



**ADB Working Paper Series**

**DOES MIGRATING WITH  
CHILDREN INFLUENCE  
MIGRANTS' OCCUPATION  
CHOICE AND INCOME?**

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**Abstract**

This paper studies the impact of migrant children on their parents' occupation choice and wage income using a dataset from a household survey conducted in 2011. We find that the heads of migrant households with school-age children earn significantly less than those who left them at their place of *hukou* registration. This result holds when we control for personal characteristics, migration duration, origin location, and family structure. Households migrating with school-age children have a higher probability of doing so within the prefecture/province of their *hukou* registration and are less likely to target coastal regions. After controlling for migration scope and destination location, the presence of children does not influence wages of migrant household heads. We also find that the presence of children below the age of six has no impact on the income of migrant household heads. Our results suggest that the *hukou* system still impedes labor mobility.

**JEL Classification:** J120, J130, J180, I280

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## 1. INTRODUCTION

Along with rapid economic growth in the last 3 decades, the People's Republic of China's (PRC) regional development gap widened significantly, which encouraged poor rural workers to migrate to urban areas. The relaxation of the PRC's household registration (*hukou*) system and decreased communication and transportation costs made the massive migration possible. In 2014, the number of rural migrants reached 270 million, 168 million of whom found employment out of their official locality.<sup>1</sup> The increased migration made a major contribution to the PRC's economic growth. In recent years, however, employers in coastal areas have found it increasingly difficult to hire workers at the previous wage level.

In view of migration's contribution to the PRC economy's rapid growth, it is necessary to study the micro-decision-making mechanisms of the migration process. Migration is rarely a simple personal decision. Potential migrants consider their own occupation and income, as well as the situation of family members (parents, spouses, and children). This paper focuses on the influence of children-accompanied migration on worker job choice and income.

Although family migration is common in other societies, it is less common for PRC children to migrate with their parents.<sup>2</sup> It is particularly rare for children who are of compulsory school age to migrate with their families, largely due to the constraints of the household registration system.<sup>3</sup> Basic PRC education services are linked to household registration. For those who cannot get *hukou* status, it is difficult to send their children to local public schools. Because of this, many rural residents who migrate for better-paid jobs are forced to leave their children at home.

Despite this difficulty, the migrant population can now bring children with them, as schools for non-local children have been established in destination cities and public schools have begun to enroll them despite *hukou* regulations (Chen and Feng 2013; Xu and Xie 2015). The continuous increase in the number of migrant children in recent years allows us to study their impact on their parents' choice of migrants' occupation and income. We are particularly interested in the impact of education opportunity on migration outcomes.

To sort out the relationship between children's education and parents' occupational choice (income), this paper focuses on those migrants whose children are at primary school or are middle-school age. We find that migrants who take their children earn a significantly lower hourly wage than those who leave them at their place of *hukou* registration. This pattern also exists in the service and manufacturing industries, where the migrant population is most highly concentrated. Households migrating with school-age children have a higher probability of doing so within the prefecture/province of their *hukou* registration. Although it is not the only factor that affects the migration behavior of households with school-stage children, education is a major consideration.

There are several possible mechanisms by which the presence of children correlates with migrant workers' occupation and income. Evaluating these mechanisms has been particularly helpful in our research. It is possible that high-income families are more capable of migrating with their children. Not only may they care more about the

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<sup>1</sup> Data source: [http://www.stats.gov.cn/tjsj/zxfb/201504/t20150429\\_797821.html](http://www.stats.gov.cn/tjsj/zxfb/201504/t20150429_797821.html) (accessed 24 October 2016).

<sup>2</sup> A related phenomenon is that many spouses do not migrate together.

<sup>3</sup> This, of course, is also relative to the high living cost in urban areas and PRC traditional culture (many grandparents take responsibility for child care).

education of their children, but they are more able to provide financial support to send them to school in urban areas. This means that those who migrate with children enjoy higher incomes. An alternative mechanism suggests the same relationship: bringing children along for better education may require more income to sustain the expenses of the migrant household. Our findings do not support these mechanisms, as families migrating with children actually earn less than those who do not.

Those who bring their children may come from regions with poor education and low economic development. This mechanism is ruled out as the results do not change after we control for hometown region dummies. After ruling out these possible explanations, we argue that the findings in this paper are consistent with the following mechanisms: First, there might be a trade-off between education and employment opportunities. In other words, educational opportunities in destination cities can be considered a benefit, and the migrants are willing to accept lower wages if they are able to send their children to school. Conversely, the extra money earned by migrant workers who are separated from their children can be viewed as compensation for being unable to bring them along. Families will bear a certain psychological cost when children cannot be enrolled in schools in the locality of their parents' employment. Thus, people will migrate only if earnings outside the home region can offset these costs.

The findings in this paper are consistent with the latter two mechanisms. Due to data limitations, we do not distinguish between these two mechanisms but leave them for future research. However, each mechanism shows that further reform of the household registration and education resources allocation system is imperative. There should not be strict prerequisites that the provision of education services be connected to household registration, and basic education resources should be distributed more equally among all regions of the PRC. These reforms will help people migrate more freely and promote PRC economic growth potential.

The structure of the paper is as follows: the second section reviews related literature on the migrant population, the household registration system, migrant children, educational quality, and occupation choice, emphasizing the relationship between this paper and existing research; section three describes the data and the features of migrant populations; methods used in this research and the main results are reported in section four; we examine the occupation and region selection models in section five; and section six concludes.

