic Activity (2)	Labor Force Participation (3)	Employment in Banned Occup. (4)	Employment in Non-banned Occ.† (5)	Unpaid Economic Activity (6)	Paid Employment (7)
Under14XPost	0.024	0.026***	0.029***	0.004***	0.023***	0.007*	0.019***
	(0.040EMC /P <</MCID 7 14.04 -0 0 14.0431 52.4569 261.1844 TID 2C -0.003 Tc 0.003 Tw 2.42 0 -3.27						

Results: Narrow Age Ranges

Results: Heterogeneity

- Also includes

Wages

Theory predicts that child wages will fall proportionally than adult wages

- DID based on age ineligibility
- Caveat: wage data only available for work outside the home, so selected subsample

Dependent Variable: Log(Real Wage)

	Ages 6-21	Ages 7-20	Ages 8-19	Ages 9-18	Ages 10-17
	(1)	(2)	(3)	(4)	(5)
Under14XPost	-0.078***	-0.076***	-0.070***	-0.065**	-0.043
	(0.023)	(0.024)	(0.025)	(0.027)	(0.026)
Observations	33,731	30,566	23,648	20,696	14,848
R-squared	0.392	0.378	0.357	0.343	0.313

Wages are trimmed of the top and bottom 1% of values within each round.

Household Welfare

	Log Expenditure Per Capita	Log Food Expenditure Per Capita	Log Daily Calories Per Capita	(1-Staple Share	

Robustness checks

- Falsification tests
  - False ban ages and dates
  - Effect of ban on demographics
- More flexible age controls
- Economic growth, other national/state policies
- Effects on other ages
- Alternate clustering methods

Summary

Impacts of the ban

- Child labor increases for those under 14 relative to those over 14
  —Even in the industries targeted by the ban
- Children with siblings likely affected by the ban increase employment
- Stronger effects for poorer households and those living in areas more exposed to the ban
- Child wages decline relative to adult wages
- Small decreases in consumption and food quality
  —Negative welfare implication

Discussion

- Why didn't the 1986 ban work?
  - Policy did not address underlying cause of child labor
  - Broader theme of optimal policy in a world with weak enforcement
  - Behavior at the margin of subsistence can be qualitatively different
- Alternatives to bans
  - Cash transfers, increase returns to and investments in education [Edmonds and Schady (2012), Edmonds & Shrestha (2013)]

Child Labor Act of 1986

Bangle manufacturing in Bihar

- Public arrests of 4 employers
- Referred to as the “beginning that has to be made somewhere”

(From the , January 1987)

Ultimatum on U.P. child labour

Return

Descriptive Statistics

Results: Overall Effects on Time Allocation

All employment/expenditure rounds (1983, 1987-8, 1989-90, 1990-1, 1992,1993, 1993-4)

Results: Sibling-based Effects

Return

Robustness: Alternate Samples – Sibling Effects

See below for NSS rounds used

Return

Robustness: Operation Blackboard & State Labor Reforms

Dependent variable: Any Economic Activity				
	States with Below Median OB Intensity		States with No Change in Besley-Burgess Labor Classifications (1983-1994)	
	Overall Effects	Sibling Effects	Overall Effects	Sibling Effects
	(1)	(2)	(3)	(4)
TreatXPost	0.026***	0.0117.4(026*)-0.8(*)-0.7(*)]TJ0 Tc 0 Tw 3.761 0 Td( )TjEMC /P <<3D		

Results: Geographic Heterogeneity (2)

- Bolded coefficients are significantly different at the 10% level

Results: Household Heterogeneity (1)

Household Heterogeneity in ______ Effects
Dependent Variable: Any Economic Activity

	Head Education		Scheduled Caste		Staple Share of Calories		Child to Adult Ratio	
	Less Than Secondary Schooling	At Least						

- Bolded coefficients are significantly different at the 10% level

Results: Household Heterogeneity (2)

