

# Education of Left-Behind Children and Return Decisions of Migrant Workers in China

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## Abstract

This paper uses a dynamic survey data of China labor force to explore the impacts of child education on their parents' return decisions by means of constructing an empirical model. The migration situation of children is the basis for us to distinguish the sample migrant workers. And those migrants who migrate with their children and those who leave their children behind in their hometowns are the two types of migrants among this model which we will analyze in urban areas. The results show that the probability for migrant workers in urban areas to return to hometowns will significantly increase when their children are left behind at home. While these parents tend to stay in the cities which they work and live in when their left-behind children enter the school age. The data we use is from the China Labor Force Dynamics Survey and we establish a model to analyze the effects of left-behind children. The empirical results show that the probability for migrants to return to their hometowns will decrease by 20.8 % when their left-behind children enter the school age. To a large extent, the emergence of such a huge contrast may be the result of the optimal decision-making of migrant workers. And the phenomenon of large-scale "migrant worker shortage" caused by such mechanism has intensified in the labor market of coastal cities. And most of these cities have implemented relevant stringent admission policies for migrant children to receive education in urban public schools and this break the intentions of the immigrant parents who plan to take the left-behind children to the cities to receive education in local schools. And these immigrants choose to return in the case of decline of the family net income.

**Keywords:** left-behind children, return migration, school age, stringent admission policies

## 1. Introduction

The transfer of a large proportion of rural workers engaged in the primary industry to secondary and tertiary industries in urban areas often contributes to the development of economic. In recent years, the number of migrant workers returning to their hometowns has experienced substantial growth. Throughout the world, return migration has been an integral issue in labor migration. In the 1990's, as the outflow of migrants increases, return migration also becomes noticeable. About one-third of all immigrants are estimated to return to their native homes (Murphy, 1999). And in some coastal cities of China, the phenomenon of labor force shortage has been gradually serious which has a great impact on social and economic development. Academic circles also pay considerable attention to this phenomenon. There are two opposing views concerned with return migration in Chinese policy circle. One considers return to be a negative factor because it exacerbates the problem of surplus labor in rural areas. The other considers return migration to be carriers of capital, technology, and entrepreneurship, factories that will contribute to the development of their native communities. Opinions are related to the perceived circumstances leading to the migrant's return. The literature offers several explanations for return migration (Stark, 1996). First, a migrant fails to find a good paying job elsewhere. Second, the returns to the human or financial capital accumulated in the destination areas are higher at home. Third, the cost of living is lower at home than in the destination areas. Hare (1999) examined the duration of the migration spell in a county in Henan Province with a representative survey data sufficient of migrant family information conducted in 1995 but she found very few permanent returnees. Murphy (1999) described the local government policies designed to attract migrants back to two counties in Southern Jiangxi Province and examined the potential contributions that returnees make to economic diversification. Ma (2001) used a sample of returnees collected in 1997 and finds a significant effect of urban employment duration on nonfarm employment upon return.

The Chinese Labor Force Dynamics Survey (CLDS) data can attribute to the representative results of analyzing return migration. The dynamic data has sufficient economic and non-economic data for family members. With the popularity of the theory of new migration economy, family form migration has attracted widespread attention in the academic community. When family factors are taken into consideration, children may play important roles in migrant families and affect their parents' return decisions.

Dustman (2003) applied a panel data set with over 14 years old sample immigrants to a model whose parents have paternalistic preferences. The results of the model shows that children influenced return plans of family and there were differences in the effects of female and male offspring. And child education plays an important role in human capital investment for families and the significance of educational investment rises increasingly as parents are concerned with development prospects for children and return decisions. Several studies that draw on data from some developed counties find that if returns to educational investment undertake in the host county, are higher in the host than in the home country, and if the parent believes that the child's return probability increases in his town, educational investments should increase with the permanent migration probability, as should the child's permanent earnings (Dustman, 2007). When we combined the situation of left-behind children in rural areas with the reality of the Chinese society, we can see that left-behind children are facing rigorous difficulties and education problems. Left-behind children have lower performance in academic performance and psychology than those children accompanied by their parents (Antman, 2011, 2012; Wu & Zhang, 2017). On the one hand, immigrant parents are inclined to take their children to the cities to receive education as the cities can provide better job opportunities, earnings and other resources that rural areas couldn't offer. While most cities implement policies to control the permanent population to reduce the burden of migrant population, and the educational enrollment requirements for migrant children emphasized in the policies will have a great negative impact on this decision if the left-behind children migrate with their parents to the cities to be migrant children. Zhao and Shi (2017) believed that the educational dilemma of migrant children is an obstacle to the investment of human capital in the process of migration. Left-behind children are an important manifestation of it. Urban governments setting the high enrollment thresholds for immigrant children may lead the parents to choose to send the children to migrant schools or send them back to attend local schools in their hometowns when the children enter the compulsory education age. However, some studies find that there is a sizable quality gap between migrant schools and public schools or even with rural schools (Song et al., 2010; Lai et al., 2014). Then the aforementioned decision of the immigrant parents will be worth discussion. And Sun (2015) studied the survey data and found that family-level factors play important roles in affecting the return of immigrants. Many literatures provide evidence that migration choices of immigrants are influenced by the educational performance of their children (Liu et al., 2010; Nechyba & Strauss, 1998; Bayer, 2000). On the other hand, as the parents pay more and more attention to family human capital investment and child living conditions, the difficulties of study and life which the left-behind children in rural areas face are gradually attracting attention of society due to the lack of parents' care in the long term. Sylvie and Xu (2011) constructed complementary empirical models and applied a household survey data carried out in Wuwei County (Anhui province, China) to verify the impact of left-behind children on return migration of immigrants. They found that the left-behind children play an important role in pulling force which drives the migrant workers choosing return and the effect being stronger for pre-school children. Then, does the situation that left-behind children are going to enter the compulsory education age affect the return decision of migrant workers? Therefore, our first purpose is to examine to what extent the left-behind children in rural areas entering the compulsory education age would affect the return decisions of migrants.

