

Children's welfare and short term migration from rural India

Diane Coffey*

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Abstract

This paper focuses on the children of short term labor migrants from rural India. While other papers in the literature have alluded to the difficult circumstances faced by this group of children, there are few quantitative descriptions of their situation. This paper uses new survey data about 1980 children residing in 70 villages in rural northwest India to report on children who migrate and children who are left behind. It finds that, unlike in other contexts, children who migrate rarely engage in paid or unpaid labour when they accompany adult migrants. Additionally, this paper provides econometric analysis of a robust, previously unquantified negative relationship between Indian children's migration and education, and calls for further research about the possible negative externalities of migration for children.

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1 Introduction

Many scholars have noted the importance of short term migration to the livelihoods of rural households in India (Breman, 1996; Mosse et al., 2002; Banerjee and Duflo, 2007). In some places, migration is exclusively undertaken by adult males, while in others, women, and sometimes children, also migrate (Haberfeld et al., 1999; Mosse et al., 2002; Rogaly, 1998). The circumstances of children at migrant work sites, experiencing the same difficult living conditions that their parents endure, and that of children left behind in villages when their parents migrate for work, have both raised concern among policy makers and those who study short term labor migration. Despite this concern, quantitative analysis about the children of migrants is rare. This is in part because many studies of short term migration in India are qualitative in nature, and in part because the quantitative data that do exist focus on the migration of adults.

This paper uses a new data set collected in 70 villages in rural northwestern India to explore children's experiences in a population of short term migrants. While the survey focused on detailed questions about adult migration and households livelihood strategies, it also included questions about children in the households, which permitted the construction of a data set of 1,980 children aged 0 to 13 in the respondent households. Using the new data, this paper comments on children's health and education status, as well as child migration and child care arrangements in the study region. It finds surprisingly little paid or unpaid labor among children who accompany adult household members. Descriptive statistics and regression analysis show that children who migrate with their parents face important educational disadvantages compared to children who do not migrate.

Rogaly (1998) calls for more "systematic comparative research" of the "differentiated causes and consequences" of short term migration. While Rogaly (1998)'s appeal for more detailed research to inform migration policy referred to short term migration broadly, a study of children's welfare is a useful place to start. Despite their evident vulnerability,

and some recent efforts to address their educational needs, little is known about the children of short term labor migrants. Additionally, in focusing on the 0 to 13 year old children of labor migrants, this paper may be able to provide some insight into the future pool of labor migrants from the study region.

1.1 Overview

The primary contribution of this empirical paper is to use new, quantitative data to explore children's welfare in a population of short term migrants. It estimates a previously unquantified relationship between children's migration and education. Here, I analyze the same data as Coffey et al. (2011), who compare the study population to rural India as a whole, discuss migration as part of a dual income strategy, and characterize adult migrants' experiences.

Section 2 of this paper is a brief review of literature from sociology, anthropology, and economics about migration and children in developing countries, particularly India. It points readers towards other studies on short term migration from the region, but focuses on work that examines the child welfare dimensions of migration. Section 3 briefly describes the survey and presents background information about the households in the study population. More detailed information about the survey, including about the sampling strategy, response rates, and issues of sample selection and comparability to rural India as a whole can be found in Coffey et al. (2011).

Based on the review of the literature, the other sections explore the experiences of children in the study population. Section 4 reviews health and education indicators in the study villages, presents estimates for the fraction of children who migrated in the year prior to the survey by age, and identifies the duration of mother's migration as a correlate of child migration. It also discusses the care of children left behind in the study region. Section 5 presents estimates of the prevalence of child labor among migrating children. Section 6 shows that child migration is robustly associated with four indicators of poor educational outcomes. Section 7 concludes by interpreting the findings about

child migration and education and considering what further research is needed to inform programs or policies to mitigate the likely negative externalities of migration for children.

2 Literature review

2.1 Short term migration from rural northwest India

The phenomenon of short term, largely seasonal, migration from the border region of Rajasthan, Gujarat and Madhya Pradesh, where our data were collected, is well documented. Mosse et al. (2002) collected ethnographic and survey data about migration in this region in 1995-6. They find that a large fraction of households relied on earnings from migrant labor, and that migration was concentrated in the summer season, when rain-fed agriculture is unproductive. Haberfeld et al. (1999) and Breman (1996) describe patterns of labor migration from neighboring regions. Based on the 2010 survey data, section 3 describes the livelihood strategies of households in the study region in greater detail.

2.2 The children of short term labor migrants

There is other work in the literature, such as Iversen (2002), that studies child workers who migrate out of their villages, sometimes unaccompanied by adults. This study, however, focuses on the children of adults who migrate for work. The distinction is important because in considering the situations of such children, we focus on both the children who accompany adult migrants, and those who are left behind.

Several authors have made reference to the difficult circumstances faced by the children of short term labor migrants. Mosse et al. (2002) and Breman (1978) highlight the poverty of families that rely on short term migration. Breman (1978) discusses the inadequate shelter and diets of children who accompany their parents to cultivate sugar cane in Gujarat. Rogaly (1998) writes about how children of migrants experience family

disruption and must bear additional responsibilities.

Many authors have suggested that children of migrant laborers sometimes work alongside their parents. Deshingkar (2009) discusses various types of migrant child labor. Breman (1978) finds that children help their parents harvest sugar cane or do other petty tasks, like make dung cakes, to help earn money. Mosse et al. (2002) suggest that working alongside their parents is an important activity for many of the children who accompany their parents on a migration trip. They write, “children spend an increasing amount of their childhood in the unfamiliar and insecure migrant work-sites. From seven years or younger they begin to work on construction or brick work-sites, and are deprived of play, leisure and schooling” (78).

Other scholars have expressed concern that migration has a negative impact on children’s education: both Rogaly (1998) and Smita (2008) use qualitative evidence to suggest that migration prevents children from going to, and staying in, school. Liang and Chen (2007) present a quantitative analysis of the relationship between education and temporary migration among children from rural China. Using data from the mid 1990s from Guangdong province, they find that children of temporary migrants are 8 percentage points less likely to be enrolled in school than the children of permanent residents of the city and 6 percentage points less likely to be enrolled in school than children living in rural areas of the province. The statistically significant negative relationship holds controlling for a variety of household factors in a logistic regression framework.