## **2. LITERATURE REVIEW**

Migration is rarely a simple personal decision, but instead is collectively made at the household level. Numerous studies show that the interaction between family members in migration decisions has an important impact on the gender gap in income and occupation, region selection, and even on marital stability. In earlier studies, Mincer's 1978 discussion of the obstacles to migration from marriage and the impact of family member interaction on labor market performance analyzed the mutual influence between spouses, and did not consider children and their educational opportunities. Long (1972, 1975) pointed out how the number and age of children in a household will affect family migration decisions, which themselves may influence the academic performance of school-age children in return. But early research lacks relevant economic theories and strict quantitative measurement. There is no analysis of the impact of children's education on the migration worker's performance in the labor market. More recent studies stress the importance of the interaction between spouses

or partners during the migration process, ignoring the effect of children on family decisions (Compton and Pollak 2004; Costa and Kahn 2000; Gemici 2006).

A number of studies have shown that human capital investment (especially education) is becoming increasingly important for the labor market outcomes of PRC rural residents. Since the 1990s, the returns to education in PRC rural and urban areas have increased significantly (Xing 2014); high levels of education also improve the ability of rural residents to move to urban areas and integrate into the local market (Chen and Xing 2004). This makes rural residents pay more attention to the education of their children, which in return affects their migration decisions and employment performance.

When rural residents migrate, they must contend with a major obstacle: the *hukou* (or household registration) system. The *hukou* system mandates that all PRC citizens register in a specific location and as either *agricultural* or *non-agricultural* (Fan 2008).<sup>4</sup> *Hukou* status is primarily determined by birth and is passed on from one generation to the next (Wu and Treiman 2004). Since its initiation in the late 1950s, the *hukou* system has played an important role in controlling the movements of those with agricultural *hukou* status in rural areas (Cheng and Selden 1994). Though the function of the *hukou* system in controlling population movement has been much weaker since the 1990s, when the economy grew rapidly in the coastal regions (Wei 2012; Sun 2011), the household registration system is still an important instrument for the government in controlling and managing incoming migrants. In particular, a local *hukou* is often required for migrants to enjoy a variety of social benefits and public services such as basic education.

In the early stages of large-scale population mobility, the children of most migrant households were left in the countryside due to lack of destination city educational opportunities. The lack of parental care has led to a series of negative consequences, including high dropout rates (Hu 2012), poor academic performance (Amuedo-Dorantes and Pozo 2006; Kandel and Kao 2001), poor health, malnutrition, and impaired personality development (Li 2010; Chen 2009; Song 2009). Such adverse effects are particularly evident for girls (Booth 2003). All these negative effects caused by the household registration system and related education supply arrangements are additional costs that need to be accounted for, as they undoubtedly hinder the migration of rural residents.

As the number of migrants increased, the demand for education services from migrant households increased as well. To meet the demand, migrant schools are increasingly being set up in certain cities. Public schools are also required to enroll students without local *hukou*. These schools provide more educational options for migrant households. The literature on migrants mostly emphasizes the income gap between regions as an incentive for migration. As educational opportunities in non-*hukou* cities became available, the regional gap in education may also have become a factor. In fact, the decentralized nature of regional education expenditure dictates a positive correlation between resources and level of economic development (Wang 2013; Gao 2013). Rural regions (especially poor regions of hinterland PRC) suffer from low inputs and low-quality teachers, which provide incentives for rural residents to move (Xing 2014).

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<sup>4</sup> Since the mid-2000s, several provinces have simplified the *hukou* registration by abolishing the distinction between agricultural and non-agricultural types.

Among the literature on the impact of children on migration decisions, studies usually examine the effect of the extensive margin (migrate or not). One major finding is that the propensity of migration is lower for households with children. Little research has studied how children affect migrant occupational choice and income. This paper contributes to the literature by considering this aspect.

### 3. DATA DESCRIPTION

The data used in this paper are from the 2011 migrant population dynamic monitoring survey, which randomly selected 128,000 migrant households in 410 counties in 31 provinces (including autonomous regions and municipalities) and Xinjiang Production and Construction Corps under a stratified multi-staged sampling frame. The migrant population is defined as those who have lived outside of their place of *hukou* registration for over 1 month. Information on the demographics of the household members, employment, housing, public services, and social integration was collected.

We use logarithmic hourly wage income in the last month for the head of household as the dependent wage equation variable. Therefore, only employed migrant workers who have positive income recorded in the data are kept. For our analysis, we also keep only migrant households who have children from 7–15 years old. The effective sample size is 14,750 after sample screening. According to the criterion of the PRC's National Bureau of Statistics, the occupations are divided into eight categories,<sup>5</sup> as listed in Table 1. The time of the first trip to the city of destination is used to calculate the migration duration.

The basic individual and household characteristics of the migrants (respondents are deemed head of household) are described in Table 1. Samples are divided into two groups: those who have children 7–15 years old migrating with parents and those who do not. Of the households considered, 55.07% have children migrating with them. The average years of schooling of these two types are 10.66 and 10.80 years, respectively. More than 80% of respondents only completed compulsory education, and only 3% and 5.18%, respectively, of the two groups of household heads have college degrees or above. Over 70% of the sample is in the age range of 31–40. The average duration of migration is 6.04 years for those who bring their children, which is significantly higher than families with children left at home. Comparing the group with migrant children and the group with children left at home, the former has a higher share of instances of inter-city or in-city migration.

The occupation structure also differs between these two groups. Migrants who live without school-age children tend to be employed in industries such as production and equipment operation, as well as trade and service, reaching 55.24% and 24.21% respectively. Professional and technical personnel account for 10.08% of migrants with children left at home. Those who live with children mainly choose to work as operation workers and in trade and service industries, accounting for 72.03%. Migrant workers as the main body of the floating population are distributed in labor-intensive, low-tech industries. In addition, the proportion of households with no fixed occupation is higher for families with children than for those with no migrant children.

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<sup>5</sup> Because the sample is very small, we do not have general people classified as separate occupation types, but as “no fixed occupation.”



