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## Education of Children Left Behind in Rural China\*

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### Abstract

Despite China's substantial internal migration, longstanding rural-urban bifurcation has prompted many migrants to leave their children behind in rural areas. This study examines the consequences of out-migration for children's education using longitudinal data from the China Health and Nutrition Survey ( $N = 885$ ). This study takes into account the complex family migration strategies and distinguishes various types of migration in China, including different forms of parental migration as well as sibling migration. Results show that migration of siblings generates benefits for children's education, which is particularly pronounced for girls and children at middle-school levels. But parental migration has not given children left behind a significant advantage in educational prospects as their parents had hoped. Younger children seem to be especially susceptible to the disruptive effect of parental out-migration.

### Keywords

Child development; Children left behind; China; Education; Migration; Sending areas

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In developing societies an increasing number of children grow up with one or no parent (United Nations Children's Fund, 2006). This largely arises from labor migration, in which children are left behind by migrant parents to circumvent the high costs and uncertainties associated with migration. A growing body of literature has examined the well-being of children left behind by international migrants. But very limited work has studied children affected by internal migration, which is also highly prominent. China is a prime example, with a record number of domestic migrants and children left behind in rural sending areas; the estimate of these children is as high as 58 million (China Youth Research Centre, 2006). This huge number of children left behind is largely a result of China's long-standing institutionalized rural-urban bifurcation that has precluded internal migrants from fully incorporating in cities of their own country.

The present research examines the education of children left behind in rural China. It is informed by an extensive literature on the effects of family disruptions and parent-child separation on child development, as well as by a growing literature on the impacts of migration on various aspects of the family. A synthesis of these two literatures suggests that the effect of out-migration on children left behind is not completely clear-cut. Studies of labor migration have often viewed emigration as a household strategy for improving the socioeconomic circumstances of the migrants and households left behind (Stark & Bloom, 1985). Research on family separation, by contrast, has underscored the detrimental

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consequences of parental absence for a range of child outcomes (McLanahan & Sandefur, 1994).

What is the overall impact of migration on the educational status of children left behind in China? The present study investigates this central question using longitudinal data from the China Health and Nutrition Survey. Further, because children of different genders and ages may show different capacities and vulnerabilities, this study assesses how the effect of out-migration varies by the gender and school levels of children. Throughout the analysis, we focus on the main effect of emigration rather than the social and economic mediating mechanisms underlying the effect. We distinguish different groups of children left behind to reflect the complex family arrangements and family migration practices in China (i.e., migration of mother, father, both parents, or sibling). We use panel fixed-effect models to account for potential selection of migrant families.

## **FAMILY DISRUPTION AND CHILDREN'S WELL-BEING**

Previous research has consistently shown that family disruption, especially in the form of parent-child separation, has substantial adverse effects on education, cognitive development, and psychological well-being of children in a range of different circumstances. In western societies, such separation often results from marital dissolution (Amao & Cheadle, 2005; Potter 2010). In the developing world, parental death as a type of family separation has been shown to bring considerable psychological and social costs for children (Beegle, Filmer, Stokes, & Tiererova, 2008). Not until recently has attention been paid to separation due to migration (reviewed in the next section).

Regardless of family type, the number of family disruptions and transitions was crucial for child well-being, with children in relatively stable family structures showing better outcomes than those experiencing many family changes (Faley and Wildsmith 2004). The moderating role of the gender of remaining parent and the age of the child remains unsettled. Biblarz and Raftery (1999) found that the outcomes of children were worse off in single-father than in single-mother households because mothers were often the primary caregivers, whereas a recent study by Dufur et al. (2010) showed negligible parenting differences by gender in single-parent families. With respect to the child's age, the deleterious impacts of parental absence could be stronger for younger children because they were more vulnerable to parenting deficits (Ermisch & Francesconi, 2001). Nevertheless, to the extent family disruption resulted in reduced economic resources, the negative effect may be more pronounced for older children at higher educational transitions that incurred higher expenses (Steele, Sigle-Rushton, & Kravdal, 2009).

The family literature has also examined how the complex family systems shape children's outcomes and the impacts of family disruption. Extended kinship systems, in particular the presence of grandparents, could provide supplementary tangible and intangible resources, thereby buffering the negative impact of family disruption and protecting children from various crises. This was found both in developing countries where extended family ideal is common (Pong, 1996), and in the U.S. for ethnic minority groups (Dolbin & Targ, 2001). Sibling composition and cultural preferences are also important for child well-being. Siblings were often critical contributors to household resources in developing societies (Gomes, 1984). In settings with prevalent preference for men, the education of sons was often promoted at the expense of daughters, suggesting that increased economic resources could have a stronger impact on girls (Parish & Willis, 1993).

## PARENTAL MIGRATION AND CHILDREN'S EDUCATION

Studies on the consequences of migration for sending communities have long focused on macro-level outcomes such as economic development and how migration networks sustained migratory flows. A growing literature has begun to examine the impacts of emigration on the micro world of families. This line of research showed that whereas migrants and families left behind continued to share strong bonds of collective welfare, the family separation has inevitably led to changes in family relations and gender identities (Parreñas, 2001). The implications of emigration have been examined for specific family members, especially children. In many resource-constrained settings, parents commonly undertake migration to improve the life chances of their offspring. Yet, the overall effect of parental emigration is not clear-cut because of potentially countervailing impacts due to economic benefits and parent-child separation. Below we discuss the psychosocial and economic processes for understanding the overall influence of out-migration, but in this research we are able to examine only the overall effect rather than the underlying processes.

