

Can the Elder's Migration Increase the Probability of Migrants Giving Birth to a Second Child?

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Abstract—This paper adopts a binary probit regression model to examine the influence of the elder's migration on migrants' behaviour about giving birth to a second child using data from the 2015 Chinese Migrant Population Dynamic Monitoring Survey of the National Health and Family Planning Commission. The results show that the proportion of two children families in migrants is not high, and the probability of migrant families having a second child can be significantly increased by the elder's migration. The results remained unchanged after two instrumental variables were selected for the elder's migration and used ERM model to conduct an endogeneity test. One instrumental variable is the rate of the elder' migration of others at the same sample point, and the other is whether the migrants have brothers or sisters in their hometown. The reason may be that there is a tradition of inter-generational care in China and the migratory elders can help to take care of the children to reduce the cost of migrants having a second child. This paper provide some references for improving the probability of migrants giving birth to a second child.

Keywords—the elder's migration; giving birth to a second child; migrants; fertility

I. INTRODUCTION

With the implementation of the family planning policy in the 1970s, the fertility rate in China dropped lower than the level required for substitution, and the trend of population aging began to occur. According to the World Health Organization (WHO), China will become the most quickly aging country in the world until 2050. Population aging slows the growth of the economy [1] [2], which has a negative impact on the demographic dividend[3]. To mitigate the problems caused by a low fertility rate and aging population in China, both selective and universal two-child policies have been promulgated since 2013, which indicates that China's birth control policy has entered a new historical stage. In this new phase, how to improve the rate of reproduction in Chinese families has become a new social issue that has also aroused heated discussion in academic circles.

No matter how difficult it is, most families will make the decision to have one child. However, for another child, many

families will take more factors into consideration, and one important factor is whether there is someone who can help take care of the children. Furthermore, China is known for its traditional inter-generational care. Therefore, it is common in China that elders take care of their grandchildren. Inter-generational care can reduce the cost of people's childbearing to a certain extent, so is it possible that the elders taking care of their grandchildren would increase their children's reproduction?

People tend to work and live in a place with a high level of economic development as a result of the uneven development that has occurred between regions. Because of the household registration system, a special group – a migrant population - has sprung up in China. The size of the migrant population is huge; it reached 244 million in 2017, with 70.43 percent from rural areas according to monitoring data of this population. The behaviour about giving birth to a second child of such a large group could have a substantial impact on trends in the Chinese population. In addition, unlike a fixed urban population, the frequent movement of the migrant population makes it more difficult for them to make reproductive decisions. At the same time, the rural labor force accounts for a relatively large portion of the migrant population. In some rural areas of China, the tradition of having more children still exists. If the elders migrate with their children to care for grandchildren, it will be easier for migrants to make reproductive decisions. These hypotheses have not yet been tested with data.

II. DATA SOURCES AND SAMPLE STATISTICS

The data used in this paper is from the Chinese Migrant Population Dynamic Monitoring Survey of the National Health and Family Planning Commission in 2015. The sampling method of the survey is mainly PPS which is stratified, multistage, and the sample capacity is proportionate to the scale. The survey's target is the migrant population of 15 years old or above who has come to live in the inflow areas for more than a month and is not a local resident in 31 provinces (cities and districts) or the Xinjiang production and construction corps. The main contents of the survey include basic information about population, employment status, basic public health,

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family planning services and medical and health services for the elders.

This study is about migrants' behavior about giving birth to a second child, so we have selected a sample that had already given birth to children. In addition, children under the age of 3 need around-the-clock care in China. Although children aged between 3 to 6 can be sent to kindergartens, they still need to be picked up and taken care of at home. For the migrants, their children usually stay at home before going to primary school if there are no suitable kindergartens in the vicinity. To a certain extent, the elder's migration allows them to take care of the children, so this paper selected samples where there were children aged 6 and below who need to be taken care of. These restrictions yielded a sample of 87298 cases.