Household Heterogeneity in ______ Effects

Dependent Variable: Any Economic Activity

	Head Education		Scheduled Caste		Staple Share of Calories		Child to Adult Ratio	
	Less Than Secondary Schooling	At Least Secondary Schooling	Scheduled Castes	Non Scheduled Castes	Above Median	Below Median	Above Median	Below Median
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
TreatXPost			0.012	0.008***			0.008**	0.015**
			(0.012)	(0.003)			(0.004)	(0.007)
P-value of test for difference	0.022		0.773		0.053		0.316	
Pre-Ban Mean	0.126	0.010	0.201	0.103	0.154	0.075	0.117	0.097
Obs.	133,153	25,155	16,021					

Robustness: Flexible age controls

Dependent Variable: Any Economic Activity

	Overall Effects			

Robustness: Economic growth & other state/national policies

Dependent Variable: Any Economic Activity

- No pertinent national labor laws passed between 1984-1986
- National Policy on Education in 1986 but did include language about compulsory education
- Effects still strong in states with low Operation Blackboard intensity (Chin 2005) and excluding states with any changes in state-level labor classification (Besley & Burgess 2004)

Robustness: Effects on other ages

Dependent Variable: Any Economic Activity

	Ages 14-17	Ages 18-25	Ages 26-35	Ages 36-45	Ages 46-55	Ages 56+
	(1)	(2)	(3)	(4)	(5)	(7)
TreatXPost	-0.007	-0.003	-0.001	-0.009**	-0.003	-0.005
	(0.005)	(0.004)	(0.003)	(0.003)	(0.004)	(0.005)
Mean of Dep. Var.	0.293	0.511	0.645	0.676	0.638	0.383
Observations	135,954	258,716	253,116	185,328	122,158	116,877
R-squared	0.195	0.348	0.502	0.509	0.505	0.399