In recent years, some negative effects of the growth of labor force in cities have attracted enough attention of the society and the urban governments began to introduce some policies to control the permanent resident population to ease the burden of public services. And among these policies, there are stringent educational admission policies to stipulate the important requirements for migrant children to receive education in urban public schools. And to some extent, these requirements are too difficult to meet for most of the migrant families. In that case, migrant workers will choose to return for the education of children and making up for the lack care of left-behind children. Then, the second purpose of this paper is to ascertain whether the return willingness of migrant workers will increase when the enrollment thresholds of children set by the stringent admission policies introduced by local governments are strengthened.

This paper constructs an empirical model by means of using the data from CLDS. When left-behind children in rural areas are going to enter the compulsory education age to face the difficult growing and educational situation, the return probability of immigrant parents who leave their children behind in their hometowns will be lower than that of migrants who migrate with their children. And for families with one child, the difficult

growing and educational situation being faced by left-behind children will decrease the return probability of their migrant parents by 26.1%. However, this difficult growing and educational situation has no effect on the return decisions of those immigrants who migrate with their children. We also study the effect of such situation on the return decisions of those immigrants who live in cities that issue relevant stringent policies to set high enrollment thresholds for migrant children to receive education in urban public schools. The results show that those immigrants will be inclined to return to their hometowns if the governments of these cities have published relevant stringent education admission policies. We also do the robustness tests by controlling the sample and get the consistent results.

This article has the following innovations. First, this paper constructs a model which analyzes how the difficult growing and educational situations being faced by left-behind children influence the return decisions of their immigrant parents. Second, based on the results of previous studies, these immigrants who migrate with their children have a high urban adscription and are reluctant to return to their hometowns (Li, 2010; Wang & Zhang, 2017). However, we find that the return decisions of those immigrant parents who migrate with their children are more likely to be influenced by the changes of household net income. Third, the education admission policies issued by the urban governments which strengthen the enrollment restrictions for migrant children to receive education in urban public schools will increase the return probability of immigrants. Theoretically, these innovative researches can enrich the research on migration and return migration of labor force, and lay the foundation for future research. We also recognize that there are two possible endogenous problems. One is that the year in which the children were born will interfere the year in which they reach the compulsory education period, and the unobservable factors may influence the return decisions of immigrants and estimation bias are thus produced. So, we control the sample to limit the children born before and around September and then use regression discontinuity-difference in difference for analysis. The other is that we control the sample period to the situation that the immigrants have moved into the cities before the education reformation policies have been published. And this method will help us avoid the reverse selection problems of policy issuance. In the practical sense, taking full account of the reality of the Chinese social labor market and achieving the effective results by combining the empirical model can be beneficial to the process of decision-making for the relevant departments.

The remainder of this paper is structured as follows. Section 2 introduces the estimation method using representative China data. Section 3 describes the data and variables, and empirically examines how the difficult growing and educational situations being faced by the left-behind children when they enter the compulsory education age affect the return decisions of their parents, and measures to what extent the issuance of stringent education admission policies will affect the return probability of these immigrants. Section 4 discusses the heterogeneity that may affect the results and performs robustness tests. Section 5 concludes.

## 2. Method

In this section, we will discuss the impact of children on the return decisions of immigrant parents through different dimensions and conduct further analysis through the classification of number of sample children.

### 2.1 Effect of Left-Behind Children on the Return Decisions of Their Immigrant Parents

#### 2.1.1 Families with No More than One Child

We first analyze the sample immigrants whose families have no more than one child. We then construct a probit model to measure the return probability:

$$\begin{aligned} Pr(return_i = 1|Z_i) = & \alpha_0 + \alpha_1 child_i + \alpha_2 child_i * left_i + \alpha_3 child_i * schage_i \\ & + \beta child_i * left_i * schage_i + \varphi X_i + p_j + l_k + c_f + \varepsilon_i \end{aligned} \quad (1)$$

where  $return_i$  equals 1 if respondent  $i$  chooses to return to his/her hometown and equals 0 otherwise,  $child_i$  takes a value of 1 if the family of respondent  $i$  has one child and takes a value of 0 otherwise,  $left_i$  is a dummy variable which represents the child of respondent  $i$  is left behind at hometown if it equals 1 and the child migrates with parents if it equals 0, and  $schage_i$  is an age identification variable that is equal to 1 if the child of respondent  $i$  is 4 or 5 years old in the survey data of 2012 and will be entering the compulsory education age period in the same data of 2014 to confront the difficult growing and educational situations and equals 0 otherwise.

