Children of migrants: education and health

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Abstract

The impact of the rural-urban migration on children of migrants is of interest to both academics and policy makers. This is so not only because they affect current social stability both in the countryside and in cities, more importantly because these children are the future of the economic and social performance of China. This paper studies education and health outcomes of four groups of children aged below 16: rural children whose parents did not migrate, rural children whose parents migrated but they themselves are left behind, rural children who migrated to cities with their parents, and those of urban children. We find some evidence that left-behind and migrated children are less likely to be rated as having very good school performance relative to rural non-migrant children and urban children, respectively, and their long term health, as measured by height, are worse than those of rural non-migrant children and urban children. No obvious difference is found between children of migrants and non-migrants with regard to parental rated health.

1 Introduction

One of the most important consequences of the spectacular rural-urban migration in China is its impact on children of migrants. This is because children are not only important to parents' life, but also to the society as a whole. If the children of migrants are not developed well, they will, directly or indirectly through their parents, affect social and political stability both in countryside and in cities. Moreover, these children also play an important role in China's social development. Children of migrants, to some extent, also shape the future of the Chinese society.

This paper studies the education and health outcomes of children of migrants. Rural-urban migration may affect the education and health outcomes of the next generation in a number of ways. At a collective level, migration movement may change rural people's perceptions with regard to education and health. The higher rate of return to education and health in the migration destinations is likely to provide increased incentive for parents to invest more in their children's education and health. At individual level, though, the impact of migration on children's education and health outcomes is more complicated and multifaceted. Children of migrants face to two paths: they may move to cities with their parents or be left-behind with other family members. For the group of children who are left-behind, the migration of their parents leads to a tradeoff between the higher family income contributed by remittances versus the reduced amount of parental time invested in their education and health. In contrast, for those who travelled with

parents to cities, migration itself is a shock to their education continuity and to their family life. In addition, many cities in China treat migrant children unfavorably, which reflected in limited access to education and health care service. As a result, the quality of education and health care received by migrant children is often compromised. While the average quality of education and health care in cities is admittedly higher than that in rural areas, the net impact of migration is unclear for children migrated with their parents.

Empirically, the economic literature has found both positive impact of migration on children's education and health outcomes (Edwards and Ureta 2003; Hanson and Woodruff, 2003; Mansuri 2006), and adverse effects which are caused by disruption of family life and education discontinuity (Long 1975, Pribesh and Downey 1999), or increased opportunity cost of study (DeBauw and Giles, 2006). Studies on impact of migration on children's education and health in China are scares and often use data collected in very limited geographic areas with small sample size (see, for example, Han, 2003; Shi, 2005l; Liang and Chen, 2007).

Using the recently available Rural-Urban Migration in China and Indonesia survey data this paper provide a general picture as to how children of migrants are fare relative to children of non-migrants both in turns of education and health outcomes. The paper is structured as follows. The next section briefly introduces some background information regarding institutions of rural-urban migration, how they may affect education and health outcomes of children of migrants and existing findings. Section 3 describes the data and the basic characteristics of the four groups of children. Sections 4 and 5 examine impact of migration on education and health outcomes of migrant children, respectively. The conclusions are presented in Section 6.

2 Background

Rural-urban migration is usually a household-level event, where children move with parents to destination cities. In such a process, migration may have adverse effect on children's education and health outcomes due to disruption of their family life and education discontinuity. In China, however, many migrants are unable to move together with their families. This is essentially due to a historical institutional setting of the household registration system (*hukou*), which exclude rural migrant workers from the urban social welfare system. This great rural-urban divide in social welfare provision implies that migrant workers have little access to urban social welfare, such as unemployment benefits, pension payments, and health care insurance. In addition, they often have very limited access to education, health and other public services. This exclusion is

also reflected in migrant children's access to generally subsidised education system in cities. As a result, migrates often choose to work in cities while leave their children behind. Thus, among children of migrants we have two groups, those who move to cities with their parents and those who remain in rural villages with other family members. The latter group is labeled in the literature as left-behind children.

While no consistent statistics on the size of this left-behind group, an estimate of over 20 million is commonly cited in the literature (see, for example, Ye, Murray, and Wang 2005, State Council Research Group 2006:229).[1] Similarly, for migrated children, only rough estimates are available. It is suggested that there are about 15 millions of rural children are amongst the floating population (State Council Research Group 2006: 229, Shi et al, 2005). According to our survey, of the sample of 2311 children aged below 16, 41 per cent are living with one or both parents in cities, while 56 per cent are left-behind in the rural villages.[2]

Left-behind children are either looked after by a single parent or by other family members, usually grandparents. Our data show that of all left-behind children 59 per cent are living with grandparents, 4 per cent with other relatives, 2 per cent is at boarding schools, while the remaining 35 per cent are living with single parents. The quality of day-to-day supervision provided by grandparents/other family members is likely to differ considerably from that provided by parents, while children from single-parent family may also suffer from reduction in parental care. In consequence, left-behind children's educational and health development may be compromised. A study on left-behind children in Central and West China by Ye, Murrays and Wang (2005) suggested that although the overall negative impact of parents' migration on children's school performance is limited, lack of parental care has increased the mental pressure and sense of insecurity of children.