Table I shows that most of the migrant population is male, of Han nationality and has agricultural Hukou. Their education level is mainly junior high school, followed by high school or special secondary school. Thus, the level of education of the migrant population is generally low. The number of people investigated who participated in the new rural cooperative medical insurance is large and those who participated in the urban and rural residents' cooperative medical insurance, urban residents' medical insurance, or urban workers' medical insurance is small. There are more migrants migrating across the province. A large proportion of the migratory population's elders do not migrate with their children. There are more people who have only one child, and most of the migrant population's first child is a boy.

TABLE I. SUMMARY STATISTICS

Variable	Definition	Mean	St. D
Dependent variable			
reproductive behavior	=1 if migrant population has a second child, 0 otherwise	0.214	0.410
Independent variable			
Elder's migration	=1 if the elder migrated with their child, 0 otherwise	0.024	0.154
Individual characteristics			
Age	Age of migrant population (years)	35.30	7.685
Gender	=1 if migrant population is male, 0 otherwise	0.590	0.492
Education	=3 if migrant population has a junior college degree or above, =2 if migrant population has a high school or special secondary school's education, =1 if migrant population has a Junior high school's education, 0 otherwise	1.364	0.824
Hukou	=1 if migrant population is urban Hukou, 0 otherwise	0.161	0.368
Nationality	=1 if migrant population is minority, 0 otherwise	0.062	0.242
Migration distance	=1 if migrant population migrates within the province, 0 otherwise	0.495	0.500
Insurance1	=1 if migrant population has new rural cooperative medical insurance, 0 otherwise	0.659	0.474
Insurance2	=1 if migrant population has urban and rural residents' cooperative medical insurance, 0 otherwise	0.042	0.202
Insurance3	=1 if migrant population has urban resident health insurance, 0 otherwise	0.059	0.236
Insurance4	=1 if migrant population has urban workers medical insurance, 0 otherwise	0.213	0.409
ISEI	International Socio-Economic Index of occupational status	34.88	11.75
Household characteristics			
The first child's gender	=1 if the first child of migrant population is a boy, 0 otherwise	0.582	0.493
The first child's age	=1 if the first child of migrant population is between 12 and 18 years old, 0 otherwise	0.183	0.387
Family monthly income	The logarithm of the family monthly income	8.696	0.532

III. RESULTS AND ROBUSTNESS CHECKS

A. Model specification and identification

To estimate the effect of the elder's migration on migrants' behaviour about giving birth to a second child, we start with the following cross-section probit model:

$$\Pr(\text{Reproductive behavior}_i = 1) = \Phi(\alpha + \beta \text{Elder's Migration}_i + \gamma Z_i + \sigma)$$

Dependent variable (Reproductive behavior) and independent variable (Elder's migration) are dummy variable. Z represents control variables. According to the existing literature and investigation experience, the control variables selected in this paper were the migrant population's personal

characteristics and household characteristics. At the individual level, we control for age, age squared, gender, Hukou nationality, education, migration distance, medical insurance and the ISEI [4] [5]. At the household level, we controlled for the first child's gender, the first child's age and family monthly income [6] [7]. σ is the province virtual variable.

B. Result discussion

We first used a binary probit regression model to examine the influence of the elder's migration on migrants' behaviour about giving birth to a second child. Before conducting the regression, we conducted a multiple collinearity test on the data. The maximum vif value was less than 10, which indicated that there is no problem with multiple collinearity in

the data. Second, we applied Extended Regression Model (ERM) to address endogeneity issues, and the regression results are shown in Table II.

