

Trade Policy, Migration Restrictions, and Gender Inequality: The Story of China's Left-Behind Children

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3 Parts to this Paper

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 - Workers migrate in from nearby rural areas.
 - New employment opportunities. Families get richer.
 - Effects on sons and daughters in the long run?

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- 2 Why are girls, not boys, harmed by trade liberalization?
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 - Parents separate from daughters exactly when and where it becomes expensive to keep children
- 3 Why are parents more likely to separate from daughters?
 - *Hukou* policy restrictions exacerbate pre-existing son-bias

Fact 1

Rural people living close to cities that experience trade-induced labor demand shocks

*Migrate to cities,
Find more skilled work,
Economic status improves.*

Shift-share empirical strategy:

$$NTR_c = \sum_d \left(\frac{1}{dist_{dc}} \right) \left(\sum_k NTRGap_k \times \frac{EX_{k,d}}{\sum_j EX_{k,j}} \right)$$

$\frac{EX_{k,d}}{\sum_j EX_{k,j}}$: Initial export shares in 1997

Parental outcomes in Population Census 2005

One **SD increase** in trade liberalization exposure causes...

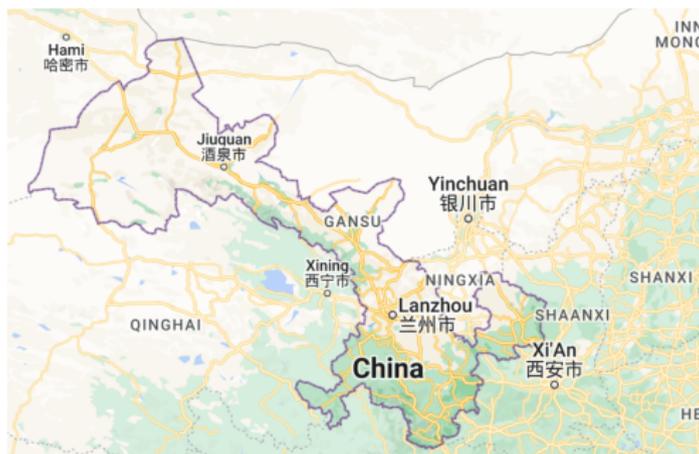
Dep. Var.	Effect on Parents	Mean of Dep. Var.
Migrate(=1)	0.0141*** (0.00245)	0.0435
Income	83.59*** (11.18)	430.8
IHS Income	0.183*** (0.0268)	6.431
Employed	0.00414** (0.00203)	0.978
High-skilled Industry(Top 20%)(=1)	0.000926*** (0.000254)	0.00488

- Migrate=1 if a parent was away from the *hukou* location at the survey time.
- 32% increase in migration
- 19% increase in income
- 18% increase in skilled employment

Fact 2

Despite the improvement in family economic status, daughters are worse off 13 years later

Gansu Survey of Children and Families (GSCF) -
Panel survey of 9-12-year-old children in 2000
Five waves in 2000, 2004, 2007, 2009 and 2015.
100 villages in 11 Prefectures in Gansu



Educational outcomes 2015 (When children 24-27 years old)

One SD increase in trade liberalization per year of exposure before completing compulsory schooling causes...

Dep. Var.	Effect on Boys	Effect on girls	P-value of Diff.	Mean of Dep. Var.
Enrolled in Precollege(=1)	0.0253* (0.0118)	-0.0177* (0.00883)	0.0478	0.207
Graduate in Precollege(=1)	0.0200* (0.0104)	-0.0161* (0.00817)	0.0762	0.165
Enrolled in High School(=1)	0.0165 (0.0164)	-0.0420*** (0.0124)	0.0298	0.369
Graduate from High School (=1)	0.0162 (0.0120)	-0.0415*** (0.0116)	0.0133	0.335
Pass Higher Vocational College Entrance Exam(=1)	0.0154* (0.00717)	-0.0407*** (0.00900)	0.000182	0.333
Pass Key High School Entrance Exam(=1)	0.0195*** (0.00571)	-0.0181** (0.00690)	0.000240	0.153
Years of Education	-0.0431 (0.101)	-0.382*** (0.104)	0.0492	11.23
IHS Years of Education	-0.00876 (0.0129)	-0.0681** (0.0235)	0.0670	3.025

- High school graduation: No effect for boys; -4.2% for girls
- Pre-college graduation: Boys +2%; Girls -1.6%
- Years of education: No effect for boys; -6.8% for girls

Children's later-life outcomes in 2015 round cont.

