**Peer Effects, Parental Migration and Children’s Human Capital**

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**Left-behind Children and Migrant Children in China**

In China, there are a huge number of migrants from under-developed areas to developed areas. Children from migrants’ families are considered to be disadvantaged and sometimes not allowed to enroll in public schools in migration destination cities due to the Hukou system. Some migrant parents have to leave their children behind in hometown which causes left-behind children problem. Government is trying to relax this enrollment restriction, which results in protests from local parents since they believe migrant students may negatively affect the local children.

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**Main Questions of the Study**

1. What are the peer effects of migrant and left-behind children on their classmates’ test scores? Are they really “Bad apples”? 
2. What is the mechanism of the peer effects? 
3. Can we improve the human capital of children if we relax public school enrollment restriction for migrant children? 

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**Method to Answer Questions 1 & 2**

1 **Classroom Random Assignment**

First, I run the following OLS regression to get peer effects:

\[ y_{ij} = \gamma_0 + \gamma_1 \text{Propmig}_{ij} + \gamma_2 \text{People}_{ij} + \beta X_{ij} + \mu_s + \epsilon_{ij} \]  

(1)

where \( y_{ij} \) is the standard test score of student \( i \) in class \( j \) of school \( s \). \( \text{Propmig}_{ij} \) is the proportion of migrant peers and left-behind peers of student \( i \) in class \( j \) of school \( s \). \( X_{ij} \) is the set of controls. \( \mu_s \) is the school-level fixed effect. \( \epsilon_{ij} \) is the unobserved variable. The dependent variable is the standard test score of student \( i \). \( \gamma_1 \) and \( \gamma_2 \) are peer effects.

Usually \( \gamma_1 \) and \( \gamma_2 \) cannot be identified due to the sorting of students. Students from advantaged families may sort into classes with less migrant and left-behind peers. However, most of the middle schools in China randomly assign students into classes.

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2 **Spatial Equilibrium Model**

Then I construct a spatial equilibrium model with city-level parents’ migration choices and the choice of whether to take their children with them or leave them behind.

For family (worker) \( o \) endowed with a Hukou in city \( i \) and a skill \( s \), it needs to choose (1) which city \( j \) to work in; (2) whether to take his or her children to city \( j \) or leave them in hometown \( i \). The utility function is as follows:

\[ U_{ij} = \frac{z_{ij} p_s}{1} (k_{ij} \theta_s) \]  

(2)

\( z_{ij} \) is the migration cost for a worker with skill \( s \) migrating from city \( i \) to work in city \( j \). \( k_{ij} \theta_s \) refers to the human capital of the worker’s children. It is determined by peer effects, whether they can enroll in public schools and whether they are left-behind. \( z_{ij} \) is the individual unobserved taste heterogeneity for different cities.

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**Results of Peer Effects**

3 **Main Results**

<table>
<thead>
<tr>
<th>Table 1 Peer Effects of Migrant Children and Left-Left Behind Children</th>
<th>Both Year</th>
<th>First Year</th>
<th>Second Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Proportion of Migrant Peers</td>
<td>-0.545†</td>
<td>-0.576**</td>
<td>-0.0255</td>
</tr>
<tr>
<td>Proportion of Left-Left Behind Peers</td>
<td>0.286</td>
<td>0.328</td>
<td>0.262</td>
</tr>
</tbody>
</table>

Conclusions: (1) (Column 1) There are negative spillovers. An increase of ten percentage points in the proportion of left-behind/migrant peers in the class reduces the test score by 0.018/0.055 points, which corresponds to 0.12/0.062 standard deviation. (2) (Column 2 & 3) The negative spillovers are strong in the first year. However, the effects from migrant peers are reduced and the effects from left-behind peers are totally erased in the second year. (3) Negative effects from left-behind peers are generally much larger.

An important implication: We can reduce the overall negative spillovers by relaxing enrollment restrictions and encouraging students to migrate with their parents.

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**4 Mechanism**

(1) The “contamination” effect of misbehavior is an important channel, especially for left-behind students which results from the absence of their parents in their lives. The damage is persistent.

(2) Migrant students can harm the classroom environment and lead to a lower academic achievement of their classmates. However, as time goes by, they can get along with their classmates well and the negative effects will be erased.

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**Results of Model Counterfactual**

I plug the estimates of the peer effects into the model, and estimate other parameters. I then simulate the counterfactual if the enrollment restriction on migrant children to public schools is relaxed.

Figures 1-3 show the evolution of average human capital, total migration and total number of students in big cities when enrollment probabilities for migrant students in all cities are increased to at least \( p \). It displays that as \( p \) goes up, all of the variables will increase.

When \( p \) is set to 1 (totally remove the enrollment restriction), the average human capital increases by 0.05 standard deviation, the total migration increases by 19.2% and the number of students in big cities increases by 16.8%. In addition, the ratio of number of left-behind over migrant students decreases by 29.1%.

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**Policy Implications**

(1) Government should help migrant student to get adapt to new environment and reduce negative spillovers. (2) Negative spillovers from left-behind students are large and persistent. Government should take special care of these children. (3) The policy of relaxing enrollment restriction for migrant students can increase human capital of the society, promote migration, alleviate left-behind children problem, but also lead to pressure of education supply in big cities.

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**Counterfactual Figures**

Red Line: Baseline level in the real world.

![Counterfactual Figures](image)