3 Data and context

3.1 The survey

The data for this study were collected during the summer of 2010 as part of a study of rural employment in a region that borders three states in India (Rajasthan, Gujarat, and Madhya Pradesh). The survey covered four districts - Banswara in Rajasthan, Jhabua and Ratlam in Madhya Pradesh, and Dahod in Gujarat. 705 household questionnaires

were completed, and 2224 adults aged 14 to 69 were interviewed in order to complete individual “adult surveys” about their migration and work experiences. Some of the data analyzed here about children and migration experiences were taken from the household survey, but most were taken from the adult survey forms, in particular the mother’s adult survey. For more detailed descriptions of the design and implementation of the survey, including sample selection and response rates, see Coffey et al. (2011).

3.2 Household characteristics

The mean household in the sample has 7.2 members, and the median household has seven. The mean household has 2.8 children under the age of 14, and the median has three. Among households with children under 14, the average number of children under 14 is 3.2. Figure 2 shows that the number of children at different ages from 0 to 13 in the sample is fairly uniform, though there does seem to be some heaping at the round ages.

In approximately 63% of households, the head self-identifies as Scheduled Tribe (ST). Scheduled Tribes are groups of people identified in the Constitution of India, who due to their traditional disadvantage, qualify for certain affirmative action programs. The fraction of households belonging to a group that the central government recognizes as ST may actually be much higher than this; many households said they did not know what category they belonged to.¹ Eighty-five percent of household heads self-identified as Hindu. Marriage in this population is patrilocal.

The households in the sample are extremely poor, even by Indian standards. 93% of households have a dirt floor, 71.3% do not have electricity, and only 1.4% have a television set. Sixty percent of women 45 years and older have had a child who was born alive and later died.² Adult women in the region have completed less than a year of schooling, on average. Additional summary statistics about the households are presented in Coffey

¹For this question, and for the question about religion, surveyors were specifically instructed not to record their own opinions of the respondents’ groups on the survey form, but rather to simply record the respondents’ answers.

²Among women over 45 years old who lost a child, the mean number of children lost is two.

et al. (2011).

3.3 Agriculture

Almost all households own and farm small plots of land. There are three main agricultural seasons in this region: monsoon (July-October), winter (November-February) and summer (March-June). Agriculture is predominantly rain-fed, so the main growing season is during the monsoon. Corn is planted during the monsoon for home consumption, and the fodder from the corn is saved for feeding animals. About half of households have irrigation, which allows them to plant crops, mainly wheat, during the winter. Crops are rarely grown during the summer.

3.4 Migration

As mentioned above, migration is largely seasonal; more people migrate when agriculture is unproductive. Coffey et al. (2011) find that “for 81.6% of those who migrated in the last four seasons, their most recent trip was initiated in summer 2010” (13). They also find that 35.0% of the 2224 adults who completed the adult survey lived outside of their village for work at some point during the summer season of 2010. Twenty-nine percent spent time outside the village during winter 2009-2010, and 10% spent time outside the village during the monsoon of 2009. The median trip length is 30 days; adults often take more than one short trip in a year.

Coffey et al. (2011) find that almost 80% of households sent a migrant in the past year. Migration is nearly universal among males in their 20s, and is over 60% among women in the same age group. Figure 1 plots the fraction of people of different ages who migrated in the study population. The graph splits the data into males and females. There is a strong age and sex pattern to migration; adult males are more likely to migrate than adult females, and migration is most common among infants and prime aged adults between the ages of approximately 18 and 35.

The adult survey asked about migration trips in the four seasons prior to the survey. Eighty-three percent of trips taken in the four seasons prior to the survey were to urban destinations. Although Surat, Baroda, and Ahmedabad, three Gujarati cities, are popular destinations, the adults in the sample reported working in over 140 different urban destinations in the four seasons prior to the survey.

Most migrants were employed in unskilled construction work, although others did agricultural labor, brick making and quarry work, road work, and other unskilled manual jobs. Most were paid on a daily basis; the median daily wage is 116 rupees. The most common way of finding work is through “nakas,” or urban meet-up points and spot markets for casual labor.

4 Children in the study villages

Descriptive statistics collected about children in the study village further reveal their poverty, and quantify their experiences with migration, either as migrants themselves, or as children left behind while parents migrate.

4.1 Health and education indicators

Basic indicators about children’s health and education corroborate the findings of other researchers who stress the poverty and disadvantage faced by children in many regions where short term migration is prevalent. Mothers who were in the village at the time of the survey reported on their children’s health in the week before the survey.³ 34.6% of children aged 0-3 suffered from diarrhea the week before the survey, and 35.6% of children aged 0-3 in suffered from an illness other than diarrhea in the week prior to the survey.

The figure for diarrhea is high in comparison to the relevant state-wide estimates. The 2007-8 District Level Health Survey (DLHS) reports diarrhea rates for children 0 to

³Children whose mothers were away from the village at the time of the study, or those whose mother refused to answer an adult survey are not included. Data about 33% of children aged 0 to 3 are missing for these reasons.

3 using a reference period of 2 weeks before the survey. In the Rajasthan DLHS, 8.4% of children aged 0-3 were reported to have had diarrhea in the two weeks before the survey. The figures for Gujarat and Madhya Pradesh were 11.8% and 15.0%, respectively.⁴

Education is low among both adults and children in the study region. 87.4% of children aged 0-13 had a mother who never attended school. 53.9% of children aged 0-13 had a father who had never been to school.⁵ Among mothers who had been to school, the average years of completed education was 6.2. Among fathers who had been to school, it was 6.5 years.

Children in the survey will attain more education, on average, than their parents. In spite of this, attainment is still quite low. Among children 6 years and older, 17.1% had never been school. Failure to start school is not the only reason for low educational attainment. Children also drop out, or progress through school too slowly. Among those 13 year old children who had ever been to school, the average child had completed 5.9 years of schooling. Students who start school on time and progress normally should be in seventh grade by the time they are 13.

Controlling for age, and only looking at children aged 6 to 13, an OLS linear probability model finds that girls are 9.4 percentage points less likely to have ever been to school than boys. This is a significant difference, but it is much less than the difference in educational attainment between their mothers and their fathers.

4.2 Child migrants

While the presence of children at sites where migrant laborers are working has often been noted, few studies have quantified child migration in the sending population. Therefore,

⁴Note that the figures in our survey and the DLHS are not directly comparable due to our use of a shorter reporting period. If we had used a two week reference period, however, it is probable that more than 34.6% of children would have likely reported diarrhea. This is because some of the children who did not have diarrhea the week before the survey may have had it in the week before that.