In contrast, children who moved to cities with their migrant parents may face a different set of conditions, which can be equally, if not more, difficult than those who are left behind. For those migrated children, they have to change from a familiar environment to one that is totally unknown to them. The level of disruption in life and the adjustment required could be substantial even from an adult's point of view. In addition, as migrants are in general discriminated against in urban areas, for a long time migrant children have no rights to attend urban schools. Liang and

[1] An in-depth study conducted by the All-Women Federation China (2006) based on 2005 Bi-Census of one per cent national population estimated there were about 58 million children below 18 years of age (40 million under age 15) left behind in the countryside, accounting for 28 per cent of all rural children.
[2] The remaining 3 per cent are living in other cities, many of which attending boarding schools.

Chen (2007) found that the enrolment rate of migrated children is not only lower than that of their urban counterparts', but also inferior compared to non-migrant children in migrant-sending communities. Almost out of desperation, migrants started to establish schools for their own children in a number of cities since the mid to late 1990s. While full account of these migrant children school is not available, Han (2003) reported in Beijing alone, there are over 200 such schools. These schools often operate under such modest conditions that many are not equipped with permanent classrooms. Moreover, as most of the teachers in these schools are not qualified teachers, and the quality of education is relatively poor (Han 2003 and Shi 2005). More recently, urban schools are instructed to accept migrant children, but various types of discriminatory treatments still exist in some cities, such as prohibitively high endorsement fees. These obstacles are expected to adversely affect migrated children's education outcome.

As far as health care is concerned, migrants and their families are yet to be included in the urban health system. Chan et al (2008), Lin et al (2003) and Liang et al. (2007) find a lower coverage rate of vaccination among migrant children and lack of knowledge on children's general health among migrant parents. However, to our knowledge, there has not been a study systematically investigate the overall health impact of migration on migrant children. Our data indicate that out of 7161 migrant workers 42 per cent are not covered by health insurance of any kind. While 47 per cent of them participated in rural cooperative medical insurance, there are practical benefits while they are in cities. Even smaller proportion (less than 7 per cent) of migrant family members are part of any urban health scheme. As a result, in general, migrant and their families enjoy less quality care and at a higher cost.

Against the institutional background described in this section, this paper gauges the impact of migration on migrant children's outcomes by comparing rural children whose parents did not migrant with those of the left-behind children; children of migrants who live in cities with their migrant parents (migrated children) with their left-behind counterparts; and migrated children with children of urban residents (urban children). Using rural children from non-migrant families and urban children as possible counterfactuals, we try to identify the effect of migration on the outcomes of migrant children.

3 Data and summary statistics

The data used for this study are from the RUMICI survey 2008 for China. The survey comprises three independent samples: the rural sample of 8000 households in Rural Household Survey (RHS), the urban sample of 5000 households in Urban Household Survey (UHS), and the migrant sample of 5000 households in Urban Migrant Survey (UM). It is important to note that households from the rural sample cannot be linked to households in the migrant sample. However, as both the rural and migrant surveys inquired information for children who are left-behind in rural villages and those who move to cities with parents, we are able to conduct consistent comparison of education and health outcomes of the two groups of children within each survey.
Table 1 present the summary statistics for the total sample of children included in the three data sources. There are 8781 children below age 16 in total,[3] which are divided into four types across the three sample: (1) rural children, (2) left behind children, (3) migrated children and (4) urban children. (1) rural children and (4) urban children refer to those who live with both parents in the countryside and cities, respectively. Only RHS (UHS) sample contains rural (urban) children observations. Left-behind children refer to those who live in rural areas and whose parent(s), one or both, live in cities.[4] This type of children exist in both RHS and UM datasets. Migrated children refer to those who were from rural households and at the time of survey lived in cities. Both RHS and UM sample have observations of migrated children.

In the RHS sample, 44 per cent of the left-behind children live with single parents, while the rest live with no parents, and about one third of migrated children in RHS live with both parents in cities. The UM data describe a similar situation as to migrant children's living arrangement and even larger percentage (65 per cent) of left-behind children live without parents. For migrant children's living arrangement, UM data presents a more complete picture compared to RHS. As RHS is a rural based survey and contains little information on family migration, many migrant children who moved with the whole family would only be sampled in UM. Therefore, we generally use UM as the source of information for analyzing migrant children. As it is indicated in UM, the majority of migrant children (87 per cent) are living with both parents in cities. Age and gender structures of migrant children and their school attendance situation are described in

[3] 149 urban children, accounting for 8 per cent of total children sample in the UHS, are excluded in the analysis. This is because we use urban children as counterfactuals for urban children with standard living arrangement, i.e. with both parents.

[4] This type of children exist in both RHS and UM datasets, where UM sample contains children whose parents are strictly-de.ned rural-urban migrants while in RHS sample 77 per cent of left-behind children have at least one parent being a rural-urban migrant. For the rest 23 per cent of left-behind children in RHS sample, their parents migrated to other rural areas. At this stage, these two types of children are grouped together in RHS sample. We will discuss them separately in the next step research and take into account of the different conditions facing
their parents.

Table 2. While the gender structure is roughly uniform across board, migrant children have the youngest average age and nearly half of them are aged under 6. Compare migrant children with those who are left behind, higher percentage of left-behind children are of schooling age attending primary school or junior high school. Given the poor access to school education in cities, it is no surprise to observe smaller percentage of migrant children is at schooling age. Children's wellbeing has much to do with the characteristics of their parents and the house- hold as a whole. Table 3 depicts a number of key indicators of parents and household level conditions for each type of children. It is important to emphasize that the household level information is always based on the source of data. Namely, for left-behind children from UM dataset, the only available household level information is the migrant families in cities rather than the rural household where the children are actually live. In other words, wherever the children do not live in the households of survey respondents, for example, migrant children in RHS and left behind children in UM, household characteristics do not fully re.ect the environment where children face.

