

CREA Discussion Paper 2016-21

Economics

Centre for Research in Economics and Management
University of Luxembourg

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October, 2016

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To Migrate With or Without the Children—A Theoretical Note ^{*}

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October 22, 2016

Abstract

Tens of millions of young children were left behind by their migrant parents who left to find a job elsewhere to gain a better income and improve their families' living standards. Many studies suggest that migrant parents should bring their children rather than leave them behind, especially EU internal migrants. In this short note, we give an economic reasoning for the choice of migrant parents. Our finding shows that emotionally, bringing the children makes both children and parents better off; however, economically, that may not be the case. The ambiguity depends on the forgone opportunity cost, relocation cost of children, children's motivation, and the quality of the public school at the origin and destination.

Keywords: Migrant children; left-behind children; migration.

JEL classification: O15, I31, I30.

^{*}We appreciate the discussion with Ioana Salagean and research assistant Antonia Margherita. However, any mistakes and errors are ours.

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1 Introduction and background

Most national and international migrant parents believe they are fulfilling their duty to raise their family's standard of living. They take dirty and hard work, and relocate from one place to another in order to earn more money for their family. They send income home to pay for better food and education for their families, especially the children they have left behind.

In China, about 61 million children—one of every five—has not seen one or both parents for at least three months (All-China Women's Federation, 2014¹). In Moldova, 177,000 children live with one or both parents abroad; in Ukraine, migrants left 200,000 children behind; and in Romania, there are about 350,000 left-behind children and one third are completely alone (2011, ChildrenLeftBehind.eu)². In Sri Lanka, migrant working mothers left behind about one million children (Save the Children, 2006). In the Philippines, Kakammpi (2004) reports that nearly nine million children are growing up without at least one parent due to that parents' migration. In 2002, 13% of Mexican and almost 22% of Salvadoran immigrants living in the US had children left behind in their home countries (Cortina and de la Garza, 2004).

It is undeniable that the high amounts of remittances³ sent back by migrants are an enormous help and contribution to their home countries and families. However, the children left behind pay a high price, though the remittances may help with children's education and human capital accumulation (Amuedo-Dorantes and Pozo, 2010;

¹See detail in the Dec. 3 2014 report at <http://www.womenofchina.cn/womenofchina/html1/1412/715-1.html>. See also The Economist, October 17th 2015, page 29-30.

²<http://www.childrenleftbehind.eu/2011/02/left-behind-seminar-in-the-european-parliament/>

³The Migration and Remittances Factbook 2016 estimates that *International migrants will send \$601 billion to their families in their home countries this year, with developing countries receiving \$441 billion*. Yanovich's 2015 Migration Policy Reports Moldova has become reliant on remittances, which equal nearly US\$2 billion, or almost one-quarter of gross domestic product (GDP), according to 2014 World Bank estimates In Ukraine, migrants sent home an estimated US\$9 billion in remittances in 2014, the largest amount in the region, representing 5.4 percent of GDP.

Bansak and Chezum, 2009; De Brauw and Giles, 2008).

The United Nations Children's Emergency Fund (UNICEF) studies suggest that children and adolescents left behind may be at greater risk to drug abuse, teenage pregnancy, psychosocial problems, and violent behavior. UNICEF's research in Moldova suggests that the increase in the juvenile crime rate between 1993 and 2000 is positively correlated with a rise in the number of left-behind children, who accounted for nearly 60% of the offenders. In China, some left-behind children fall victim to tragedies⁴ such as suicide, abuse, and human trafficking; or they end up as street children and live on the edges of society. In Mexico, the father's absence was associated with behavioral problems: 61% of children left behind suffered from psychological problems and felt abandoned (UNICEF-UNDP Survey, 2006).

Can migrant parents bring their children with them? Can whole-family migration solve the left-behind children problem? Indeed, in China, tens of millions of internal migrant workers bring their children with them to their jobs, and keep them in cities while they work. According to a survey report by the United Nations Children's Fund, in 2010, one out of every four children in China's urban areas was a migrant child. In 2013, that proportion rose to one out of three—a total of 35.81 million children (Zhang, 2014). However, despite the fact that the children live with their parents in China, the parents work long hours and are too busy to take care of them. Additionally, the migrant children do not get enough parental care and affection and end up growing up alone again.

