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School Performance of Chinese Internal Migrants' Children

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Abstract

This paper examines whether the decision of migrant parents on children's migration affect their school performance. Empirical evidence based on the 2009 wave of the Rural-Urban Migration Survey in China (RUMiC) data suggests that migrant children outperform left-behind children, especially for Chinese test scores. Further analysis interacting children's migration status with their age shows that, in terms of school performance, younger children having migrated with parents to the city have advantage over their left-behind counterparts in rural hometown, but this gap disappears with the age of children. Among children in junior high school, school performance of left-behind children are better than that of migrant children.

Keywords: Chinese internal migrant workers; left-behind children; migrant children; school performance.

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1 Introduction

Unequally geographical development triggers tremendous number of rural-to-urban migrants in China. China's National Bureau of Statistics estimated that in 2015 there were about 277.5 million internal Chinese migrant workers, equivalent to 36% of the total workforce[1]. Though this rising internal migration contributes to economic development, it also brings about associated social problems. One of these issues attracting special attention of policy makers and academic scholars are the effect of parental migration on their children' school performance (Chen et al., 2009; Meyerhoefer and Chen, 2011; Lee, 2011; Zhao et al., 2014).

Restrained by China's household registration system, known as *hukou*, many migrant workers have chosen to leave their children in rural hometown. According to a *All-China Women's Federation* report, in 2013 about 61 million Chinese children - one of every five in China - are left-behind, that is, they haven't seen one or both parents for at least three months in a year. Among these left-behind children, more than three per cent (that is, more than 2.1 millions) live alone. Migrant parents may bring their children to the city, the same All-China Women's Federation (2013) report shows that in 2013 proportion of migrant children are one out of three in urban areas, amounting to a staggering 35.81 million.

Does the decision of migrant parents on children' s migration affect their school performance? If yes, what would be the difference between those left-behind and migrant children? Existing empirical literature suggests that children of migrating parents may be hurt no matter if they join their parents or if they are left-behind. Parental absence may cause left-behind children to suffer from mental health issues such as mood swings, stress, depression or anxiety disorders (Qin and Albin, 2010; Lee, 2011; Ye and Lu, 2011; Hu et al., 2014; Zhao and Yu, 2016). Using data from north-eastern provinces of Hebei and Liaoning, Meyerhoefer and Chen (2011) find that parental migration is associated with a lag in grade-level attainment for left-behind children compared with other rural non-left-behind children, especially for girls. Lu (2012), Zhang

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[1]The estimates are based on an annual survey of migrant workers conducted by China's National Bureau of Statistics. Results are published at http://www.clb.org.hk/content/migrant-workers-and-their-children.

et al. (2014), Zhao et al. (2014), Meng and Yamauchi (2015) and Lu et al. (2016) conclude that parental migration significantly lowers the grades of left-behind children relative to children whose parents have not migrated.

Even though children are migrated with parents to the city, their educational performance is significantly lower than that of urban children (Kong and Meng, 2010; Zhang et al., 2015). The essential inferiority of migrant children comes from their restricted access to being enrolled in public school in destination cities. Lacking of local urban hukou, Chinese migrant children cannot benefit from the same educational opportunities as locals. They may attend makeshift private schools, usually with low quality of education (Lu and Zhang, 2004; Wong et al., 2007; Wang and Holland, 2011; Liu et al., 2015). Chen and Feng (2013), Lu et al. (2016) and Sun et al. (2016), among others, report that a significant proportion of migrant children in China are not able to attend public schools for the lack of local hukou and turn to privately operated migrant schools. They may also pay higher fees in order to be admitted to public schools. Public schools, however, prefer admitting urban children because the government subsidies they receive are solely based on the number of local children enrolled. Schools may boost their revenue by charging extra fees and require donations from parents, with amounts proportional to the schools' academic reputation. This strong incentive to maintain high academic standards, together with the often-held view of migrant children as being academically inferior, leads public schools to set up obstacles to admitting migrant children (Chan and Crothall, 2009).