Compared to rural children's parents, migrant parents are generally 3 to 5 years younger. In particular, RHS data show that parents of left-behind children are of the youngest parents group. These age differentials probably, to some extent, reflect the different age profile of migrant workers compared to that of non-migrant rural adults. Meanwhile, there are a number of seemly conflicting descriptions of left-behind children's parents as opposed to those of migrant children in Table 3. On the one hand, RHS data suggest parents of left-children have slightly lower average education level, compared to non-migrant rural parents who have on average 7 to 8 years of schooling, translating into 1.6-1.9 education level. On the other hand, UM data show that parents of both migrant children and left-behind children tend to have higher average education levels, around junior high school or slightly above, around 1.9 to 2.2. Furthermore, there is little difference across these two groups of parents in terms of their average age or education level. Compared to average rural children's parents in RHS, both groups are about 3 years younger and 2-3 years more educated. There are few straightforward reasons to explain such differences. However, the information on migration duration of parents indicates that RHS and UM seem to capture different groups of migrant parents, where parents in UM sample have significantly longer duration of migration. What is quite intuitive in terms of migration duration is that parents who brought their children along to cities have longer years of migration compared to parents who left children behind. It shows that moving with children is probably not what migrant parents do when they first move to cities. For migrant parents, bringing children up in cities often requires a number of years of establishment.

The lower half the Table 3 describes basic household level information. In general, children reside in rural areas typically live in larger families of 5 people compared to average household size of 3.5 in cities. It is probably useful to reiterate that only when children's residential location is consistent with the source of data collection, household level information is informative of the children's living condition. For example, the average household size of 1.5 for left-behind children in UM data does not suggest these children live in small families. Rather, it should be interpreted as that parents of left-behind children have smaller household sizes in cities, which is quite intuitive. This qualification of data interpretation also applies to other household level information, such as household income and expenditure. Without accounting for the vastly different costs of living across rural and urban areas and across various regions and cities, we would only interpret the household income and expenditure levels as indicative of the fact that compared to those live in villages, children live in cities tend to have higher living standards measured by per capita income or expenditure.

We then estimate a probit model to identify the factors that differentiate children who move with parents to cities and those who are left behind. The sample used are children with one or both parents migrated, including both left-behind and migrated children from RHS and UM samples. The dependent variable takes the value of 1 if a child is left-behind, zero if a child moved to city with his/her migrant parent(s). The independent variables include children's age and number of siblings. Children's gender, health condition and education level are dummy variables equal to 1 if the child is a girl, having above average health and currently attending to school. Additional explanatory variable on parents and household information include age, migration duration in years and per capita income level of the household. Three more dummy variables are included indicating whether both parents are migrants, whether mother/father has above junior high school education and whether at least one of them is self-employed.

Table 4 presents the results from an estimation using combined RHS and UM samples, as well as from estimations using the UM samples. For the reasons provided earlier, we would consider UM data have better information than RHS data on migrated children. Most of the explanatory variables are significantly associated with whether parents bring a child to city or leave him/her behind. The results show that older children and less healthy children are more likely to be left behind. With regard to parental characteristics, older and better educated parents, especially mothers, are less likely to leave their child behind. The longer have the parents migrated, the more likely they bring their children with them to cities. Both parents being migrants and one or both of them are self-employed decrease the probability that they choose to leave children behind.

In contrast, higher household income per capita increases the chance for a child to be left behind. These conditional correlations do not suggest causal relationship. For example, we do not know whether leaving children behind makes them unhealthy or parents are less likely to take unhealthy children to cities due to concerns of high costs of health care in cities for migrants. However they are informative in pointing out factors that are associated with the outcome of children's migration status.

4 Migration and children's education outcomes

In this section we examine the effect of rural-urban migration on education outcomes of migrant children. Table 5 presents a range of background information on the education of the four types of children from the RHS, UM and UHS samples, respectively.

The first panel presents the school attendance distribution of the children. As our sample of children is restricted to those who are age 15 and below, the majority are either pre-school age or at junior high school and below. The second panel shows the distribution of the quality of school attended, which is a subjective assessment of parents or guardians. Comparing children from different groups, urban children are more likely to attend good schools than migrated children in the same cities, while left-behind children are also fare better than migrated children in cities. The next panel summarises parental assessed children's school performance. While 62 per cent of them are in the very good or good categories, only half of migrated children, left-behind children and rural children were rated as having good or very good performance.[5] It is interesting to note that school performance is the largest cause of concern for parents/guardians of children living in the countryside. On average 54-55% of RHS sample registered a concern related to school performance. The ratio is much lower for urban and urban migrant samples. The last set of information in Table 5 relates to the total amount of school fees paid in 2007. These fees only include the minimum requirement imposed by the school and do not include involuntary sponsorships, donations and any extra cost from attending the particular school[6]5 Compared to rural and left-behind children, it costs more for migrant and urban children to attend primary or junior high school in cities. However migrated children, because of their non- hukou status, are often rejected by formal urban schools, and hence the fee reported is more likely to be paid to migrant children schools. UM data indicate about 1400 yuan for urban migrant primary schools

[5] It is important to note that this question asks within class performance, which does not take into account the education quality difference between rural and urban schools, and between urban migrant children schools and urban normal schools where urban children go.

[6] As very few schooling age children aged below 16 attend senior high school or above, and even fewer children in our sample drop out of school, we focus on children attending primary schools or junior high schools.

and 1800 yuan for junior high schools, respectively. In both cases, this is equivalent to around 85 to 90 per cent of the average school fees paid by urban children.

