

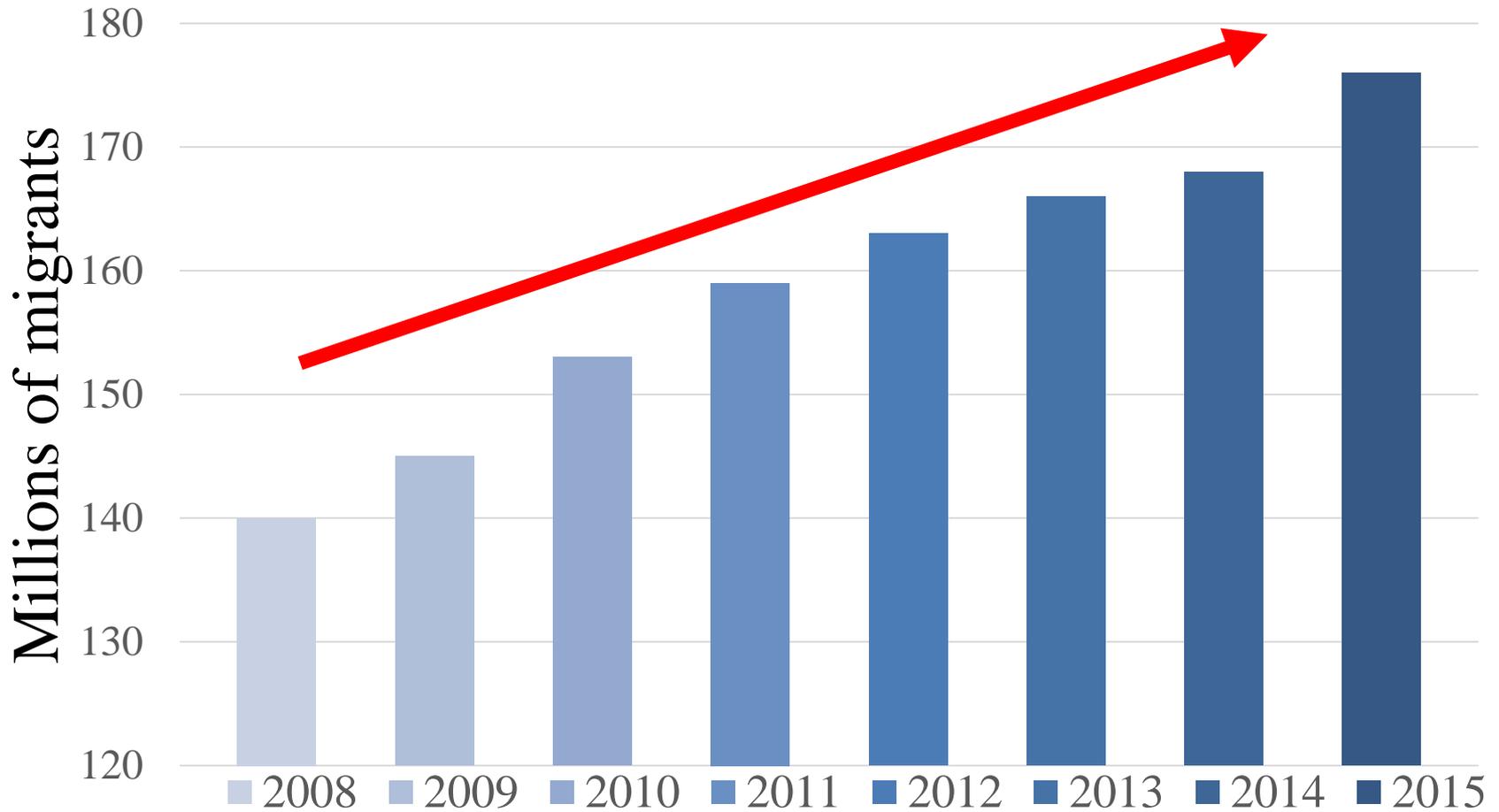


Effect of Parental Migration on the Left Behind Children's Academic Performance: Evidence from Rural China

Yu Bai, Linxiu Zhang, Chengfang Liu (CCAP, CAS)
Yaojiang Shi (CEEE, SNNU)
Di Mo, Scott Rozelle (Stanford U.)

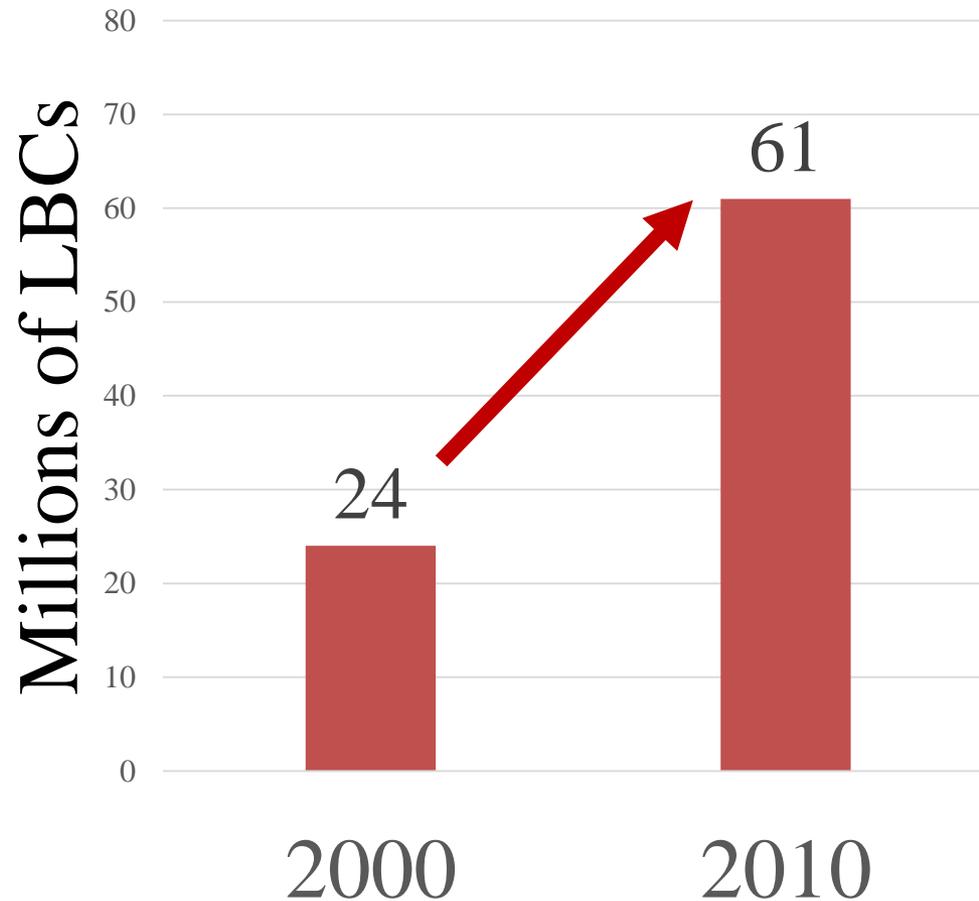
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Increasing Number of Rural-urban Migrants