Notwithstanding, no consensus has been reached on the studies of educational gap between migrant and rural children. Comparing the test scores of children in migrant schools in Beijing with the test scores of children in Shaanxi's rural public schools, Lai et al. (2014) conclude that among fourth-grade students, migrant students outperform those in rural public schools. In contrast, Wang et al. (2017) find evidence showing that the fifth grade students in rural public school perform better in Math test scores than migrant counterparts in private migrate school in the city.

The existing studies on Chinese migrant workers' children mainly do comparative analysis among young children in elementary school. Following existing educational and psychological literature, however, parental effects on children's school perfor-

mance are likely to be stronger when children are in elementary school and to weaken as children grow older (Entwisle and Hayduk, 1982, 1988; Topor et al., 2010). The objective of this paper, therefore, is to test whether this hypothesis is robust for the school performance between migrant and left-behind children. By exploiting the 2009 Rural Urban Migration survey in China, the baseline finding is that, on average, Chinese test scores of migrant children are better than children who are left-behind in the rural village. We further demonstrate that this advantage of migrant children depends on the age of children: young children being schooled in cities show better results than their left-behind peers, yet no such advantage exists at the level of junior high school.

Though much efforts being made, these results need to be interpreted with caution. Selection of children into a migrating or left-behind group may be endogenous, it may depend on some unobserved variables that cannot be controlled for. Nonetheless, this findings are consistent with educational literature that parents' involvement are positively related to young children's school performance (Entwisle and Hayduk, 1982, 1988; Topor et al., 2010).

The rest of paper is structured as follows. Section 2 describes the unique large-scale survey of internal migrants in China and Section 3 presents the empirical analysis strategy and results. Section 4 concludes.

2 Data

2.1 The Data

Nationwide data collection regarding internal migrants in China is made very challenging by the geographical scale and temporary nature of the migration, the sheer number of persons concerned as well as the usual difficulties in defining and tracking migrants, especially unregistered migrants. However, the recent large-scale Migrant Household Survey (MHS), drawing on a random sample of rural-to-urban migrant households from the five provinces which are the largest source of migrants in China

and the four most common destination provinces [2] allows some interesting insights on the outcomes of Chinese internal migration. The survey design and implementation are described in detail by (Kong, 2010).

The MHS is one of the three independent surveys forming the Rural Urban Migration in China (RUMiC) survey [3]. It has been initiated in 2006 by a group of universities comprising the Australian National University, the University of Queensland and Beijing Normal University as a longitudinal survey following migrant households for a period of five years. The MHS targeted the population of migrants who were registered in a rural area but lived in an urban area at the time when the survey started in 2008 (Kong, 2010). Considering these workers usually live in factory dormitories or makeshift accommodations, a sampling frame was not readily available. Instead, the survey first randomly selected workplaces within defined city boundaries and subsequently migrant workers in each workplace were randomly chosen based on their birth months. Face-to-face interviews with the selected workers and the members of their households[4] living in the city were performed.

The MHS questionnaires collect rich information on demographic and socio-economic characteristics of migrant workers, their household members in the city as well as their spouses and children who stayed behind in the home village. Parents or custodians provided answers concerning many types of expenditures, including those for education, as well as test scores obtained in school by children who were younger than 16 years old and children who were older than 16 but still in school. Parents can be assumed to have good knowledge of their children's scores because at the end of each semester they attend a parents meeting and the final test scores are also sent to parents

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[2]The sample covers 15 cities in nine provinces: Shanghai, Guangdong, Jiangsu, Zhejiang, Anhui, Hubei, Sichuan, Chongqing and Henan. According to the 2000 Census, two-thirds of migrant workers in China have chosen as destination cities in the provinces of Shanghai, Guangdong, Jiangsu and Zhejiang. 47% of migrant workers stem from the Sichuan, Chongqing, Anhui, Hubei and Henan provinces (Akgüç et al., 2014).

[3]The financial support for RUMiC was obtained from the Australian Research Council, the Australian Agency for International Development (AusAID), the Ford Foundation, IZA and the Chinese Foundation of Social Sciences. The two other surveys in the RUMiC project are the Urban Household Survey (UHS) and the Rural Household Survey (RHS).

[4]A household was defined as anyone who was living with the respondent at the time of the survey, sharing income and expenditure.

in writing (see Meng and Yamauchi (2015) for more detail).