Child education outcomes may be associated with a wide range of factors. We estimate the following regression to measure conditional correlations between parental assessed child school performance and parental migration status:

$$Y_i^c = \beta X_i^c + \theta S_i^c + \delta Z_i^p + \gamma^{c,p} D_i^{c,p} + \epsilon_i, \qquad (1)$$

where Y is an education outcome variable. We use parental assessed school performance (as summarised in Table 5) as a proxy for the education outcome. X^c is a vector of child characteristics, including age, gender, health condition and number of siblings. S^c is a vector of school related factors; distance to school, annual school fees for 2007 and the number of hours the child spends on homework per week. Z^p is a vector of parental and household information, including parents' age, education, whether the parents are concerned about the child's education, per capita household income and region of residence. $D^{c,p}$ is a dummy variable indicating child/parental migration status. This variable differs across different samples. First, in the rural sample we use a dummy variable indicating whether one or both parents have migrated. Second, for the urban migrant sample, we use a dummy variable indicating whether the child is left-behind in the rural home village or is in the city with the parents. Finally, we combine children from our urban sample (UHS) with migrated children who live in cities from the urban migrant sample (UM), and use a dummy variable indicating children from migrant families.[7]

Table 6 reports these three sets of regressions. The dependent variable is one if the child is rated as performing very well at school, zero otherwise. There are some consistent results across different regressions. These include:

- The older a child is, the more likely he/she is rated as being very good, but the variable is only statistically significant for the rural sample.
- Girls and children with better health conditions are more likely to be rated as very good school performers.
- Mother's education seems to be positively associated with sons' school performance.
- If a parent is concerned about the child's education, the child is more likely to be rated as not having performed very well at school. However, the conditional correlation between

[7] Some of the variables, such as weekly hours used to do homework, distance from school, and school fees have a sizeable number of missing values. To ensure the sample size, we included them and added dummy variables for the missing value observations.

the two variables is less than 15% in every equation, suggesting that parents differ considerably in the importance they place on school performance.

The most important variable in Table 6 is child/parent migration status. Using the RHS sample we find that children with one or both parents migrated are more likely to be rated as not performing very well, both for boys and girls. The result from using the UM sample does not show any statistically significant relationship between children's migration status and their parental rated school performance. If anything, those who are with parents in cities seem to be rated lower than those who are left behind in rural villages, though none of the coefficients is statistically significant. Finally in the third sample which compares migrated children in cities with urban children, we find that migrated children on average are performing less well than their urban counterparts according to their parents/guardians, though the variable is only statistically significant for the female sample.

At this point, we would like to stress that the results reported in Table 6 are conditional correlations between children's education performance and the child/parent migration status. Thus the negative correlation we find in the RHS sample does not necessarily indicate that parental migration status reduces the child's education performance. The reason for not able to claim causal relationship is twofold. First, there may be a reverse causality between children's education and parental migration status. On the one hand, children with migrated parents may do worse than those whose parents are not migrated; on the other hand, parents may decide to move to cities because their children are doing well at school. Second, our measure of child school performance is a parental/guardian's assessed variable. Parental personal unobserved characteristics may affect whether they rate their children as doing well or not and at the same time may affect their decision on migration. A similar problem exists with the results obtained from the UM sample. For the results comparing migrated children and urban children, though, there should be no reverse causality problem. However, possible measurement errors associated with the subjective measure of school performance remain. In summary, we find some negative relationship between child school performance and child/parental migration status. To further examine the causal effect, we need to gather further information on children's objective school performance.

5 Migration and children's health outcomes

The possible effect of migration on health outcomes of children are examined in this section. RUMIC survey collects a number of general health indicators and Table 7 presents the summary

statistics of some health related variables for the four groups of children. The general health conditions of children as assessed by their parents indicate that the majority of children are in better than average health conditions, where migrant workers seem to be particularly positive about their children, both in cities and left-behind.

Height is normally used as an indicator of long term health condition. On average, rural children whose parents are not migrated are 10 centimetres taller than those whose parents migrated, while urban children are 12 centimetres taller. However, the mean value does not adjust age difference. To examine age adjusted height difference, Figure 1 plots height by age for each comparison groups. The graph shows that left-behind children are shorter at almost all the age groups relative to both children from non-migrant families, and children from migrant family but migrated with parents. Relative to city children, however, children migrated to cities are shorter at almost all the age groups.

Compared to children live in cities, children live in the countryside seem to be more healthy as suggested by the incidence of illness over three months prior to the survey. More than 10 per cent of children live in cities fell ill within this three-month period, while in rural areas the ratio is about 5-7 per cent. Although within this period, more migrated children and urban children experienced illness than rural or left-behind children, local urban children spent around 20 times more on medical treatment compared to migrant children. In contrast, children live in rural areas and especially migrant children spend much less on health service. Furthermore, for urban children, of the total three month health expenditure only around 15 per cent was out of pocket payment, while this ratio for the other groups are all above 87 per cent. While children live in rural areas seem to be able to claim a small part of the total cost, children of migrants have to bear the entire health cost by themselves. This reality is also evident when we look at the situation of health insurance across the four types of children. Most children live in rural areas are covered by Rural Cooperative Medical Care System, while in cities around 30 per cent of urban children have public medical care or other kinds of health insurance, only around 10 per cent of migrated children are covered by any health insurance in cities .