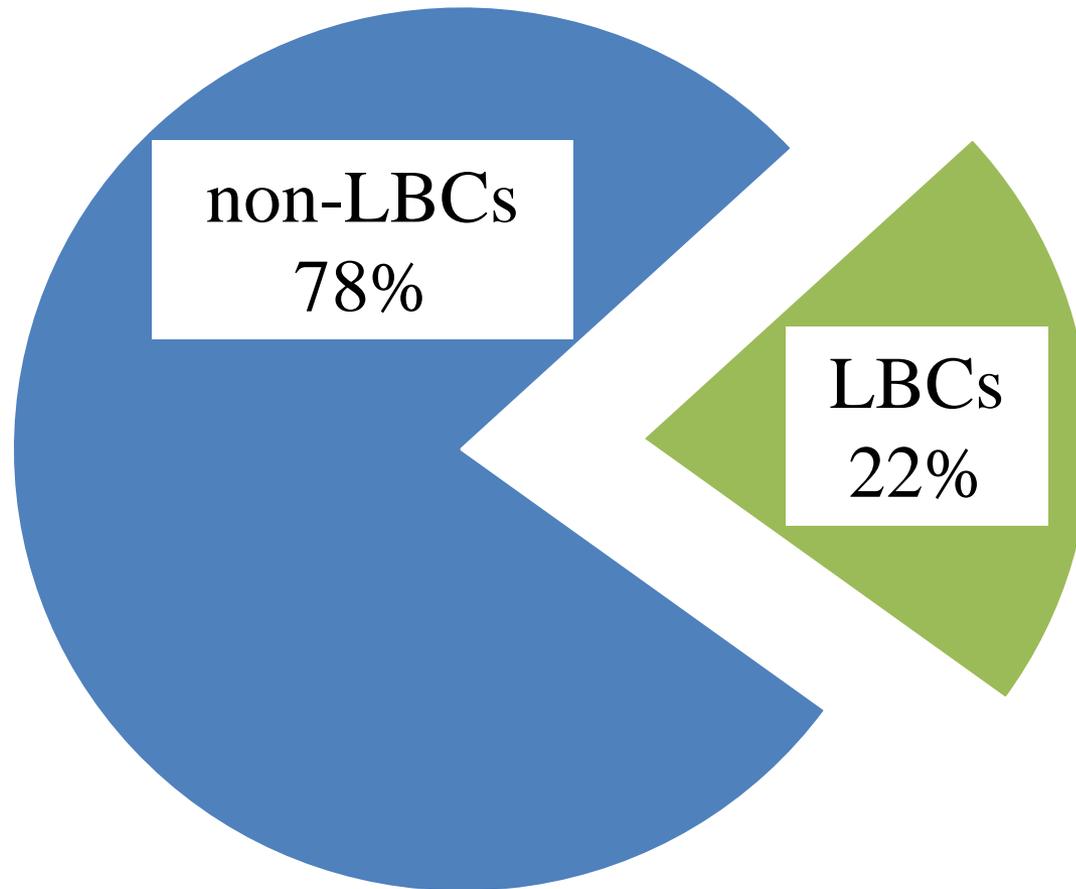
Data source: National Bureau of Statistic of China

Emerging Issue of **Left Behind Children**



Data source: ACWF, 2013; Duan et al., 2008.

Emerging issue of **Left Behind Children**



Data source: ACWF, 2013

The Education of LBCs has Drawn Attention from Many Researchers

So, does parental migration affect the academic performance of LBCs?



What should we expect the impact of being an LBC is on the student's educational performance?

In fact: The Sign of the Overall Effect of Parental Migration on the Academic Performance of LBCs is **NOT clear** and Remains an Empirical Question

+		-
<p>Positive effect from remittances transfer</p> <ul style="list-style-type: none">• Relaxing liquidity constraints (spend more on nutrition; supplemental education material; tutors; etc <p>➔ In general: Higher investments in LBCs</p>	<p>VS.</p>	<p>Negative effect from absence of parents</p> <ul style="list-style-type: none">• Decreased parental care• Increased time LBCs spend at home doing on-farm or in-home work

What should we expect the impact of being an LBC is on

In short: There appears to be a Resources (Income) versus Parental Care tradeoff ...