**Table 1: Summary Statistics**

	No Migrant Children	Have Migrant Children
	(1)	(2)
Years of schooling	10.66 (2.92)	10.80 (3.05)
Education levels (%)		
Primary and below	21.63	22.69
Middle school	60.00	57.45
Senior high school (and technical school)	15.00	14.68
Profession college and above	3.00	5.18
Age	36.63 (4.51)	36.84 (4.53)
Age cohort		
16–30	8.06	7.55
31–40	73.41	72.82
41–50	18.04	19.18
51–59	0.33	0.31
Sex (%)		
Male	58.00	58.09
Female	42.00	41.91
Duration (Years)	3.77 (4.61)	6.04 (5.25)
Migration distance (%)		
Inter-province	67.33	46.7
Inter-city and within province	21.45	30.56
Inter-country and within city	11.23	22.74
Occupation (%)		
Managers, person in charge	0.38	0.78
Professionals	10.08	10.43
Staff	3.00	4.28
Trade and service	24.21	29.8
Agricultural related	1.78	3.31
Operation workers of producing, transporting equipment	55.24	42.23
Casual work	2.23	4.78
Others	3.08	4.39
Weekly working hours	57.2 (13.64)	55.52 (14.06)
Number of Observations	6,626	8,124

Note: Standard deviation in parentheses.

Source: 2011 Migrant Dynamic Monitoring Survey (stats.gov.cn/English).

Table 2 shows the income distribution of the different occupations. Staff members in state organizations and directors of enterprises and institutions have the highest salaries. Professional technicians and staff migrating with school-age children take second place, earning 3,196 yuan and 3,194 yuan on average per month, respectively. Because the working intensity of the production and transportation industry is high,

migrants' average salary and hourly wage are slightly higher than those of other occupations. For those who migrate without their school-age children, their average monthly and hourly wage is 2,483 yuan and 11 yuan in the production and transportation industry. Table 2 shows how professionals and technical personnel, clerks, and transport industry practitioners who migrate with children earn higher average monthly and hourly wages than those who do not. It seems that the more advantageous economic conditions of the inflow area make them decide to bring their children, but another possible explanation is that parents who bring children are older than those who do not. According to the income-age curve, income will increase with age at a certain stage.

**Table 2: The Monthly or Hourly Salary of the Migrant Householder**  
(yuan)

Occupations	No Migrant Children		Have Migrant Children	
	Monthly Wage	Hourly Wage	Monthly Wage	Hourly Wage
Managers, person in charge	4,928	24.86	3,879	22.53
Professionals	2,967	14.54	3,195	16.70
Clerks	2,961	15.78	3,194	18.00
Trade and service	2,047	9.46	1,934	9.33
Agricultural related	1,995	8.74	1,904	8.32
Operation workers of producing, transporting equipment	2,482	11.18	2,492	11.39
Casual work	1,838	8.52	1,817	9.20
Others	1,994	9.80	2,154	10.66

Source: 2011 Migrant Dynamic Monitoring Survey (stats.gov.cn/English).

## 4. MIGRANT CHILDREN AND THE INCOME DETERMINATION OF MIGRANT HOUSEHOLD HEADS

### 4.1 Model Specification

Personal, family, and social characteristics are among the factors that influence migrant population wage levels. In this study, we focus on the effect of the number of migrant children while controlling for variables such as gender, years of schooling, age, and migration duration. The specific regression equation is as follows:

$$\begin{aligned} \log(wage) = & \alpha + \beta_1 * children + \beta_2 * eduyear + \beta_4 * agesq \\ & + \beta_5 * gender + \beta_6 * duration + \gamma X + \varepsilon \end{aligned} \quad (1)$$

where  $\log(wage)$  is the logarithm form of the household heads' hourly wage,  $children$  represents the number of school-age children living in a migrant family—the key independent variable of this paper—and  $eduyear$  represents the years of schooling for the household head. As only education levels are recorded in the survey, we convert the level of education into years of schooling by the following standards: zero years of schooling for the illiterate, 6 years for primary school graduates, 9 years for middle school, 12 years for high school and technical secondary school, 15 years for college,

and 16 and 19 years for undergraduate and graduate students, respectively. Previous empirical research indicates that the age-wage relationship is nonlinear, so the regression model includes age and its quadratic term (*agesq*); *gender* is a dummy (0=male, and 1=female), and *duration* is the migration duration in months until the time of survey. Finally, *X* consists of other important controlled variables, including source area, family structure, occupation, type of destination region, etc. We introduce these variables in the following analysis gradually.

## 4.2 Basic Regression Results

The first column in Table 3 is the regression result without control variables. The results show that the hourly wage of the householder decreased by 2.2% with one more migrant child. The results of the second column show that controlling for personal characteristics of the household heads has little effect on the above results. The impact of personal characteristics on the household heads' wage is consistent with our expectation. In the third column, we further control for the migration duration. The results show that the negative impact of the number of accompanied migrant children to the household heads' wage is significantly increased. This is mainly because migration time is positively correlated with the number of children and the parents' income. Without controlling for duration, migrant households living with children enjoy a relatively high income because of the longer migration time, which leads to an underestimation of the negative impact of migrant children on their parents' income.

The origin region's economy is also an important factor for migration decisions. When the regional economic or education conditions are poor, the migrant population tends to bring their children and choose workplaces where they can attend school. This leads to a lower wage level of the regional migrant population. It is therefore necessary to control for the origin regions. According to the traditional geographical division, we divide the regions into three broad areas: East, Middle, and West. Table 3 reports the regression results after controlling for source area, which has a remarkable influence on migrants' wages, but the effect of the presence of migrant children on parental income does not change significantly.

The sample analyzed above includes households with both spouses migrating out and those with only one parent migrating out. Whether both parents migrate out will not only influence the choice for children, but also affect the wage level of the household head. When the husband and wife migrate at the same time, their career choices are influenced by each other's job opportunities. For example, it might be possible for a husband to give up a better job in order to prioritize his wife's job. In this case, it is not migrant children, but rather both husband and wife migrating that reduces the wages of the household head. To examine this possible mechanism, we further control for household structure in the fifth column of Table 3. The results show that the husband migrating alone earns more than heads of other types of households. The impact of the number of migrant children on income becomes  $-2.7\%$ , and it is still significant at the 1% level.