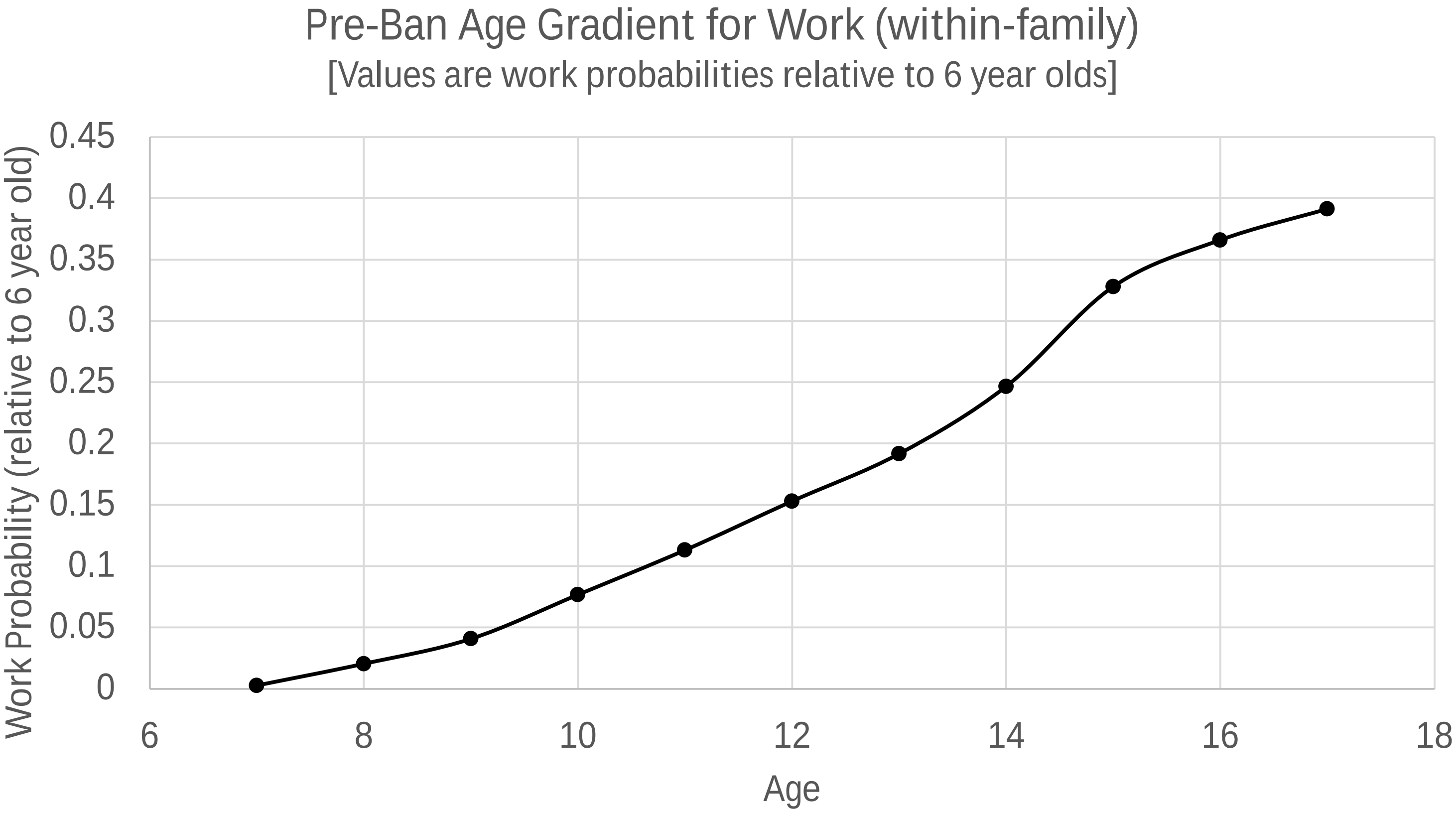
Return

Robustness: Alternate clustering methods

Results: Rural/Urban Differences

Results: Excluding 1987-8 round

Employment probabilities within families



Results:

Results: Household Heterogeneity (2)

Round 42: July 1986 – June 1987

Household Heterogeneity in Sibling-based Effects

Dependent Variable: Any Work

	Head Education		Scheduled Caste		Child to Adult Ratio	
	Less Than Secondary Schooling	At Least Secondary Schooling	Scheduled Castes	Non Scheduled Castes	Above Median	Below Median
	(1)	(2)	(3)	(4)	(7)	(8)
TreatXPost	0.007	0.003	0.006	0.003	0.005	0.008
	(0.005)	(0.005)	(0.011)	(0.005)	(0.005)	(0.009)
Pre-Ban Mean of Dep. Var.	0.061	0.009	0.077	0.048	0.059	0.044
Observations	34,330	6,563	10,391	32,348	33,131	9,606
R-squared	0.086	0.103	0.141	0.086	0.093	0.119

Model: One sector

Basu & Van (1998), Basu (2005)

Setup: Firms

- Two types of labor: adult ( ) and child ( )
  - —Substitution axiom: $= \quad , \quad < 1$
- Production: ($+$)
- Wages: adult wage ( ), child wage ( )