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→ My question: which one dominates?

investments in LBCs

The Results from Empirical Studies also are **Inconclusive**

+	0	-
Ambler et al., 2015 Malik, 2015 Roy et al., 2015 Antman, 2012 Lu and Treiman, 2011 Chen et al., 2009 Yang, 2008 Edwards and Ureta, 2003	Zhou et al., 2015	Zhao et al., 2014 Zhou et al., 2014 Zhang et al., 2014 Chang et al., 2011 Mckenzie and Rapoport; 2011 Meyerhoefer and Chen, 2011 Ye and Lu, 2011 Lahaie et al., 2009

Why might the Literature not be Conclusive? → shortcoming in many studies

- Some studies do not have a **valid comparison group**
- Most have only small sample size “n”
- Some do not use careful **measures of academic performance**
- Finally: Some only examine the **overall** effect
(for specific types of families ... e.g., when any parent outmigrates ... or when only BOTH parents outmigrate)
→ These studies do not allow for the fact that there may be important heterogeneous effects (e.g., a family in which the father outmigrate and mother in home may have a different effect on the household’s children than if both parents outmigrated)

Goal and Objectives

- **Overall goal**
 - **To examine the effect of parental migration on the academic performance of left-behind children.**
- 3 specific objectives:
 - Compare the distribution of children's scores across different types of migrant households
 - Examine whether parental migration (in general) affects the academic performance of LBCs
 - Examine how the impact of parental migration varies by different types of households (e.g., between a family in which the father outmigrate and mother in home may have a different effect on the household's children than if both parents outmigrated)

Approach

- To get the facts right! [collect data]
- Examine Correlations [Descriptive analysis]
- Multivariate Analysis

Data

- My research team collected the data and ran the standardized tests ourselves ...
 - 6 counties in Haidong prefecture, Qinghai
 - 85 townships
 - 130 schools
 - 13,055 students in 4th or 5th grade

Location of our Sample Counties



Of six sample counties, five are **nationally designated poverty counties**.

Three Blocks of Survey

- Academic performance of students
- Migration status of parents
- Other control variables

Academic Performance: Standardized English Test Score

- Note: We normalized test scores relative to the distribution of the students' scores of the comparison group to get standardized scores, which is comparable across grades and time. [Note: we timed and proctored the exams strictly → no cheating]



Why did we choose English as our measurement of students' academic performance?

- English is one of the main subjects included as part of the competitive exam system in China that determines entrance into high school and college (McKay, 2002; Bolton and Graddol, 2012).
 - Studies have shown that a low English score is one of the largest impediments keeping rural students from attending high school in China (Loyalka, 2014)

Migration Status of Parents

- In baseline: we asked for the migration status of each parent (“Who do you live with? Where is your Dad? Mom?”)
- At endline: we asked the same question



This allows us to identify two GENERAL types of families

- Those in which parents were home at baseline and endline

AND

- Those in which parents were home at baseline and outmigrated by the endline (and at least outmigrated for more than half time period between baseline and endline)

➔ this is our basic measure of parental migration

Control Variables

- Students:
 - gender
 - age
 - ethnic minority
 - grade
 - boarding or not
- Parents and the households:
 - family asset
 - father/Mother education level
 - number of siblings

Approach

- To get the facts right! [collect data]
- **Examine Correlations [Descriptive analysis]**
- Multivariate Analysis

Outline for this Section of Talk

- Migration status of parents
- Descriptive analysis of changes of scores across different types of migrant households

Distribution of Students

Total No. of students interviewed (12,207: 100%)



Did **ANY** parent out-migrated at baseline survey in 2013

NO

YES

Total No. of students that their parents **did not** migrate (6,724: 55.1%)

Excluded from our analysis (5,482: 44.9%)



During 2013-2014, did **ANY** parent out-migrated more than half of the time

YES

NO

Treatment
(2,205: 18.1%)

Comparison
(5,419: 37%)