The adverse impact of family separation on children noted in the broader family literature is likely to arise in the context of migration. When parents migrate, children left behind tend to receive less parental support and supervision. The remaining care provider would almost certainly face increased household responsibilities (Taylor et al., 1996), further undermining their ability to parent. Migration may also lead to the absence of traditional authority figures and the breakdown of essential social control in the household. Children themselves could endure not only the emotional costs of separation from parents but also increased household obligations (Jones, Sharpe, & Sogren, 2004). Migrant families sometimes sought to cope with the separation by turning to extended kin for support. These resources may help alleviate some family constraints but this was not consistently the case (Parreñas, 2001).

Nevertheless, unlike many other types of parent-child separation, parental emigration may generate economic advantages from migrants' remittances, as posited in the New Economics of Labor Migration that migration decisions were made collectively to diversify risks and maximize household economic welfare (Stark & Bloom, 1985). As a result, a large fraction of migrants' incomes were devoted to remittances, which could reduce the economic vulnerability of the origin households (Azam & Gubert, 2006). From the perspective of child development, the remittances might improve children's educational prospects insofar as they were used to invest in children, or to mitigate the time and energy constraints of the caregiver or the demand for child labor (Brown & Poirine, 2005). Emigration could also bring about "social remittances" of knowledge, perceptions, and practices (Levitt, 1998) conducive to child development, though it might also reduce educational aspirations if migration appeared a more viable route to economic success than education (Kandel & Kao, 2001).

The growing empirical studies have examined the link between migration (mostly international migration) and various aspects of children's schooling. Some suggested that emigration positively affected children's schooling and improved their school performance (Adams, Cuecuecha, & Page, 2008; Curran, Cadge, Varangrat, & Chung, 2004; Kandel & Kao, 2001). In contrast, other studies have demonstrated a deleterious impact (Lopez-Cordoba, 2005; McKenzie & Rapoport, 2006) or a neutral impact of migration on schooling (Arguillas & Williams, 2010; Borraz, 2005), and suggested that children left behind by mothers experienced more difficulties in school than those left behind by fathers (Battistella & Conaco, 1998). Parental migration even seemed to lower educational aspirations in Mexico as children waited to follow in their parents' footsteps (Kandel & Kao, 2001).

These studies provided very valuable insights but they often faced several limitations. First, most of the attention has focused on international migration, whereas internal migration also has generated widespread family separation. Additionally, very few studies distinguished different groups of children left behind to capture the complex family arrangements and family migration practices in migrant-sending areas. Even fewer studies have addressed a common methodological difficulty, endogenous selection of migrant households, with a few exceptions (Adams et al., 2008).

## THE STUDY SETTING

China is a compelling setting to study the consequences of internal migration for children, both because of its unprecedented labor migration and limited educational provision in rural migrant-sending areas.

### Migration and Family in China

Since the early 1980s an estimated 220 million migrants have moved to work in Chinese cities (National Bureau of Statistics, 2011). A large fraction of these migrants are married and have children. But a long-standing bifurcated social institution (the household registration system) has led to various structural and social barriers that precluded migrants from becoming full urban citizens, resulting in limited provision of social services for migrant families such as the education and health care for their children (Solinger, 1999). Because of the difficulties and high costs of arranging child care and schooling in cities, many migrant parents left their children behind in rural sending areas. Over 70% of children of migrants (or 58 million) were left behind while one or both of their parents migrated for work; among them, nearly one third were separated from both parents (CYRC, 2006).

The main reason for migration is often to better provide for families. Hence, over 75% of Chinese migrants remitted to their original families, and for those with children, the rate is over 90% (Cai, 2000; CYRC, 2006). These remittances had a strong and positive influence on household income (Du & Park, 2006). But the disruption of family life was also felt by people left behind. Although migrants sought to maintain regular contacts through telephone with those left behind, in general children left behind had limited close contacts with their parents. Fewer than 30% of children left behind saw their migrant parents every year (Ye & Murray, 2005).

In the face of parental out-migration, especially when both parents migrated, children were often left with grandparents and sometimes other relatives (Ye & Murray, 2005). This reflects the widespread extended family arrangements in rural China and the extensive involvement of grandparents in childcare. In rural China, over 50% of people older than 60 lived with their adult children (Zimmer & Kwong, 2003). The presence of extended kin, in particular grandparents, tended to have a positive effect on child development by offering additional resources and intergenerational support (Falbo, 1991). Studies of family system in rural China also demonstrated the role of older siblings in supporting younger ones. This pattern has persisted even under the one-child policy because this policy was mainly imposed in urban areas. In rural areas, multiple children were generally allowed, especially if the first child was a girl (Goodkind, 2004). Ethnographic accounts have suggested the commonality of a family history of migration, with remittances from older siblings used to finance household expenditures and younger siblings' education (Gaetano, 2010): Parents migrated for work first; when older children grew up, parents would return to tend to the land and elderly parents or younger children while sending older children to work in cities.

The large number of children left behind has received increasing media and scholarly attention. But previous research has been largely restricted to anecdotal evidence or

qualitative studies in specific areas. A study of 250 middle school students left behind in a rural area in Hubei province found that more than half of them experienced difficulties in adapting to parents' emigration and about half of them performed poorly in school (Li & Wen, 2009). Some observations also suggested that children left behind were at a higher risk for problematic behaviors at the two extremes, being either withdrawn or excessively aggressive (Yang, 2005). These studies, however, collected data on only children left behind, failing to sample a comparison group of nonmigrant children. This makes it impossible to assess the effect of being left behind. In addition, previous research has not taken into account different types of parental emigration and migration of siblings.

### Rural Education

In China, whether one lives in an urban or a rural area is crucial in determining one's educational opportunities (Knight & Li, 1996). The rural areas are characterized by relatively high educational costs, limited educational opportunities of lower quality, and a strong gender bias favoring boys (Hannum & Park, 2009). In many rural areas, the lack of local revenues led to an increase in educational fees, as many schools had to cover costs by charging directly to students. Although the compulsory education law stipulated nine years of public education (primary school and middle school) to be tuition free, education in China has never been completely free and educational expenses (e.g., uniforms, books, and supplies) shouldered by the parents have continued to rise (Tsang, 2000). This situation becomes more pronounced at the middle-school level, where fees are often more than twice as high. The educational expenses are even higher at the high-school level where compulsory schooling ends.