Despite considerable efforts of the surveying team, 64% of households could no longer be tracked after the first wave (Akgüç et al., 2014). This substantial attrition rate prevents us from relying on the panel dimension of the MHS. We exploit only the second wave of the MHS because at present it is the only publicly available wave in which scores obtained by children in school have been collected. In early 2009, 5243 households were interviewed. They had a total of 3116 children, of which 1219 children were too young to attend school and 1897 were aged between 6 and 16 or were older than 16 but still in school. 148 school-aged children who already obtained a local urban hukou were excluded from the analysis, as were the 394 children for whom Math or Chinese scores were not recorded (46 had dropped out of school altogether).

In explaining test scores earned by the children in school, selection bias may occur if children earning high scores continue education beyond the nine years of compulsory education whereas lower achieving students leave school to seek jobs. We thus restricted our analysis to children enrolled in compulsory education, i.e. enrolled in elementary and junior high school. Our sample thus consists of 789 children with complete information[5], of which 415 are migrant children and 374 are left-behind children. Children whose primary residence the year before the survey was a rural village are considered left-behind children and those living in the city in the same period are defined as migrant children.

We measure school performance by the test scores earned by children both in Math and in Chinese language because these two are main subjects taught and tested in every grade of the 9-year compulsory education in accordance with the National Curriculum Standard designed by the Ministry of Education. The contents of the tests in each region must follow the National Curriculum Standard (Meng and Yamauchi, 2015), allowing comparability across provinces of China. It is widely accepted they provide a good measure of overall school performance of children (Chen et al., 2009; Zhao et al., 2014). As schools in China may use different scales in grading children's performance, we ensure comparability across schools by analysing not the raw Math and Chinese scores but standardized scores, determined as the ratio of the actual scores obtained to

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[5]Observations with missing information on explanatory variables are excluded.

the maximum test score possible in the school for Math and Chinese respectively. The maximum scores were reported by the parents in the RUMiC data.

2.2 Descriptive Statistics

The descriptive statistics are reported in Table 1. The proportion of 58% boys in the sample is slightly high, but one should keep in mind in the Chinese population the sex-ratio also tends to be high (in 2005 it was estimated by China's National Bureau of Statistics at 54.25% (UNICEF, 2014)) and that in the rural population from which the migrants emerge the share of boys is known to be even higher (it was at 54.89% at the time of the 2000 census (Wang et al., 2006)). We find no evidence of a preference for migrating with sons, as had been reported in previous literature (for example, (Chen and Feng, 2013)).

Migrant and left-behind children are similar in age and are equally likely to be only children. Almost half of the children in our sample are not the only child in the household. While this might seem inconsistent with the one-child policy China has long implemented, it is not surprising since the one-child policy has always allowed households holding a rural hukou to have a second child if their first child was a girl. In certain regions a family could also pay a so-called "social compensation fee" in order to have a second child.

Educational expenditure is the sum of private educational cost, regular living cost and school fees and sponsorship fees, that is the educational related cost. These private educational cost were collected under the heading "remedial costs outside of school" in the questionnaire of MHS and they correspond to cram school expenses. Cram schools provide extra classes for children in the evenings, weekends or school holidays with the stated aim of improving their school test scores. Parents who migrated with their children are more likely to spend on private education and spend on average three times more on private education than those who left their children behind. Regular living and school fees, consisting of expenses for food, accommodation and remedial classes taken in school, are similar for families who left children behind and those who migrate with children. Although China passed a law in 2008 that barred schools from

charging parents with extra fees for simply accepting to enrol their children, many schools continued to demand such fees in the form of donations, called "sponsorship fees" in the MHS questionnaire. Because children with rural hukou do not have a right to enroll in urban schools, parents who have migrated with their children are more likely to incur such fees. Indeed, 28% of migrant parents reported having paid such sponsorship fees compared to only 5% of migrants who have left children behind.