Any parent migrated
2,205: 18.1%

Father migrated ONLY
1,264: 10.3%

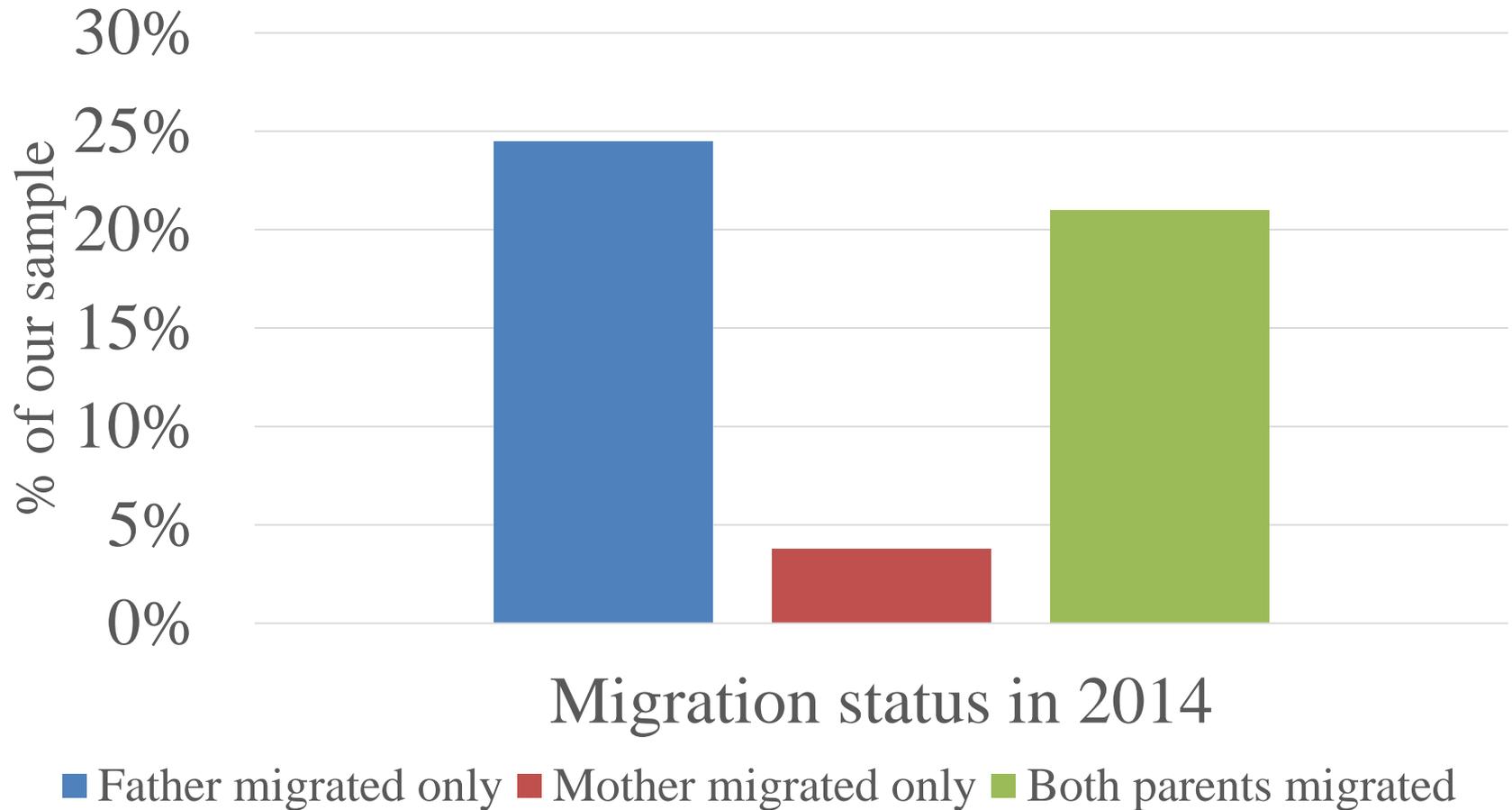
Father migrated
2,028: 16.6%

Mother migrated ONLY
177: 1.4%

Mother migrated
941: 7.7%

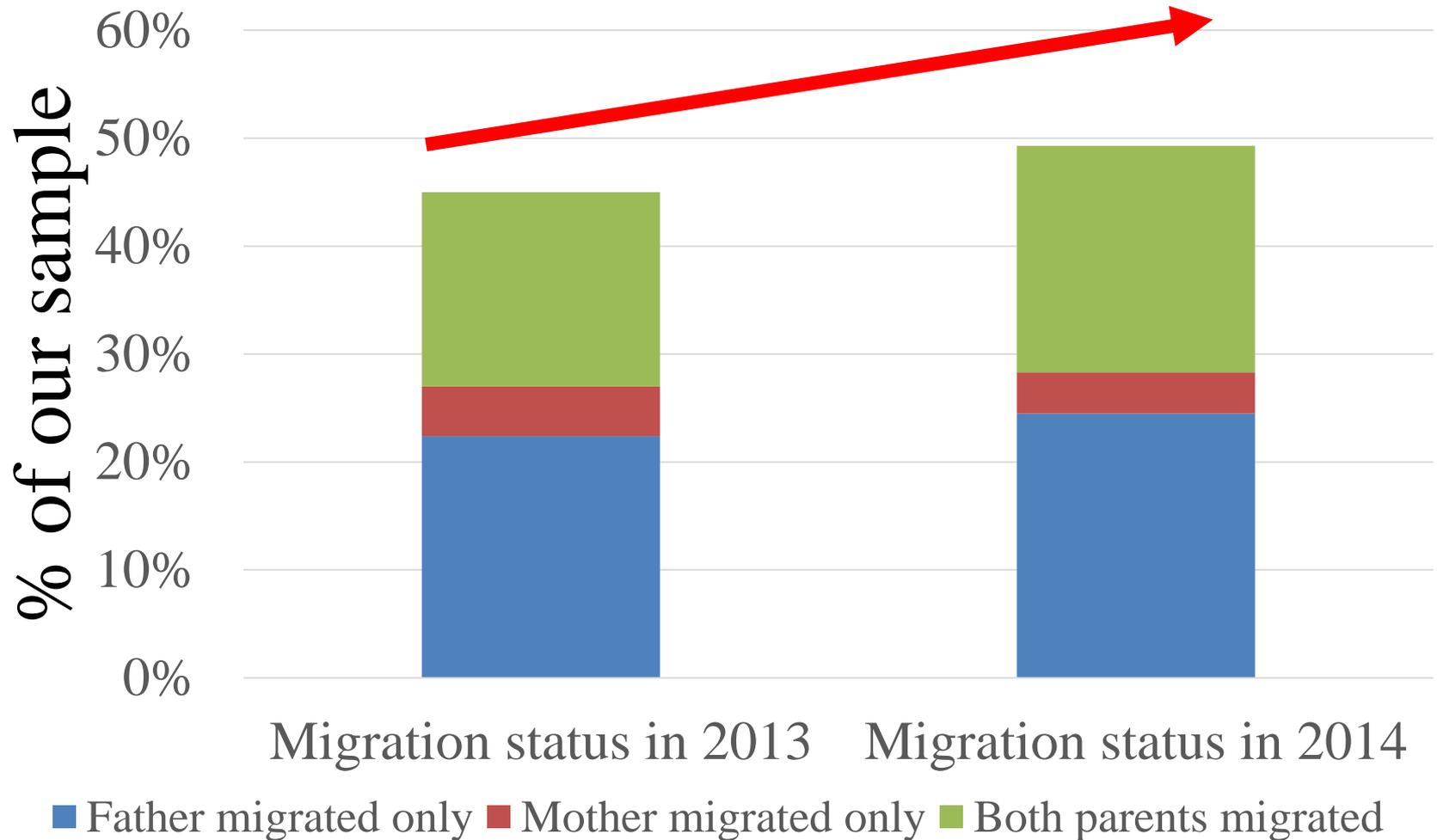
Both parents migrated
764: 6.3%

Migration Status of Parents



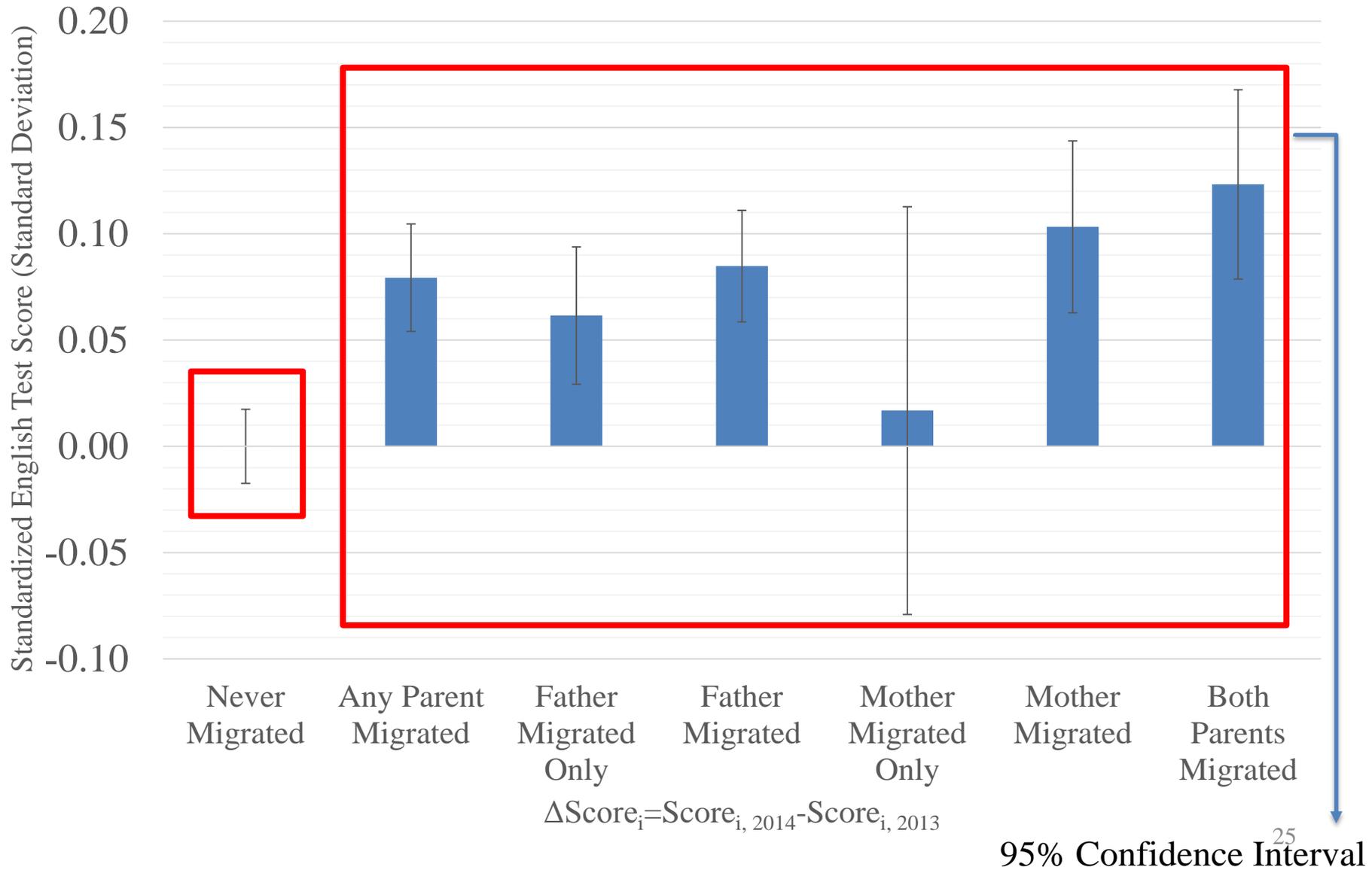
Fathers are more likely to migrate

Migration Status of Parents



Increasing number of migrants → this means that there are new LBCs each year ...

Change of Migration and Change in Test Scores



Summary of Descriptive Analysis

- Increasing migration of parents → this means that there are new LBCs each year
- Our cross tabulation shows that there is a **positive relationship** between parental migration and the academic performance of LBCs in most cases.
 - The only exception is that when only mother migrated.
→ note that in this case the results were NOT negative ...
 - consistent with a story that the resource/income effect is dominating the parental care effect ...

BUT, We can't Stop Here

- Why?
 - academic performance may be explained by many factors other than migration activities that change over time and differ between migrant and non-migrant households. So we need to understand the “net effect” → need to use multivariate analysis