Model: One sector

Model: One sector

Equilibrium

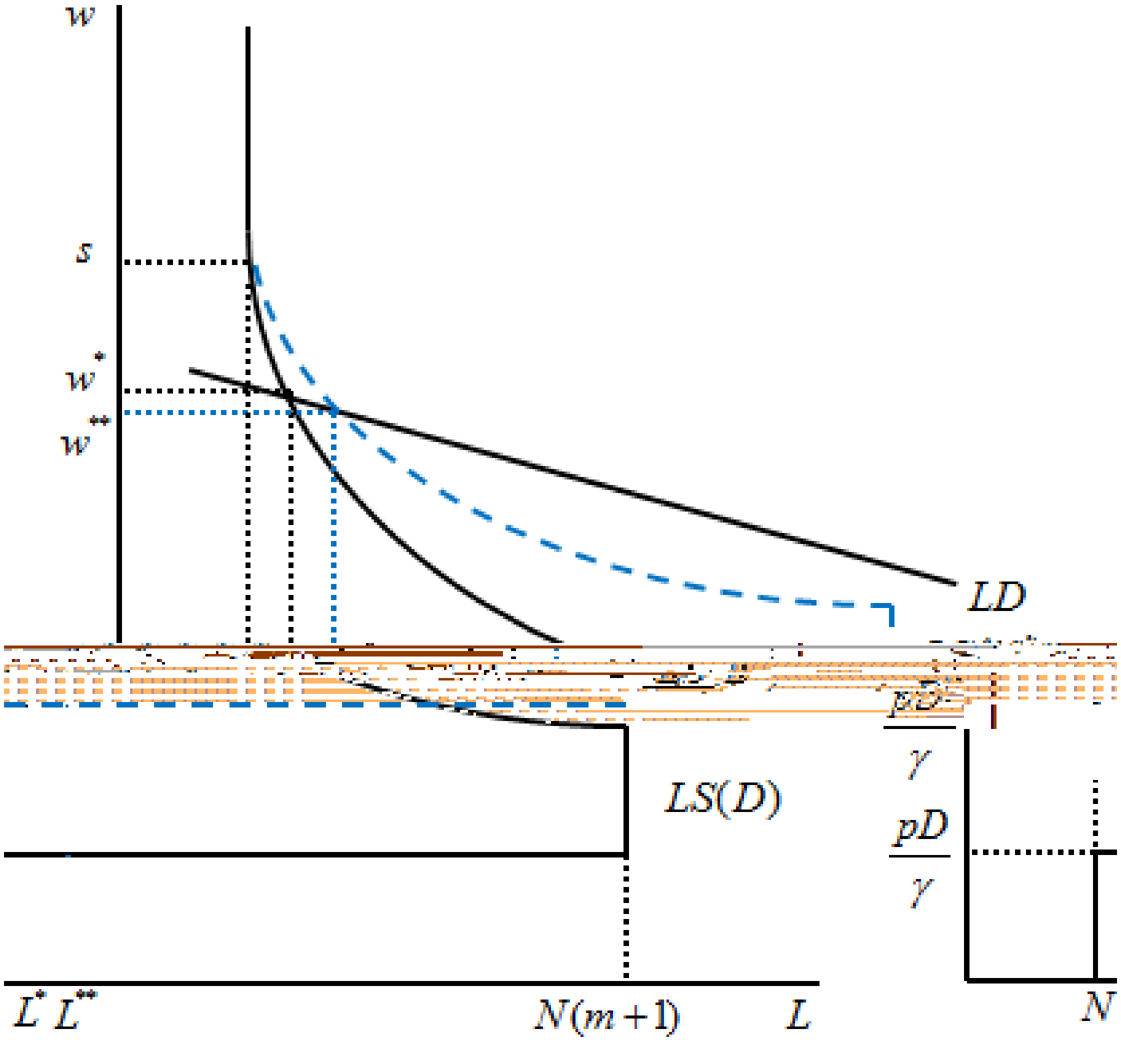
- Start with an equilibrium where there is at least some child labor and $= \; -$
  - Can consider other cases when $> \; -$, but leads to similar results
- In equilibrium, the child labor supply curve is

$$(\;) = \begin{array}{ll} 0 & \text{if} \;\; \geq \;\; \text{or} \;\; - \;\; \leq 0 \\ \min\left\{ \;, \frac{-}{-} \right\} & \text{otherwise} \end{array}$$

What is the impact of increasing expected fines?

One Sector: Impact of child labor ban

Basu (2005)



Model: Two sectors, complete mobility

Edmonds & Shrestha (2012)

- Two sectors: manufacturing (ban), agriculture
- Complete wage equalization across sectors pre-ban
- Impact of ban: labor reallocation
  - Cost of hiring child labor rises in manufacturing; child wages fall
  - Children flow from manufacturing to agriculture
  - Adults flow from agriculture to manufacturing
  - No overall effect on levels of child labor (no increase   decrease)

Model: Two sectors, no (or partial) mobility

- Barriers to entry into manufacturing
  - Higher wages in manufacturing pre-ban
- Ban lowers child wages in manufacturing
- Higher levels of child labor overall
  - Though unclear in which sector or both
  - Depends on household structure, barriers to entry