Table 4 presents the regression results of the wage equation for each occupation group. Part B is the result of adding a control for the source area and the structure of the family from part A. Among the eight occupations, the number of migrant children has a significant impact on the salaries of the trade and service occupation, and equipment operation and transportation. With one more migrant child, workers in these two occupations earn 2.82% and 3.02% less, respectively. In addition, the education return rate and gender wage gap also show significant differences across occupations.

**Table 3: Effects Migrant Child on the Hourly Wage of the Household Head**

	Dependent = ln(Hourly Wage)				
	(1)	(2)	(3)	(4)	(5)
Children	-0.0219*** (0.00654)	-0.0250*** (0.00612)	-0.0350*** (0.00623)	-0.0334*** (0.00621)	-0.0271*** (0.00697)
Eduyear		0.0138*** (0.00134)	0.0135*** (0.00134)	0.0138*** (0.00133)	0.0138*** (0.00133)
Age		0.0211** (0.00969)	0.0197** (0.00967)	0.0187* (0.00963)	0.0178* (0.00963)
Age2/100		-0.0371*** (0.0129)	-0.0362*** (0.0129)	-0.0345*** (0.0128)	-0.0336*** (0.0128)
Female		-0.372*** (0.00830)	-0.372*** (0.00828)	-0.373*** (0.00825)	-0.383*** (0.00940)
Duration			0.00649*** (0.000803)	0.00588*** (0.000802)	0.00609*** (0.000809)
From central				-0.0910*** (0.0107)	-0.0913*** (0.0107)
From west				-0.120*** (0.0112)	-0.121*** (0.0112)
Only mother					0.00537 (0.0132)
Only father					0.0565*** (0.0155)
Constant term	2.296*** (0.00599)	2.412*** (0.182)	2.427*** (0.182)	2.525*** (0.181)	2.548*** (0.182)
N	14,747	14,747	14,747	14,747	14,747
R-squared	0.001	0.127	0.130	0.137	0.138

Note: (1) \*, \*\*, \*\*\* represent significance level of 10%, 5%, and 1%, respectively; (2) Standard errors in parentheses; (3) *From East and Father and Mother go out together* are omitted dummy variables; (4) *age2/100* = age squared divided by 100; (5) *eduyear* = years of schooling of household head.

Source: 2011 Migrant Dynamic Monitoring Survey (stats.gov.cn/English).

**Table 4: The Regression Results of the Wage Equation for Each Occupation Group**

Occupation Group	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
<b>A: Controlling for education, gender, age, and duration of migration</b>								
Children	0.0132 (0.118)	0.0287 (0.0213)	0.0393 (0.0388)	-0.0282** (0.0124)	-0.0488 (0.0374)	-0.0302*** (0.00763)	0.0254 (0.0294)	-0.0198 (0.0333)
R-squared	0.117	0.126	0.220	0.136	0.070	0.111	0.096	0.102
<b>B: + origin region and family structure</b>								
Children	0.110 (0.145)	0.0455* (0.0250)	0.0672 (0.0455)	-0.0266* (0.0140)	-0.0353 (0.0420)	-0.0221*** (0.00848)	0.0247 (0.0328)	-0.0108 (0.0346)
R-squared	0.233	0.143	0.230	0.143	0.126	0.115	0.101	0.149
<b>C: + origin region and family structure + migration distance + destination region</b>								
Children	0.106 (0.146)	0.0651*** (0.0252)	0.113** (0.0452)	0.000627 (0.0139)	-0.0340 (0.0422)	-0.00327 (0.00870)	0.0476 (0.0329)	0.00549 (0.0354)
R-squared	0.278	0.155	0.272	0.178	0.158	0.126	0.131	0.163
N	88	1,515	547	4,025	384	7,091	536	561

Note: Columns 1–8 correspond to the occupation groups as follows: (1) Managers, person in charge; (2) Professionals; (3) Staff; (4) Trade and service; (5) Agricultural related; (6) Operation workers of producing, transporting equipment; (7) Casual work; (8) Others.

Source: 2011 Migrant Dynamic Monitoring Survey (stats.gov.cn/English).

### 4.3 Robustness Checks

Migrant children might not only reduce their parents' hourly wage, but they might also affect their monthly wage. On one hand, children's education affects their parents' wage levels through employment choice; on the other hand, the migrant population may want to shorten their working hours to make time to take care of their children. The first column in Table 5 shows that school-age children significantly reduce the working hours of migrant household heads; monthly working time decreases by 2.1% for each additional child living with him/her. Controlling for household structure has little effect on this result, and the coefficient on the number of children becomes  $-2.3\%$ . According to this result and the results of the last column in Table 3, we can calculate the impact of migrant children on household heads' monthly income: one more child in the family decreases the monthly wage by 5%.