 - Want to disaggregate net effect on different groups of students

Approach

- To get the facts right! [collect data]
- Examine Correlations [Descriptive analysis]
- **Multivariate Analysis**
 - Difference in Difference
 - Matching / Difference in Difference

Empirical Specifications

- Difference-in-difference, DID

$$\Delta Score_{is} = \alpha + \beta \cdot MIG_{is} + \lambda \cdot s_s + \varepsilon_{is}$$

$$\Delta Score_{is} = \alpha + \beta \cdot MIG_{is} + \gamma \cdot X_{is} + \lambda \cdot s_s + \varepsilon_{is}$$

$$\Delta Score_{is} = \alpha + \beta \cdot MIG_{is} + \delta \cdot Score_{is,baseline} + \lambda \cdot s_s + \varepsilon_{is}$$

$$\Delta Score_{is} = \alpha + \beta \cdot MIG_{is} + \delta \cdot Score_{is,baseline} + \gamma \cdot X_{is} + \lambda \cdot s_s + \varepsilon_{is}$$

Where: $\Delta Score_{is} = Score_{is,endline} - Score_{is,baseline}$

MIG_{is} = treatment variable (six types of migrant status)

X_{is} = vector of covariates (includes Characteristics of students and SES of their family)

s_s = county dummy

Note: In all regressions, we accounted for the clustered design by constructing Huber-White standard errors clustered on the school level.