Since 2000, the central government ordered local governments to enforce the free nine-year compulsory education in rural areas. These recent initiatives have improved rural education, but this goal has yet to be fully achieved. While urban children achieved nearly universal enrollment, the enrollment rates for rural children were 90% in primary schools and 85% in middle schools (Knight & Song, 2005). The rural-urban gap also lies in the quality of education. Poor school quality in rural areas substantially reduced the likelihood that rural children would advance to high school and college. Another persistent feature of rural education was the preference for sons (Brown & Park, 2002). Despite some recent improvements, girls continued to have fewer educational opportunities than boys.

### The Present Research

The main research question is "what is the overall effect of out-migration on the educational status of children left behind by internal migrants in rural China?" To take into account the complex family migration strategies, we used a typology to differentiate children in households with no migrants, with one or both parents as migrants, and with siblings as migrants (while living with both parents). Given the common role of older siblings in supporting younger ones, we expect children with migrant siblings to enjoy better educational outcomes than children in nonmigrant households; but children with migrant parents are not likely to enjoy the same benefits given the extended separation from parents.

The second and the third research questions assess "how does the effect of emigration vary by gender; and how does it vary by the school level of children?". Given the strong male bias in rural China that results in resources being devoted to daughters only when they are plentiful, migration may redistribute the opportunities between boys and girls. Girls are thus likely to benefit more from emigration. In addition, because the educational costs are substantially higher at higher school levels, the benefits of emigration may be more important for older children than for younger children. By contrast, younger children may fare worse than their older counterparts when experiencing separation from parents because

they are more attached to parents and are less capable of adapting to family change. Hence, the overall effect of emigration is likely to be more positive for older children than for younger children.

## METHOD

### Data

Data are from the China Health and Nutrition Survey (CHNS), a longitudinal study designed by the University of North Carolina at Chapel Hill to examine a wide range of social, economic, and health outcomes of the Chinese population ([www.cpc.unc.edu/projects/china](http://www.cpc.unc.edu/projects/china)). The survey followed a large nationally representative sample of households and conducted household interviews to collect information on all members of the households. The response rate was quite high, close to 90% at the household level in each wave (Popkin, Du, Zhai, & Zhang, 2010). After the first round in 1989, six additional panels were collected in 1991, 1993, 1997, 2000, 2004, and 2006, resulting in a total of over 4,400 households and 19,000 individuals. The study population was drawn from both rural and urban areas of nine provinces (Guangxi, Guizhou, Heilongjiang, Henan, Hubei, Hunan, Jiangsu, Liaoning, and Shandong) that vary substantially in social and economic development. This variability provided a national-level account of the Chinese population. Sampling within each province was done using a stratified multistage random cluster technique. Since 1997, the sampling procedure was slightly modified to make up for sample attrition. The survey added newly-formed households that resided in the sample areas and additional households to replace those no longer in the survey. New communities were also added to replace communities no longer participating.

The CHNS represents the only publicly available panel study that permits a national-level understanding of the well-being of children left behind. The longitudinal structure also provides a stronger basis for causal inference than cross-sectional studies. The timing of the survey is ideal for studying the consequences of migration, as it corresponds to the soaring internal migration in China. Starting in 2000, the survey began gathering basic information on family members not currently living at home, which permits identifying the families left behind. For this reason, this study used the 2000, 2004, and 2006 waves of the CHNS.

As with all panel studies, a fraction of the sample was lost to follow-up in each wave. The analysis was carried out for panel rural children age 7-18 between 2000 and 2006. The sample size of eligible children in the 2000 wave was 1,219, among which 832 were followed in 2004. Because new family members (including children) were added in each wave of the survey, the total number of eligible children was 951 in 2004, among which 780 was followed in 2006. To retain sufficient sample size and to reduce sample attrition, children with at least two observations over the six-year period were included. In the analytic sample, the quantity of missing information was small. The final set used for analysis was based on complete cases, after deleting the 4% of cases containing any missing data. The final sample consisted of 885 panel children.

Sensitivity analysis was also conducted to evaluate how sample attrition may affect the results. This analysis used multiple imputations to fill in missing information and missing data due to sample attrition. The multiple-imputation analysis yielded similar results to the complete-case analysis. For example, the coefficients of parental and sibling emigration were respectively, 0.009 and 0.419, and the corresponding standard errors were 0.138 (p-value=0.951) and 0.141 (p-value=0.018) (comparing to results in Table 3 Model 2, discussed below). This similarity was in part because much of the attrition in CHNS was due to changes in survey operations (e.g., the whole community withdrew from the survey due to administrative difficulties). Previous work also showed that the individuals lost to follow-up

were not significantly different in major characteristics from those who remained in the survey (Popkin et al., 2010).

### Variables and Methods

The analytic sample was rural children aged 7-18 inclusive during the study period (2000-2006). Although the typical age for starting school is six, it is common for rural children to start school late. For this reason, age 7 was used as the starting age. The upper age limit was set at 18 to reduce selective attrition caused by post-secondary students who left home to attend schools in urban areas. Hence, the analysis focused on children of primary-school (6 years) and secondary-school (3 years middle school and 3 years high school) ages.

The dependent variable was a continuous measure of children's highest schooling grade completed, ranging from 0 to 12 (0 = *no education*, 12 = *third grade in high school*). For the small number of children in technical or vocational schools, the grade level was converted to the corresponding level in high school. Highest grade is a more sensitive indicator than current enrollment or completed schooling to the issues of family disruption. This measure allows to study delayed schooling process such as grade retention, school interruption, and other types of discontinuity in school. In rural China progression through school was often interrupted: At any given age, rural children tended to complete very different levels of schooling.