One **SD increase** in trade liberalization **per year of exposure** before completing compulsory schooling causes...

Dep. Var.	Effect on Boys	Effect on girls	P-value of Diff.	Mean of Dep. Var.
High-skill Occupation(Top 10 % =1)	-0.00176 (0.00632)	-0.0205** (0.00702)	0.0475	0.0629
Daily Income for Current Job	4.000 (3.830)	-9.564*** (1.403)	0.00630	89.49
Daily Income for First Working Month	2.319 (1.873)	-1.840 (1.969)	0.0364	59.81
Bottom Income Group (Bottom 50%)(=1)	-0.0554*** (0.00906)	-0.0298** (0.00993)	0.0704	0.452
Have Formal Contract(=1)	0.00777 (0.0114)	-0.0273** (0.00950)	0.0810	0.414
Good English(=1)	0.0180*** (0.00497)	-0.0543*** (0.00488)	0.000	0.682
Economic Status Better than Others in the Same Village(=1)	0.0125 (0.00738)	-0.0401*** (0.0125)	0.00406	0.730
Self-evaluation Index	0.0501 (0.0339)	-0.0513*** (0.0156)	0.0123	0.000
Psychological Problem Index	-0.0187 (0.0190)	0.0615*** (0.0129)	0.00727	-0.00200

Fact 3. *Parents of girls more likely to migrate*

	(1)	(2)	(3)	(4)
Dependent Variable: Migrate to Cities (=1)				
Standardized NTR × Having Daughter	0.0267** (0.0107)	0.0245** (0.00889)	0.0243** (0.00846)	0.0292** (0.00929)
Having Daughter	0.0520*** (0.0121)	0.0498*** (0.0113)		
Standardized NTR	0.0178** (0.00623)			
City FE	No	Yes	Yes	Yes
Child Gender by Cohort FE	No	No	Yes	Yes
Controls	No	No	No	Yes
Observations	2,652	2,652	2,652	2,652
Adjusted R-squared	0.00977	0.0336	0.0329	0.0338
Mean of Dep. Var.	0.106	0.106	0.106	0.106

- One SD increase in trade exposure increases emigration rate
 - of parents of sons from 10.6% to 12.4%.
 - of parents of daughters from 10.6% to 15.1%
- Migration and parental separation observed in 2004 round of GSCF
- Migrate=1 if parent away for more than 3 months per year.

Fact 4. *This hurts daughters early in life* (GSCF 2004)

One SD increase in trade liberalization **per year** of exposure before completing compulsory school education causes among children in 2004....

	Effect on Boys	Effect on girls	P-value of Difference	Mean of Dep. Var.
Good Chinese(=1)	0.0256** (0.00858)	-0.0374** (0.0131)	0.00611	0.366
Good Math(=1)	0.0199 (0.0144)	-0.0229* (0.0119)	0.00191	0.340
Violate School Discipline(=1)	-0.0118 (0.00873)	0.00913 (0.00605)	0.0846	0.190
Receive Punishment at School(=1)	-0.000269 (0.00826)	0.0246*** (0.00572)	0.0270	0.176
Do Agricultural Work(=1)	0.0911** (0.0402)	0.139*** (0.0384)	0.0864	0.547
Cut Class(=1)	-0.00752 (0.00895)	0.0294*** (0.00832)	3.85e-05	0.144
Sleeping Problems(=1)	-0.00524 (0.00359)	0.00996*** (0.00423)	0.0148	0.0387
Psychological Problem Index	0.000992 (0.0147)	0.0455** (0.0167)	0.0882	-0.00171

- Chinese Language skills: +7% for boys; -10% for girls
- School disciplinary punishment: No effect on boys; +14% for girls
- School absence: No effect on boys; +20% for girls
- Sleeping problems: No effect on boys; +26% for girls
- Psychological problems: No effect on boys; +0.05 std dev for girls

Children's outcomes in 2009 round of survey

One SD increase in trade liberalization per year of exposure before completing compulsory school education causes among children in 2009....