In spite of these differences in sponsorship fees paid, the parents' perception of the quality of the school their children attend is the same whether the children are left-behind or migrant. More than two thirds of parents consider their children attend "average or below" quality schools and slightly more than one quarter think their children are enrolled in "better than average" schools. Only 4% of parents report their migrant children attend schools of "the best" quality, which confirms the difficulties migrant children have in accessing good quality education in their destination cities. Yet among parents who left children behind the proportion who think their children are enrolled in "the best" quality schools is only slightly higher, at 6%.

Household income is the total income earned by family members living in the destination city. The income of families migrating with children are 19% higher than the families where children are left-behind. Consistent with our hypotheses, migrant parents remit almost 40% more on average if their children are left-behind.

As expected, migrant parents themselves have only gained limited education: only 15% of fathers and 10% of mothers have high school education or above. For left-behind children it is most often the mother that raises the child, so her education level is particularly important for the children's learning. In families migrating with children, the proportions of higher educated fathers/mothers are slightly higher than among families where children are left-behind.

In order to control for possible regional differences in children's school performance, we introduce a set of dummies indicating the origin of migrant children and the area where left-behind children live. Ideally province-level dummies would have been used, but insufficient observations have led us to distinguish just three regions: a Central region, a Coastal region and the region of Western China. Half of the children in our sample come from the Central provinces of China, which is not surprising, because

central China is at the same time less developed than the east-coast and not too far removed from the urban east-coastal areas to allow migration. Western areas are poorer than central ones, but migration from those areas is hindered by the vast distances migrants would have to travel away from home. Close to 30% of the children stem from Western areas.

Chinese and Math test scores are higher than expected, with migrant children scoring on average 86% of the maximum score and left-behind children scoring on average 83.6% of the full score. One possible explanation is the case that, at the compulsory education stage, it is generally easier for children to obtain higher test scores. The unconditional difference in mean Chinese test scores is 2.4 percentage point in favor of migrant children, but gap in Math test scores between two groups is minor.

3 Empirical Strategy and Results

3.1 Empirical Strategy

The baseline model is written as:

$$S_{ih} = \alpha + \beta_1 M_h + \beta_k X_{kih} + \epsilon_{ih}, \tag{1}$$

where S_{ih} stands for the standardized Chinese or Math test scores of child i in household h. M_h is equal to 1 if children in household h are migrant and 0 if they are left-behind. X_{kih} is a vector of k control variables refering to characteristics of children, parents, households and region of origin, such as gender and age of the children, the perceived quality of the school children attend, yearly household expenditures on education, amount remitted per year etc.. ϵ_{ih} is the error term.

The migration status of the children in the sample varies across households[6]. We report standard errors clustered at the household level to correct for the fact that children within the same household are expected to have more similar school performances

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[6]Only 4 households in our sample report having migrated with some children and left others behind.

Table 1: Summary statistics

| | Migrant children | Left-behind children | All children | | |
	Mean	Mean	Mean	Min	Max
Standardized test scores					
Chinese	0.860	0.836	0.849	0.24	1.00
	(0.106)	(0.121)	(0.114)		
Mathematics	0.868	0.855	0.862	0.20	1.00
	(0.118)	(0.120)	(0.119)		
Age of children	10.877	11.345	11.099	6	18
	(2.868)	(2.909)	(2.895)		
Grade of children	4.523	5.005	4.752	1	9
	(2.500)	(2.543)	(2.533)		
Proportion of boys	0.576	0.588	0.582		
Proportion of households with an only child	0.470	0.409	0.441		
Educational expenditure	2.036	1.450	1.758	0	18.3
	(2.381)	2.231	2.331		
of which					
Private education cost	0.112	0.037	0.077	0.00	4.50
	(0.438)	(0.223)	(0.357)		
Regular living and school fees	1.437	1.327	1.385	0.00	15.00
	(1.869)	(2.002)	(1.933)		
Having paid a sponsorship fee	0.282	0.045	0.170		
(1= having paid a sponsorship fee; 0 otherwise)					
Household income	38.97	31.760	35.556	7.20	12.00
	(20.304)	(17.032)	(19.154)		
Remittance	3.825	5.312	4.530	0.00	50.00
	(6.162)	(6.492)	(6.360)		
Perceived quality of school					
Average or below	0.680	0.676	67.8		
Better than average	0.282	0.259	0.271		
The best	0.039	0.064	0.051		
Father's level of education	0.159	0.139	0.150		
(1 = high school and above; 0 otherwise)					
Mother's level of education	0.104	0.088	0.096		
(1 = high school and above; 0 otherwise)					
Region of origin					
Central	0.523	0.484	0.504		
Coastal	0.198	0.222	0.209		
Western	0.280	0.294	0.286		
Observations	415	374	789		