Meanwhile,  $X_i$  means the personal characteristics variables of individual  $i$  and spouse and these variables will influence the return willingness of immigrant parents. Specifically, these variables include the child gender, the characteristics of respondent  $i$  (e.g., gender, nationality, registered residence, age, years of schooling, duration of floating, having medical insurance, family income, and marital status), and the characteristics of the spouse (e.g., nationality, registration residence, years of schooling, and whether or not she/he migrates with individual  $i$ ).  $p_j$ ,  $l_k$ ,

and  $c_f$  represent the registration residence province of the respondent, the range of migration (inter-provincial, cross-city, and cross-county), and the dummy variables which represent the cities where respondent  $i$  migrates to, respectively.  $\varepsilon_i$  is the disturbance term.

### 2.1.2 Families with Only One Child

For those families whose number of children is only one,  $child_i$  is equal to 1, so the estimation equation changes as:

$$\Pr(return_i = 1 | Z_i) = \alpha_0 + \alpha_4 left_i + \alpha_5 schage_i + \beta left_i * schage_i + \phi X_i + p_j + l_k + c_f + \varepsilon_i \quad (2)$$

We focus on the two states of child migration on this sample which are being left behind at hometown or migrating with parents. What we are mainly concerned with is the estimated coefficient of  $\beta$ , which indicates the effect of the left-behind children's difficult growing and educational situation on the return probability of immigrant parents when these children enter the compulsory education age (relative to those immigrants who migrate with their children to the cities). The definitions of variables in this model are the same as formula (1).

### 2.2 Effect of Stringent Education Admission Policies for Migrant Children on Return Decisions of Migrant Parents

In our sample, we can obtain the information that some cities have implemented stringent education admission policies for migrant children during the research. The urban governments introduced laws and regulations to strengthen the enrollment thresholds of public schools for migrant children to control the permanent resident population. These policies will affect the return decisions of migrants if they have the willingness to take the left-behind children to these cities to receive education in urban public schools. We then generate a policy identification variable and apply it to the sample which has no more than one child, then the estimation formula can be written as follows:

$$\begin{aligned} \Pr(return_i = 1 | Z_i) = & \alpha_0 + \alpha child_i + \alpha child_i * left_i + \alpha child_i * schage_i \\ & + \beta child_i * left_i * schage_i + \alpha_6 child_i * po_i + \alpha_7 child_i * po_i * left_i + \\ & \alpha_8 child_i * po_i * schage_i + \delta child_i * po_i * left_i * schage_i + \phi X_i + p_j + l_k + c_f + \varepsilon_i \end{aligned} \quad (3)$$

While when we apply it to the sample whose family only has one child, then the formula changes as:

$$\begin{aligned} \Pr(return_i = 1 | Z_i) = & \alpha_0 + \alpha_4 left_i + \alpha_5 schage_i + \beta left_i * schage_i \\ & + \alpha_9 po_i + \alpha_{10} left_i * po_i + \alpha_{11} schage_i * po_i + \eta po_i * left_i * schage_i \\ & + \phi X_i + p_j + l_k + c_f + \varepsilon_i \end{aligned} \quad (4)$$

where  $policy_i$  is an identification variable that takes a value of 1 if the city where immigrant  $i$  live in has introduced stringent education admission policies to strengthen the enrollment thresholds for migrant children. And this variable is equal to 0 otherwise. The other variables have the similar definitions with those in the aforementioned equations. What we focus on is the coefficients of  $\delta$  and  $\eta$  in estimation formula (3) and (4) which represent the influence mechanism of the relevant stringent admission policies in cities respondent  $i$  lives.

Considering the sample size and that there are some effects that are difficult to quantify, and these effects will influence each other in the samples whose families have multiple children. Therefore, this article does not analyze these family samples with multiple children.

## 3. Results

In this part, we will first analyze the survey data used in our empirical model and perform some relevant elaborations. Then, this paper will make an exhaustive analysis of the empirical results obtained by the model.

### 3.1 Data Analysis

The data of this article is CLDS2012 and CLDS2014. CLDS is a nationwide tracking survey data which was conducted by Sun Yat-sen University and focuses on the present situation of labor force in China. This large-scale dataset interviews respondents in 29 provinces and municipality cities except Hong Kong, Macau, Taiwan, Tibet, and Hainan. And these respondents are family members aged from 15 to 65 years among the sample families. As the floating population is the research groups, we control the sample respondents to be immigrants and drop those samples whose respondents have joined the army or have been remarried, divorced, or widowed. Then we obtain a sample which has 904 respondents who have at most one child aged from 0 to 16 and a sample which has 516 respondents who have only one child aged from 0 to 16 in the family. We apply interviewing willingness approaches to identify those migrants who choose to return to hometowns before and after their children reach the compulsory education period.

Specifically, these immigrants exist in the sample of CLDS2012, should have responded “more likely to return to hometown” or “very likely to return to hometown” when asked about their recent intentions of return migration, and should not be tracked in the sample of CLDS2014.