The key predictor is household out-migration status, constructed by combining information on the migration status of each family member with the individual's relationship to the focal child. First a dichotomous distinction was made: Whether the child lived in a household where one or more family members had emigrated for work. The analysis then used a more detailed measure differentiating children in nonmigrant households (NM), in households with one or both parents as migrants (PM), and in households with siblings as migrants (SM). The measure was further disaggregated to distinguish circumstances where the mother, the father, or both parents had migrated. It should be noted that this last procedure yielded small sample sizes in each category and may give relatively less stable estimates. Migration constituted the primary source of family separation in rural China. Other causes such as divorce, non-marital fertility, and death of prime-age adults (i.e., parents of school-age children) were far less common in comparison (Cohen, 1992; Liao & Heaton, 1992; Zimmer, Kaneda, & Spess, 2007). Therefore, a small number of children with absent parents due to non-migration related reasons were excluded (< 2%). A very small number of children in families with other relatives as migrants were also excluded.

Other covariates included socio-demographic variables such as children's age and gender. Because of the relatively wide age range, a quadratic age term was included to capture the possibility that grade level increased at young ages but decreased at older ages. A discrete variable of the highest level of education attained by any household member age 25 and above was included to measure household educational environment. It would also be helpful to study the educational level of the emigrants, but such information was unavailable. Per capita annual household income was used as an indicator of family economic background, which did not include income from out-migrants. The natural log of this variable was included in the models. To control for family structure, we included whether the child lived in an extended family and the number of school-aged children (age 6-18) in the household. The former captured the complex living arrangements in rural China, with over 80% of the extended family members being grandparents. The latter reflected the level of competition for household educational resources. Finally, discrete variables of survey provinces and survey years were added to account for the province-level contextual effects and the effects of macroeconomic shocks.

The effect of migration may be biased by unobserved factors that affect both family migration decisions and children's education. For instance, if households with poor socioeconomic conditions tend to motivate people to migrate and such conditions also have a negative effect on children's schooling, we would observe a spurious effect of migration if we do not adequately capture household socioeconomic background. In the absence of experimental designs we cannot completely ascertain the causal effect of migration on children. But second-best strategies have been developed. One is to exploit longitudinal data to control for individual and familial circumstances via the fixed-effect models (FE). To study the first question of the overall effect of emigration, the model is formulated as below:

$$Edu_{it} = \mu_t + \beta Fmig_{it} + \gamma \mathbf{X}_{it} + \alpha_i + \varepsilon_{it} \quad (1)$$

where  $Edu_{it}$  is the educational status of child  $i$  in year  $t$ ;  $Fmig_{it}$  is family migration status for child  $i$  in year  $t$ ;  $\mathbf{X}_{it}$  is a vector of other covariates described above;  $\mu_t$  is an intercept that differs in year  $t$ ;  $\varepsilon_{it}$  is the random error; and  $\alpha_i$  represents unobserved differences specific to each child and constant over time. The FE models purge out  $\alpha_i$  by differencing equation (1) across waves of the survey. Equivalently, the FE models with continuous dependent variables can also be estimated using ordinary least squares regressions by including a dummy variable for each child ( $\alpha_i$ ) to adjust for individual differences. This approach relies on the assumption that the unobserved heterogeneity is time invariant. There may be time-varying factors that affect education and family migration status, but this assumption is not likely to be seriously violated because many endogenous factors are past background or are highly heritable. Another strength of the FE approach is that it helps account for potential sample attrition bias that is associated with stable factors (Ziliak & Kniesner, 1998). A caveat of the FE approach is that time-invariant factors such as the main effect of gender cannot be explicitly modeled. We used the Hausman test to compare the FE models with corresponding random-effect models, which assume no unobserved heterogeneity. The test suggested that the two sets of models were significantly different. The FE models are thus more appropriate to use.

To study the second question of whether the effect differs by gender, we included an interaction between family migration status and the gender of children, as formulated in equation (2). To examine the differential effects by grade level, we stratified the sample by children in primary-school and secondary-school age and tested for cross-level differences.

$$Edu_{it} = \mu_t + \beta_1 Fmig_{it} + \beta_2 Fmig_{it} * Gender_i + \gamma \mathbf{X}_{it} + \alpha_i + \varepsilon_{it} \quad (2)$$

## RESULTS

### Descriptive Statistics

Table 1 presented the descriptive statistics. Over half of the sample were boys, a result consistent with the male bias in rural China. With respect to the grade level, it has increased over time, but the increase was smaller than the difference in the number of years between two consecutive surveys. This provided some evidence for school interruptions in rural China. Consistent with the low levels of socioeconomic status in rural areas, the highest level of education among adults in the household was quite limited, with the majority of adults having only primary or middle-school education. Per capita annual income was low, reaching about \$600 by 2006. The number of school-aged children in the household was between 1 and 2. This did not necessarily reflect the actual fertility rate in rural China, as it did not count children younger than 6 or older than 18 or migrated siblings. The extended family arrangements were prevalent and seemed to have become more so over time.



With respect to family migration status, in 2000, about 18.7% of the children lived in households with emigrants. There was a steady increase in the migration rate over time. By 2006, over 33% of rural children lived in migrant households. Across the three waves, in general over half of children in migrant households lived apart from at least one migrant parent, and the rest lived in households with migrant siblings. Migration of fathers was more common than that of mothers. There was also a considerable fraction of children left behind by both parents. In addition, migration of siblings was very common in rural China, comparable to the magnitude of parental migration. This finding speaks to the important role of older siblings in supporting the families and putting younger siblings through school. This pattern was especially true in poor rural areas, where many children started working as migrants soon after finishing middle school at around age 15.