Source of data: RUMiC data. MHS wave 2009. Notes: Standard deviations are reported in parenthesis. Educational expenditure, private education cost, regular living and school fees, household income and remittance are measured in thounsands of RMB per year. The Coastal region includes the provinces of Fujian, Guangdong, Jiangsu, Liaoning, Shandong, Zhejiang and Shanghai. The Central region inlcudes migrants from the provinces of Anhui, Hebei, Heilongjiang, Henan, Hubei, Hunan, Jiangxi and Shanxi. The Western region regroups Chongqing, Gansu, Guangxi, Guizhou, Ningxia, Qinghai, Shaanxi, Sichan, Xinjiang and Yunan.

than children chosen at random from the population. The error term ϵ_{ih} is assumed to be independent across households.

Table 2: Baseline regression results for school performance in Chinese and Math

	Standardised Chinese scores	Standardised Math scores
	(1)	(2)
Migrant children	0.019 (0.009)**	0.005 (0.009)
Age	−0.007 (0.002)***	−0.008 (0.002)***
Boys	−0.023 (0.008)***	−0.009 (0.008)
Only child	0.002 (0.008)	0.005 (0.009)
Educational expenditure	0.000 (0.002)	−0.000 (0.002)
household income	0.0003 (0.0002)	0.001 (0.0002)**
Perceived quality of School (ref: Average or below)		
Better than average	0.033 (0.009)***	0.044 (0.009)***
Best	0.068 (0.015)***	0.069 (0.017)***
Father's level of education	−0.002 (0.011)	−0.005 (0.012)
Mother's level of education	0.020 (0.010)*	0.015 (0.011)
Region dummies	yes	yes
Number of household clusters	609	609
Observations	789	789

Source of data: RUMiC data. MHS wave 2009. Notes: Educational expenditure is the sum of private education cost, regular living and school fees and sponsorship fees. Standard errors in parentheses correct for clustering at the household level. All regressions include the constants.*p<0.1; **p<0.05; ***p<0.01.

In Eq.1, β_1 captures migrant/left-behind children school performance gap after controlling for their individual, family and region characteristics, but according to existing experimental and empirical studies, parental effects on children's school performance are likely to be stronger when children are in elementary school and to weaken as children grow older (Entwisle and Hayduk, 1982, 1988; Topor et al., 2010). In other words, at different ages school performance gap between two groups may go different directions and cancel each other out in overall sample. In order to explore whether migrant/left-behind children school performance differential varys across the age, fol-

lowing the technique of Case et al. (2002) who study the impacts of household income on the health of children at different ages, we therefore interact migration status of children M_h with the age Age_{ih}, the regression model is:

$$S_{ih} = \alpha + \beta_1 M_h + \beta_2 Age_{ih} + \beta_3 M_h * Age_{ih} + \beta_k X_{kih} + \epsilon_{ih}, \tag{2}$$

Table 3: Regression results for school performance in Chinese and Math

	Standardised Chinese scores	Standardised Math scores
	(1)	(2)
Migrant children	0.118 (0.035)***	0.113 (0.036)***
Age	−0.003 (0.002)	−0.003 (0.002)
Migrant children * age	−0.009 (0.003)***	−0.010 (0.003)***
Boys	−0.022 (0.008)***	−0.008 (0.008)
Only child	0.001 (0.008)	0.004 (0.009)
Educational expenditure	−0.000 (0.002)	−0.001 (0.002)
Household income	0.0003(0.0002)	0.0005(0.0002)**
Perceived quality of School (ref: Average or below)		
Better than average	0.032 (0.009)***	0.043 (0.009)***
Best	0.066 (0.015)***	0.067 (0.017)***
Father's level of education	−0.001 (0.011)	−0.004 (0.011)
Mother's level of education	0.018 (0.010)*	0.013 (0.011)
Region dummies	yes	yes
Number of household clusters	609	609
Observations	789	789

Source of data: RUMiC data. MHS wave 2009. Notes: All regressions include the constants.*p<0.1; **p<0.05; ***p<0.01.