	Effect on Boys	Effect on girls	P-value of Difference	Mean of Dep. Var.
Economic Status Better than Others in The Same Village(=1)	0.0344*** (0.00508)	0.0100* (0.00504)	0.0174	0.147
Enrolled in High School(=1)	0.00266 (0.00835)	-0.0361*** (0.00700)	0.00291	0.385
Studying in High School(=1)	0.0132 (0.0136)	-0.155* (0.00853)	0.0174	0.161
Pass Key High School Entrance Exam(=1)	0.00822 (0.00699)	-0.0176*** (0.00526)	0.00752	0.113
Standard BMI (BMI >=18.5 & BMI <25)(=1)	0.0323** (0.0117)	-0.0187 (0.0161)	0.0232	0.563
Too Thin (BMI <18.5) (=1)	-0.00509 (0.00960)	0.0352*** (0.00537)	0.00393	0.196
Height <Bottom Gender-specific Decile (=1)	0.00485 (0.00365)	0.0127*** (0.00374)	0.133	0.0891
Psychological Problem Index	-0.0350 (-0.0281)	0.0663*** (0.0284)	0.0295	0.00271

- High school enrollment: No effect on boys. -9% for girls
- Normal BMI: +5.7% for boys; no effect for girls
- Malnourished: No effect for boys; +18% for girls
- Stunted: No effect for boys; +15% for girls
- Psychological problems: No effect for boys; +0.06 std dev for girls

Fact 5. *The Problem is Nationwide: CFPS 2010*

- CFPS is a **national representative** survey. We trace back the exposure to trade liberalization based on birth location.
- One **SD increase** in trade liberalization **per year** of exposure before completing compulsory school education causes among children...

	Effect on Boys	Effect on girls	P-value of Difference	Mean of Dep. Var.
Good Relationship with Others(=1)	0.00612 (0.00686)	-0.0132** (0.00605)	0.0484	0.439
Self-reported Happiness(=1)	0.00471 (0.00729)	-0.0153*** (0.00573)	0.0414	0.436
IHS Hours spent Looking after Family	0.00643 (0.0195)	0.0631*** (0.0196)	0.0231	1.012
Part Time Job(Working Hours <8)(=1)	0.0101 (0.00664)	0.0245*** (0.00605)	0.0429	0.687
Years of Education	-0.136*** (0.0502)	-0.191*** (0.0405)	0.278	8.422
Junior Middle School or above Education(=1)	-0.00576 (0.00818)	-0.0154** (0.00608)	0.247	0.699
High-skilled Occupation(=1)	-0.000667 (0.000730)	-0.00742*** (0.00209)	0.00276	0.0111
Low-skilled Occupation (Bottom 20%)(=1)	0.00956* (0.00563)	0.0256*** (0.00466)	0.00860	0.845
Bottom 20% Income(=1)	-0.00259 (0.00332)	0.00545 (0.00384)	0.104	0.101

Fact 6

Daughters receive less remittances than sons

Dependent variable: IHS of the Amount of Remittance		
Panel A: Primary School Age		
Female (=1)	-0.0980* (0.0530)	-0.0971* (0.0530)
Observations	14,460	14,460
Adjusted R-squared	0.0810	0.0814
Panel B: Junior Middle School Age		
Female (=1)	-0.134** (0.0653)	-0.135** (0.0642)
Observations	8,018	8,018
Adjusted R-squared	0.0818	0.0816
Household Control	Yes	Yes
City FE × Year FE	Yes	Yes
Cohort FE	No	Yes

- Migration improves parents' earnings and daughters could be compensated.
- The **net effect** on children depends whether the parents' **time** or **money** is more important

Fact 7

*Girls do more **housework** than boys when left behind.*

Dependent variable: Weekly Hours of Housework		
	Left-behind	Stay in rural with parents
Female (=1)	3.017*** (0.717)	1.765*** (0.338)
Coeff diff p-value		0.040
Observations	276	1,538
Adjusted R-squared	0.0813	0.0648
Prefecture FE	Yes	Yes
Cohort FE	Yes	Yes
Mean of Dep. Var.	5.896	3.891

- Girls do more housework in general. Gender gap magnified when parents leave.
- No meaningful difference in age of taking factory jobs (child labor)