**Table 5: The Effect of Migrant Children on Working Hours and Family Income**

Dependent V=	Ln(Working Hours)		Ln(Family Income)		Ln(Income per Capita)	
	(1)	(2)	(3)	(4)	(5)	(6)
Children	-0.0208*** (0.00342)	-0.0228*** (0.00384)	0.0642*** (0.00598)	-0.0539*** (0.00623)	-0.0607*** (0.00587)	-0.0148** (0.00654)
Eduyear	-0.00504*** (0.000733)	-0.00501*** (0.000733)	0.0113*** (0.00128)	0.0112*** (0.00119)	0.0100*** (0.00126)	0.00991*** (0.00125)
Age	-0.00589 (0.00530)	-0.00593 (0.00530)	0.00305 (0.00927)	0.0150* (0.00861)	0.0166* (0.00911)	0.0131 (0.00904)
Age2/100	0.00825 (0.00705)	0.00834 (0.00705)	-0.0135 (0.0123)	-0.0261** (0.0114)	-0.0329*** (0.0121)	-0.0295** (0.0120)
Female	-0.0277*** (0.00454)	-0.0372*** (0.00518)	0.0112 (0.00794)	0.0634*** (0.00841)	-0.183*** (0.00780)	-0.152*** (0.00882)
Duration	-0.00142*** (0.000442)	-0.00148*** (0.000445)	0.0109*** (0.000772)	0.00701*** (0.000723)	0.00437*** (0.000759)	0.00588*** (0.000759)
From central	0.0221*** (0.00589)	0.0213*** (0.00589)	-0.0772*** (0.0103)	-0.0813*** (0.00957)	-0.0829*** (0.0101)	-0.0779*** (0.0100)
From west	0.0212*** (0.00616)	0.0204*** (0.00616)	-0.146*** (0.0108)	-0.128*** (0.0100)	-0.139*** (0.0106)	-0.140*** (0.0105)
Only mother		-0.0192*** (0.00727)		-0.308*** (0.0118)		0.188*** (0.0124)
Only father		0.0208** (0.00855)		-0.611*** (0.0139)		0.0843*** (0.0146)
Constant term	4.198*** (0.0999)	4.214*** (0.0999)	8.051*** (0.175)	7.904*** (0.162)	7.783*** (0.172)	7.746*** (0.170)
N	14,750	14,750	14,750	14,750	14,750	14,750
R-squared	0.011	0.012	0.047	0.179	0.060	0.075

Note: (1) \*, \*\*, \*\*\* represent significance level of 10%, 5%, and 1%, respectively; (2) Standard errors in parentheses; (3) *From East and Father and Mother go out together* are omitted dummy variables; (4) *age2/100* = age squared divided by 100; (5) *eduear* = years of schooling of household head.

Source: 2011 Migrant Dynamic Monitoring Survey (stats.gov.cn/English).

In addition, the second and third columns in Table 5 represent the analysis using total and per capita family income as dependent variables. Different from the previous hourly wage, the income here refers to the household total in the destination regions, including wages, business income, rent and transfer payments, etc. The results show that a child has a significant effect on the total household income earned in the destination region. The family income is positively related to the number of children if we do not control for household structure: one more child is associated with a 6% increase in income. This may be because high-income families tend to bring their children when they migrate, or because couples always do so together when children accompany them, which increases the family's total income. Therefore, we control for the household structure in the fourth column. The results indicate that for a given household structure, the total income of the household is lower for those with more migrant children. Therefore, the significantly positive effects of migrant children are mainly due to couples being more likely to migrate together in households with accompanied children. This also implies that both husband and wife tend to earn salaries when they migrate together. The results of the regression analysis with per capita household income as the dependent variable are listed in the last two columns of Table 5. Although the control of the family structure still has a major influence on the regression results, the number of children has a significantly negative impact on the per capita income of the family. This is consistent with the regression result using the household head's wage as the dependent variable, but it also rules out the mechanism that high-income households tend to bring their children when they migrate.

**Table 6: The Effect of Migrant Children on Hourly Wage, Working Hours, and Family Income with Husband and Wife Migrating Together**

	Ln(Hourly Wage) (1)	Ln(Working Hours) (2)	Ln(Family Income) (3)	Ln(Income per Capita) (4)
Children	-0.0207*** (0.00736)	-0.0260*** (0.00405)	-0.0593*** (0.00643)	-0.0130* (0.00683)
Eduyear	0.0133*** (0.00153)	-0.00531*** (0.000840)	0.0109*** (0.00133)	0.00878*** (0.00141)
Age	0.0202* (0.0115)	-0.00587 (0.00634)	0.0118 (0.0101)	0.0135 (0.0107)
Age2/100	-0.0384** (0.0154)	0.00862 (0.00847)	-0.0216 (0.0134)	-0.0317** (0.0143)
Female	-0.385*** (0.00956)	-0.0366*** (0.00527)	0.0625*** (0.00836)	-0.155*** (0.00887)
Duration	0.00584*** (0.000909)	-0.00120** (0.000501)	0.00639*** (0.000795)	0.00510*** (0.000844)
From central	-0.0909*** (0.0124)	0.0310*** (0.00682)	-0.0791*** (0.0108)	-0.0766*** (0.0115)
From west	-0.126*** (0.0131)	0.0308*** (0.00719)	-0.137*** (0.0114)	-0.150*** (0.0121)
N	11,167	11,170	11,170	11,170
R-squared	0.141	0.015	0.041	0.050

Note: (1) \*, \*\*, \*\*\* represent significance level of 10%, 5%, and 1%, respectively; (2) Standard errors in parentheses; (3) *From East* and *Father and Mother go out together* are omitted dummy variables; (4)  $age2/100 = age^2$  divided by 100; (5)  $eduyear = years$  of schooling of household head.

Source: 2011 Migrant Dynamic Monitoring Survey (stats.gov.cn/English).

These results indicate that family structure and migrant children both have strong correlations with family income. Taking into consideration how dual parent migrant households account for about 75% of the sample, we keep only couples-based migrants for analysis in Table 6. Regardless of using hourly wage, working hours, family income, or family income per capita as dependent variables, the results are similar to the regression results controlling for family structure in Tables 3 and 5.