Table 2 further compared the socioeconomic characteristics of different types of migrant households. The results confirmed earlier research that relatively poor households and households with at least some educated members were more likely to send out migrants than were more financially secure families, though the differences in household educational level was not significant. With respect to living arrangements, there were clear variations by family migration status. Children left behind by both parents were most likely to live in extended families, followed by children with migrant mothers, because these two types of households tended to experience the most parenting deficits.

### **The Overall Impact of Family Migration on Children's Education**

Regression results with child fixed effects were presented in Table 3. When using the dichotomous migration measure, there seemed to be a positive effect of household migration. Net of other factors, children in households with emigrants completed significantly more schooling, by over one fifth of a grade, compared to children in nonmigrant households (Model 1). This binary measure, however, obscured substantial differences across different types of migrant households. When disaggregating by family migration status, this positive effect turned out to be largely driven by sibling migrant households (Model 2). By contrast, children in parental migration households did not experience significant improvements in educational status over children in nonmigrant households. Additional tests showed that those in PM households were significantly more disadvantaged in school than those in SM households. This difference provided some evidence for the disruptive effect brought about by parental emigration.

When further disaggregating parental emigration status (Model 3), the beneficial effect again held only in SM households. The coefficients for children in various PM families were not significantly different from those in nonmigrant households. Turning to the differences between the three types of PM households and SM households, which tended to reflect the disruptive effect of parental absence, we found a negative effect for mother's migration, and a marginally negative effect for father migration. Children in households with both parents as migrants, however, were not significantly worse off. This might be partly attributed to the role of extended families, as most children with both parents out for work lived in such families, especially with grandparents (Table 2), and that the effect of being in extended families was marginally positive (Model 3). To explicitly examine whether the disruptive effect of parental migration was largely offset by extended family members, we included an interaction of extended family arrangements with family migration status. If extended families mattered, children in migrant families with and without extended kin should fare significantly differently. The results showed that the coefficient for PM households living without extended families was 0.030 with a standard error of 0.130. The interaction term was positive and in the expected direction (the coefficient was 0.154), but lacked statistical significance (standard error of 0.195). These results lent very weak support for our speculation, suggesting that although the role of extended families appeared to be positive,

the extended arrangements did not completely offset the repercussions of family disruption. Other possible explanations were discussed below.

Turning to the other factors affecting children's education (Table 3), age had a curvilinear effect. The educational level of adults was positively associated with children's schooling, but the effect of household income was not significant. This might be because the income measure excluded migrants' income. Once family emigration status was taken into account (and potentially additional resources from migrants), original family income was no longer a crucial factor. We conducted sensitivity analysis by interacting the income variable with family migration status and found that family income mattered for nonmigrant households but not for migrant households.

### Variations by Gender and Grade-level

With respect to the gender interactions, the positive effect of emigration was significantly greater for girls than for boys (Table 4). This result underscored the potential for emigration to alleviate the persistent male bias in schooling in rural China. In contrast, emigration did not have a significant impact for boys, who already enjoyed better educational opportunities. The educational benefit for girls, however, was again overshadowed by parent-child separation in PM households. It was largely girls in SM households that were doing significantly better.

Results by school levels are presented in Model 3 through Model 6. Because the relative educational expenses and subsequently the opportunity costs were much higher for children to enroll in middle schools and high schools than in elementary schools, the positive effect of emigration was more pronounced for secondary-school aged children, as shown in contrasts between Model 3 and 5 and between Model 4 and 6. But this positive effect still existed for children at primary-school age. Nevertheless, this positive effect was largely offset in PM households. The negative impact of separation (the difference between PM and SM households) was greater for younger children than for older children. This indicated that younger children might have a greater need for parental care and thus suffered more from the absence of parents. By contrast, older children could better adapt to parental absence. Hence, the overall pattern was that older children were more likely to benefit from and less likely to suffer from out-migration, as we could see by comparing the corresponding coefficient in Models 3 and 5, and in Models 4 and 6.

## DISCUSSION

The present research examines the consequences of out-migration for children's education in the context of China's rural-urban bifurcation and limited rural educational opportunities. As in many other settings, labor migration has become an institutionalized strategy for improving the lives of migrants and their families, especially children, in China. Nevertheless, the distinct state institutions in China have resulted in various structural and social barriers facing migrants in cities. This has led to many split families and children left behind by migrant parents. In some cases, rural families have adopted the strategy of sending older children out for work to finance household expenditures and support younger children.

At first glance, the results seemed to show a positive overall effect of emigration for children's education. Although the data lacked information on migrants' remittances, we speculated that such a positive impact may partly result from improved material resources from remittances. These additional resources could be used to keep children in school, to pay for supplementary educational services and other school supplies, and to enhance children's learning ability by affording health care and nutritious food. This beneficial role

was particularly pronounced for girls and children at higher educational levels (i.e., secondary schools), for whom education was more closely tied to the availability of economic resources. But it was also present for children at the primary-school level. This suggested the role of economic benefits throughout children's educational trajectory: They determined whether children entered school and did so at the proper age, and whether children could afford to stay in school in later transitions. Because migrants were largely drawn from middle- and lower-middle income households, migration seemed to afford these children opportunities to keep up with those from more affluent rural families and ameliorate some of rural girls' structural disadvantages in education.

The positive effect, however, persisted only when nonparent family members such as siblings migrated for work. In this scenario, children likely enjoyed improved economic resources without being separated from parents. In the context of parental migration, the positive effect of emigration tended to be largely overshadowed by decreased parenting due to migration. Families with migrant parents were less able to offer academic assistance, adequate supervision, or a home environment conducive to learning. Children also might develop emotional and behavioral problems and faced additional household labor burdens. All of these could hinder their school progress. This adverse effect was especially strong for younger children, who were more vulnerable to diminished parental input and supervision. It was also greater when mother rather than father migrated, which is what we would expect given China's patrilineal tradition stressing the role of mothers in caregiving. One unexpected finding was that children left behind by both parents were not necessarily worse off than others, presumably because such households may receive more remittances and the absent parents in such families may be especially attentive to maintain frequent contact with children. Overall, these findings showed that parental migration has not given children left behind a significant advantage in educational prospects as their parents had hoped. This is unfortunate because one of the primary reasons for migration is to better provide for children.