TABLE II. THE EFFECTS OF THE ELDER'S MIGRATION ON MIGRANTS GIVING BIRTH TO A SECOND CHILD

Variable	Model 1	Model 2 (ERM)		Model 3 (ERM)	
	Reproductive behavior	Elder's migration	Reproductive behavior	Elder's migration	Reproductive behavior
Elder's migration	0.06***		1.75***		3.98***
Other migration		0.25***			
Brother or sister				-0.01***	
The first child's gender	-0.13***		-0.51***		-0.50***
The first child's age	0.03***		0.13***		0.13***
Gender	0.03***		0.12***		0.14***
Age	-0.00***		-0.01***		-0.01***
Age squared	-0.00***		-0.01***		-0.01***
Education					
Junior high school	-0.05***		-0.19***		-0.17***
High school/special secondary school	-0.11***		-0.40***		-0.33***
Junior college or above	-0.18***		-0.75***		-0.62***
Hukou	-0.07***		-0.29***		-0.28***
Nationality	0.05***		0.20***		0.18***
ISEI	0.00***		0.00***		0.00***
Migration distance	-0.02***		-0.08***		-0.05***
Family monthly income	0.03***		0.11***		0.09***
Insurance1	0.02***		0.07***		0.07***
Insurance2	-0.00		-0.01		0.01
Insurance3	-0.01*		-0.05*		-0.03
Insurance4	-0.03***		-0.13***		-0.10***
Province	have		have		have
Constant	-1.59***	0.02***	-1.57***	0.03***	-1.47***
Obs	87298	87136		50913	
Pseudo R ²	0.16				
Corr(e.Elder's migration,e.Reproductive behavior)		-0.23***		-0.47***	

Notes: ***, ** and * refer to being statistically significant at the 1%, 5% and 10% levels, respectively. 'Other migration' means rate of the elders' migration of the others at the same sample point. 'Brother or sister' means that whether the migrant population has brothers or sisters in their hometown.

The probit estimate of the key variable, the elder's migration, was significant. The marginal effect of the elder's migration was 0.6, suggesting that the probability of having a second child is increased by 6 percent if the elder migrates with their child. There are two main reasons why the elder's migration can promote probability of migrants having a second child. On the one hand, the elder's migration means couples are living with each other. Therefore, the rate of giving birth to a second child is increased because of

childbearing feasibility compared with those who are separated from their spouses. On the other hand, the main purpose of this population's migration is financial, which leads to their spending more time devoted to work; thus, the opportunity cost of having another child will increase, which will reduce the probability of migrants having a second child. However, the elder who migrates with their children could help look after the grandchildren, which will reduce the cost of fertility and make the migrant population feel less worried. As a result, the elder's migration can increase the probability of the migrants having a second child.

In addition to the effects of the elder's migration, other control variables also had reasonable signs and magnitudes regarding reproductive behavior of migrants. The probability of a woman having a second child is lower than a man's probability by 3 percent. There is a negative correlation between age and reproductive behavior of migrants. The higher the education level of migrants, the lower probability of them having a second child. The probability of having a second child for the migrants of urban Hukou is lower than that of agricultural Hukou by 7 percent. The probability of having a second child for the minorities is higher than that for the Hans by 5 percent. The higher ISEI was, the greater the probability of having a second child was. The migrants who migrate across the provinces are more likely to have a second child compared with those who migrate in province. It can significantly increase the probability of having a second child when the migrants has rural cooperative medical insurance (Insurance1). However, those who have urban resident medical insurance (Insurance3) or urban workers medical insurance (Insurance4) have a reduced probability of having a second child. It is more likely for migrants to have a second child when the first child is a girl or at the age of 12-18. Furthermore, the higher the monthly income of migrants, the higher the probability is of having a second child.

C. Endogeneity Discussion

Possible endogeneity issues may complicate our estimation. On the one hand, the migratory elder can help to care for children and reduce the opportunity cost of migrant population having a second child, which may increase the probability of migrants giving birth to a second child. On the other hand, migrants will bring the elder to the inflow area and live with them if they want to give birth to a second child. When the above reverse causality problem exists, the estimated result of this paper will be a biased one. We employed ERM model to address the aforementioned issues.