To investigate the underlying factors that potentially contribute to different health outcomes across children from different types of families, we estimate equation 1, where Y_i^c indicates the health outcomes of child *i*: either the height of the child and whether he/she is rated as having excellent health. The regression specification is similar to that of the education outcome analysis. X^c is a vector of children's characteristics, including age, gender, and number of siblings. H^c is the

birth weight of the child, which is found to be correlated to health outcomes later on in life (references). Z^p contains information about parents and household information, including parents' age, education, per capita household income, and whether the parent worry about the child with regard to any aspect of his/her development at all. $D^{c,p}$ is a dummy variable indicating child/parental migration status.

Selected results of estimated equations on health outcomes are presented in Table 8. The top panel presents the results from the height equation. Controlling for age in linear form[8] and gender, birth weight is associated with taller stature for all the samples. The effect of number of sibling is generally negative for the rural and migrant sample, but positive and not significant for the urban sample.

Our main findings from this equation, though, is the effect of migration indicators. For the rural sample, on average the left-behind children are 1.2 cm shorter than their counterparts whose parents are not migrated. Relative to children who migrated with parents to cities, left-behind children are also fare worse. On average they are 3.9 cm shorter. However, children who migrated to cities with their parents are, in turn, 3.7 cm shorter than their counterparts from the urban households. The results from both the rural sample and urban migrant sample indicate that despite the higher income parents earn from migration, children's long term health is negatively associated with the absent of parental care. While these results may not be causal as migration choice may be correlated to the health condition of the children, it is hard to believe that parents choose to migrate because their children is shorter. Further investigation is warranted to pin down the causal relationship. When comparing migrated children in cities with children of city origin, the large negative effect should mainly bea long term nutritional differences between rural and urban as most of the children of the migrants only spent a short period in the cities.

The bottom panel of Table 8 shows the selected results from the equation with the parental subjective assessment of their children's health as the dependent variable. In this regression, children's birth weight is also positive and significant in general for the rural and urban migrant samples. But for reasons not clear to us, it is negative and insignificant for the urban and city migrant sample. The results from the rural sample indicate that parents/guardians are less likely to rate children of left-behind children as having excellent health, and the effect is more profound for girls than for boys. The results from the urban migrant sample indicate that parents are more likely to rate children who migrated with them as having excellent health, but this is only true for boys and the effect is not precisely estimated. The combine sample of migrant in cities and city

[8] Including age as a group of dummy variables do not change the results.

dwellers show that parents of migrated children are more likely to rate their children as having excellent health than local city people. Due to the subjective nature of the dependent variable, it is very hard to gauge why the results are inconsistent across different samples and largely insignificant in these regressions.

6 Conclusions

In this paper we examine how children of migrants (both left-behind and migrated) compare to rural non-migrant children and urban children with regard to education and health outcomes. We find some evidence that left-behind and migrated children are less likely to be rated as having very good school performance relative to rural non-migrant children and urban children, respectively, and their long term health, as measured by height, are worse than those of rural non-migrant children and urban children. No obvious difference is found between children of migrants and non-migrants with regard to parental rated health.

These findings, however, are not causal. Part of the problem is due to the nature of the outcome measures. With the subjective measure of the outcomes, it is very hard to disentangle the attitude of the parents/guardians, their understanding of the child, and the reality. To push the research agenda forward, it seems necessary that we collect more objective information on children's education and health outcomes. Part of the problem is related to the endogenous behaviour of migration. Hence, future studies in this area will benefit significantly if a valid instrument for parental migration decision can be found.

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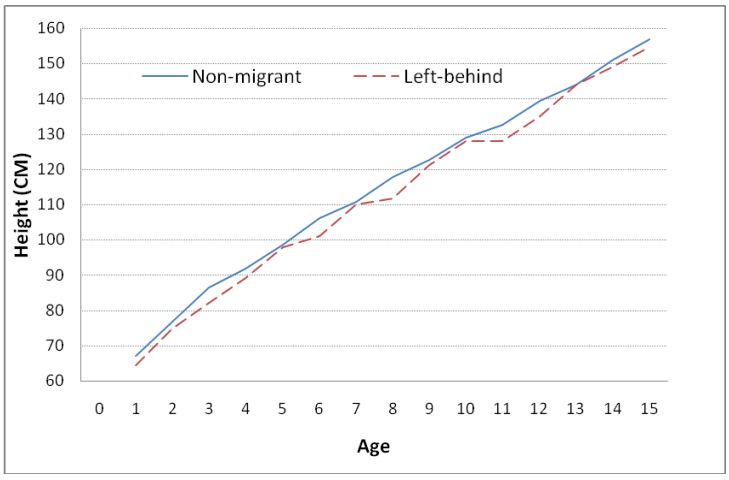
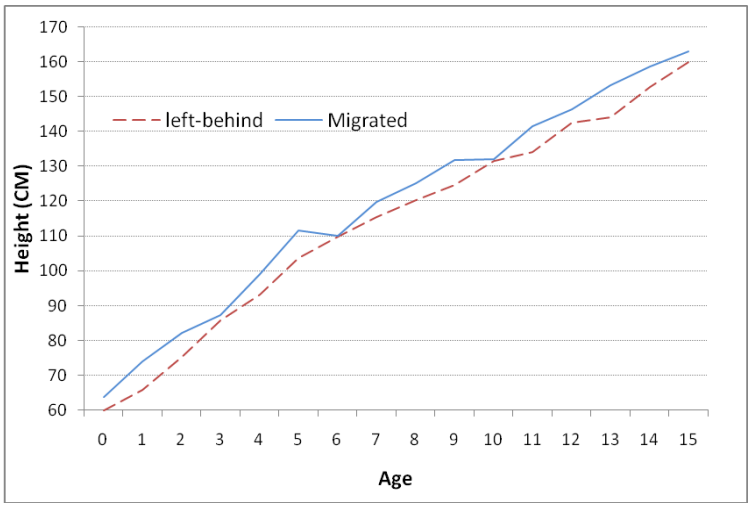
Figure 1: Height of children by age and parental migration status