The present study maps out the similarities and differences between parental emigration and other forms of family separation. Children experiencing parental divorce or death commonly suffer from a reduction in both tangible and intangible resources. In emigrant families, by contrast, the well-being of children could be understood as both a socioeconomic process and a psychosocial process stemming from family separation. Whereas the overall impact of emigration is not overly deleterious as in the case of other parent-child separation, the social costs of family separation due to emigration are real and often overshadow the potential benefits of migration. Hence, the overall impact of migration depends not only on the magnitude of migrants' transfers, but also on whether families undertake compensatory adjustments to mitigate the disruptions, either by sending someone whose role is less critical for child development (e.g., a sibling rather than a parent) or by resorting to household members who are good substitutes for parents (e.g., extended family members, grandparents in particular). The results showed that children did seem to benefit from siblings' migration. But the extended families did not fully substitute for the roles played by parents. This could arise from a lack of supervision authority among nonparent family members as well as a lack of education among rural grandparents. Previous ethnographic research and our fieldwork showed that grandparents taking on the childcare responsibility often found it difficult to provide the guidance and supervision growing children need (CYRC, 2006).

This research adds to the literature on migration and families left behind by investigating different forms of family migration and variations by gender and grade-level. It also focuses on internal migrants and illustrates how the longstanding socialist institutions that divide rural and urban Chinese into two classes of citizens have shaped the educational prospects of children left behind in a domestic scene. On balance, parental migration has hardly helped

alleviate the long-standing educational disadvantages facing rural children, as it often entails family separation that carries deleterious and unintended ramifications for child development. Given that an increasing fraction of the rural population are entering the migration stream in China, more migrant parents would face the stark choice of where to place their children. Unless rural migrants are provided better chances of incorporation in Chinese cities, the opportunities of upward mobility for their children would be rather limited.

This research also has some methodological implications for studies of children left behind. Because many migrant-sending areas have complex family systems, households may commonly devise migration strategies that involve migration of nonparent family members, especially children's siblings. We showed that the magnitude of sibling migration was comparable to that of parent migration and children endured very different experiences when their parents and siblings migrated. A more sensitive measure of family migration would take account of these different family practices. Failing to do so (i.e. collapsing non-parental migration with nonmigration) would lead to biased estimates. We conducted sensitivity analysis that grouped children in SM households with those in NM households, which tended to understate the benefits and overstate the deleterious repercussions of parental migration.

Several limitations warrant discussion. The main limitation is the lack of data on crucial mediating mechanisms of the effect of emigration, especially the receipt of remittances as well as the quantity and quality of parenting. We thus could not explicitly examine the potential benefits from remittances and the potential costs from reduced parenting, and have had to rely on indirect inferences to reach some of our conclusions (e.g., the estimates in SM households tended to reflect mainly the effect of migration due to tangible resources, and the differences between PM and SM households tended to manifest largely the disruptive effect of migration). Also, in spite of our use of longitudinal data to address potential bias, we cannot rule out all possible sources of bias that may result from time-varying unobserved heterogeneity and sample attrition. Although results from multiple imputation analysis yielded similar findings, we could not completely ascertain that multiple imputation assumptions (i.e., missing/attrition at random) were met. Sample attrition could thus lead to biased results to the extent that was difficult to gauge (e.g., if children with emigrant parents or children who performed poorly in school were more likely to drop out, the overall effects may underestimated or overestimated).

Despite these limitations, the present study points to the potential countervailing effects of out-migration for children. It also highlights the importance of taking account of the complex family migration strategies, and of the differential vulnerabilities for boys and girls and for children of varying school levels. Better data are needed to establish a more accurate and comprehensive picture of the effects of emigration on various dimensions of child well-being as well as the underlying processes.

## REFERENCES

- Adams, RH.; Cuecuecha, A.; Page, J. Policy Research Working Paper. World Bank; Washington, DC: 2008. The impact of remittances on poverty and inequality in Ghana; p. 4732
- Amato P, Cheadle J. The long reach of divorce: Divorce and child well-being across three generations. *Journal of Marriage and Family*. 2005; 67:191–206.
- Arguillas M, Williams L. The impact of parents' overseas employment on educational outcomes of Filipino children. *International Migration Review*. 2010; 44:300–319.
- Azam J, Gubert F. Migrant remittances and the household in Africa: A review of evidence. *Journal of African Economies*. 2006; 15:426–462.