**Table 7: The Effects of Migrant Child of Different Ages on Wages of Household Head**

	All Types of Migrant Families			Families with Husband and Wife Migrating Together		
	Age: <=6 (1)	Age: 7–12 (2)	Age: 13–15 (3)	Age: <=6 (4)	Age: 7–12 (5)	Age: 13–15 (6)
Children	–0.00183 (0.00799)	–0.0264*** (0.00922)	–0.0425*** (0.0139)	–0.00443 (0.00837)	–0.0198** (0.00976)	–0.0332** (0.0147)
Eduyear	0.0483*** (0.00145)	0.0165*** (0.00158)	0.00386* (0.00210)	0.0509*** (0.00163)	0.0164*** (0.00180)	0.00231 (0.00242)
Age	0.0422*** (0.00677)	0.0240** (0.0115)	–0.00271 (0.0257)	0.0476*** (0.00768)	0.0257* (0.0138)	0.0157 (0.0304)
Age2/100	–0.0710*** (0.0105)	–0.0412*** (0.0155)	–0.00793 (0.0318)	–0.0805*** (0.0119)	–0.0458** (0.0187)	–0.0299 (0.0376)
Female	–0.334*** (0.00920)	–0.378*** (0.0110)	–0.381*** (0.0163)	–0.337*** (0.00938)	–0.380*** (0.0112)	–0.378*** (0.0165)
Duration	0.0122*** (0.000987)	0.00617*** (0.000979)	0.00586*** (0.00129)	0.0116*** (0.00109)	0.00637*** (0.00111)	0.00488*** (0.00143)
From central	–0.0803*** (0.00972)	–0.100*** (0.0124)	–0.0745*** (0.0194)	–0.0834*** (0.0110)	–0.105*** (0.0143)	–0.0654*** (0.0226)
From west	–0.151*** (0.0108)	–0.140*** (0.0131)	–0.0937*** (0.0197)	–0.150*** (0.0123)	–0.150*** (0.0152)	–0.0903*** (0.0230)
Only mother	–0.0461*** (0.0141)	–0.00227 (0.0158)	0.0272 (0.0218)			
Only father	0.0415** (0.0168)	0.0637*** (0.0185)	0.0429* (0.0257)			
Constant term	1.754*** (0.109)	2.401*** (0.213)	3.032*** (0.523)	1.662*** (0.123)	2.406*** (0.254)	2.660*** (0.614)
N	15,887	10,769	5,095	12,785	8,255	3,769
R-squared	0.168	0.138	0.133	0.176	0.144	0.130

Note: (1) \*, \*\*, \*\*\* represent significance level of 10%, 5%, and 1%, respectively; (2) Standard errors in parentheses; (3) *From East* and *Father and Mother go out together* are omitted dummy variables; (4)  $age2/100 = age^2/100$ ; (5)  $eduyear = years\ of\ schooling\ of\ household\ head$ .

Source: 2011 Migrant Dynamic Monitoring Survey (stats.gov.cn/English).

In this paper, we hypothesize that parents' consideration of their children's educational opportunities makes them give up some income. Although we have no direct evidence to support this, the following robustness exercises support such a hypothesis: children at compulsory school age exert more influence on the household heads' income than those who have not. We no longer limit children's age to 7–15 years old in Table 7, but rather consider three specific age groups: 6 years old and below (column 1, preschool children), 7 to 12 years old (column 2, primary school children), and 13 to 15 years old (column 3, junior school children). Results in the first column of Table 7 imply that only investigating the mobility of families with children under 6 years of age, whether the child migrates or not does not significantly affect household heads' hourly wage.

Columns 2 and 3 indicate that irrespective of whether the child is in primary or in junior school, their existence as a migrant child has a significant negative impact on the wages of the parent. The results do not change much when we control for the household structure (columns 1 to 3) or retain samples with both couples migrating together (columns 4 to 6). All of these results indicate that children's education has an important impact on migrant workers' income.

## 5. MIGRANT CHILDREN AND THE OCCUPATIONAL CHOICE OF MIGRANTS

### 5.1 Migrant Children and the Regional Choice of Migrants

We investigate the effect of migrant children on occupational choice in terms of migration range (inter-province; inter-city, but within province; inter-country, but within prefecture) and the destination regions (eastern, central, and western). Both these variables have discrete values. We use the multinomial Logit model to investigate the influence of migrant children on the employment decision of their parents. It is worth pointing out that we do not emphasize the causal relationship between migrant children and employment choice, but only document their correlation. Assuming that migrant people have three choices, the probability of choosing each option is given by the following formula:

$$\Pr(I = 1|z) = \frac{1}{1 + \sum_{j \neq s} \exp(z\gamma_j)};$$

$$\Pr(I = s|z) = \frac{\exp(z\gamma_s)}{1 + \sum_{j \neq s} \exp(z\gamma_j)} \quad (s = 2, 3).$$

Where  $Z$  is a vector containing information such as education level, age, gender, and origin region of the migrants, and  $\gamma_s$  is the parameter vector. Furthermore,

$$RRR \equiv \frac{\Pr(I = s|z') / \Pr(I = 1|z')}{\Pr(I = s|z) / \Pr(I = 1|z)} = ((z' - z)\gamma_s). \quad \text{In particular, when the number of}$$

migrant children increases by 1 (other factors remaining unchanged),  $RRR \equiv \exp((z' - z)\gamma_s) = \exp(\gamma_{children})$  reflects the role of children in the employment selection of the migrant population, and  $RRR > 1$  (that is,  $\gamma_{children} > 0$ ) indicates that the relative probability of selecting  $s$  over the baseline option will increase with the number of migrant children.

Panels A and B of Table 8 report the results treating migration range and destination as dependent variables. In panel A, we choose inter-provincial migration as a reference. This panel shows that the number of migrant children increased the relative probability of intra-province migration. Within a province, the relative probability of intra-city migration increases with the number of migrant children. In other words, migrant children set obstacles to greater range movement, partly because educating them is more difficult when migration is inter-prefectural or inter-provincial. In addition, women or people with high education levels tend to migrate at a greater range. Residents from the central and western provinces prefer inter-provincial mobility, probably because these areas cannot offer enough job opportunities.