In 1980, China implemented the compulsory education law which requires children to enter schools upon reaching the age of six years. We define these children who face the difficult growing and educational situation in rural areas as those who are 4 or 5 years old during CLDS2012 because these children would have been aged 6 years by the time of CLDS2014. That is to say, these children don't enter the compulsory education period during the time of CLDS2012 and have already been facing difficult growing and educational situation in CLDS2014. If a child is left behind in his/her hometown, we classify the child as a left-behind child. Considering the registration time of the new school year, we restrict the policy promulgation time from January 1, 2012 to August 31, 2014 for the policy identification dummy variable. And we also control those variables which may influence the return decisions of immigrant parents. These control variables cover the individual and migration characteristics of the respondents, their spouses, and their children.

Table 1. Descriptive statistics of the CLDS data

	Mean value	Standard Deviation
	(1)	(2)
Return migration	0.29	(0.45)
Number of children	0.57	(0.50)
Number of left-behind children	0.23	(0.26)
Number of children that will enter the compulsory education age	0.10	(0.30)
Gender of the respondent (=1 if male)	0.44	(0.50)
Nationality of the respondent (=1 if <i>han</i> nationality)	0.92	(0.27)
<i>hukou</i> property of the respondent (=1 if holding rural registration)	0.63	(0.48)
Age of the respondent	35.44	(9.87)
Years of education of the respondent	10.09	(4.16)
The duration of migration of the respondent	4.62	(4.37)
Spouse migrates with the respondent	0.86	(0.34)
Nationality of spouse (=1 if <i>han</i> nationality)	0.93	(0.89)
<i>hukou</i> property of spouse (=1 if holding rural registration)	0.56	(0.50)
Age of spouse	32.26	(10.53)
Years of education of spouse	10.28	(4.04)
The duration of migration of spouse	10.3	(6.66)
Monthly income of the family (natural logarithm)	8.36	(0.72)
Monthly expenditure of the family (natural logarithm)	7.79	(0.95)
Sample size	904	516

Table 1 shows the statistical results for sample families whose number of children is at most one. Columns (1) and (2) present the mean and standard deviation of the variables in that dataset. The results show that there are at least 29% of the respondents that choose to return to their hometowns by the year of 2014. There are on average 0.57 children in these immigrant families and the sample includes an average of 0.23 left-behind children and the left-behind children constitute about 40% of the total child number.

About 10% of the children in the sample families enter the compulsory education period and are facing difficult growing and educational situations. The proportion of immigrants who hold rural household registration reached about 63%. On average, the migrants are aged about 35 years and have flowed into current cities for about 4.62 years. The average years of education for these immigrants are about 10.09 years. The proportion of immigrants migrating with their spouses accounts for about 86% of sample immigrants. And the individual characteristics of these spouses are similar to those of the respondents. The average monthly income of migrant families is about 4273 yuan and the average monthly expenditure is about 2416 yuan in 2012.

### 3.2 Empirical Results

#### 3.2.1 Effect of Left-Behind Children's Difficult Growing and Educational Situation on the Return Decisions of Immigrant Parents

##### (1) Families with no more than one child

First, we analyze these sample families whose number of children is no more than one. We also include the sample families without children in analysis to compare the effect of having children or not on the return decisions of immigrants. The equation (1) which constructs the probit model is used to analyze the effects. The coefficient  $\beta$  in equation (1) is what we focus on and it represents the effect of the education of left-behind children in rural hometowns on the return decisions of immigrant parents who have left the children behind in

their hometowns (relative to those immigrants who migrate with their children to the cities). The negative coefficient represents that the situation that the child is going to enter the compulsory education age drives the migrant parents more reluctant to return to their hometowns. Considering the cross-sectional correlation in the sample, the standard error has been clustered at the city level. The results and the coefficients which are reported in Table 2 have been adjusted to the average partial effect.

Table 2 reports the estimation results of sample families whose number of children is no more than one (columns (1) and (2)) and whose number of children is only one (columns (3) and (4)). First, column (1) reports that the return probability of immigrant parents will increase by 15.5% if there is a child who is left behind at their hometowns, and the coefficient is significant at the 5% level. Meanwhile, compared with the migrant parents that leave their children behind at hometown, the return probability of these migrants who migrates with their child will decrease by 13%. That is, the left-behind child to some extent increases the psychological costs of immigrant parents, while the costs are smaller if they choose to migrate with their child. Previous studies find the consistent results (Wang & Zhang, 2017).

Second, we analyze the return decisions of these immigrants who migrate with their children and those who leave their children behind at their hometowns when their children are going to enter the compulsory education period and face the difficult growing and educational situation. The estimated results are reported in column (2) of Table 2. The return probability for immigrants who leave the children behind at the hometowns will be 20.8% lower than those who migrate with their children to the cities when their children are going to enter the compulsory education age and face the difficult growing and educational situations. The estimated coefficient is significant at the 10% level. These immigrant parents choose to stay in the cities as the net income of them to return to the hometowns will decrease because of the high expenditure of child education and the less labor opportunities and remuneration in the hometowns. Moreover, in order to provide their children with better living standards and educational conditions, staying in cities to earn more reward or take the child to the cities to receive education are the more preferred choices for migrant parents.