Part 2. *Hukou* Migration Restrictions Encourage Migrants to Leave Children Behind

- Under China's *Hukou* system, each person is
 - assigned a locality of *hukou* registration
 - classified as either rural or urban
- Hukou determines person's eligibility to register marriage, buy local apartment, **enroll children in local schools**.
- Majority of 145 million urban migrants have a rural *hukou*

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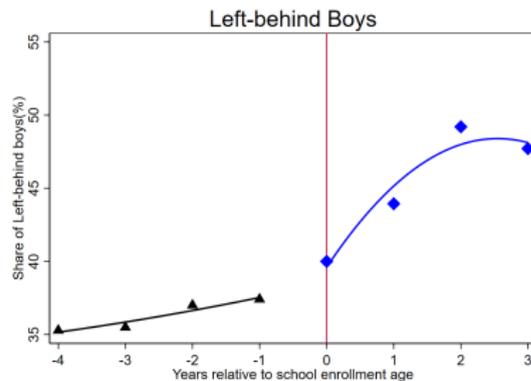
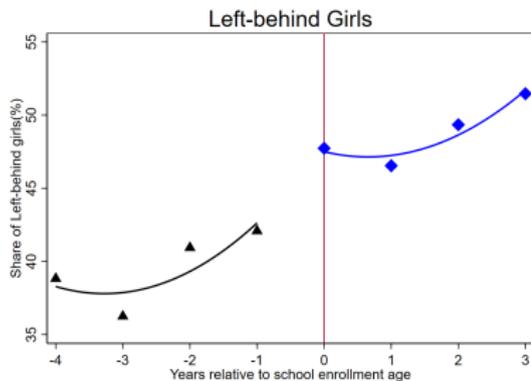
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- Migrants without local hukou must pay *zanzhufei* to enroll children in urban public school. *Per-child*:
 - 10% of the average migrant's earnings. Doubles edu. cost
 - Increases by 50% from primary to middle school
- Migrant schools shut down after 2014 in various cities

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 - 10% of the average migrant's earnings. Doubles edu. cost
 - Increases by 50% from primary to middle school
- Migrant schools shut down after 2014 in various cities
- Note: **No** gender discrimination in intent or design

Fact 8. More girls left behind when it gets expensive

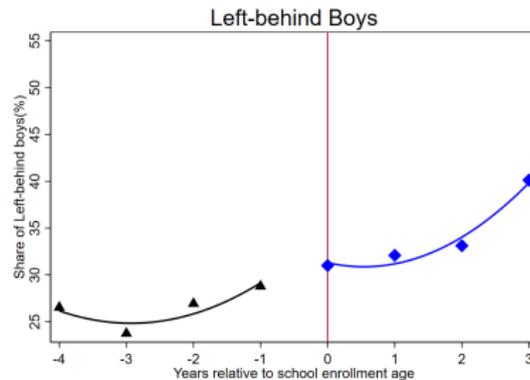
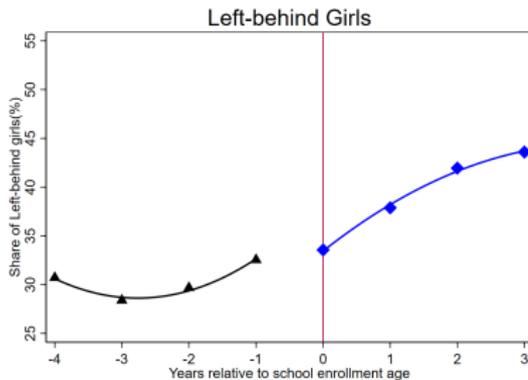
#1 Highly Hukou-Restricted Cities



Data come from *China Migrants Dynamic Survey (CMDS)*.

...but not near cities with lax hukou policies

#2 Less Hukou-Restricted Cities



Data come from *China Migrants Dynamic Survey (CMDS)*.