Rural sample:



Migrant sample:



Combined migrants and urban sample:

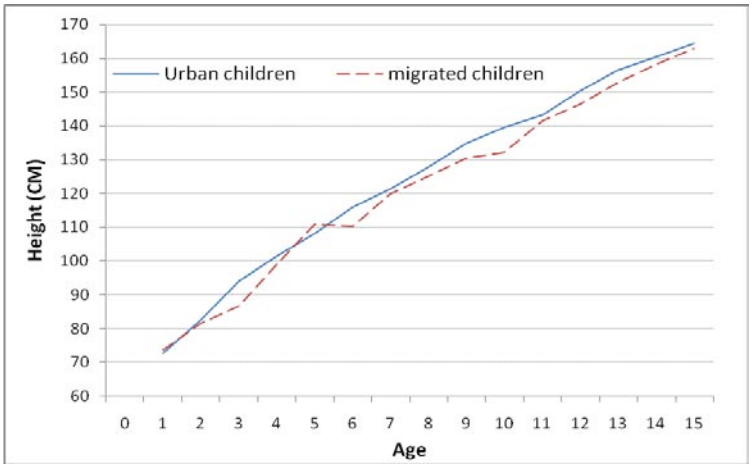


Table 1: Number of children and living arrangement

data souce		RHS			UM		UHS
Total No. of Children		4717			2311		1753
children's living arrangement		Rural children	Left-behind children	Migrated children	Left-behind children	Migrated children	Urban children
No. of Obs.		2462	2027	228	1298	1013	1604
% of sample		52%	43%	5%	56%	44%	92%
Living with	both parents	100%		32%		87%	100%
	single parents		44%	18%	35%	6%	
	no parents		56%	50%	65%	7%	

Table 2: Children's age and gender composition

data souce		RHS			UM		UHS
children's living arrangement		Rural children	Left-behind children	Migrated children	Left-behind children	Migrated children	Urban children
No. of Obs.		2462	2027	228	1298	1013	1604
Age structure	mean age	9.3	8.6	10.1	8.0	7.2	8.2
	Std. Dev.	4.3	4.4	4.1	4.5	4.5	4.3
	0~6 years old	698	368	20	289	379	590
	% of 0~6 years old	28%	36%	26%	42%	48%	37%
	6~16 year old	1764	658	69	419	398	1014
	% of6~16 year old	72%	64%	74%	58%	52%	63%
Gender structure (%)	boys	55%	55%	58%	55%	56%	53%
	girls	45%	45%	42%	45%	44%	47%
School attendance (%)	before schooling	30%	37%	26%	41%	46%	39%
	primary school	49%	43%	35%	40%	37%	43%
	junior high school	19%	18%	29%	18%	14%	17%
	senior high school	1%	0%	6%	1%	1%	1%
	drop-out	1%	1%	3%	1%	1%	0%

Table 3: Children's parents and household information

data souce		RHS			UM		UHS
children's living arrangement		Rural children	Left-behind children	Migrated children	Left-behind children	Migrated children	Urban children
No. of Obs.		2462	2027	228	1298	1013	1604
Parents' age	mother	36.1	30.9	34.2	32.7	33.2	35.6
	father	37.9	32.9	36.5	34.2	34.7	38.1
Parents' eduction level: 1 primary, 2 junior high 3 senior high 4 college and	mother	1.62	1.51	1.72	1.93	1.95	3.1
	father	1.89	1.76	2.09	2.22	2.26	3.2
Parents' migration duration (year)	mother	0-1.6	2-4	1.9-3.4	4.4-8.5	5.7-9.5	n.a.
	father	0.1-3.5	4.8-7.7	3.6-6.2	6.1-10.9	6.9-11.6	n.a.
household size	Mean	4.7	5.0	4.8	1.5	3.4	3.5
housing conditions, average living areas (m2)	Mean	30.9	28.2	30.6	10.4	11.7	no info.
income p.c.	Mean	4661	3799	4393	19632	12331	20218
	S.D.	3793	2678	2982	14265	10344	16384
consumption_ expenditure p.c.	Mean	3540	2879	3576	10174	8427	11669
	S.D.	3378	2708	3024	6932	12089	8762
total_expenditure p.c.	Mean	5160	4044	5337	16874	11654	15535
	S.d.	5606	4140	5529	16468	15377	23062

Table 4: Probit model for left-behind vs. migrant children: Prob(left-behind=1)

	(1) UM sample	(2) UM+RHS sample
Child's age	0.051***	0.034***
	(0.013)	(0.011)
Child's gender (girl=1)	-0.009	0.033
	(0.060)	(0.051)
Number of siblings of a child	0.113**	0.128***
	(0.052)	(0.043)
Child having above average health	-0.371***	-0.271***
	(0.097)	(0.085)
Child attending school	-0.057	-0.013
	(0.112)	(0.096)
Father's age	-0.004	-0.008*
	(0.005)	(0.004)
Mother's age	-0.013***	-0.013***
	(0.005)	(0.004)
Father's education level above junior high school	-0.035	-0.098
	(0.068)	(0.060)
Mother's education level above junior high school	-0.146*	-0.155**
	(0.080)	(0.073)
number of migration years	-0.024***	-0.014***
	(0.005)	(0.005)
Both parents are migrants	-0.998***	-0.691***
	(0.083)	(0.064)
Income p.c.	0.414***	0.419***
	(0.030)	(0.030)
At least one parent is self-employed	-0.767***	-0.762***
	(0.082)	(0.074)
Constant	1.172***	2.427***
	(0.204)	(0.172)
Observations	2238	3757