## (2) Families with only one child

When we discuss the effects of household samples with only one child, the results were also significant. Column (3) lists the results for those sample families whose number of children is only one. The return probability will increase by 13.7% if those immigrants leave their child behind at their hometowns, and the estimated coefficient is significant at the 5% level. And for these sample families that the immigrants leave their child behind at their hometowns, they have a 26.1% (significant at the 10% level) chance to stay in the cities if their children are going to enter the compulsory education period and face the difficult growing and educational situations. And the estimated results in column (4) are consistent with those results in column (2). These findings are also consistent with the previous studies (Sylvie & Xu, 2011).

Table 2. The impact of left-behind children's difficult growing and educational situation on the return decisions of their migrant parents (sample families with at most one child)

	(1)	(2)	(3)	(4)
Having a child ( $\alpha_1$ )	0.025 (0.041)	0.042 (0.039)	-	-
The child is left-behind at hometown ( $\alpha_2$ )	0.130** (0.057)	0.078 (0.057)	0.137** (0.063)	0.198*** (0.072)
The child is going to enter compulsory education age ( $\alpha_3$ )	-	0.011 (0.050)	-	0.074 (0.056)
The child is left-behind at hometown $\times$ the child is going to enter compulsory education age ( $\beta$ )	-	-0.208* (0.118)	-	-0.261* (0.139)
Characteristics of respondent and spouse	Yes	Yes	Yes	Yes
Respondent's household registration provinces	Yes	Yes	Yes	Yes
Range of migration	Yes	Yes	Yes	Yes
City	Yes	Yes	Yes	Yes
Number of observations	785	785	483	483

*Note.* The mean partial effect is represented by the estimated coefficients in the table and the standard error which is enclosed in parentheses has been clustered at the city level. Respondent's personal characteristics encompass gender, nationality, nature of household registration, age, years of education, duration of migration of the respondent, urban medical insurance, and monthly household income. Personal characteristics of spouse cover nationality, nature of household registration, years of education, and whether migrate with the respondent. Respondent's household registration province indicates the dummy variables of 29 provinces. The range of migration represents interprovincial mobility, cross-city mobility, and cross-county mobility these three indicators. The city represents the dummy variables of city which respondent flows to. The estimated results using sample families with at most one child are presented in columns (1) and (2), while the findings using sample families with only one child are presented in columns (3) and (4). \*\*\*, \*\*, and \* indicate significance at the 1%, 5% and 10% levels, respectively.

### 3.2.2 Effect of Education Admission Policies Enhancing the Enrollment Thresholds for Children

A series of problems for city immigrants increasingly attract the attention of the governments. And some governments have implemented relevant policies to strengthen the management of household registration for immigrants which are designed to control permanent resident population to reduce the burden of the city. These promulgated policies stipulate that migrant children receiving education in urban public schools requiring “three certificates”, some more stringent needs the residence permit and meet the required length of residence in the city on the basis of “three certificates”. These policies to a large extent raise the thresholds for migrant children to receive education in local urban public schools. And those stringent requirements are too difficult for most migrant families to meet. The entry of compulsory education age for children will place the migrant parents in a dilemma. Then the effect of children’s difficult growing and educational situations on the return decisions of migrants will differ if parents have the willingness to take the school aged left-behind children to the cities to receive education. To study the effects, we use a policy dummy variable to identify whether the city the respondent lives in has introduced stringent child education admission policies during the period from January 1, 2012 to August 31, 2014. The dummy variable in the model which we construct is  $po_i$ , which takes values of 1 and 0 to represent having introduced stringent policies and not, respectively. We analyze the impact of these policies by using the probit model constructed by equations (3) and (4). The coefficients to be focused are  $\delta$  and  $\eta$ , which illustrate the effect of child’s difficult growing and educational situation and entry into school age on the return decisions of immigrant parents who live in cities that have published stringent admission policies. The standard errors have been clustered at the city level.

Table 3. The effect of stringent education admission policies for child education on the return decisions of immigrants

	(1)	(2)
Having a child ( $\alpha_1$ )	0.046 (0.039)	- -
The child is left-behind at hometown ( $\alpha_2$ )	0.132** (0.061)	0.157** (0.065)
The child is going to enter compulsory education age ( $\alpha_3$ )	0.061 (0.053)	0.108* (0.057)
The child is left-behind at hometown $\times$ the child is going to enter compulsory education age ( $\beta$ )	-0.330** (0.131)	-0.332** (0.135)
Education reformation policy ( $\alpha_6$ )	0.064 (0.423)	0.167*** (0.061)
Education reformation policy $\times$ the child is going to enter compulsory education age ( $\alpha_8$ )	-0.276* (0.143)	-0.388** (0.159)
Education reformation policy $\times$ the child is left-behind at hometown ( $\alpha_7$ )	-0.226 (0.143)	-0.372** (0.158)
The child is going to enter compulsory education age $\times$ the child is left-behind at hometown $\times$ education reformation policy ( $\delta / \eta$ )	0.529* (0.280)	0.691** (0.299)
Characteristics of respondent and spouse	Yes	Yes
Respondent’s household registration province	Yes	Yes
Range of migration	Yes	Yes
City	Yes	Yes
Number of observations	779	480

Note. The regression results using two samples whose families have at most one child and only one child respectively are presented in the table. The mean partial effect is presented by the estimated coefficients and the standard errors which are enclosed in parentheses have been clustered at the city level. Respondent’s personal characteristics encompass gender, nationality, nature of household registration, age, years of education, duration of migration of the respondent, urban medical insurance, and monthly household income. Personal characteristics of spouse cover nationality, nature of household registration, years of education, and whether migrate with the respondent. Respondent’s household registration province indicates the dummy variables of 29 provinces. The range of migration represents interprovincial mobility, cross-city mobility, and cross-county mobility these three indicators. The city represents the dummy variables of city which respondent flows to. The estimated results using sample families with at most one child are presented in columns (1), while the findings using sample families with only one child are presented in columns (2). \*\*\*, \*\*, and \* indicate significance at the 1%, 5% and 10% levels, respectively.