Taking your children with you while migrating is much easier to say than to do. The barriers to taking young children come from different aspects. It may happen that the destination countries or cities cannot offer visas for the young children, or parents with children may not get a job opportunity or can only work part time instead of full time

⁴For example, The Economist October 17th 2015 Page 32 "In May a teacher in one such" boarding "school in Gansu province in the North-West was executed for abusing 26 primary-school students. In Ningxia province in June, a teacher got life in prison for raping 12 of his pupils, 11 of whom had been left behind." We can see more cases from Chinese news than what is reported by The Economist.

and must give up the potential income. It may be that the destination lacks schools for young migrant children, or it is simply too costly to bring the children along, due to housing, food, health care, and other costs.

Thus, in this note, we try to study, from economic modeling point of view, the migrant parents' optimal choice: leave their children behind or take them, or under which conditions it is actually better to leave their children behind.

The rest of this note proceeds as follows. Section 2 introduces the model of migrant adults' decision problem. Then, Section 3 provides the solution and discussion, and Section 4 concludes.

2 The model: Migrants' choice

Consider an over-lapping generation model of migrants. Suppose each individual is one household and will live for two periods: youth and old age. The life time utility of generation t is

$$U_t = u(c_t) + \beta u(d_{t+1}) + \gamma U_t^f, \quad (1)$$

where c_t and d_{t+1} are the consumption of youth and old age, respectively, with parameter $\beta (\in (0, 1))$ denoting time preference. Following Lucas and Stark's (1985) altruism concept, we assume that individuals care also other family members, denoted by U_t^f , with $\gamma (\in (0, 1))$ as the altruism parameter. The other family members could be old age parents, children, siblings, and so on. For simplicity, we take

$$U_t^f = a_f u_f \left(\frac{c_{f,t}}{N} \right) + a_K \sum_{k=1}^K u_k(c_{k,t}, h_{k,t+1}), \quad (2)$$

where c_f measures other family members, mainly parents', consumption; N is number of siblings who share the cost of the family; c_k and $h_{k,t+1}$ are children's consumption and human capital accumulation (schooling), respectively. Suppose there are K – children in each household and parents care for them equally. However, we impose a

restriction in which an individual cares for their parents no more for their children, that is,

Assumption 1 $\gamma a_f \leq \gamma a_K < 1$.

We denote the human capital of migrant workers as h_t , which checks $h_t \geq h_0$ with h_0 to measure pure physical labor and no education, training skills, or experience. Suppose an exogenously given unit human capital wage of w_t . Thus, an individual with human capital h_t earns income of $w_t h_t$ that will be used for her (and her family's) consumption when young and save s_t for old age. At the same time, some amount m_t will be sent back home to support parents' old age and/or raising young children left behind.

Therefore, the migrant faces the following financial budget constraint:

$$c_t + s_t + g(e_t) + m_t = w_t h_t \quad (3)$$

where children's education cost is given by:

$$g(e_t) = g^j(e_t) = \begin{cases} Ke^l, & \text{if children leftbehind } j = l, \\ K(e^m + k_m), & \text{if children immigrant } j = m. \end{cases}$$

Here, k_m is the children's relocation cost and could be the opportunity cost for parents while taking care of their migrant children.

A migrant in the old age part of life, would base consumption on savings from youth with an interest rate of r_{t+1} . The migrant might earn old age working income, but with some discounted human capital ϕh_t (parameter $0 \leq \phi \leq 1$) and maybe some exogenous transfers from adult children and/or a public pension, which we denote by \widetilde{T}_{t+1} . Thus, the old age budget constraint is

$$d_{t+1} = s_t(1 + r_{t+1}) + w_{t+1}\phi h_t + \widetilde{T}_{t+1}. \quad (4)$$

As usual, parents care not only for their children's consumption, but also their education and human capital accumulation, which crucially depends on where the education

takes place: as a migrant or left-behind. We modify De Brauw and Giles (2008) and De la Croix and Deopke's (2003) formulation of human capital accumulation is as follows:

$$h_{t+1}^j = h_0 + B_j(\theta_j + e_t^j)^\eta h_t^{\alpha^j} (\bar{h}_j)^\kappa, \quad j = l, m, \quad (5)$$

where parameter $\eta \in (0, 1)$ represents the share of public and parental contribution to the education outcome, α^j is parents' human capital impact, $\kappa \in [0, 1 - \eta]$ is the effect of the quality of schooling, and \bar{h}_j is the average human capital of teachers. A positive parameter θ_j indicates free public education, where, as long as children make some effort $B_j > 0$, even if the parents choose not to make any contribution, it is still possible for children to get some education (see De la Croix and Deopke, 2003). Here, B_j represents learning productivity, reflecting children's ability and factors that affect their motivation and effort.