A valid IV should be highly correlated with the elder's migration, but uncorrelated with migrants' behaviour about giving birth to a second child. In this paper, we first utilize the rate of the elder migration of others at the same sample point as the IV for elder's migration. Other elder's migration status at the same sample point will affect the elder's migration decision but will not affect migrants' behaviour about giving birth to a second child. Since there was only one interviewee in every single sample point of 162 sample points, it was impossible to calculate the rate of the elders' migration of others at these sample points. Therefore, these samples were removed for this part, and the sample size was 87136. The

regression results are shown in model 2. From the estimation results, the elder's migration still has a significant positive effect on migrants' behaviour about giving birth to a second child

We also use it as an instrumental variable of whether migrants has brothers or sisters in their hometown, because if migrants has brothers or sisters in their hometown, it may reduce the probability that the elder would migrate in order to take care of other grandchildren, and vice versa. In addition, if migrants does not have any brothers or sisters in their hometown, they may bring the elder to live with them out of concern for their parents. Moreover, it is not directly related to the migrants' behaviour about giving birth to a second child. There were some missing values in whether the migrant has brothers or sisters in their hometown, so this analysis was conducted on 50913 samples; the regression results are shown in model 3. From the estimation results, the elder's migration still has a significant positive effect on increasing the probability of migrants having a second child. All of these results indicate that the possible endogeneity issues of the elder's migration has little influence on the estimation results of this paper.

D. Robustness Check

In this paper, migrants is grouped by gender, education and migratory range in order to investigate the influence of the elder's migration on their children's reproductive behavior in different groups. The regression results are shown in Table III. It indicates that in different groups, the ratio of the migrants having a second child is increased with the elder's migration. This indicates the increased probability of migrant population having their second child is relatively stable.

TABLE III. GROUPING REGRESSION

Variables	Grouped by gender(Margins)		Grouped by flow range(Margins)	
	Man	Women	Across province	In province
Elder's migration	0.05***	0.07***	0.08***	0.04***
Control variables	Have	Have	Have	Have
Sample size	51542	35756	44075	43223
Pseudo R2	0.16	0.17	0.14	0.18
Variables	Grouped by education(Margins)			
	Primary school or below	Junior High school	High school / special secondary school	Junior college or above
Elder's migration	0.04*	0.07***	0.06***	0.03**
Control variables	Have	Have	Have	Have
Sample size	9068	47801	20003	10397
Pseudo R2	0.22	0.16	0.13	0.12

Note: To simplify the results of the model, the result of control variables are omitted.

IV. CONCLUSION

Generally, when women are employed in China, having children means that one member of the couple needs to spend time caring for their children, which means that the time spent working will be reduced. The cost of childbearing is high because of the competitiveness of time resources. However, China's family structure is resilient and there is a tradition of inter-generational care. The elder can take care of their grandchildren for free if necessary. Thus, we explore the influence of the elder's migration on migrants behavior about giving birth to a second child using data from the 2015 National Migrant Population Dynamic Monitoring Survey of the National Health and Family Planning Commission.

According to the data distribution, the proportion of having two children in migrants is only 21.4 percent, which is not high. The elder's migration can significantly increase the probability of migrants giving birth to a second child. There may be a reverse causation between the elder's migration and the reproductive behavior of migrants. We selected the rate of the elders' migration of others at the same sample point and whether migrants has brothers or sisters in their hometown as instrumental variable of the elder's migration, used ERM model to conduct an endogeneity test. After eliminating the endogenous effect, the results remain unchanged. Therefore, the significant positive effect of the elder's migration on the reproductive behavior of migrants is not biased.

The reason why the elder's migration can increase the probability of migrants having a second child is that the migratory elder can help to take care of the children, which can reduce the opportunity cost of having a second child. The related research also shows that the ability of caring for children is one of the key factors that restricts childbirth. How can parents find resources for childcare if a family has no inter-generational care? What kind of help can the state and society provide for childcare? This may be a key point in determining people's fertility decisions in the future. To respond positively, we can start from several angles such as standardizing maternal and infant services, early childhood education, paid/unpaid family care leave, etc. For the elders who migrate with their children, we can get through the system of long-distance medical treatment and pension system that can not only improve their welfare level but also increase their children's labor supply and behavior about giving birth to a second child. It is the best of both worlds.

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