Results from DID

Dependent variable: $\Delta \text{Score}_i = \text{Score}_{i, 2014} - \text{Score}_{i, 2013}$

	Restricted & Unadjusted	Unrestricted & Unadjusted	Restricted & Adjusted	Unrestricted & Adjusted
Treatment variables	(1)	(2)	(3)	(4)
[1] Any Parent Migrated	0.08*** (0.02)	0.04** (0.02)	0.06*** (0.02)	0.04** (0.02)
[2] Father Migrated Only	0.06*** (0.02)	0.03 (0.02)	0.04** (0.02)	0.03 (0.02)
[3] Father Migrated	0.08*** (0.02)	0.04** (0.02)	0.06*** (0.02)	0.04** (0.02)
[4] Mother Migrated Only	0.01 (0.05)	-0.04 (0.04)	0.00 (0.04)	-0.04 (0.04)
[5] Mother Migrated	0.10*** (0.02)	0.04* (0.02)	0.07*** (0.02)	0.04* (0.02)
[6] Both Parents Migrated	0.12*** (0.03)	0.06** (0.03)	0.09*** (0.02)	0.07*** (0.02)

Results from DID

Dependent variable: $\Delta \text{Score}_i = \text{Score}_{i, 2014} - \text{Score}_{i, 2013}$

	Restricted & Unadjusted	Unrestricted & Unadjusted	Restricted & Adjusted	Unrestricted & Adjusted
Treatment variables	(1)	(2)	(3)	(4)
[1] Any Parent Migrated	0.08*** (0.02)	0.04** (0.02)	0.06*** (0.02)	0.04** (0.02)
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[4] Mother Migrated Only	0.01 (0.05)	-0.04 (0.04)	0.00 (0.04)	-0.04 (0.04)
[5] Mother Migrated	0.10*** (0.02)	0.04* (0.02)	0.07*** (0.02)	0.04* (0.02)
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Treatment variables	(1)	(2)	(3)	(4)
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[2] Father Migrated Only	0.06*** (0.02)	0.03 (0.02)	0.04** (0.02)	0.03 (0.02)
[3] Father Migrated	0.08*** (0.02)	0.04** (0.02)	0.06*** (0.02)	0.04** (0.02)
[4] Mother Migrated Only	0.01 (0.05)	-0.04 (0.04)	0.00 (0.04)	-0.04 (0.04)
[5] Mother Migrated	0.10*** (0.02)	0.04* (0.02)	0.07*** (0.02)	0.04* (0.02)
[6] Both Parents Migrated	0.12*** (0.03)	0.06** (0.03)	0.09*** (0.02)	0.07*** (0.02)

Results from DID

Dependent variable: $\Delta \text{Score}_i = \text{Score}_{i, 2014} - \text{Score}_{i, 2013}$

We reject the hypothesis that migration negatively affects school performance.

Treatment variables	(1)	(2)	(3)	(4)
[1] Any Parent Migrated	0.08*** (0.02)	0.04** (0.02)	0.06*** (0.02)	0.04** (0.02)
[2] Father Migrated Only	0.06*** (0.02)	0.03 (0.02)	0.04** (0.02)	0.03 (0.02)
[3] Father Migrated	0.08*** (0.02)	0.04** (0.02)	0.06*** (0.02)	0.04** (0.02)
[4] Mother Migrated Only	0.01 (0.05)	-0.04 (0.04)	0.00 (0.04)	-0.04 (0.04)
[5] Mother Migrated	0.10*** (0.02)	0.04* (0.02)	0.07*** (0.02)	0.04* (0.02)
[6] Both Parents Migrated	0.12*** (0.03)	0.06** (0.03)	0.09*** (0.02)	0.07*** (0.02)

Results from DID

Dependent variable: $\Delta \text{Score}_i = \text{Score}_{i, 2014} - \text{Score}_{i, 2013}$

The scores of LBCs improved significantly in most types of migrant household.

Treatment variables	(1)	(2)	(3)	(4)
[1] Any Parent Migrated	0.08*** (0.02)	0.04** (0.02)	0.06*** (0.02)	0.04** (0.02)
[2] Father Migrated Only	0.06*** (0.02)	0.03 (0.02)	0.04** (0.02)	0.03 (0.02)
[3] Father Migrated	0.08*** (0.02)	0.04** (0.02)	0.06*** (0.02)	0.04** (0.02)
[4] Mother Migrated Only	0.01 (0.05)	-0.04 (0.04)	0.00 (0.04)	-0.04 (0.04)
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[6] Both Parents Migrated	0.12*** (0.03)	0.06** (0.03)	0.09*** (0.02)	0.07*** (0.02)

Clearly: in both the descriptive statistics and multivariate analysis (using DID), when households decide to outmigrate the affect on the children is NOT negative ... in fact, in many cases it is positive ...

This is consistent with an interpretation that there is a positive household income effect ... and that this effect is greater than any negative absence of parental care effect

Robustness Check: Results from Matching and DIDM

Results from matching are quite similar to those from the DID analyses.

Any Parent Migrated

[1a] Propensity score matching	0.11***	0.04	0.08***	0.02
[1b] Bias corrected matching	0.07***	0.02	0.07***	0.02

Father Migrated Only

[2a] Propensity score matching	0.01	0.05	0.03	0.03
[2b] Bias corrected matching	0.06***	0.02	0.07***	0.02

Father Migrated (unconditional)

[3a] Propensity score matching	0.09***	0.04	0.06***	0.02
[3b] Bias corrected matching	0.08***	0.02	0.08***	0.02

Mother Migrated Only

[4a] Propensity score matching	0.01	0.11	-0.02	0.07
[4b] Bias corrected matching	0.02	0.05	0.05	0.05

Mother Migrated (unconditional)

[5a] Propensity score matching	0.08*	0.05	0.02	0.03
[5b] Bias corrected matching	0.09***	0.02	0.08***	0.03

Both Parents Migrated

[6a] Propensity score matching	0.10**	0.05	0.08***	0.03
[6b] Bias corrected matching	0.10***	0.02	0.09***	0.03

Summary of Results from Multivariate Analysis

- We reject the hypothesis that migration negatively affects school performance.
- In fact, generally parental migration has significant positive impacts on the academic performance of LBCs.