*** p<0.01, ** p<0.05, * p<0.1

Standard errors in parentheses

Table 5: Children's education

data souce		RHS		UM		UHS
		Rural children	Left-behind children	Left-behind children	Migrated children	Urban children
School attendance (%)	before schooling	30%	37%	41%	46%	39%
	primary school	49%	43%	40%	37%	43%
	junior high school	19%	18%	18%	14%	17%
	senior high school	1%	0%	1%	1%	1%
	drop-out	1%	1%	1%	1%	0%
School quality	Best in the local city/county	5%	4%	6%	3%	15%
	Above average in the local city/county	25%	22%	26%	37%	54%
	Average	67%	72%	64%	58%	31%
	Below average in the local city/county	2%	2%	4%	3%	0%
School performance (%)	Very good	8%	6%	13%	8%	13%
	Good	40%	41%	37%	44%	49%
	Average	49%	49%	46%	46%	37%
	Poor	3%	4%	4%	2%	1%
	Very poor	0%	0%	1%	0%	0%
Concerns	No concerns	35%	36%	43%	40%	43%
	School performance	55%	54%	41%	45%	40%
	Excessive visit to internet Café , playing computer games or watch TV	6%	4%	6%	9%	10%
	Being bullied or bad friends	3%	4%	5%	4%	5%
	others	1%	1%	4%	2%	3%
Annual school fees for 2007, excluding sponsorship, (yuan)	Primary school	403	454	797	1403	1565
	Junior High	1018	1211	1715	1787	2093

Table 6: Migration status and school performance

	Rural sample			Urban migrant sample			Migrated children in city and urban children		
	Total	Males	Females	Total	Males	Females	Total	Males	Females
one or both parents migrated	-0.026	-0.023	-0.030				-0.024	0.019	-0.085
	[0.010]**	[0.013]*	[0.016]*				[0.024]	[0.031]	[0.040]**
Dummy for being in city				-0.026	-0.018	-0.022			
				[0.020]	[0.025]	[0.044]			
Age of the child	-0.004	-0.003	-0.006	-0.004	-0.001	-0.008	-0.004	-0.003	-0.004
	[0.002]**	[0.002]	[0.003]**	[0.003]	[0.004]	[0.006]	[0.003]	[0.004]	[0.005]
Dummy for males	-0.019			-0.005			-0.032		
	[0.009]**			[0.019]			[0.016]**		
Child being healthy	0.032	0.031	0.032	0.077	0.079	0.075	0.071	0.058	0.083
	[0.010]***	[0.013]**	[0.016]**	[0.018]***	[0.023]***	[0.033]**	[0.018]***	[0.023]**	[0.028]***
Hours of home work	0.006	0.003	0.009	0.000	0.001	0.000	0.000	0.000	0.000
	[0.006]	[0.008]	[0.011]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]	[0.001]
Parent/guardian concerned about education	-0.103	-0.107	-0.096	-0.063	-0.065	-0.052	-0.121	-0.094	-0.153
	[0.010]***	[0.013]***	[0.015]***	[0.017]***	[0.021]***	[0.029]*	[0.014]***	[0.019]***	[0.022]***
School distance/100	0.015	-0.020	0.029	-0.001	-0.001	-0.001	-0.001	0.003	-0.001
	[0.019]	[0.013]	[0.024]	[0.001]	[0.001]	[0.001]	[0.001]	[0.008]	[0.001]
School fee/10000	0.074	0.004	0.169	-0.018	-0.050	0.040	-0.034	-0.082	0.077
	[0.057]	[0.069]	[0.092]*	[0.060]	[0.073]	[0.109]	[0.065]	[0.063]	[0.134]
Number of siblings	0.001	0.000	0.001	-0.004	0.001	-0.020	-0.017	-0.021	-0.009
	[0.006]	[0.008]	[0.010]	[0.014]	[0.018]	[0.025]	[0.015]	[0.017]	[0.026]
Mother's years of schooling	0.004	0.006	0.002	0.005	0.009	0.006	0.000	0.011	-0.013
	[0.002]*	[0.002]**	[0.004]	[0.006]	[0.006]	[0.009]	[0.005]	[0.005]**	[0.009]
Father years of schooling	-0.001	-0.003	0.001	0.005	0.007	-0.004	0.004	0.007	0.001
	[0.002]	[0.003]	[0.004]	[0.004]	[0.004]	[0.008]	[0.003]	[0.004]*	[0.005]
Mother's age	-0.001	-0.002	0.000	0.004	0.001	0.006	0.002	-0.002	0.005
	[0.001]	[0.001]*	[0.001]	[0.002]**	[0.002]	[0.003]*	[0.001]	[0.001]	[0.003]*
Father's age	0.000	0.001	-0.001	0.004	0.002	0.007	0.001	-0.001	0.002
	[0.001]	[0.001]	[0.001]	[0.002]**	[0.002]	[0.003]**	[0.001]	[0.001]	[0.002]
Per capita income	-0.016	-0.020	-0.014	2.631	3.142	0.032	0.079	0.102	0.009
	[0.067]	[0.090]	[0.100]	[1.107]**	[1.226]**	[2.261]	[0.074]	[0.098]	[0.103]
Regional dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	0.163	0.119	0.194	-0.096	-0.071	-0.103	0.118	0.096	0.103
	[0.040]***	[0.049]**	[0.063]***	[0.074]	[0.092]	[0.123]	[0.056]**	[0.071]	[0.087]
Observations	3017	1679	1338	1305	894	411	1656	896	760
R-squared	0.06	0.07	0.07	0.07	0.08	0.11	0.07	0.09	0.10