3.2 Empirical Results

Table 2 reports baseline regression parameter estimates. The results show that migration has a significant impact on the Chinese scores. Migrant children significantly

outperform left-behind children by 1.9 percentage point, after controlling for individual, family and region characteristics. The magnitude is slightly narrowed compared to the unconditional Chinese score gap reported in Table 1. In terms of standardised Math score, the advantage of migrant children is not statistically significant.

When the interaction term is introduced, displayed in Table 3, the result is consistent with the hypothesis. Ceteris paribus, migration has a significant impact both on the Chinese score and the Math score that children obtain: at young ages migrant children outperform left-behind children, but around at the end of the compulsory education this trend is reversed. Migrant children aged 6 have Chinese test scores on average 6.4 percentage points higher than the left-behind children of the same age, whereas among migrants of age 16 the left-behind earn Chinese test scores on average 2.6 percentage points higher than their migrant counterparts. Math scores are on average 5.4 percentage points higher among migrants of age 6 than among left-behind children of the same age. Among 16 year-old, the left-behind score 4.6 percentage points higher in Math than the migrant children. For children of age 13, the Chinese test score is the same whether children migrate to the city or are left-behind.

Regarding the effects of control variables, the perceived quality of the school substantially improves both Chinese and Math scores. Girls' scores in Chinese are 2.0 percentage points higher on average than those of boys, but no differences exist regarding Math scores.

Only the mother's education level influences the children's Chinese test scores. A father's with high education does not improve Chinese scores and Math scores of his children. This might be the consequence of Chinese migrant workers having to work very long hours [7], leaving them too little time for helping their children study.

To gauge robustness of our result that the differences in school performance between migrant children and left-behind children are age related, we further divide children into two groups on the basis of their grade, i.e. children in elementary school and children in junior high school, we then repeat our analysis in each group. The results in

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[7]Migrants worked on average 25.2 days a month an 8.7 hours a day in 2015. 85 percent of them worked in excess of 44 hours per week. See China Labour Bulletin at `http://www.clb.org.hk/content/migrant-workers-and-their-children`.

Table 4: Results for children in elementary school and in junior high school

	Dependent variable:			
	Elementary School		Junior high School	
	Chinese	Math	Chinese	Math
	(1)	(2)	(3)	(4)
Migrant children	0.031***	0.026***	−0.019	−0.051***
	(0.010)	(0.010)	(0.016)	(0.018)
Age	0.0004	0.001	−0.005	−0.005
	(0.002)	(0.002)	(0.006)	(0.006)
Boys	−0.015	0.003	−0.040***	−0.032*
	(0.009)	(0.009)	(0.015)	(0.016)
Only child	0.001	0.008	0.006	0.0001
	(0.010)	(0.010)	(0.015)	(0.017)
Educational expenditure	0.004*	0.002	−0.0005	−0.0002
	(0.002)	(0.002)	(0.002)	(0.002)
Household income	0.000	0.0002	0.0009*	0.0013***
	(0.0002)	(0.0002)	(0.0005)	(0.004)
Perceived quality of School (ref: Average or below)				
Better than average	0.034***	0.039***	0.028	0.052***
	(0.009)	(0.009)	(0.019)	(0.018)
Best	0.054***	0.043**	0.090***	0.112***
	(0.018)	(0.020)	(0.019)	(0.022)
Father's level of education	−0.002	−0.007	0.009	0.015
	(0.013)	(0.013)	(0.020)	(0.023)
Mother's level of education	0.021*	0.020*	0.012	−0.005
	(0.011)	(0.011)	(0.025)	(0.024)
Region dummies	yes	yes	yes	yes
Observations	552	552	237	237
Number of household clusters:	504	504	221	221

Source of data: RUMiC data. MHS wave 2009. Notes: Standard errors in parentheses correct for clustering at the household level. *p$<$0.1; **p$<$0.05; ***p$<$0.01. Each regression includes a constant.