- Battistella G, Gastardo-Conaco M. The impact of labour migration on the children left behind. *Sojourn*. 1998; 13:220–41.
- Beegle, K.; Filmer, D.; Stokes, A.; Tiererova, L. Orphanhood and living arrangements of children in Sub-Saharan Africa. World Bank; New York: 2008.
- Biblarz T, Raftery A. Family structure, educational attainment, and socioeconomic success: Rethinking the “Pathology of Matriarchy.”. *American Journal of Sociology*. 1999; 105:321–365.
- Borraz F. Assessing the impact of remittances on schooling: The Mexican experience. *Global Economy Journal*. 2005; 5:1–9.
- Brown P, Park A. Education and poverty in rural China. *Economics of Education Review*. 2002; 21:523–541.
- Brown R, Poirine B. A model of migrants’ remittances with human capital investment and intrafamilial transfers. *International Migration Review*. 2005; 39:407–438.
- Cai, F. Henan People Express. 2000. Floating Population in Transition China.
- China Youth Research Center (CYRC). China’s children and juveniles statistical handbook. Science Press; Beijing: 2006.
- Cohen M. Family management and family division in contemporary rural China. *China Quarterly*. 1992; 130:357–377.
- Curran S, Cadge W, Varangrat A, Chung C. Boys’ and girls’ changing educational opportunities in Thailand: The effects of siblings, migration and village location. *Research in Sociology of Education*. 2004; 14:59–102.
- Dolbin M, Targ D. Grandparents raising grandchildren. *Journal of Teaching in Marriage and Family*. 2001; 1:52–64.
- Du, Y.; Park, A. Migration, remittance and poverty reduction. In: Fang, C.; Bai, N., editors. *Labor migration in transition China*. Social Sciences Academic Press; China: 2006. p. 12-35.
- Dufur M, Howell C, Downey D, Ainsworth J, Lapray A. Differences in parenting behaviors in single-mother and single-father households. *Journal of Marriage and Family*. 2010; 72:1092–1106.
- Ermisch J, Francesconi M. Family structure and children’s achievements. *Journal of Population Economics*. 2001; 14:249–270.
- Falbo T. The impact of grandparents on children’s outcomes in China. *Marriage and Family Review*. 1991; 16:369–376.
- Gomes M. Family size and educational attainment in Kenya. *Population and Development Review*. 1984; 10:647–660.
- Goodkind D. China’s missing children: the 2000 census underreporting surprise. *Population Studies*. 2004; 58:281–95. [PubMed: 15513284]
- Hannum, E.; Park, A. *Education and reform in China*. Routledge; Oxford: 2009.
- Jones A, Sharpe J, Sogren M. Children’s experiences of separation from parents as a consequence of migration. *Caribbean Journal of Social Work*. 2004; 3:89–109.
- Kandel W, Kao G. The impact of temporary labor migration on Mexican children’s educational aspirations and performance. *International Migration Review*. 2001; 35:1205–1227.
- Kelly Raley R, Wildsmith E. Cohabitation and children’s family instability. *Journal of Marriage and Family*. 2004; 66:210–219.
- Knight J, Li S. Educational attainment and the rural–urban divide in China. *Oxford Bulletin of Economics Statistics*. 1996; 58:83–87.
- Knight, J.; Song, L. *Towards a labour market in China*. Oxford University Press; Oxford: 2005.
- Levitt P. Social remittances: Migration driven, local-level forms of cultural diffusion. *International Migration Review*. 1998; 32:926–948. [PubMed: 12294302]
- Li D, Wen Y. Educational well-being of rural children left behind. *Educational Measurement and Evaluation*. 2009; 4:32–35.
- Liao C, Heaton T. Divorce trends and differentials in China. *Journal of Comparative Family Studies*. 1992; 23:413–429.
- Lopez-Cordoba E. Globalization, migration, and development: The role of Mexican migrant remittances. *Economia*. 2005; 6:217–256.

- McKenzie, D.; Rapoport, H. Policy Research Working Paper 3952. World Bank; Washington, DC: 2006. Can migration reduce educational attainment?: Evidence from Mexico.
- National Bureau of Statistics (of China). Demographic statistics from the 2010 census. 2011.
- Parish W, Willis R. Daughters, education, and family Budgets: Taiwan experiences. *Journal of Human Resources*. 1993; 28:863–898.
- Parreñas, R. *Servants of globalization: Women, migration, and domestic work*. Stanford University Press; Stanford, CA: 2001.
- Pong SL. School participation of children from single-mother families in Malaysia. *Comparative Education Review*. 1996; 40:231–249.
- Popkin B, Du S, Zhai F, Zhang B. Cohort profile: The China Health and Nutrition Survey: monitoring and understanding socio-economic and health change in China, 1989–2011. *International Journal of Epidemiology*. 2010; 39:1435–1440. [PubMed: 19887509]
- Popkin B, Paeratakul F, Ge K. Body weight distribution pattern in China: The results from 1989 and 1991 China Health and Nutrition Survey. *American Journal of Public Health*. 1995; 85:690–694. [PubMed: 7733430]
- Potter D. Psychosocial well-being and the relationship between divorce and children's academic achievement. *Journal of Marriage and Family*. 2010; 72:933–946.
- Solinger, J. *Contesting citizenship in urban China: Peasant migrants, the state, and the logic of the market*. University of California Press; Berkeley: 1999.
- Stark O, Bloom D. The new economics of labor migration. *American Economic Review*. 1985; 75:173–178.
- Steele F, Sigle-Rushton W, Kravdal O. Consequences of family disruption on children's educational outcomes in Norway. *Demography*. 2009; 46:553–574. [PubMed: 19771944]
- Taylor E, Massey D, Arango J, Hugo G, Kouaouci A, Pellegrino A. *International migration and community development*. *Population Index*. 1996; 62:397–418.
- Tsang MC. Education and national development in China since 1949: Oscillating policies and enduring dilemmas. *China Review*. 2000:579–618. 2000.
- United Nations Children's Fund. *The state of the world's children 2007*. 2007.
- Yang, D. *The development report of China's education*. Social Sciences Academic Press; 2005.
- Ye, J.; Murray, J. *Left-behind children in rural China*. Social Sciences Academic Press; Beijing: 2005.
- Zimmer Z, Kaneda T, Spess L. An examination of urban versus rural mortality in China using community and individual data. *Journal of Gerontology. Series B, Psychological Sciences and Social Sciences*. 2007; 62:S349–S357.
- Zimmer Z, Kwong J. Family size and support of older adults in urban and rural China: Current effects and future implications. *Demography*. 2003; 40:23–44. [PubMed: 12647512]
- Ziliak J, Kniesner T. The importance of sample attrition in life cycle labor supply estimation. *Journal of Human Resources*. 1998; 33:507–530.