⁵For 6% of children, information on mother's education was missing. These children were not used to compute the statistic about the fraction of children whose mother never attended school. Father's information was missing for 12% of children, and the same strategy was used to compute the fraction of children whose fathers never attended school.

it is unclear whether child migration is a quantitatively important part of the experience of the children of migrants. This survey asked about child migration in the adult and the household surveys. Of the 1,980 children⁶ about whom we collected data, 586, or 29.6%, migrated with one or more adult family members in the year before the survey. Figure 3 is a close-up reproduction of figure 1, looking specifically at children aged 0 to 13 years. It plots, separately for girls and boys, the fraction of children of different ages who have migrated from the village in the past year. While the fraction of girl children who migrated in the last year is higher at every age than it is for boys, there is not a statistically significant difference between the migration rates of girls and boys. Migration is most common for young children, with almost half of 0 to 2 year old children migrating in the last year. About 30% of five year old children migrated, and just under 20% of ten year old children migrated.⁷ Thus, while not as common as adult migration, child migration is a quantitatively important phenomenon in this population.

There is reason to be concerned about the welfare of children who migrate with their parents. First, children who migrate seem to be at an educational disadvantage; section 6 will discuss this association in greater detail. Second, even compared to living in arid, isolated villages, migration can be an uncomfortable experience. Eighty-five percent of respondents to the adult survey had no formal shelter on their last migration trip, and 58% cooked and slept in the open in public spaces because they lacked even an unfinished building or a private construction site in which to stay.

The factor that best explains whether or not a given child migrated in the past year is whether or not her mother migrated. Among children who migrated in the past year, 85% had a mother who also migrated. Put differently, among children whose mother migrated in the past year, about 45% migrated, whereas among children whose mothers did not migrate, only 7% of children migrated.

Among children whose mothers migrated, approximately half also migrated, and half

⁶In this survey, children were defined as people under 14 years of age.

⁷We do not have information on children who may have migrated on their own. Our data on children's migration comes from asking adults in the household which children accompanied them on migration trips in the past year.

were left behind in the village. Given the likely burden placed on relatives caring for young children and assuming that parents prefer to be with their children than not, it would make sense that mothers who are away from the village longer would be more likely to take their children with them. Figure 4 plots the probability that a child migrated last year against number of days that her mother migrated for work in the past year. The kernel density of mother's days outside the village for work is plotted on the same figure.⁸ Since babies almost always accompany their mothers when they migrate, it includes only children aged 3 - 13 whose mothers migrated in the past year. An simple OLS linear probability model that regresses the number of days a mother spent out of the village in the last year on whether or not her child migrated finds that the association depicted in figure 4 is statistically significant.⁹

Why is children's migration associated with the duration of mother's migration? There are at least three possible explanations for this. One is that taking a longer trip causes mothers to bring their children along. This might be the case if, as speculated above, mothers plan ahead and do not want to leave family members with the burden of child care for too long. A second explanation is that the causality actually runs the other way: having taken their children on a migration trip, mothers feel comfortable staying away from the village for longer. A third explanation for the relationship is that some third variable is driving both duration of mother's migration and child migration, and confounding the relationship.

Subsequent regression analyses were not able to uncover any of these third variables: the coefficient on the duration of mother's migration is significant and of similar magnitude after controlling for a variety of factors including the child's age, sex, village, parent's education, whether or not there is a grandparent in the household, household size, and indicators of household wealth. Future research, and perhaps more detailed data, will be needed to explore the mechanisms through which the duration of mother's migration is

⁸The mean number of days that a child's mother spent away was 105.

⁹A 30 day increase in the duration of mother's migration is associated with a 4.3 percentage point increase in the probability that her child migrated in the year before the survey.

related to child migration. It might be useful, for instance, to focus on families in which some children migrate and not others. In our data, there were 233 women who were both mothers of more than one child aged 3 to 13 and who migrated in the last year. For only 36% of these women did some of their children migrate and not others.

4.3 Child care for non-migrating children

About half of children whose mothers migrated were left behind in the village in the year before the survey. It is also possible to look at the fraction left behind in the sample as a whole. Due to some missing data in the adult survey and some maternal orphans, we have data on mother's migration in the year before the survey for 1760 children. Of these 1760 children, 26% were left behind in the village in the year before the survey, meaning that that their mother migrated, but they did not.

Who cares for this group of children left behind in the village? We asked mothers who completed the adult survey whether they had ever left their children behind in the village, and who they had left them with. A wide variety of child care arrangements emerged. Sixty five percent of children 0-13 who had been left in the village while their mothers migrated were left with their grandparents, but the remaining children were left with other relatives, including their fathers, aunts and uncles, older siblings, and the husband's other wife. Five percent of children whose mothers migrated stayed alone in the village.

While the joint family system probably affords the child left behind more security and higher quality care than they would receive in societies where nuclear families are the norm, it seems unlikely that the children's grandparents or other caregivers are able to provide the same quality of care that their mothers would be able to. While we did not collect any survey data about health and disability among the elderly directly, it was evident from my observations of the interviews that the health of the older generation was, in general poor, probably due to the extreme deprivation they had faced throughout their lives. Many grandparents seemed to have trouble even caring for themselves.

Two particular cases of children left behind stand out. The first was a six or seven year old girl who was being cared for by her grandmother and grandfather. The grandfather, due to seemingly low cognitive functioning, was unable to answer questions about the girl's name or age. The grandmother had higher cognitive functioning than her husband, but made it clear that between her responsibilities taking care of him and the girl's two young brothers, she could provide little supervision for the girl, who did not attend school. Another child who stands out is a mentally disabled boy, about three years old, who was left in the care of his elderly grandmother. The boy was ill and sat, unclothed from the waist down, on the ground while the surveyor completed the household survey with his grandmother. While it is not certain that given the circumstances the parents would have been able to do a much better job promoting the growth and development of these children than the grandmothers were, it seems possible that both might have benefited from the attention of a more energetic primary caregiver.

5 Child labor and activities of children who accompany migrants

Though papers in the literature review suggest that child labor often goes hand in hand with child migration, there is little evidence of this in our data. The argument developed here that child labor is not an important part of the experiences of migrant children is based on adult reports of what children do when they migrate. When asked during piloting what their children do when they migrate, most adults reported that they do “nothing.” Of course, it is not possible that most children were literally doing “nothing.” This was offered, however, offered as an option in the survey because it was a phrase that parents who took children on migration trips used to refer to children who are playing or doing something else that they did not consider to be productive.¹⁰

¹⁰When asking about what children do when they migrate, surveyors were provided with a pre-coded set of options. This list was not read to respondents. These options were: cooking/cleaning, taking care of younger children, working for pay, working not for pay, school, nothing, other. They could also record

There were 262 children aged 0-13 outside of their villages at the time when their households were surveyed. For children who were away from the village at the time of the survey because they had accompanied a family member on a migration trip, the head of household reported the child's main activity while away. For 67% of children who were away at the time of the survey, the main activity reported was doing "nothing." For 20% of children, "going to school" was listed as the main activity, and 16% were "taking care of younger siblings." Only 2.3% were listed as "working for pay" and only 2.7% were listed as "working, but not for pay," possibly to facilitate the work their parents were doing.