**Table 8: The Multinomial Logit Model Analysis on Migration Distance and Destination Region**

	<b>A: Migration Distance – Inter-province as Reference</b>		<b>B: Destination Region – East as Reference</b>	
	<b>Inter-city and within Province (1)</b>	<b>Inter-county and within City (2)</b>	<b>Central (3)</b>	<b>West (4)</b>
Children	0.534*** (0.0310)	0.649*** (0.0342)	0.623*** (0.0365)	0.450*** (0.0381)
Eduyear	-0.0115* (0.00675)	-0.0148** (0.00752)	-0.0255*** (0.00794)	0.00322 (0.00793)
Age	-0.0541 (0.0485)	-0.0530 (0.0545)	-0.106* (0.0565)	-0.0650 (0.0598)
Age2/100	0.0613 (0.0646)	0.0729 (0.0723)	0.158** (0.0752)	0.121 (0.0797)
Female	-0.119*** (0.0416)	-0.117** (0.0476)	-0.401*** (0.0476)	-0.489*** (0.0527)
Duration	-1.115*** (0.0508)	-0.204*** (0.0666)	2.482*** (0.0781)	1.087*** (0.113)
From central	-0.969*** (0.0533)	0.0432 (0.0681)	0.573*** (0.104)	3.909*** (0.104)
Constant	1.158 (0.913)	-0.242 (1.031)	-0.437 (1.063)	-2.147* (1.128)
N	14,750		14,750	

Note: (1) \*, \*\*, \*\*\* represent significance level of 10%, 5%, and 1%, respectively; (2) Standard errors in parentheses; (3) *From East and Father and Mother go out together* are omitted dummy variables; (4) age2/100 = age squared divided by 100; (5) eduyear = years of schooling of household head.

Source: 2011 Migrant Dynamic Monitoring Survey (stats.gov.cn/English).

Part B in Table 8 is the regression result using destination region as the independent variable. When compared with migrating to the eastern region, the coefficient of the number of migrant children is significantly positive for the other two options (migrating to central and western areas). This shows that migrant children tend to increase the relative probability of migrating to the central and western regions. This is because most of our samples are from the middle and western areas, and the consideration of children encourages them to migrate within a closer region. In addition, we find that the higher the education level of the migrants, the lower the probability they have of selecting the central area as their destination. Women tend to choose eastern provinces. People in the migration process have a tendency to stay close to home.

The results of this part show that the migrant scope is greatly narrowed and the probability of migration to the east where job opportunities are relatively sufficient is reduced when doing so with children. This suggests that the PRC's eastern region did not provide the corresponding public services (education for children) for migrants during its period of rapid economic growth.

Finally, we also analyze the influence of migrant children on the occupation choice of the migrants. The results show that occupation choice is closely related to the number of migrant children. In particular, there is a significant positive correlation between the number of migrant children and the possibility of migrant workers selecting "no fixed occupation (or temporary employment)" (see Table 9).

**Table 9: The Regression Results of the Occupation Selection Model and Region Selection Model (Multinomial Logit)**

	Occupation Group (Operation Workers of Producing, Transporting Equipment is the Omitted Group)						
	Occupation 1	Occupation 2	Occupation 3	Occupation 4	Occupation 5	Occupation 7	Occupation 8
Children	0.438*** (0.156)	0.117*** (0.0446)	0.295*** (0.0690)	0.277*** (0.0312)	0.671*** (0.0727)	0.691*** (0.0619)	0.425*** (0.0649)
Eduyear	0.342*** (0.0423)	0.0946*** (0.0102)	0.177*** (0.0160)	-0.0109 (0.00669)	0.0188 (0.0169)	0.0179 (0.0148)	0.0478*** (0.0148)
Age	0.386 (0.317)	0.186** (0.0771)	0.0967 (0.117)	0.0522 (0.0491)	-0.155 (0.107)	0.0460 (0.107)	-0.0246 (0.102)
Age2/100	-0.479 (0.412)	-0.267*** (0.103)	-0.153 (0.157)	-0.0630 (0.0657)	0.252* (0.138)	-0.0188 (0.139)	0.0480 (0.135)
Female	-0.418* (0.243)	-0.520*** (0.0652)	0.422*** (0.0921)	0.874*** (0.0415)	0.505*** (0.109)	0.0861 (0.0964)	0.568*** (0.0907)
Duration	-0.237 (0.271)	-0.323*** (0.0734)	-0.582*** (0.107)	-0.238*** (0.0537)	0.250 (0.161)	0.389*** (0.145)	-0.113 (0.120)
From central	-0.734** (0.301)	-0.439*** (0.0779)	-0.952*** (0.121)	-0.263*** (0.0563)	0.398** (0.163)	0.561*** (0.146)	-0.0571 (0.124)
Constant term	-15.51** (6.082)	-4.852*** (1.449)	-6.262*** (2.179)	-2.761*** (0.920)	-2.337 (2.070)	-5.241** (2.054)	-3.829** (1.929)
N	14,750						

Note: Columns 1–8 correspond to the occupation groups as follows: (1) Managers, person in charge; (2) Professionals; (3) Staff; (4) Trade and service; (5) Agricultural related; (6) Operation workers of producing, transporting equipment; (7) Casual work; (8) Others.

Note: (1) \*, \*\*, \*\*\* represent significance level of 10%, 5%, and 1%, respectively; (2) Standard errors in parentheses; (3) *From East and Father and Mother go out together* are omitted dummy variables; (4) *age2/100* = age squared divided by 100; (5) *eduyear* = years of schooling of household head.

Source: 2011 Migrant Dynamic Monitoring Survey (stats.gov.cn/English).

## 5.2 Migrant Children, Choice of Occupation, and Migrants' Income

The occupation, migrant range, and choice of destination region are closely related to wage level. To investigate how migrant children affect their parents' wages, we control for dummy variables representing occupation, migrant scope, and employment region sequentially. The regression results are shown in Table 10. To facilitate comparison, we copy the last column of Table 3 and list it in the first column of Table 10. Controlling for occupation significantly reduces the coefficient of the number of migrant children, but its effect on wage income remains negative (with the coefficient being  $-0.012$ , significant at 10% level; see column 2 in Table 10). That is, for the same type of occupation, migrant children have an impact on the household heads' wage income.