Need to Look at **Heterogeneous** Effects

- While we have found no significant negative impacts, mostly positive impacts, all of these results have been for the average household. The impacts could be vary for different subgroups.

Heterogeneous Effects

Dependent variable: $\Delta\text{Score}_i = \text{Score}_{i, 2014} - \text{Score}_{i, 2013}$	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	Any Parent Migrated	Father Migrated Only	Father Migrated	Mother Migrated Only	Mother Migrated	Both Parents Migrated
<i>Characteristics of the students</i>						
[1] MIG * Standardized pre English test score (standard deviation)	-0.02 (0.01)	0.02 (0.02)	-0.01 (0.01)	-0.08* (0.04)	-0.07*** (0.02)	-0.06*** (0.02)

The positive impact on LBCs is greater for poor performing students.

The additional resources that are available to households from newly out-migrating parents may be able to overcome one or more of the educational barriers that were limiting the performance of the students.

[1] MIG * Father has at least junior high school degree	0.00 (0.03)	0.03 (0.04)	0.00 (0.03)	0.02 (0.09)	-0.03 (0.04)	-0.03 (0.05)
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Heterogeneous Effects

Dependent variable: $\Delta\text{Score}_i = \text{Score}_{i, 2014} - \text{Score}_{i, 2013}$

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	Any Parent Migrated	Father Migrated Only	Father Migrated	Mother Migrated Only	Mother Migrated	Both Parents Migrated

Characteristics of the students

The positive impact on LBCs maybe offset if the mother of an LBC has at least junior high school degree.

This result are consistent with the interpretation that there is a parental care-household resources trade-off when the mother of the student has the ability to provide educational performance-enhancing care.

Characteristics of the parents and the households

[6] MIG * Mother has at least junior high school degree	-0.02 (0.04)	0.04 (0.04)	-0.01 (0.04)	-0.10 (0.09)	-0.10** (0.05)	-0.08 (0.05)
[7] MIG * Father has at least junior high school degree	0.00 (0.03)	0.03 (0.04)	0.00 (0.03)	0.02 (0.09)	-0.03 (0.04)	-0.03 (0.05)

However, we find no significant evidence of heterogeneous effects for other student demographic and family characteristics, including gender, ethnic minority, only child, asset and father education level.

	(0.03)	(0.03)	(0.03)	(0.09)	(0.05)	(0.06)
[3] MIG * Ethnic Minority	0.03	0.02	0.02	0.08	0.03	0.01
	(0.03)	(0.04)	(0.03)	(0.09)	(0.05)	(0.05)
[3a] MIG * Tibetan	0.11**	0.08	0.10*	0.26**	0.13**	0.10
	(0.05)	(0.06)	(0.05)	(0.10)	(0.05)	(0.06)
[3b] MIG * Tu minority	-0.08	-0.02	-0.04	-0.62**	-0.22**	-0.09
	(0.07)	(0.08)	(0.08)	(0.24)	(0.09)	(0.10)
[4] MIG * Only child	-0.04	0.00	-0.04	-0.05	-0.08	-0.09
	(0.04)	(0.05)	(0.05)	(0.09)	(0.06)	(0.07)
[5] MIG * Asset	-0.01	-0.06	-0.02	0.02	0.02	0.02
	(0.04)	(0.07)	(0.05)	(0.02)	(0.02)	(0.03)
<i>Characteristics of the parents and the households</i>						
[6] MIG * Mother has at least junior high school degree	-0.02	0.04	-0.01	-0.10	-0.10**	-0.08
	(0.04)	(0.04)	(0.04)	(0.09)	(0.05)	(0.05)
[7] MIG * Father has at least junior high school degree	0.00	0.03	0.00	0.02	-0.03	-0.03
	(0.03)	(0.04)	(0.03)	(0.09)	(0.04)	(0.05)

Conclusions

- There is no significant **negative** effect of parental migration on the academic performance of left-behind children.
- In fact, in the analysis of most migrant households, especially in those in which any parent migrated, father migrated, mother migrated or both parents migrated, migration is shown to have a **statistically significant and positive effect** on the performance of LBCs.

Policy Implication

- Although there might be good reason to implement policies which mean to improve education in schools in which there were many children of migrants, they **should not be carried out on the ground of the negative effect of migration on academic performance of LBCs.**

Policy Implication

- Since both LBCs and non-LBCs perform poorly on academic performance in rural areas, we recommend that special programs designed by policy makers to improve education among left-behind children should be **expanded to cover all children in rural China.**

Worries

- There are unobserved time varying effects ...
- e.g.: parents wait until their children's are improving ... then leave ... (actually could be reverse causality) → we are now getting access to another data set that have data on two years ... and we will be able to run placebo tests using the first year's data

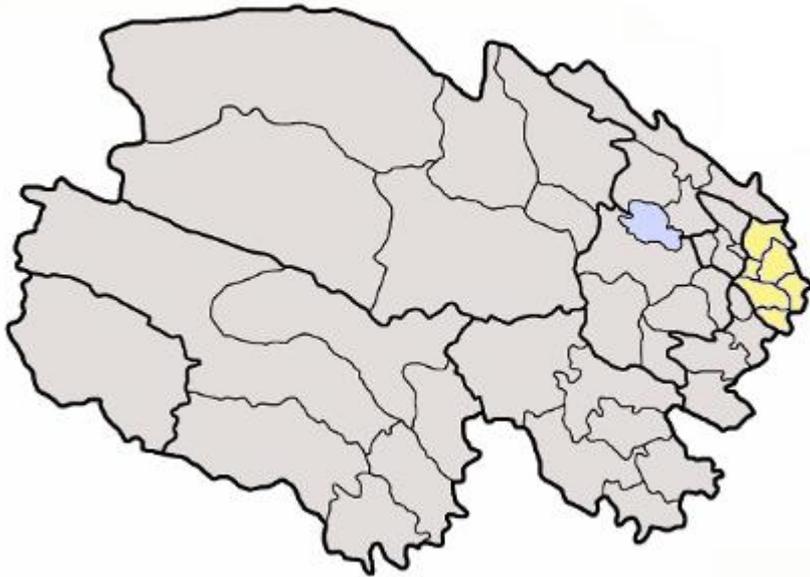
Thank you for your attention!