Data were also collected about 513 child migrants from adults who were in the village at the time of the survey. Adults who had migrated with children were asked: "On the most recent trip that this child came with you, what did he/she do?" Multiple responses were allowed for this question.¹¹ 20.5% of children did domestic work on their last trip; 5.7% worked for pay; 3.3% helped adults work, but were unpaid; 2.1% went to school; and 79.5% did nothing.¹²

It is possible that using parental reports to learn about child labor leads us to underestimate it, particularly if parents are wary of sharing this information with surveyors. However, this does not seem likely. First of all, household heads do report marriages of girls under 18, which are, like some forms of child labor, illegal according to Indian law. Fifteen percent of girls 14 to 17 are reported to be married, and 25% of 16 and 17 year old girls are reported to be married. Second, the nature of most parents' work suggests

answers that differed from the pre-coded options under "other."

¹¹If two or more adults reported on the activities of the same child and their accounts disagreed, the maximum of the reported activities was used. For example, if one parent says that the child did domestic work, and the other parent says only that the child did nothing, then the child would be coded as having done both activities.

¹²There are two plausible reasons that the fraction of migrant children going to school would be higher in the group that was away from the village at the time of the survey. The first is that the head of household may be less informed about what the child does on a migration trip than those adults who accompany the child. The second is that adults who were away during the time of the survey generally migrated for a higher fraction of the year than those migrant adults who were in the village at the time of survey. We would expect that the children accompanying longer-duration migrants would be longer duration migrants themselves. Thus, they may be better able to attend school at the place to which they migrate.

that child labor was probably reported correctly. Most parents do construction work and are paid a pre-determined daily wage. In my experience observing construction sites, it is common to see children at the work sites, but uncommon to see them working. This may be because employers do not find them productive enough to pay them a daily wage.

That the fraction of children working in our data is low compared to what we might have expected from reading studies of Indian migrants in other contexts underscores the importance of Rogaly (1998)'s call for research to dispel "one size fits all" approaches to thinking about short term migration. It is important to note, however, that this finding only applies to young children from the ages of 0 - 13 years. A study that defines children to be under 18, or even 16, will find higher rates of child labor.

6 Educational consequences of migration for children

Are there, as the literature suggests, educational disadvantages associated with child migration? Figure 5 shows the grade in school completed by children of each age, separately for children who migrated in the past year and for those who did not. There is a clear divergence in the educational trends of non-migrating and migrating children, with the children who migrate getting less education for each year of age than the group that does not migrate.

Is the relationship between education and migration shown in figure 5 statistically significant? Is migration related only to grade completed, or is it also related to other aspects of education? Are these relationships spuriously driven by some third factor? Our strategy for answering these questions involves regressing four different educational outcomes on child migration status in the last year. Controls for possible omitted factors are used. These controls are: the child's age, sex, and village, her household's assets, size, ability to irrigate, and whether anyone in the household has a salary job, and the grades in school completed by her parents. In addition, we show the results of placebo regressions designed to indicate whether the association of child migration

and education is driven by third factors for which we do not have data, such as aspects of the child’s socioeconomic status. If migration is statistically significantly related to the placebo outcome, we might conclude that it is simply acting as a measure of general socioeconomic disadvantage. Finally, we use different estimation strategies, such as restricting the sample to children whose mother’s migrated, and using mother fixed effects, to test the robustness of the relationship and to explore mechanisms connecting child migration to educational outcomes.

Table 2 presents the results of these regressions.¹³ The regression equations use OLS to estimate the results in panel A and are of the following form:

$$\begin{aligned}
outcome_{iv} = & \beta_0 + \beta_1 migrate_{iv} + \beta_2 female_{iv} + A_{iv}\theta + \beta_3 assetindex_{iv} + \\
& \beta_4 householdsize_{iv} + \beta_5 irrigation_{iv} + \beta_6 salary_{iv} + \\
& \beta_7 grademomcompleted_{iv} + \beta_8 gradedadcompleted_{iv} + \alpha_v + \varepsilon_{iv}.
\end{aligned} \tag{1}$$

$outcome_{iv}$ is one of the following four educational outcomes for child i in village v : whether the child has ever been to school, whether the child went to school the day of the survey,¹⁴ the grade the child had completed, and whether the child has a school bag. Whether or not the child has a school bag can be thought of an indicator of the parents’ investment in the children’s education. $migrate_{iv}$ is an indicator for whether the child migrated in the year before the survey; $female_{iv}$ is an indicator that is one if the child is female; and θ is a series of dummy variables for the children’s ages. $assetindex_{iv}$ is a measure of the child’s household’s asset wealth constructed by taking the first principal component of indicators for the ownership of 23 assets; $householdsize_{iv}$ is the number of members in the household; $irrigation_{iv}$ an indicator that is 1 if the household has irrigation; $salary_{iv}$ is an indicator that is one if someone in the household has salaried job. $grademomcompleted_{iv}$ and $gradedadcompleted_{iv}$ indicate the grade in school completed by the child’s mother

¹³Appendix A discusses missing data in table 2.

¹⁴If the school was closed for a “legitimate” reason the day of the survey (i.e. it was Sunday or a national holiday), then we asked whether the child attended school the day before.

and father, respectively.¹⁵ α_v is a village fixed effect. Standard errors were clustered at the village level. Table 1 presents summary statistics for the dependent and independent variables used in table 2. It also summarizes some of the other descriptive statistics that have been referred to throughout the paper.

Using the estimation strategy described above, and looking only at children aged 3 to 13 years, panel A of table 2 regresses all four education outcomes on child migration in the last year for the full sample of children. Not surprisingly, given that in many other regions of India female children are at an educational disadvantage, girls are less likely to have ever been to school and have completed fewer grades than boys. The results also show that children who migrate are disadvantaged for each of these educational outcomes. They are 10 percentage points less likely to have ever been to school, 8 percentage points less likely to have been to school the day before the survey, 7 percentage points less likely to have a school bag, and have completed almost half year of education less, on average, than children their age who have not migrated. However, this deficit of half a year is averaged over children aged 3 - 13. As shown in figure 5, the deficit is greater for older children than for younger children. Thirteen year old children who migrated last year had completed about two years less schooling, on average, than those who did not migrate.