Robust standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%

Table 7: Children's health

data souce		RHS		UM		UHS
children's living arrangement		Rural children	Left-behind children	Left-behind children	Migrated children	Urban children
No. of Obs.		2462	2027	1298	1013	1604
Health condition	Excellent	39%	38%	45%	45%	27%
	Good	52%	52%	43%	46%	61%
	Average	8%	10%	11%	8%	12%
	Poor	0%	0%	1%	0%	0%
	Very poor	0%	0%	0%	0%	0%
Height (cm)	Mean	124.2	114.7	117.2	117.5	126.8
sick during past three months	yes	5%	7%	n.a.	15%	12%
	no	95%	91%		85%	88%
3 months total health_expenditure	Mean	177	137	n.a.	34	671
% of 3 months health_expenditure is out of pocket	Mean	89.44	87.73	n.a.	95.21	15.04
health_ insurance	1. Rural coop	89.1%	88.4%	53.8%	38.6%	18.5%
	2. Public medical care	0.1%	0.3%	8.4%	3.5%	15.2%
	3. Commercial health insurance	0.3%	0.1%	2.4%	3.8%	4.0%
	4. others	0.8%	0.1%	1.6%	3.6%	8.5%
	5. no insurance	8.6%	8.5%	33.8%	50.6%	52.5%

Table 8: Selected results from the health equations

	Rural sample			Urban migrant sample			Migrant children in city and urban children		
Dependent variable: Height	Total	Males	Females	Total	Males	Females	Total	Males	Females
one or both parents migrated	-1.174	-0.764	-1.656				-3.660	-4.026	-2.872
	[0.528]**	[0.713]	[0.778]**				[0.725]***	[0.955]***	[1.003]***
Dummy for being in city				3.929	4.146	2.938			
				[0.662]***	[0.880]***	[1.322]**			
Birth weight (kg)	2.092	2.590	1.459	1.730	1.764	1.593	0.727	0.827	0.615
	[0.487]***	[0.676]***	[0.698]**	[0.631]***	[0.818]**	[1.032]	[0.277]***	[0.381]**	[0.399]
Age of the child	6.108	6.111	6.117	6.347	6.366	6.302	6.311	6.445	6.165
	[0.067]***	[0.091]***	[0.102]***	[0.083]***	[0.111]***	[0.127]***	[0.062]***	[0.082]***	[0.096]***
Dummy for males	0.449	0.000	0.000	0.013	0.000	0.000	1.340	0.000	0.000
	[0.472]	[0.000]	[0.000]	[0.684]	[0.000]	[0.000]	[0.456]***	[0.000]	[0.000]
Number of siblings	-0.208	-0.384	-0.056	-1.191	-1.397	-0.585	0.092	0.186	0.006
	[0.320]	[0.430]	[0.491]	[0.616]*	[0.840]*	[0.824]	[0.488]	[0.669]	[0.710]
Parental and household level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4443	2468	1975	2202	1446	756	2788	1514	1274
R-squared	0.75	0.75	0.76	0.80	0.79	0.83	0.85	0.85	0.85
Dependent variable:	Rural sample			Urban migrant sample			Migrant children in city and urban children		
Parental assessed excellence in health	Total	Males	Females	Total	Males	Females	Total	Males	Females
one or both parents migrated	-0.032	-0.021	-0.042				0.178	0.209	0.142
	[0.016]**	[0.021]	[0.023]*				[0.026]***	[0.035]***	[0.039]***
Dummy for being in city				0.030	0.042	-0.006			
				[0.022]	[0.029]	[0.046]			
Birth weight (kg)	0.046	0.064	0.026	0.048	0.060	0.033	-0.009	-0.005	-0.018
	[0.015]***	[0.020]***	[0.022]	[0.021]**	[0.026]**	[0.035]	[0.010]	[0.014]	[0.016]
Age of the child	0.002	0.002	0.001	-0.004	-0.006	-0.001	0.005	0.003	0.007
	[0.002]	[0.003]	[0.003]	[0.003]	[0.003]*	[0.005]	[0.002]**	[0.003]	[0.003]**
Dummy for males	0.049	0.000	0.000	0.002	0.000	0.000	0.015	0.000	0.000
	[0.014]***	[0.000]	[0.000]	[0.025]	[0.000]	[0.000]	[0.018]	[0.000]	[0.000]
Number of siblings	0.014	-0.013	0.049	-0.018	-0.045	0.027	0.010	-0.009	0.036
	[0.010]	[0.013]	[0.015]***	[0.019]	[0.023]**	[0.032]	[0.019]	[0.026]	[0.028]
Parental and household level controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Regional controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	4448	2471	1977	2312	1526	786	2814	1527	1287
R-squared	0.05	0.06	0.05	0.08	0.10	0.09	0.05	0.06	0.06

Robust standard errors in brackets

* significant at 10%; ** significant at 5%; *** significant at 1%