Table 4 indicate that, in the group of elementary school, migrant children are outperforming left-behind children in both Chinese and Math subjects. After controlling for all other variables, Chinese and Math test scores of migrant children are 3.1 percentage points and 2.6 percentage point, respectively, higher than left-behind counterparts. Concerning children in the junior high school, there is no statistically significant discrepancy in Chinese test scores, Math scores of left-behind however are 5.1 percentage point higher than migrant children. This is consistent with the findings drawn on in Table 3, at young ages of children, migrant ones get the advantage of school performance over left-behind children while this advantage is weaken among children in the junior high school.

The above analysis concludes that young migrant children's school performance are better than those left-behind. But this trend is reversed for junior high school children. Though the precise reason for this result is not known, one possible explanation is that it is harder for adolescence to adjust to the new environment than for younger children. Therefore, some unobserved factors may pull down migrant children's school performance. Constraint by data, analysing this effect is beyond the scope of this paper. Nonetheless, if children are too young that migrant parents have to be involved in their young children's school activities, parental involvement may counteract negative effect trigged by unequal treatment in the city. As children's age increasing, migrants parents, due to heavy work schedules, spend less time taking care of their children even if their children migrate with them, therefore, migrant children's advantage being with parents weakened.

3.3   Further Discussion

Based on the above analysis, concerning children's school performance, young migrant children behave much better than left-behind children, but this trend is reverted among children in junior high school. Nevertheless, much caution is needed in interpreting the estimated effects of children's migration on test scores for several reasons. The parents decision to migrate with a child or to leave him or her in the home village may depend on the school performance of the child, creating a problem of reverse causality. Important determinants of the school performance such as the general abil-

ity of children or their study effort are unobserved, yet they may be correlated with the migration status of the children and causing our estimates to be both biased and inconsistent. Selection bias may also affect our results, as for a non-negligible share of children in the sample the Math and Chinese scores are not reported. In the Chinese context it can be assumed that some parents might feel ashamed to report a low school performance for their children and might prefer to simply not answer the survey question. If such a pattern was indeed followed in reporting test scores, the average of test scores would be overestimated and the variance of the test scores reduced. Finally, test scores as well as educational expenditure and household income are likely plagued by measurement error. Minimum values of these variables are surprisingly low, which contrasts to the general idea that children of wealthier parents generally receive more and better schooling (Bowles and Gintis, 2002; Case et al., 2002).

Despite these problems, our findings are in line with educational and psychologic literature that child's academic success has been found to be positively related to parents' involvement in children's early school education(Entwisle and Hayduk, 1988; Hara and Burke, 1998; Hill and Craft, 2003; Topor et al., 2010). For the current study, the mechanisms through which this positive influence of migrant parents on their young children's school performances may not be an endogenous process. Taking care of young children, who are too young to take care of themselves, may indirectly provide chances for parents' involvement in their young children's school activities. While with the children's age increasing, the busy working parents are less involved in their children school activities , hence the migrant children's advantage being with parents weakened.

4   Concluding Remarks

The novelty of this current study is showing that there are school performance differences between left-behind and migrant children. By using large-scale Migrant Household Survey that was collected in nine provinces in China, we examine school performance of these migrant workers' children. Comparing test scores of children having migrated to the city to those of children having left-behind, we conclude that migrant

children outperforms left-behind children, especially for Chinese test scores.

The main contribution of this paper is that it explores age effect on the school performance differential: at young ages of children, migrant children have significant advantage over their left-behind counterparts in rural hometown, but among children who are in junior high school, math test score of left-behind children is higher than that of migrant children.

Beyond the classical idea of facilitating the procedures of migrant children being enrolled in urban pubic school and increasing investment on the migrant children's education, our findings also suggest that policy maker could regulate migrant workers' working time and protect parental time of taking care their school age children.

Because of data limitation, especially the high mobility of migrant workers, further empirical (and theoretical) studies are needed before more proper policy can be recommended. "Take your child with you to migrate" is one of the suggestions from scholars to the migrant job seeking parents. However, in Chinese case, the reality is far more complicated than this simple slogan.

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