Columns 5 and 6 of panel A serve as “placebo tests,” which help us determine whether a third factor, not captured among the controls, is influencing both child migration and educational outcomes. They regress the health outcomes described in section 4 on child migration status. While it seems plausible that migration could have long run effects on children’s health, it does not seem likely that it would effect their diarrhea or other illnesses in the week immediately prior to the survey. If there were some confounding dimension of child disadvantage related to migration status that was not captured by the controls, but driving the relationship between education and migration, it might also induce a statistically significant relationship between migration and the health indicators.¹⁶

¹⁵In the regressions in table 2, grade completed by the mother and father are entered as linear terms. In all of the regressions that use these controls, the results are very similar if dummy variables for the grade completed are used.

¹⁶Previous research has suggested that poorer people are less likely to report the morbidity they

The results of the regressions in columns 5 and 6 show that there is not a statistically significant relationship between whether a child migrated in the past year and whether or not she had diarrhea or another illness in the last week. That we see no such association makes such a confounding seem less likely.

So far, this analysis has compared children who do migrate with children who do not. Section 4 found, however, that there is a clearly defined group who are “at risk” for migration: those whose mother migrated. The effect found in panel A may simply reflect differences between the group of children at risk of migration and those who are not. Panel B of table 2 explores this possibility by replicating the regressions in panel A using only children whose mothers migrated in the past year.

Patterns similar to the ones found in panel A emerge: among the group of children whose mothers migrated in the last year, the children who migrated, rather than staying behind in the village, were less likely to have ever gone to school, to have gone to school the day before the survey and to have a school bag. Additionally, the gap in grade completed between children who migrated and those who stayed behind is statistically significant.

Panel C of table 2 shows the results of a regression of the education outcomes on child migration in the last year that includes mother fixed effects. This empirical strategy compares the educational outcomes of children who migrated with their siblings who did not. A regression with mother fixed effects might be informative if we believe that there are family level omitted variables, even among the group of families for which the women migrate, that lead families to both take their children on migration trips and not send them to school. But, considering how few families brought only some of their 3 to 13 year old children on migration trips and not others, the regressions with mother fixed effects may not be very informative. In addition, it could be that some determinants of

experience than rich people. However, Das et al. (2011) present the results of a survey in Delhi in which poor and rich respondents are asked about their morbidity. When the reference period is a month, rich people report more symptoms than poor people. When the reference period is a week, the poor report more symptoms than the rich. Given that the reporting period in our survey was only a week, it is unlikely that differential reporting of morbidity is a concern in the regressions in table 2.

mother's migration are, in fact, important sources of variation in children's migration, in which case, using mother fixed effects would produce a misleading estimate of the effect of child migration on education.

In panel C, there are no longer a statistically significant relationships between whether the child had ever been to school, whether the child went to school today, or whether she has a school bag, and her migration status. However, there is still a statistically significant relationship between migration and grade completed, and the magnitude of the coefficient is similar to the other estimates.

It is possible that the effect of children's migration on grade completed is driven entirely by children who had never attended school. If this is true, it rules out certain causal mechanisms for the migrant children's education disadvantage, such as those having to do with falling behind in school due to lack of sustained attendance, and supports other kinds of explanations, such as those having to do with what kind of a families migrant child come from.

It is possible to determine whether the effect of children's migration on grade completed is driven entirely by children who never attended school by restricting the regression presented in column 4 of panel A of table 2 only to children over 5 who had ever been to school. Even among children over 5 who had ever been to school, I find a statistically significant relationship between migration in the last year and grade completed. We can reject the null hypothesis that there is no difference between the educational attainment between children who migrated last year and those who did not at the 5% level, using a two sided test. Indeed, conditional on every having gone to school, 13 year old children who migrated last year are 1.3 years further behind in school than those who did not migrate last year. Therefore, it is not the case that the relationship between child migration and grade completed is being driven by children who never attended school.

Taken together, the results in panels B and C, and the finding that the educational disadvantage of migrants is not isolated among children who never started school, seem to suggest that the mechanism behind the relationship may have something to do with

the migration process, rather than with the “type of families” that send women migrants.

7 Discussion

This paper provides quantitative description of the lives of the children of short term labor migrants. It found poor health and education indicators among the population of children as a whole. It also found that migration was common among children, and associated with the duration of mother’s migration. A variety of child care arrangements were documented for children left behind while their parents migrated. Compared to children who did not migrate, child migrants were found to have worse educational outcomes.

The negative relationship between child migration and education is robust to a variety of specifications and controls. If parents do not know about this disadvantage, or at least do not consider it when deciding whether or not to take their children with them when they migrate, then it constitutes a negative externality of migration. Section 7.1 explores this negative externality in further detail and points to topics for future research. Section 7.2 concludes by discussing the health of young children who migrate, another possible negative externality of migration for children and area deserving future research.

7.1 Children’s migration and education

What does the robust relationship between child migration and education imply? Is there a causal effect of a child’s migration on her education? That is, if the children who migrated last year had stayed in the village, would they have gotten more education?

There are several plausible mechanisms that could lead from child migration to poor educational outcomes. Migration may lead children to forget what they have learned in school, or prevent them from developing relationships with teachers and classmates that help them progress through school; it may simply break the habit of going to school. If this is the case, then finding a way to keep children in the village when their parents migrate may improve their educational outcomes.

It is also possible that the children who migrated would not have gotten more education if they had stayed back in the village. This would be the case if causality actually ran from education to migration. For example, some children may not like, or be good at school, and so chose to accompany their parents on migration instead.

It might seem that even without a clear understanding of the direction of the causality, a recommendation could be made that children be left behind in villages. There is almost always a relative to care for them, and if causation does run from migration to education, then the children left behind will get more schooling. Efforts have even been made to set up hostels for the children of migrants in other contexts Smita (2008). However, while it is not clear that being left in the care of relatives has a negative effect on children in the study region, prior research suggests that children are better cared for, on average, by their parents than anyone else, and by close relatives than by distant relatives (Case et al., 2004). Therefore, if there is a negative effect of child migration on education, reducing mothers' migration could help bridge the gap in the education of migrant and non-migrant children while leaving them in the care of parents. But, is it feasible or desirable to reduce mothers' migration? This is an important question for future research. In the past, development programs have tried to curb migration from the area under study (Mosse et al., 2002). As Mosse et al. (2002) point out, however, income from migration is an essential part of the livelihoods of many families. Programs that consider attempting to reduce mothers' migration should explore non-educational benefits and costs of women's migration, such as loss of income, increased exposure to life outside the village, or the potential effects on health described below.

