Solution or Isolation: Is Boarding School a Good Solution for Left-behind Children in Rural China?

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INTRODUCTION

Left-behind Children(LBC)

- Younger than 18 years old
- At least one parent migrate to work
- Rural area

China has the **largest** population of LBC

- 61 million
- 37.7% of the total rural children

Rural Boarding School Construction Program

- 9.35 million elementary students boarded in rural China
- 22% of elementary and junior high students boarded at school

OBJECTIVES

- What are the effects of parental absence due to migration on child human capital outcomes, including physical health, cognition, and emotional well-being?

- Does boarding school mitigate or exacerbate these effects?

BACKGROUND

Household registration system: *Hukou*

- Agricultural and non-agriculture residence
- Education and other social services only in the authorized residence

Rural school merging program

- Increase the commuting distance

Impacts of parental migration

- Positive income effect
- Negative effect: Worse health outcomes; Lower schooling outcomes; Anxiety, depression, and loneliness

Impacts of boarding at school

- Negative: Isolated from their families; Long-term behavioral or emotional difficulties
- Positive for *disadvantaged* children: Increase opportunities for communicate with and learn from classmates and teachers; Higher high school graduation rates and adult per capita income

DATA

China Family Panel Study (CFPS)

- 10-15 years old children
- Observations: 1,252
- 20.77% LBC; 33.47% boarding at school

Dependent variables

- Physical health: height-for-age z-scores (HAZ) and Body-Mass-Index-for-age z-scores (BAZ)
- Cognitive outcome: verbal (34) and mathematical (24) problems
- Mental health: factor analysis with 6 survey questions on emotional status

METHODS

- Ordinary Linear Regression with province fixed effect

$$Y_{ij} = \beta_0 + \beta_1 \cdot parentmig_{ij} + \beta_2 \cdot boarding_{ij} + \beta_3 \cdot parentmig_{ij} * boarding_{ij} + \beta_4 \cdot X_{ij} + \mu_j + \epsilon_{ij}$$

(1)