The regression results are reported in Table 4, and the estimated coefficients illustrate the mean partial effect. Column (1) describes the results of those sample families whose number of children is at most one. The coefficient  $\delta$  in the probit model is positive and represents that the immigrant parents are more inclined to return to their hometowns if they live in these cities that have published relevant stringent education admission policies

and have a better level of development in economics. This result represents that cities introducing relevant stringent education admission policies will increase the return probability of immigrants by 52.9% under the circumstance that children are going to enter the compulsory education age and face the difficult growing and educational situation. Also, column (2) reports the regression results using sample families with only one child. And the estimated coefficient  $\eta$  is positive and is significant at 5% level, which represents that the immigrant parents who live in cities with implemented stringent education admission policies have 69.1 percentage points higher return probability than that of immigrant parents who live in those cities without implemented relevant stringent policies. The estimated results in this column are consistent with those in column (1).

#### 4. Discussion

Based on the above studies of this paper, we further discuss and analyze the possible heterogeneity that may lead to biased results in the sample. In this part, we use the probit regression to perform some robustness tests. In particular, we will examine whether its heterogeneity affects the estimation results by controlling the sample even further.

##### 4.1 Gender Heterogeneity of Sample Respondents

Reviewing the changes of migration patterns, starting with a single parent migration followed by parental migration and migration of entire family, we can obtain the changes of migration decisions in a family. Generally speaking, the father works as a pillar of the family and he has the right to make decision for the whole family. To examine whether gender heterogeneity affect the regression results, we control the sample to male respondents.

Table 4. The effect of difficult growing and educational situation of left-behind children on the return decisions of migrant fathers (sample with male respondents)

	(1)	(2)
Having a child ( $\alpha_1$ )	0.125** (0.063)	- -
The child is left-behind at hometown ( $\alpha_2$ )	0.034 (0.083)	0.076 (0.094)
The child is going to enter compulsory education age ( $\alpha_3$ )	0.150* (0.081)	0.190** (0.084)
The child is left-behind at hometown $\times$ the child is going to enter compulsory education age ( $\beta$ )	-0.458*** (0.160)	-0.501*** (0.174)
Characteristics of respondent and spouse	Yes	Yes
Respondent's household registration province	Yes	Yes
Range of migration	Yes	Yes
City	Yes	Yes
Number of observations	331	192

*Note.* The mean partial effect is presented by the estimated coefficients and the standard errors which are enclosed in parentheses have been clustered at the city level. Respondent's personal characteristics encompass gender, nationality, nature of household registration, age, years of education, duration of migration of the respondent, urban medical insurance, and monthly household income. Personal characteristics of spouse cover nationality, nature of household registration, years of education, and whether migrate with the respondent. We control the sample by dropping female respondents. Respondent's household registration province indicates the dummy variables of 29 provinces. The range of migration represents interprovincial mobility, cross-city mobility, and cross-county mobility these three indicators. The city represents the dummy variables of city which respondent flows to. \*\*\*, \*\*, and \* indicate significance at the 1%, 5% and 10% levels, respectively.

We use the probit model defined by equations (1) and (2) to analyze the regression effect. The results are reported in Table 4. The estimated coefficients have been converted to average partial effects, and the standard errors have been clustered at the city level. The estimated results for those families whose number of children is at most one are reported in column (1). The regression coefficient of  $\beta$  is -0.458 and is significant at the 1% level. This reveals that the return probability of the migrant fathers who leave the children behind at hometowns will decrease by 45.8 percentage points compared to those migrant fathers who migrate with their children when the children enter the compulsory education age and face the difficult growing and educational situation. This value is more than double than that of the coefficient in Table 2 (20.8 percentage points). The regression results using sample families with only one child are reported in column (2). The coefficient of  $\beta$  is -0.501 and is significant at the 1% level. This figure is also almost double of the coefficient in Table 2 (26.1 percentage points). The estimated results are still consistent with the aforementioned conclusions when we identify the actual effect of male migrants' return decisions.



#### 4.2 The Migration Distance Heterogeneity

In terms of migration trend and economic development status in China, provincial cities and eastern coastal cities develop better than other cities and these fast developing cities can provide these immigrants more job opportunities and public services that other cities couldn't offer. So that most of the immigrants who come from less developed areas in central and western China tend to migrate to the provincial capital cities and eastern developed cities in recent years. While migration range in our sample includes three forms which are inter-county, inter-city, and inter-provincial. And the latter two kinds should be mainstream choices according to above analysis. Then we can reasonably presume that choosing close distance migration can create convenience for the immigrants to work in local areas and take care of their families simultaneously, reduce the risk of loss, and prepare for the whole family migration if necessary. The effect of this migration form will differ from that of other two forms on the return decisions of immigrants. So we examine whether the migration distance heterogeneity affect the regression results by excluding inter-county migration from our sample.