Why did we choose Haidong Prefecture, Qinghai ?

Among 31 provinces in mainland China, **Qinghai ranked 30th** in terms of total GDP in 2013 (National Bureau of Statistics, 2014).

A quarter of the population of Qinghai lives in Haidong Prefecture, even though it only accounts for about 2% of the province's total area → **Poor rural** areas with high population densities and **high rates of off-farm employment**.



This study focuses on six poor rural counties in eastern Qinghai Province, which is one of the poorest areas in China. Five of the sample counties are **nationally designated poverty counties**. Four of them are **minority autonomous counties**.

Panel Data

Baseline survey
2013.9



Endline survey
2014.6

13,055 students participated in our survey (6455 4th grade and 6600 5th grade students)

12,207 students were followed up (6,015 4th grade and 6192 5th grade students)

Multivariate Analysis

- **Propensity Score Matching, PSM**
 1. Check whether the common support region is wide enough;
 2. Choose the method of matching. Following Smith and Todd(2005), we use the nearest neighbor matching with replacement. Standard errors are bootstrapped using 2,000 replications;
 3. Assess the matching quality. We use balance test described in Dehejia and Wahaba (1999, 2002).
- **Bias-corrected Matching, BCM**
 1. Enforce exact matching by town;
 2. Each treatment obs. is matched to 3 control obs. with replacement;
 3. Use the Mahalanobis metric as our weighting matrix.
- **Difference-in-difference Matching, DDM**
 - Use both PSM and BCM methods.

Note: We use the unrestricted and adjusted model when implementing DDM method.

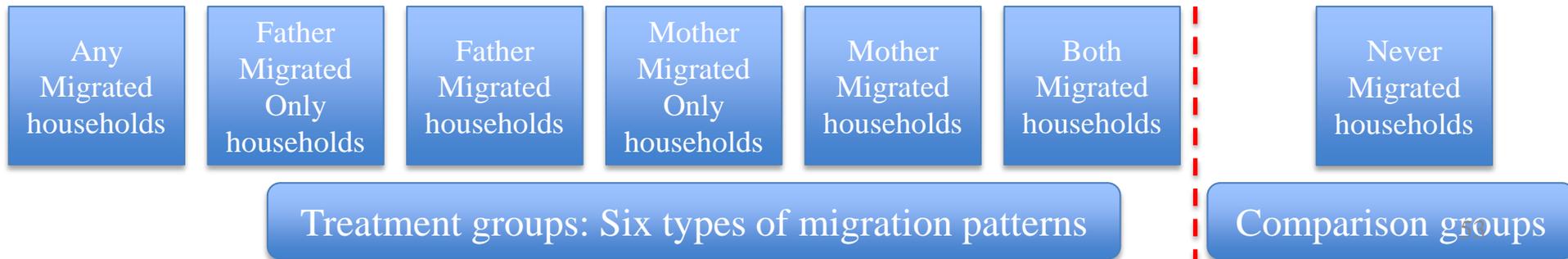
Why did we choose English as our measurement of students' academic performance?

- English is one of the main subjects included as part of the competitive exam system in China that determines entrance into high school and college (McKay, 2002; Bolton and Graddol, 2012).
- Second, English teaching and English learning are particularly weak in poor rural China (Li, 2002; Zhao, 2003; Hu, 2005; Hu, 2009)
 - Studies have shown that a low English score is one of the largest impediments keeping rural students from attending high school in China (Loyalka, 2014)

Migrant patterns of parents

Table 1. Patterns of migration in sample households in 2013 and 2014, Qinghai Province, China.

	Migration status in 2013	Migration status in 2014						
	(1) Number of households in 2013	(2) Any Migrated	(3) Father Migrated Only	(4) Father Migrated	(5) Mother Migrated Only	(6) Mother Migrated	(7) Both Parents Migrated	(8) Neither parent migrated
[1] Father migrated only	2730	1779	1358	1728	51	421	370	951
[2] Mother migrated only	560	353	63	221	132	290	158	207
[3] Both parents migrated	2193	1688	305	1579	109	1383	1274	505
[4] Neither parent migrated	6724	2205	1264	2028	177	941	764	4519
[5] Total number of households	12207	6025	2990	5556	469	3035	2566	6182



Appendix Table 1. Definition of different types of migrant households.

Appendix Table 1. Definition of different types of migrant households.

Migration status (key independent variable name)	Definition
[1] Any Parent Migrated	Households in which both parents lived at home by September 2013 and at least on parent – either the father, mother or both parents – out-migrated by June 2014
[2] Father Migrated Only	Households in which only the father out-migrated by June 2014 but was at home by September 2013
[3] Father Migrated (Unconditional)	Households in which the father was at home by September 2013 but out-migrated by June 2014 (including households in which the mother was either at home or not at home in 2014)
[4] Mother Migrated Only	Households in which only the mother out-migrated by June 2014 but was at home by September 2013
[5] Mother Migrated (Unconditional)	Households in which the mother was at home by September 2013 but out-migrated by June 2014 (including households in which the father was either at home or not at home in 2014)
[6] Both Parents Migrated	Households in which both parents were at home by September 2013, but out-migrated by June 2014