- Propensity Score Matching

$$\tau_{ATET} = E[(E[Y_{1ij}|boarding_{ij} = 1, P(X)]E[Y_{0ij}|boarding_{ij} = 0, P(X)])|boarding_{ij} = 1]$$
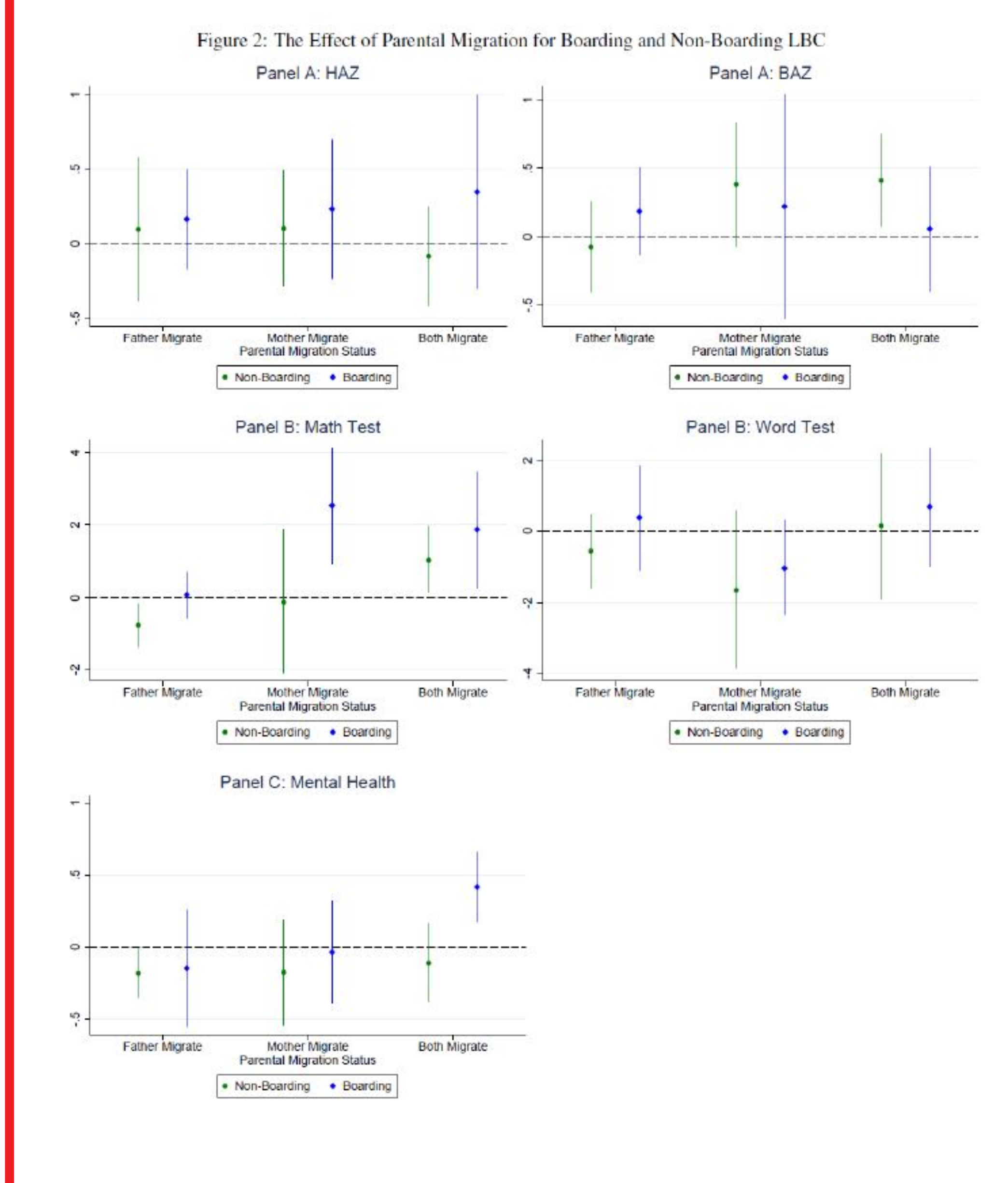
(2)

- Oster Bound

$$\delta \approx \frac{(\tilde{\beta} - \hat{\beta})(\tilde{R} - R^\circ)}{(\beta^\circ - \tilde{\beta})(R_{max} - \tilde{R})}$$

(3)

OLS-MARGINAL EFFECT

Figure 2: The Effect of Parental Migration for Boarding and Non-Boarding LBC

PSM AND OSTER FOR LBC

	PSM	Uncontrolled Effect (se)[R2]	Controlled Effect (se)[R2]	δ for β = 0	β for δ = 1
Effect on HAZ for					
All LBC pooled	-0.02 (0.27)	0.46** (0.20) [0.02]	0.35 (0.24) [0.08]	2.63	0.28
LBC girls only	-0.30 (0.35)	0.43 (0.30) [0.02]	0.16 (0.36) [0.17]	1.02	0.00
LBC boys only	0.47 (0.40)	0.56* (0.30) [0.03]	0.53 (0.38) [0.18]	2.73	0.51
Effect on BAZ for					
All LBC pooled	-0.41* (0.23)	-0.05 (0.19) [0.00]	0.02 (0.22) [0.09]	-0.69	0.05
LBC girls only	-0.37 (0.30)	-0.15 (0.24) [0.00]	0.10 (0.30) [0.11]	-0.98	0.23
LBC boys only	-0.30 (0.28)	-0.01 (0.30) [0.00]	-0.04 (0.37) [0.10]	-6.58	-0.05
Effect on Math for					
All LBC pooled	1.65** (0.64)	4.47*** (0.57) [0.20]	2.30*** (0.61) [0.41]	1.28	0.66
LBC girls only	1.62* (0.91)	3.97*** (0.82) [0.17]	1.68* (0.93) [0.39]	0.96	-0.09
LBC boys only	1.07 (0.96)	5.32*** (0.83) [0.27]	3.27*** (0.89) [0.52]	1.35	1.23
Effect on Word for					
All LBC pooled	2.70* (1.39)	4.93*** (0.85) [0.12]	2.85*** (0.91) [0.34]	1.58	1.35
LBC girls only	2.70** (1.17)	4.88*** (1.11) [0.15]	2.18* (1.22) [0.41]	1.05	0.13
LBC boys only	1.45 (2.65)	4.81*** (1.31) [0.11]	2.80* (1.42) [0.39]	1.56	1.32
Effect on Mental Health					
All LBC pooled	-0.05 (0.19)	0.00 (0.16) [0.00]	-0.06 (0.19) [0.04]	-3.50	-0.09
LBC girls only	-0.26 (0.28)	-0.09 (0.24) [0.00]	-0.34 (0.30) [0.10]	-3.89	-0.47
LBC boys only	0.08 (0.35)	0.02 (0.21) [0.00]	-0.14 (0.26) [0.11]	-2.57	-0.22