Table 5. The effect of left-behind children's difficult growing and educational situation on the return decisions of immigrants (samples with inter-provincial and inter-city migrants)

	(1)	(2)
Having a child ( $\alpha_1$ )	0.068 (0.056)	- -
The child is left-behind at hometown ( $\alpha_2$ )	0.135* (0.076)	0.151* (0.080)
The child is going to enter compulsory education age ( $\alpha_3$ )	0.040 (0.070)	0.079 (0.072)
The child is left-behind at hometown $\times$ the child is going to enter compulsory education age ( $\beta$ )	-0.324** (0.156)	-0.321** (0.159)
Characteristics of respondent and spouse	Yes	Yes
Respondent's household registration province	Yes	Yes
Range of migration	Yes	Yes
City	Yes	Yes
Number of observations	539	333

*Note.* The mean partial effect is presented by the estimated coefficients and the standard errors which are enclosed in parentheses have been clustered at the city level. Respondent's personal characteristics encompass gender, nationality, nature of household registration, age, years of education, duration of migration of the respondent, urban medical insurance, and monthly household income. Personal characteristics of spouse cover nationality, nature of household registration, years of education, and whether migrate with the respondent. Respondent's household registration province indicates the dummy variables of 29 provinces. The range of migration represents interprovincial mobility and cross-city mobility these three indicators. We exclude those inter-county migration respondent samples. The city represents the dummy variables of city which respondent flows to. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

The regression results that use CLDS data which has excluded inter-county migration samples are reported in Table 5. The estimated results for families with at most one child and only one child are reported in columns (1) and (2), respectively. The estimated coefficients have been converted to average partial effects, and the standard errors have been clustered at the city level. These immigrant parents in the sample families with at most one child have a 32.4% probability to stay at the cities when the left-behind child enters the compulsory education age and faces the difficult growing and educational situation. The coefficient value of  $\beta$  is more than half of that in Table 2 (20.8%). Column (2) in Table 6 lists the regression results for those sample families whose number of children is only one. The estimated coefficient  $\beta$  is -0.321 and is significant at the 5% level. The result indicates that the return probability of immigrant parents who leave their children at hometowns will be 32.1 percentage points lower than that of the immigrants who migrate with their children together if the children enter the compulsory education age and face the difficult growing and educational situation. We use the sample data that exclude those families with inter-county immigrants to identify the actual return of immigrant parents, and the estimated results are consistent with the aforementioned conclusions.

Comprehensively speaking, the results of the above empirical study are sufficient for the study of the migrant families with at most one child and with only one child in this paper. However, for sample families with multiple children, considering the complex cross effects between the children and the statistical errors in the sample, the research of multiple children sample is scarce in our article which is also an important part to be strengthened in the future research.

## 5. Conclusion

China has at least 13.95 million migrant children and 17.26 million left-behind children in 2016 according to the data released by the Ministry of Education. In recent years, China has witnessed a wide gap between the supply and demand of future labor market. And when the left-behind children enter the compulsory education age, immigrant parents are inclined to stay in the cities and take their children to the cities to receive education in urban public schools with their whole family because these left-behind children are faced of a series of education problems and difficult situations that are thorny to overcome to some extent. While the inflow of a large number of migrant population aggravate the burdens of the cities, then some of the cities implement some reformation policies to control the permanent resident population of the cities. And the stringent admission stipulation for migrant children to receive education in urban public schools is an important part of these regulations which are incapable to meet for most migrant worker families. So the immigrants will choose to return to their hometowns as the net income of the family decreases. We can understand the return effect, its mechanism, and why some cities are faced with labor force supply shortage by analyzing this problem. We use the data from the CLDS to validate the model and analyze the effect.

This paper presents two valuable findings. One is that the return probability of immigrant parents who have only one child will decrease by 26.1% if their left-behind child is going to enter the compulsory education age and face the education problems and difficult situations. The other is that we sort the cities to distinguish whether have introduced the stringent education admission policies or not and find that those immigrant parents who live in cities with published stringent policies for migrant children have 52.9 to 69.1 percentage points higher probability to return to their hometowns compared with those immigrants who live in cities without relevant published stringent policies. We also control the sample to drop out the female sample and inter-county migration samples and find that the probability of return migration will decrease by 32.1 to 50.1 percentage points when the left-behind child is going to enter the school age. In general, education problems and difficult situations of left-behind children and the unfair enrollment thresholds set by the stringent education admission policies can attribute to the shortage of labor and the return of immigrants.