7.2 Migration and the health of young children

Due to the nature of the data, this paper was not able to explore whether poor health among young children is a negative externality of migration. However, as a result of my observations of work sites and interviews with parents, I feel it is important to mention this topic, and to recommend it as an area of future research.

Much recent scholarship in economics (see Currie and Almond (2011)) and other disciplines suggests that investment in children in utero and at very early ages can have important effects for their productivity and well-being later in life. If accompanying their mothers on migration trips leads to worse health or less investment in young children, it would almost certainly have long life long implications.¹⁷ Given that 57% of children under two migrated in the year before the study, any negative effect of migration would have consequences for a large fraction of the population, and thus for the sending communities.

There are a few reasons to think that migration may not be good for young children. First, most mothers work on construction sites in urban areas. Cities are more polluted than the villages where the children would otherwise be brought up. At construction sites, activities like demolishing buildings, transporting materials, and mixing cement introduce particles into the air. Several studies, including Currie and Walker (2011), show a negative effect of exposure to air pollution during pregnancy on prematurity and birth weight. Exposure to pollution in young children is linked to higher incidence of respiratory disease.

In addition to the potential health risks posed by pollution, it is possible that working mothers will have insufficient time to devote to the care of their infants. Basu and Basu (1991) find that the children of working women in India have higher mortality rates than the children of women who do not work. They suspect that this may have something to do with the time and attention women are able to devote to their infants. While most migrant women take their children to their work sites, they are probably not able to be as responsive to an infant's need to be fed or cleaned while working in a supervised group, for a daily wage, than they would be if they worked without supervision at home or in their fields.

¹⁷Recall that the coefficients on child migration status in regressions of whether a child was sick (with diarrhea or other illnesses) in the last 7 days on migration status and controls were not statistically significant. This does not imply that young children who migrate do not face additional health risks. Firstly, those regressions included only children aged 3 to 13. Secondly, the questions were about acute illness, and asked only of mothers whose children were in the village at the time of the survey. The hypothesis being explored here is about whether migration between the ages of 0 and 2, and even during a mother's pregnancy, may impact early childhood health.

It seems likely that migrant work has negative health consequences for young children that may persist throughout their lifetimes. Of course, much research is needed to confirm and quantify these speculations.

A Missing data in table 2

Panel A of table 2 is supposed to include 1,591 children between the ages of 3 and 13. However, due to missing responses and the way survey questions were asked, some children are dropped from these regressions.

Columns 1 and 4 have approximately 1,300 observations each. This is mainly due to missing data in the parent's education variables. For a very small number of observations, information about assets and/or irrigation is also missing. 65 observations are dropped from column 1 due to missing data for if the child ever attended school. 55 observations are dropped from column 2 due to missing data for grade completed. For both of these variables, the household head, who responded to the household survey, either did not know the answer, or refused to answer.

Columns 2, 3, 4, and 6 use information about 1,261 children whose mothers responded to the adult survey.¹⁸ As in columns 1 and 4, most of the observations that were dropped from these regressions were dropped because of missing data about parents' education. A few were dropped because of missing data about assets and/or irrigation. Thirty-four observations are missing from column 2 because information on school attendance is missing. The corresponding numbers for columns 3, 4, and 5 are 31, 27, and 26. The results in panel A are robust to re-running the regression using the strategy for missing parental education data described above.

Panel B of table 2 is supposed to include 642 children between the ages of 3 and 13 whose mother migrated in the past year. Again, of the observations that were dropped, most were dropped due to missing information about parents' grade completed, but there is also some missing data for the dependent variables and two of the other independent variables. The results in panel B are robust to using the same technique of filling in missing values for parents' grade completed, and using a dummy variable to indicate which observations were missing.

¹⁸We did not ask household heads the more specific questions about children's education and health if their mothers were unavailable for the adult survey, because we felt that the household heads were unlikely to be able to give accurate answers.

In Panel C of table 2, there is some information missing for the dependent variables, as before. Some children are also dropped because they are maternal orphans, so we cannot run regressions using mother fixed effects.

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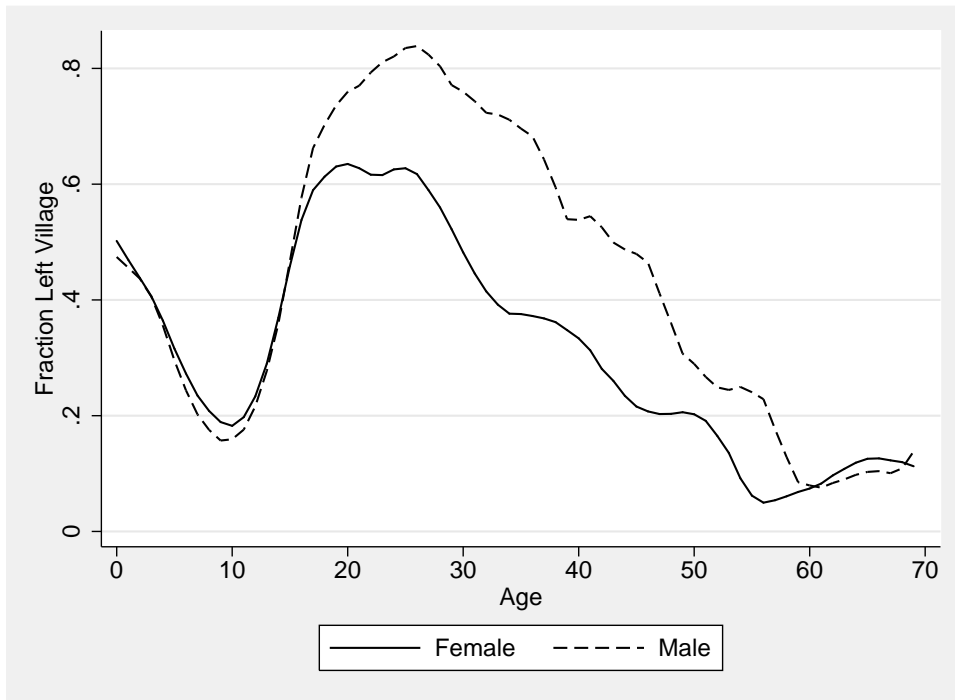


