

Extended Abstract

Gender Gap in Educational Performance and Achievement in rural China: Evidence from Sibling Data

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Introduction

In rural China, with a strong tradition of son preference- do parents invest more in sons than daughters, and additionally, does that differentially impact educational outcomes across children within the same family? Prior research suggests that girls have lower educational attainment than boys *across* families in China. However, existing research primarily relies on samples from urban families with only one child and pays little attention to rural families, normally with more than one child. In addition, samples from one-child families make it hard to determine parents allocate resources *within* families, since the only child receives all the resources, but the rural child has to compete with their siblings. Given the research focus on one-child families in China, this study is unique in that it uses rural china as the study area, where multiple children are common.

This research aims to explore the gender differences in educational outcomes and how parents allocate resources within families in rural China by using unique sibling data from the Gansu Survey of Children and Families (GSCF). Preliminary suggests that there is no difference in educational attainment, but sons outscore their sisters in test scores. The next step of this research will explore how parental investment reinforces the gender differences in educational performance.

Rural China background

Rural China includes approximately 63% Chinese population in 2000 (National Bureau of Statistics of China, 2001) and the one-child policy is more loosely enforced and conditionally allows rural families to have more than one child (Hasketh, Lu, and Xing, 2005), experience different familial context from urban children. Children grow up in one-child family expectably receives all the resources their families have, but the rural child has to compete with their siblings.

Because few surveys in China contain full information about both focal children and their siblings, we know little about how children's gender is associated with educational outcomes and how parents allocate resources across children within families in the China context.

Data and measurement

The primary data source is the Gansu Survey of Children and Families (GSCF), a longitudinal survey from rural China. The target population of this survey is children from age 9 to 12 in Gansu, one of the poorest provinces in China. The initial year of the longitudinal study is year 2000, and followed up at 2004, 2007 and 2009. We mainly use wave 2 data in this research, because the information about educational performance of sample child and his/her 1st younger sister or brother of the sample

child at school age was collected only in wave 2.

There are 1918 sample children and 932 sample siblings in this dataset. Although around 95% of sample children have at least one sibling, these siblings are either older than sample child or below school age; thus only information about 932 siblings of sample children are collected. We restrict our analysis to sample without missing values at all variables of interest, and reduce the number of observations further to 1474 sample children and 624 sample siblings. This full sample is used in the OLS analysis, but only 515 families have full information about both sample child and sample sibling, are included in the analysis of family-fixed effects model.

The dependent variables are educational progression and educational performance. Educational progression is measured by age-standardized grade-for-age, which is defined as the age standardization of the difference between current educational level of child and the educational level the child should be at a given age. Because late enrollment in the primary school and grade repetition are common phenomenon in rural China and other developing countries as well (Glewwe, Jacoby and King, 2001; Meng Zhao and Glewwe, 2010), thus many children actually lags in schooling years at the given age.

Educational performance is defined as grade-standardized math and language (Mandarin) test scores. Both math and language test questionnaires were designed based on grade-specific curriculum by researchers at the Gansu Educational Research Institute in the provincial Ministry of Education. Children were given difference test questionnaires based on their current grade level and took the tests at school in 2004.

Preliminary results

As we would expect, the sex ratio in rural China is abnormally high. The sex ratio is 119 males per 100 females in the sample child and it is even higher in the sample sibling, indicating strong son preference in this context (see Table 1). In addition, the average sibship size is apparently higher in rural China than in the area where one-child policy is strictly executed, suggesting children in rural China face competition with their siblings for family resources.

Results from OLS and Family fix-effects estimation are displayed in Table 2. I find that female children lag more school years behind at the given age in the full sample with OLS estimation in model (1), which is confirmed to prior research that girls have lower educational achievement in China. These findings suggest that parents discriminate against girls in educational progression more so than with male children *between* families. Unsurprisingly, parents' education and the wealth of family are strongly positive association with child's educational progression, indicating family background is an important factor that accounts for educational progression even though these children are still at the stage of compulsory education.

Furthermore, I find that there is no association between gender and educational progression by using family-fixed effects model after controlling for common shared heterogeneity among siblings, which is contradict to our conventional wisdom. Results demonstrate the use of one child or urban family sample can lead to different

results regarding the gender difference in educational achievement in China.

For educational performance, results show that boys outperform girls in math scores, but not in language scores with OLS estimation. The gender gap in both math and language test scores are even wider in the family fixed-effects estimation, suggesting boys have better educational performance than their sisters within families.

Next Steps of this research and Expected Findings

These preliminary results suggest that parents do not discriminate against daughters in providing opportunities and resources for progressing in compulsory education within families, however, boys apparently outscore their sisters in both math and language test scores in the OLS and family-fixed effects model. The question remains, what are the factors that account for gender gap in educational performance in rural China? Next steps of the research will highlight the family resource allocation across gender within the families that differentiates the educational performance. Specifically, we will explore the role of daily time use of children, parental educational expectations and additional educational investment outside school for sons in explaining the gender gap in educational performance in rural China.

References

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Table 1: Descriptive Statistics for Gender and Sibship Size Used in the Analysis

	Sample Child (N=1474)	Sample Sibling (N=624)
Sex ratio (male-to-female)	1.19	1.40
Sibship size	2.32	2.46

Table 2: OLS and Family-fixed Effects Model of Children's Characters and Family Background on Child's Educational Progression and Performance

	Standardized grade-for-age			Standardized Math Test Scores			Standardized Language Test Scores		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Girl	-0.083**	0.012	0.008	-0.155***	-0.189***	-0.219***	-0.073	-0.120*	-0.150**
	(0.040)	(0.056)	(0.059)	(0.045)	(0.061)	(0.075)	(0.044)	(0.062)	(0.075)
<i>Mother's Education</i> (schooling years<6years)									
6<=years<9	0.280***	0.362***	-	-0.002	0.063	-	0.101	0.171*	-
	(0.052)	(0.077)	-	(0.067)	(0.089)	-	(0.069)	(0.092)	-
years>=9	0.258***	0.242***	-	0.082	0.130	-	0.087	0.150*	-
	(0.051)	(0.077)	-	(0.064)	(0.098)	-	(0.062)	(0.090)	-
<i>Father's Education</i> (schooling years<6years)									
6<=years<9	0.317***	0.293***	-	0.012	0.066	-	-0.018	0.002	-
	(0.065)	(0.103)	-	(0.064)	(0.087)	-	(0.067)	(0.091)	-
years>=9	0.322***	0.311***	-	0.062	0.116	-	0.104*	0.133*	-
	(0.051)	(0.081)	-	(0.055)	(0.079)	-	(0.053)	(0.077)	-
Wealth(log)	0.178***	0.185***	-	-0.029	-0.060*	-	-0.016	-0.034	-
	(0.023)	(0.034)	-	(0.024)	(0.034)	-	(0.025)	(0.037)	-
Model	OLS ^a	OLS	FE ^b	OLS	FE	FE	OLS	FE	FE
Observations	2,080	1,030	1,030	2,080	1,030	1,030	2,080	1,030	1,030
Pairs of Sibling			515			515			515

Standard errors are in parenthesis; ***, **, * denotes significant level at 1%, 5%, and 10% respectively

^a OLS represents ordinary least square regression; ^b FE represents family-fixed effects model

All models control for birth weight, age of children, birth order, sibship size, parental education and family wealth