Figuring out the driving force of immigrants' return migration and the effect of the stringent enrollment thresholds on this analysis has representative meanings. Solving the education problems and difficult situations of left-behind children can help the immigrants reduce the family worries. While the stringent education admission policies exclude the migrant children from the urban public schools educational system. And if these immigrant parents could take the left-behind children to the cities that have introduced reformation policies and properly solve the problem of migrant children to receive education in local public schools, then, the shortage of labor force in these cities will ease. Therefore, to promote the education reformation policies to reasonably set admission requirements for migrant children to receive education in urban public schools and to address a series of educational and living problems of left-behind children, local governments still have much to improve. Specially, the government should further deepen its current reformation for the floating population to accept the migrant workers to send their children to public schools in urban areas and the hometown governments should vigorously develop the industry and introduce relevant welfare policies to attract migrant workers to return for employment. The reformation policies will be beneficial to the equal provision of education for all children, address the shortages in the urban labor force. Also, the development of their hometowns will accelerate urbanization and help them take care of their children and families.

## References

- Antman, F. M. (2011). The Intergenerational Effects of Paternal Migration on Schooling and Work: What can We Learn from Children's Time Allocations? *Journal of Development Economics*, 96(2), 200-208. <https://doi.org/10.1016/j.jdeveco.2010.11.002>
- Bayer, P. (2000). *Tiebout Sorting and Discrete Choices: A New Explanation for Socioeconomic Differences in the Consumption of School Quality*. Working paper.
- Dustman, C. (2003). Children and return migration. *J. Popul. Econ.*, 10, 16:815-830. <https://doi.org/10.1007/s00148-003-0161-2>
- Dustman, C. (2007). Return migration, Investment in children, and Intergenerational Mobility: Comparing Sons of Foreign and Native Born Fathers. *The Journal of Human Resources*, 43(2). <http://dx.doi.org/10.2307/40057348>
- Greenaway. (1996). *Trade and Development: Essays in Honor of Jagdish Bhawati* (pp. 32-41). Basingtoke: Macmillan.

- Hare, D. (1999). "Push" versus "Pull" Factors in Migration Outflows and Returns: Determinants of Migration Status and Spell Duration among China's Rural Population. *J. Devel. Stud.*, 35(3), 45-72. <https://doi.org/10.1080/00220389908422573>
- Lai, F. C., Liu, R., Luo, L., Zhang, X., Ma, Y., Bai, B., ...Rozelle, S. (2014). The Education of China's Migrant Children: The Missing Link in China's Education System. *International Journal of Educational Development*, 37, 68-77. <https://doi.org/10.1016/j.ijedudev.2013.11.006>
- Li, N. (2010). An Analysis of Factors Affecting Rural Migrant Workers' Retirement and Their Return. *Journal of Chinese Population Science*, 6.
- Liu, H., Mroz, T. A., & Klaauw, W. (2010). Maternal Employment, Migration, and Child Development. *Journal of Economics*, 156, 212-228. <https://doi.org/10.1016/j.jeconom.2009.09.018>
- Murphy, R. (1999). Return Migrant Entrepreneurs and Economic Diversification in Two Counties in South Jiangxi, China. *J. Int. Devel.*, 11(4), 661-672. [https://doi.org/10.1002/\(SICI\)1099-1328\(199906\)11:4<661::AID-JID609>3.0.CO;2-I](https://doi.org/10.1002/(SICI)1099-1328(199906)11:4<661::AID-JID609>3.0.CO;2-I)
- Nechyba, T. L., & Strauss, R. P. (1988) Community Choice and Local Public Services: A Discrete Choice Approach. *Regional Science and Urban Economics*, 28(1), 51-74. [https://doi.org/10.1016/S0166-0462\(97\)00013-6](https://doi.org/10.1016/S0166-0462(97)00013-6)
- Song, Y., Loyalak, P., & Wei, J. (2010). *Does Going to Public Schools Matter for Migrant Children's Academic Achievement in China?* Working paper.
- Stark, O. (1996). On the Microeconomics of Return Migration. [https://doi.org/10.1007/978-1-349-25040-0\\_3](https://doi.org/10.1007/978-1-349-25040-0_3)
- Sun, X., Wang, Li., & Jia, W. (2015). An Analysis of the Willingness to Settlers' Return to Rural Areas and Its Influencing Factors-Based on the Survey Data of Migrant Workers in Shanghai, Nanjing and Suzhou. *Journal of Rural Economy*, 10.
- Sylvie, & Hui, X. (2011). Left-Behind Children and Return Decisions of Rural Migrants in China. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1943403>
- Wang, C., & Zhang, C. (2017). Children's Immigration and Urban Integration of Migrant Workers. *Sociological Research Journal*, 2.
- Wu, J., & Zhang, J. (2017). The Effect of Parental Absence on Child Development in Rural China. *Asian Economic Policy Review*, 12, 117-134. <https://doi.org/10.1111/aepr.12166>
- Wu, J., Yao, X., & Zhang, J. (2015). Is Urban and Rural Household Registration Discrimination Tending to Stop: from the Reform Process in the Empirical Evidence——1989-2011. *Economic Research Journal*, 11.
- Zhao, Y., & Shi, Z. (2017). Urban Agglomeration, Household Registration System and Educational Opportunity. *Journal of Financial Research*, 3.
- Zhongdong, M. (2001). Urban Labour-Force Experience as a Determinant of Rural Occupational Change: Evidence from Recent Urban-Rural Return Migration in China. *Environ. Plann. A.*, 33(2), 237-255. <https://doi.org/10.1068/a3386>

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