Figure 1: Fraction of people who migrated in the last year
 Source: Coffey et al. (2011)

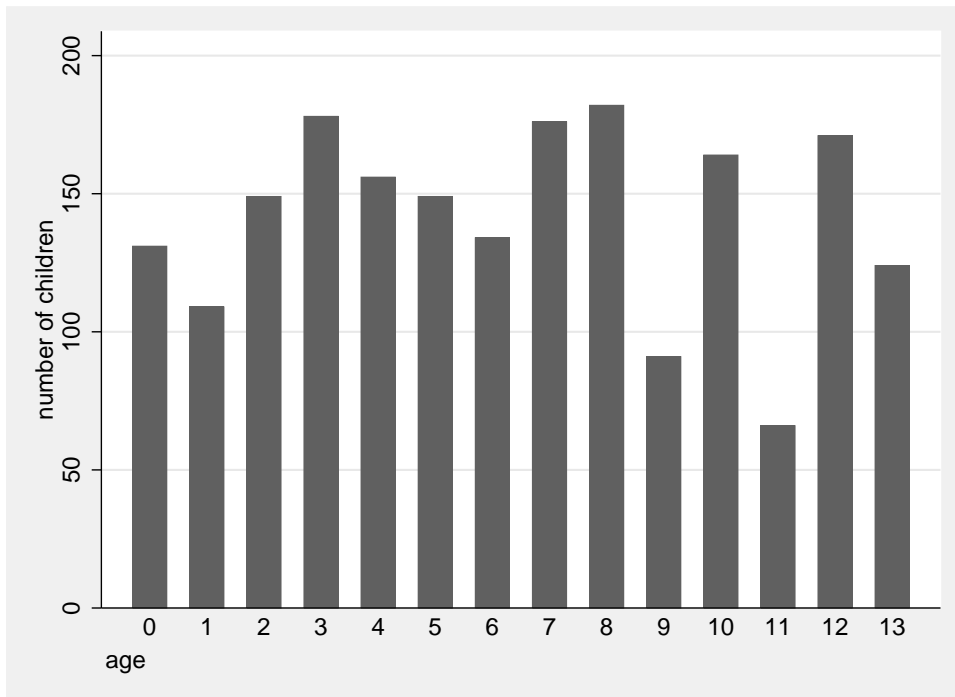


Figure 2: Ages of children in the sample

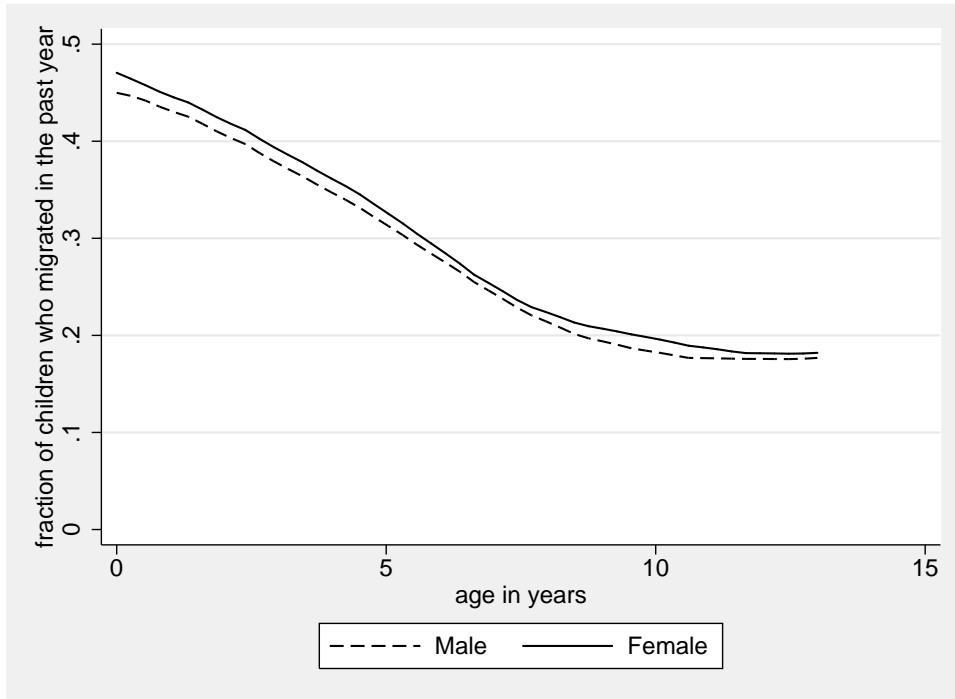


Figure 3: Fraction of children who migrated in the past year

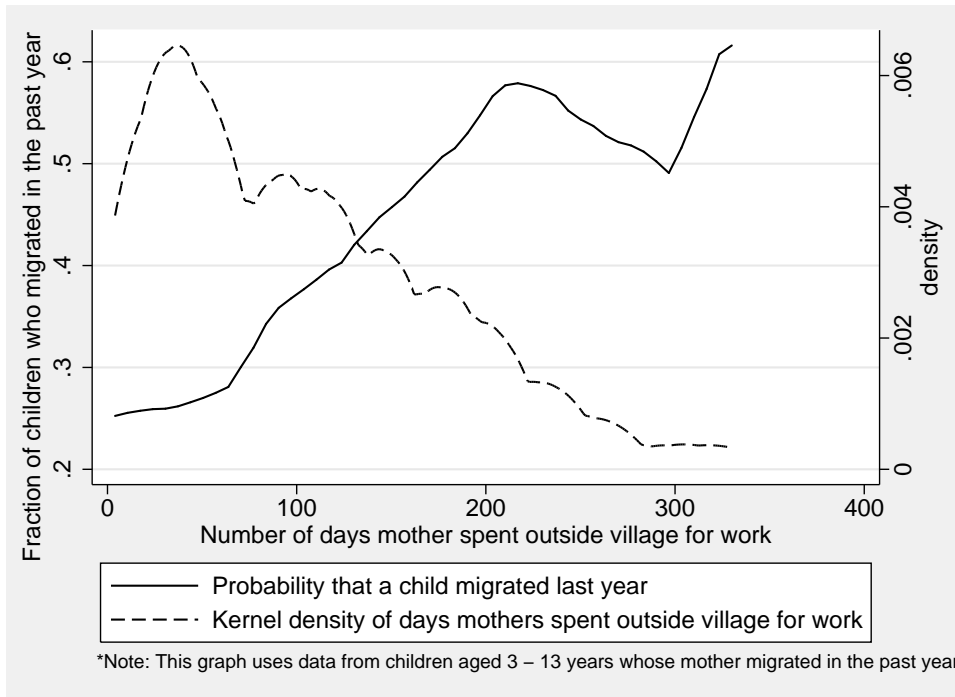


Figure 4: Child migration and duration of mother's migrant work

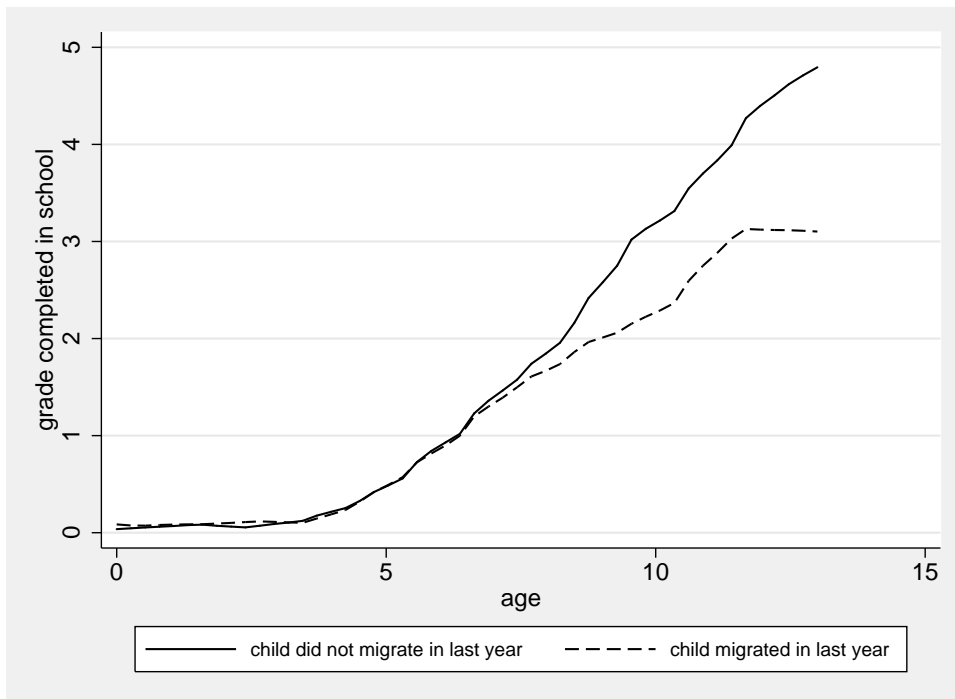


Figure 5: Grade completed among children age 0 - 13

Table 1: Summary statistics

	Mean	standard deviation	n
Dependent variables, using children aged 3 - 13 years as the unit of observation			
ever attended school	0.73	0.45	1526
went to school the day of the survey	0.52	0.50	1227
has a school bag	0.11	0.32	1230
grade completed	1.95	2.31	1536
had diarrhea in the week before the survey	0.14	0.35	1234
had another illness in the week before the survey	0.22	0.42	1235
Independent variables, using children aged 3 - 13 years as the unit of observation			
migrated in the year before the survey	0.24	0.43	1591
female	0.50	0.50	1591
age	7.70	3.18	1591
household asset index score	-0.02	1.71	1587
household size	9.09	4.16	1591
household has irrigation	0.60	0.49	1591
household has a member with a salaried job	0.06	0.24	1587
grade completed by father	2.95	3.92	1750
grade completed by mother	0.64	2.06	1486
Other variables of interest, using children aged 0 - 2 years as the unit of observation			
migrated in the year before the survey	0.30	0.46	1980
was left behind by mother in the year before the survey	0.26	0.44	1760

Table 2: Child migration and education outcomes

	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variables:	ever school	school today	has school bag	grade completed	diarrhea in last week	other sick in last week
Panel A: full sample of children aged 3 - 13						