The third column in Table 10 presents the regression results after controlling for migration range. We can see that the closer the migration range, the lower the migrants' wage: intra-province and intra-prefecture samples' salary is respectively 11% and 16% lower than that of inter-province migration. Controlling for migration range makes the coefficient on the number of migrant children small and insignificant. Destination region is controlled for in column 4. The results show that working in the eastern regions significantly improves wage level, and that the number of migrant children has no significant impact on wage income after controlling for this factor. The

effect of the number of children becomes positive after controlling for all factors in the last column, but the impact is small and only significant at the 10% level.

Table 10 shows that the effect of migrant children on the destination and the scope is the main channel by which they influence the wage level, and occupation choice is a relatively minor channel. Due to the limitations of the household registration system, while the education problem is easy to solve in the province or city of *hukou* registration, it is difficult to solve inter-provincially. At the same time, although the coastal areas (especially some big cities) have a greater demand for laborers, it is difficult to solve the education problem for their children. The migrant population seems to have given up some opportunity for the consideration of their children's education, which has hindered the relocating of labor to these areas.

**Table 10: Children Effect on Wage Determination after Controlling for Occupation Choice**

	Dependent Variable = log(Hourly Wage)				
	(1)	(2)	(3)	(4)	(5)
Children	-0.0271*** (0.00697)	-0.0119* (0.00668)	-0.00627 (0.00704)	-0.000975 (0.00704)	0.0120* (0.00676)
Eduyear	0.0138*** (0.00133)	0.00844*** (0.00128)	0.0135*** (0.00132)	0.0135*** (0.00132)	0.00801*** (0.00127)
Age	0.0178* (0.00963)	0.0120 (0.00917)	0.0164* (0.00955)	0.0151 (0.00953)	0.00934 (0.00908)
Age2/100	-0.0336*** (0.0128)	-0.0242** (0.0122)	-0.0316** (0.0127)	-0.0292** (0.0127)	-0.0203* (0.0121)
Female	-0.383*** (0.00940)	-0.343*** (0.00908)	-0.390*** (0.00933)	-0.397*** (0.00933)	-0.357*** (0.00904)
Duration	0.00609*** (0.000809)	0.00498*** (0.000771)	0.00500*** (0.000805)	0.00454*** (0.000804)	0.00341*** (0.000769)
From central	-0.0913*** (0.0107)	-0.0802*** (0.0102)	-0.111*** (0.0108)	-0.0298*** (0.0113)	-0.0548*** (0.0117)
From west	-0.121*** (0.0112)	-0.101*** (0.0107)	-0.135*** (0.0113)	-0.0321** (0.0131)	-0.0645*** (0.0132)
Only mother	0.00537 (0.0132)	0.000266 (0.0126)	0.00448 (0.0131)	0.0259** (0.0131)	0.00860 (0.0125)
Only father	0.0565*** (0.0155)	0.0723*** (0.0148)	0.0679*** (0.0154)	0.0755*** (0.0154)	0.0854*** (0.0147)
Inter-city within province			-0.105*** (0.00960)		-0.0518*** (0.0104)
Inter-county within city			-0.159*** (0.0110)		-0.112*** (0.0119)
Destination: central				-0.162*** (0.0110)	-0.0883*** (0.0123)
Destination: west				-0.163*** (0.0121)	-0.0734*** (0.0127)
Occupation dummies	No	Yes	No	No	Yes
N	14,747	14,747	14,747	14,747	14,747
R-squared	0.138	0.220	0.153	0.157	0.236

Note: (1) \*, \*\*, \*\*\* represent significance level of 10%, 5%, and 1%, respectively; (2) Standard errors in parentheses; (3) *From East* and *Father and Mother go out together* are omitted dummy variables; (4) age2/100 = age squared divided by 100; (5) eduyear = years of schooling of household head.

Source: 2011 Migrant Dynamic Monitoring Survey (stats.gov.cn/English).

Panel C in Table 4 presents the regression results by occupation while controlling for migration range and employment region. The results show that, after controlling for these factors, migrant children have no significant impact on the wage level in most occupations, especially in the two large categories (trade and service, transport equipment operating), where migrants are relatively concentrated. In some occupations (such as professional and technical personnel and clerks), household heads migrating with children have higher wage levels.

## 6. DISCUSSION AND CONCLUSION

Many migrants leave their children in rural areas, while others bring them along. This paper analyzes the influence of the presence of children on the occupation choice and income of the migrant population, paying special attention to the influence of those at school age. The results show that the heads of households with school-age migrant children earn significantly less than those who leave them at their place of *hukou* registration. Households migrating with school-age children have a higher probability of staying within the prefecture/province of their *hukou* registration and are less likely to target eastern coastal regions.

Of course, the above results may be affected by the endogeneity problem. This paper addresses this concern mainly through the addition of control variables. Even so, the impact of endogenous problems should also be discussed in relation to the conclusion. First, some non-observable variables may affect migrant children and the income of the household head. For example, some families may put more value on family members living together, and less on income. This will lead to a negative relationship between the number of migrant children and the income of the household head. However, family values do not necessarily lead to the low wage level of workers in the job market. Second, migrant worker employment and income status may, in turn, affect their decision to migrate with their children. However, this reverse causality should suggest higher income for households with migrant children. This is contrary to the findings of this paper, which shows that this mechanism does not play a leading role; the discrepancy is unlikely to weaken this paper's conclusion.

These shortcomings admitted, the findings of this paper still have strong policy implications. First, those families who migrate with children have to sacrifice better job opportunities in exchange for their children's education. This loss of efficiency is caused by the household registration system, which also shows that public services (especially basic education) should be an important aspect of its further reform. Second, this study also shows that high demand regions still have the potential to attract more labor through the reform of the household registration system and to improve public service provision.

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