Note: Results from Kernel matching method with bandwidth=0.06;
PSM standard errors are calculated from bootstrapping with 1,000 replications.
*** p<0.01, ** p<0.05, * p<0.1

PSM AND OSTER FOR NON-LBC

	PSM	Uncontrolled Effect (se)[R2]	Controlled Effect (se)[R2]	δ for β = 0	β for δ = 1
Effect on HAZ for					
All non-LBC pooled	0.06 (0.13)	0.16 (0.10) [0.00]	0.06 (0.12) [0.04]	1.49	0.02
non-LBC girls only	0.23 (0.18)	0.32** (0.15) [0.01]	0.21 (0.15) [0.04]	2.23	0.14
non-LBC boys only	-0.06 (0.18)	0.01 (0.16) [0.00]	-0.02 (0.17) [0.07]	-1.86	-0.03
Effect on BAZ for					
All non-LBC pooled	0.10 (0.11)	-0.19* (0.11) [0.00]	-0.04 (0.12) [0.04]	0.66	0.02
non-LBC girls only	-0.10 (0.14)	-0.20 (0.14) [0.00]	-0.21 (0.16) [0.04]	9.75	-0.22
non-LBC boys only	0.32* (0.19)	-0.14 (0.17) [0.00]	0.12 (0.18) [0.04]	-1.36	0.22
Effect on Math for					
All non-LBC pooled	1.34*** (0.35)	3.38*** (0.29) [0.12]	1.35*** (0.25) [0.48]	1.33	0.38
non-LBC girls only	1.53*** (0.47)	3.69*** (0.41) [0.15]	1.25*** (0.37) [0.49]	0.98	-0.03
non-LBC boys only	1.19** (0.51)	3.09*** (0.43) [0.10]	1.41*** (0.36) [0.49]	1.74	0.66
Effect on Word for					
All non-LBC pooled	1.83*** (0.61)	4.20*** (0.47) [0.08]	2.09*** (0.48) [0.27]	1.71	1.35
non-LBC girls only	2.65*** (0.81)	5.13*** (0.65) [0.12]	2.36*** (0.68) [0.31]	1.31	0.67
non-LBC boys only	1.15 (0.80)	3.13*** (0.70) [0.04]	1.59** (0.69) [0.25]	2.11	0.92
Effect on Mental Health					
All non-LBC pooled	-0.10 (0.07)	-0.11 (0.07) [0.00]	-0.11 (0.07) [0.02]	6.79	-0.09
non-LBC girls only	0.01 (0.12)	-0.07 (0.09) [0.00]	-0.01 (0.11) [0.04]	0.43	0.02
non-LBC boys only	-0.21* (0.11)	-0.19* (0.10) [0.01]	-0.21* (0.11) [0.04]	18.16	-0.22

Note: Results from Kernel matching method with bandwidth=0.06.
PSM standard errors are calculated from bootstrapping with 1,000 replications.
*** p<0.01, ** p<0.05, * p<0.1

CONCLUSION

- Boarding school can improve performance on math and verbal achievement tests for both left-behind and non-left-behind children

- Boarding school has little to no effect on the physical health of LBC

- Left-behind boy boarders do not suffer from the same negative mental health effects as those with both parents at home