migrated in last year	-0.0986** (0.0366)	-0.0824* (0.0385)	-0.0659* (0.0264)	-0.469** (0.151)	-0.0268 (0.0282)	0.0255 (0.0366)
female	-0.0707** (0.0209)	-0.0295 (0.0263)	-0.00252 (0.0214)	-0.312*** (0.0898)	0.00354 (0.0234)	-0.0386 (0.0268)
controls	✓	✓	✓	✓	✓	✓
age and village FEs	✓	✓	✓	✓	✓	✓
constant	0.821*** (0.0664)	0.620*** (0.0791)	0.0565 (0.0739)	2.515*** (0.262)	0.0267 (0.0494)	0.175* (0.0719)
n	1304	1164	1167	1314	1170	1171
Panel B: children aged 3 - 13 whose mother migrated in the last year						
migrated in last year	-0.0892+ (0.0489)	-0.103+ (0.0567)	-0.0737+ (0.0385)	-0.579*** (0.167)	-0.0142 (0.0404)	0.0486 (0.0491)
female	-0.0288 (0.0335)	-0.0214 (0.0517)	0.00698 (0.0226)	-0.136 (0.143)	-0.0362 (0.0308)	-0.0449 (0.0406)
controls	✓	✓	✓	✓	✓	✓
age and village FEs	✓	✓	✓	✓	✓	✓
constant	0.730*** (0.101)	0.633*** (0.172)	0.0715 (0.0770)	2.229*** (0.433)	-0.0118 (0.0870)	0.171 (0.116)
n	584	505	505	590	507	507
Panel C: full sample of children aged 3 - 13 using mother fixed effects						
migrated in last year	-0.0155 (0.0693)	-0.0566 (0.0814)	-0.0311 (0.0386)	-0.467+ (0.278)	-0.0774 (0.0490)	0.0274 (0.0660)
female	-0.0683* (0.0327)	-0.0319 (0.0344)	-0.00505 (0.0214)	-0.239+ (0.137)	-0.00224 (0.0329)	-0.0356 (0.0366)
age and mother FEs	✓	✓	✓	✓	✓	✓
constant	0.252*** (0.0616)	0.133+ (0.0713)	0.0234 (0.0366)	0.267 (0.209)	0.345*** (0.0640)	0.362*** (0.0581)
n	1441	1227	1230	1451	1234	1235

Columns 1,2,3,5,6 are linear probability OLS. Column 4 is OLS. Standard errors are clustered at the village level and given in parentheses. Two sided p-values: + 0.10, * 0.05, ** 0.01, *** 0.001. Controls include the child's household's asset index score, household size, whether the household has irrigation, whether anyone in the household has a salary job, the grade completed by her father, and the grade completed by her mother.