3 Theoretical results

We take the following logarithm utility function to obtain some clear theoretical results:

$$U_t = \ln(c_t) + \beta \ln(d_{t+1}) + \gamma a_f \ln\left(\frac{c_{f,t}}{N}\right) + \gamma a_K K[\ln(c_{k,t}) + \tilde{\beta}_k \ln(h_{k,t+1} - h_0)],$$

where $0 \leq \tilde{\beta}_k \leq 1$ measures how much parents care about their children's education compared to consumption. Here, $h_{k,t+1} - h_0$ measures the results of schooling or education, given the physical care included in the term of c_k . In other words, parents' care for their children are two-fold: consumption and education. Arguably, the left-behind and migrant children may have little physical difference compared with other children, but the substantial difference is their school performance and emotional damage (the source of the concerns arising from prior studies). It is clear from the above function form that if $B_j = 0$, the last term, $\ln(h_{k,t+1} - h_0) = -\infty$, and parents do not have an optimal interior choice.

Therefore, in the following, we focus on the case where $B_j > 0$, which may differ depending on whether the children are left behind or migrate with the parent.

Given that the children in our study may be left behind or migrate with the parents, we must treat parent and child consumption separately, which differs from the classical overlapping generation literature, such as De la Croix and Deopke (2003).

If children are left behind and living with their grandparents, we make no distinction between the children's and grandparents' consumption, that is, we assume and normalize this to family consumption c_f :

$$c_k^l = c_f. \quad (6)$$

Then, the migrant adult's remittance will check

$$\frac{c_{f,t}}{N} + K c_{k,t}^l \leq m_t^l + \tilde{y}, \quad (7)$$

in which \tilde{y} is the potential income of those left behind, such as renting out a house or land to the others. Thus, the migrant's utility can be rewritten as:

$$U_t^l = \ln(c_t^l) + \beta \ln(d_{t+1}^l) + (\gamma a_f + \Gamma_K) \ln(c_f^l) + \Gamma_K \tilde{\beta}_k \ln(h_{k,t+1}^l - h_0), \quad (8)$$

with a $\Gamma_K = \gamma a_K K$ altruism factor for children.

However, if children migrate with their parents, the remittance to support only the left-behind family is given by:

$$\frac{c_f}{N} = m_t^m + \tilde{y}. \quad (9)$$

The migrants' utility is

$$U_t^m = (1 + \Gamma_K) \ln(c_t^m) + \beta \ln(d_{t+1}^m) + \gamma a_f \ln(c_f^m) + \Gamma_K \tilde{\beta}_k \ln(h_{k,t+1}^m - h_0). \quad (10)$$

Definition 1 We call $\{c_t^j, s_t^j, e_t^j, m_t^j\}$ ($j = l, m$) an optimal choice, if it maximizes utility (8) (or (10)) under budget constraints (3), (4), (7) (or(9)) and children's human capital accumulation (5).

Employing the standard first order conditions and substituting the savings, remittance, and education cost into the budget constraint, it follows for $j = l, m$ that,

$$c_t^l \left(\text{or } \frac{c_t^m}{1 + \Gamma_K} \right) (1 + \beta + \gamma a_P + \Gamma_K + \Gamma_K \tilde{\beta}_k \eta) = w_t h_t + \tilde{y} + \frac{\widetilde{T}_{t+1} + \phi h_t w_{t+1}}{1 + r} - K k_j + K \theta_j,$$

with $k_l = 0$ and $k_m > 0$. We denote $W_t = w_t h_t + \tilde{y} + \frac{\widetilde{T}_{t+1} + \phi h_t w_{t+1}}{1 + r}$ as the lifetime earnings, which include labor incomes of both periods, potential income back home, discounted old age social transfer, and children's remittances. Then, the left hand side is aggregate lifetime cost, including consumption and accounting for young and discounted old age, parents' and children's consumption, plus the cost to educate children. The right hand side is the lifetime potential income, which includes lifetime earnings and public transfers to education net of children's relocation costs.