Multinomial Logit Analysis of Migration and Parental Separation

Parents have 3 choices

- 1 Stay in the village with children
- 2 Migrate and leave children behind
- 3 Migrate with children

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- Identification: Triple Difference based on school-age cutoff; children's gender and *hukou* restrictiveness of cities *nearby*
 - One SD increase in *hukou* policy restrictiveness causes
 - 1.4 percentage point jump in migrant parents' propensity to leave **daughter** (but not sons) behind
 - Exactly when she crosses threshold for middle-school age.
 - 23% jump relative to elementary school-aged girls

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 - Exactly when she crosses threshold for middle-school age.
 - 23% jump relative to elementary school-aged girls
 - No effect on migration propensity, only on leaving child behind

Alternative Triple Difference Identification

2014 Mega-City Population Control Policy

China urged mega cities – with population over 5 million in central district – to strictly control migrant population.

Dependent Variable: Indicator for leaving the child in rural hometown				
	Female	Male	Female	Male
School-aged \times I(Population>5 million) \times I(Year>2014)	0.0700*** (0.0220)	-0.0429 (0.0363)	0.0772** (0.0306)	-0.0314 (0.0267)
School-aged \times I(Population>5 million)	-0.00355 (0.0222)	0.0186 (0.0139)	-0.00946 (0.0197)	0.00909 (0.0153)
School-aged \times I(Year>2014)	-0.0495** (0.0214)	0.0342 (0.0262)	-0.0491 (0.0291)	0.0434 (0.0277)
School-aged	0.0314* (0.0173)	-0.0240 (0.0166)	0.0453** (0.0172)	-0.0200 (0.0186)
Coeff diff p-value	0.000		0.000	
Observations	10,296	13,812	10,296	13,812
Adjusted R-squared	0.163	0.137	0.192	0.169
City FE \times Year FE	Yes	Yes	No	No
City FE \times Year FE \times Hukou Province FE	No	No	Yes	Yes
Age Bandwidth	2	2	2	2
City Size Bandwidth	3	3	3	3

Fact 9. Trade results explained by *hukou* policy

One SD increase in trade liberalization per year of exposure before completing compulsory school education causes among children in 2015....

Dep. Var.	Girls in Low Hukou	Girls in High Hukou	P-value of Difference	Mean of Dep. Var.
Enrolled in Precollege(=1)	-0.0125 (0.00753)	-0.0549 (0.0340)	0.244	0.207
Graduate from Precollege(=1)	-0.00999 (0.00760)	-0.0450 (0.0286)	0.263	0.165
Pass High School Entrance Exam(=1)	-0.0330*** (0.00724)	0.0649 (0.0649)	0.147	0.458
Daily Income for Current Job	-8.062*** (1.811)	-18.14** (7.116)	0.212	89.49
Daily Income for First Working Month	-1.112 (1.934)	-32.64** (13.71)	0.0465	59.81
Having Formal Contract(=1)	-0.0159 (0.0106)	-0.121** (0.0444)	0.0489	0.414
Self-evaluation Index	-0.0773** (0.0324)	-0.450*** (0.133)	0.0192	0.000
Psychological Problem Index	0.0677*** (0.0185)	0.240** (0.0843)	0.0729	-0.00200

- Psychological issues worsen by 0.07 SD for girls near lax *hukou* cities.
- They worsen by 0.24 SD for rural girls rural near *hukou* restrictive cities

Fact 10. Mechanism: *Hukou* restrictions exacerbate pre-existing son preference

- Girls with male siblings more likely to be left behind.
- Girls born in provinces with stronger son preference more likely to be left behind.

Alternative Explanations with no Support in Data:

- The returns to education may differ by gender.
 - Females have a higher (rather than a lower) rate of return to education than males.
- Sons may be potentially more productive than daughters in cities.
 - Females have a higher (rather than a lower) rate of return to migration than males.
- Sons are expected to support parents in their old age.
 - No differential effect in provinces where sons more likely to support old parents.

Recap and Conclusion

- Trade Liberalization creates economic opportunities, ...but harms rural daughters in the long run
 - Migrants more likely to separate from daughters than sons
 - Being left-behind and growing up in poor rural area translates into long-term socioeconomic disadvantages
 - Girls receive less money *and* less time from parents
 - Girls have worse mental health

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 - Magnify the effects of pre-existing gender bias

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- Why? **Migration Restrictions** encourage separation.
 - Magnify the effects of pre-existing gender bias
- Global Implications
 - Barriers for migrant children in Vietnam (Cameron 2012), India (Pandey 2021)
 - Most of the world's 272 million international migrants discouraged or explicitly disallowed from bringing families (Mobarak et al, *AEJ* 2023)