**Table 1**  
**Percentages and Means of the Characteristics of Analytic Sample, Children Age 7-18 in 2000-2006, CHNS**

Variables	2000	2004	2006
Age <sup>a</sup>	10.7	13.8	15.3
Male	55.6	54.8	54.2
Children's grade level <sup>a</sup>	4.3	6.8	7.7
Living in emigrant households <sup>a</sup>	18.7	28.3	33.8
Family migration status <sup>a</sup>			
Non-migrant, both parents present	81.3	71.7	66.2
Mother migrant	2.0	2.9	3.6
Father migrant	5.2	7.7	9.0
Both parents migrant	2.8	4.2	5.6
Sibling migrant, both parents present	8.7	13.5	15.6
HH highest education level <sup>a</sup>			
No education	2.3	1.5	1.8
Primary school	25.0	13.5	14.3
Middle school	46.1	55.2	49.7
Some high school or more	26.5	29.8	34.2
Per capita HH annual income (unit: yuan) <sup>a</sup>	3,144	4,225	4,749
Extended family <sup>a</sup>	23.8	29.4	36.3
Number of school-age children in the HH (6-18)	1.7	1.4	1.4

Note:  $N = 885$ . Yuan is the main unit of currency of China. In 2006, 1 U.S. dollar  $\approx$  8.0 yuan. HH is the acronym for household.

<sup>a</sup>The over-time differences are significant at the 0.05 level. Many statistical tests are significant at the 0.001 level.

**Table 2**  
**Demographic and Socioeconomic Status and Living Arrangements by Family Migration Status, 2006, CHNS**

	NM <sup>a</sup>	MM <sup>a</sup>	FM <sup>a</sup>	BM <sup>a</sup>	SM <sup>a</sup>
Age <sup>b</sup>	15.5	14.8	14.7	14.5	15.1
Male	54.0	55.8	53.7	52.4	53.9
Children's grade level <sup>b</sup>	7.7	7.2	7.3	6.8	7.9
HH highest education level	8.8	9.1	8.9	8.8	9.2
Per capita HH annual income (unit: yuan) <sup>b</sup>	5,297	3,739	3,540	3,336	3,850
Extended family <sup>b</sup>	26.1	47.5	31.0	75.3	29.6
Number of school-age children in the HH (6-18) <sup>b</sup>	1.4	1.9	1.6	1.6	1.3

<sup>a</sup>They represent children in different types of households: Non-migrant, mother migrant, father migrant, both parents migrant, and sibling migrant.

<sup>b</sup>Differences by group are significant at the 0.05 level. Many statistical tests are significant at the 0.001 level.



**Table 3**  
**Fixed-effect Regressions Predicting Children's Education on Family Migration Status and Other Covariates, Children Age 7-18 in 2000-2006, CHNS (standard errors in parentheses)**

	Model 1	Model 2	Model 3
Living in labor migrant HH (ref. in non-migrants HH)	0.21 ** (0.08)		
Parental migration status, aggregated (ref. non-migrants)			
One or both parents migrant		0.09 <sup>a</sup> (0.09)	
Sibling migrant		0.32 *** (0.09)	
Parental migration status, complete (ref. non-migrants)			
Mother migrant			-0.08 <sup>a</sup> (0.17)
Father migrant			0.09 <sup>a</sup> (0.12)
Both parents migrant			0.14 (0.19)
Sibling migrant			0.33 *** (0.09)
Age	1.47 ** (0.45)	1.40 ** (0.46)	1.39 ** (0.46)
Age squared	-0.01 *** (0.003)	-0.01 *** (0.003)	-0.01 *** (0.003)
Number of school-age children in the HH	0.05 (0.06)	0.06 (0.06)	0.07 (0.06)
Extended family	0.25 (0.15)	0.26 (0.16)	0.27 <sup>†</sup> (0.15)
HH highest education level (ref. no education)			
Primary school	0.19 (0.23)	0.19 (0.24)	0.20 (0.23)
Lower middle school	0.22 (0.22)	0.21 (0.23)	0.24 (0.23)
Some high school or more	0.90 *** (0.24)	0.87 *** (0.25)	0.90 *** (0.24)
Per capita HH annual income (log)	0.06 (0.05)	0.06 (0.05)	0.05 (0.04)
Constant	-9.16 * (3.98)	-8.37 * (4.04)	-8.63 * (4.06)

Note:  $N = 885$ . The FE models drop stable factors including gender and province of residence, which are essentially adjusted for in the models.

<sup>a</sup>This denotes that the coefficient is significantly or marginally different from coefficient for SM households at 0.05 level.

<sup>†</sup> $p < .10$ .

\*  $p < .05$ .

\*\*  
 $p < .01.$

\*\*\*  
 $p < .001.$

**Table 4**  
**Fixed-effect Regressions Predicting Children's Education on Family Migration Status and Other Covariates, by Gender and Grade Level, Children Age 7-18 in 2000-2006, CHNS (standard errors in parentheses)**

	Gender interaction					
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Living in labor migrant HH (ref. in non-migrants HH)	0.42*** (0.11)		0.16 (0.10)		0.38* (0.19)	
Living in labor migrant HH * Male (0.14)		-0.40*** (0.14)				
Parental migration status, aggregated (ref. non-migrants)						
One or both parents migrant		0.16 (0.14)		0.05 <sup>a</sup> (0.12)		0.36 (0.29)
Sibling migrant		0.53*** (0.12)		0.30* (0.13)		0.46* (0.21)
One or both parents migrant * Male		-0.25 (0.19)				
Sibling migrant * Male		-0.42* (0.16)				

Note: N = 885. Other covariates are omitted, which are the same as in Table 2.

<sup>a</sup>This denotes that the coefficient is significantly or marginally different from coefficient for SM households at 0.05 level.

\* p < .05.

\*\* p < .01.

\*\*\* p < .001.