We conclude the above analysis in the following:

Proposition 1 *There exists one and only one optimal choice, c_t^j given by*

$$c_t^j = \begin{cases} \frac{(W_t + K\theta_l)}{\Lambda}, & j = l, \\ \frac{[W_t + K(\theta_m - k_m)](1 + \Gamma_K)}{\Lambda}, & j = m \end{cases} \quad (11)$$

and s_t^j and m_t^j, e_t^j are given by:

$$s_t^j = \begin{cases} \beta c_t^l - \frac{\widetilde{T}_{t+1} + \phi h_t w_{t+1}}{1 + r}, & j = l, \\ \frac{\beta}{1 + \Gamma_K} c_t^m - \frac{\widetilde{T}_{t+1} + \phi h_t w_{t+1}}{1 + r}, & j = m, \end{cases} \quad (12)$$

$$c_f^l \left(\frac{1}{N} + K \right) = m_t^l + \tilde{y} = (\gamma a_f + \Gamma_K) c_t^l \quad \text{or} \quad \frac{c_f^m}{N} = m_t^m + \tilde{y} = \frac{\gamma a_f}{1 + \Gamma_K} c_t^m \quad (13)$$

and

$$e_t^j = \begin{cases} \frac{\Gamma_K \tilde{\beta}_k \eta}{K} c_t^l - \theta_l, & j = l, \\ \frac{\Gamma_K \tilde{\beta}_k \eta}{(1 + \Gamma_K) K} c_t^m - \theta_m, & j = m, \end{cases} \quad (14)$$

where

$$\Lambda = 1 + \beta + \gamma a_f + \Gamma_K(1 + \tilde{\beta}_k \eta).$$

Substituting the above optimal choice of migrants into their utility functions and taking the difference yields the following results.

Proposition 2 *Suppose migrant parents' choice between taking their children to the destination and leaving them behind is undetermined; otherwise, migrant parents follow the optimal choice of Proposition (1). Then, the difference in migrants' choices is given by:*

$$\begin{aligned} U^m - U^l = & \Lambda \underbrace{\ln \left(\frac{W_t + K(\theta_m - k_m)}{W_t + K\theta_l} \right)}_{\text{income}} \\ & + \underbrace{(1 + \Gamma_K) \ln(1 + \Gamma_K) + \gamma a_f \ln(\gamma a_f) - (\gamma a_f + \Gamma_K) \ln \left(\frac{\gamma a_f + \Gamma_K}{1 + NK} \right)}_{\text{altruism effects}} \quad (15) \\ & + \underbrace{\Gamma_K \ln N}_{\text{sibling externality}} + \underbrace{\Gamma_K \tilde{\beta}_k \ln \left(\frac{B_m(\overline{h}_m)^\kappa}{B_l(\overline{h}_l)^\kappa} \right)}_{\text{schooling and motivation}}. \end{aligned}$$

Obviously, there is some kind of positive externality from having a sibling to share the cost of family, which makes it more attractive to leave children behind. To avoid this confusion, we consider $N = 1$ in the following, that is, the case in which the migrant has no sibling.

The utility difference between taking the children and leaving them behind lies in three terms for migrant parents: income, altruism considerations, and public education.

The income difference includes the potential difference in public education input, θ_j . However, taking the children along during migration comes with a relocation cost, Kk_m , which could include costs for visa, entry barriers at the destination, tuition fee, and, most important, the opportunity cost of losing a job opportunity. If the children's

relocation cost is too high, migrant parents would be better off leaving their children behind.

The second term comes from the altruism consideration, which can be rewritten as

$$(1 + \Gamma_K) \ln(1 + \gamma a_f K) + \gamma_f a_f \ln(\gamma_f a_f) - (\gamma a_f + \Gamma_K) \ln \left[\frac{\gamma a_K (a_f/a_K + K)}{1 + K} \right] > 0$$

given Assumption 1 that $\gamma a_K < 1$ and $\frac{(a_f/a_K + K)}{1 + K} \leq 1$. In other words, for parents who care about their children, migrating with the children always increases parents' utility. In other words, parents do want to bring their children with them.

The education effect includes two terms: children's motivation, B_j , and the public school quality, \bar{h}_j . It is easy to see if left-behind children completely lose interest or have no motivation for education at all, that is, $B_l \rightarrow 0^+$, while taking them will change this, $B_m > 0$, then it is obvious that taking the children along makes parents better off. However, if there is no difference in children's motivation between being left behind and migrating, $B_l = B_m$, the difference lies in the potential public school alone. In the case where the destination has a better education system than the origin, it is better to bring the children along provided that it is not too costly for parents to take them. Otherwise, if it is not possible for young children to register in a proper school at the destination, migrant parents are still better off leaving their children behind.

4 Conclusion

A significant number of studies, though not enough, contribute to the left-behind problem. "Take your child with you" is one of suggestions from scholars. However, our economic model suggests that indeed, both parents and children are better off emotionally by migrating together as a whole family. However, that may not be possible financially. To make it possible for children to migrate with the parents, some more basic child-related infrastructure at the destination is needed, which would include remov-

ing the barriers to entry, school registration, child health care, and so on. Nonetheless, none of these are easy tasks.

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