The impacts of income gaps on migration decisions in China

NONG ZHU
CHINA ECONOMIC REVIEW

Gabrielle BODEL
Foudil LEKHAL
INTRODUCTION

Goals of the paper:

- Effects of income gaps on migration decisions in China
- Where are those gaps from?

Plan:

- Backgrounds
- Model
- Results
- Conclusion
BACKGROUND

- Harris-Todaro (1970) : wage gap => rural/urban migration
- Famine between 1959-1961 => rural/urban migration limited
- Two method : high opportunity cost and civil registry system
- Dualism of Chinese society and a significant income gap
- The household responsibility system : Buy food in urban areas without urban registration status / Increased personal freedom to rural people
- The government continues to limit migration : High level of urban life/Investments in urban infrastructure/The business reform state-owned
- Urban informal sector and rural non-farm sector
METHOD

Three factors:

- differences education and age of migrants
- differences in productivity between the two sectors
- unobserved characteristics
  ◦ Selectivity Bias
  ◦ Switching regression and structural Probit :

\[ P_i^* = \alpha'Z_i + \beta'X_i + \varepsilon_i \]
Urban income equation and rural income equation

\[ \log W_{ui} = \beta_u X_i + \gamma_u \lambda_{ui} + \mu_{ui} \]

\[ \log W_{ri} = \beta_r X_i + \gamma_r \lambda_{ri} + \mu_{ri} \]

\[ P_i^* = \eta (\log \hat{W}_{ui} - \log \hat{W}_{ri}) + \alpha Z_i + \varepsilon_i \]

- Individuals characteristics
- Discrimination urban/rural labor market
- Unobservable factors

Inverse Mills ratios:

\[ \lambda_{ui} = \frac{\phi(\hat{\beta}' X_i + \hat{\alpha}' Z_i)}{\Phi(\hat{\beta}' X_i + \hat{\alpha}' Z_i)} \]

\[ \lambda_{ri} = -\frac{\phi(\hat{\beta}' X_i + \hat{\alpha}' Z_i)}{1 - \Phi(\hat{\beta}' X_i + \hat{\alpha}' Z_i)} \]
Oaxaca (1973): decomposition technique
Reimers (1983): correct selection bias
Agesa & Agesa (1999): adopted this method (Kenya)

We estimate the urban and rural income:

\[ \log \hat{W}_{ui} = \beta_u X_i + \gamma_u \lambda_{ui} \]
\[ \log \hat{W}_{ri} = \beta_r X_i + \gamma_r \lambda_{ri} \]

Income gap:

\[ \log \bar{W}_u - \log \bar{W}_r = \log \tilde{W}_u - \log \tilde{W}_r = \beta_u \bar{X}_u - \beta_r \bar{X}_r + \gamma_u \bar{\lambda}_u - \gamma_r \bar{\lambda}_r \]
We can decompose this equation into three parts:
- Differences in average characteristics
- Differences in the parameters of the wage function
- Differences in selectivity bias

\[
\log \tilde{W}_u - \log \tilde{W}_r = (\bar{X}_u - \bar{X}_r)[D\hat{\beta}_u + (I - D)\hat{\beta}_r] + [(I - D)\bar{X}_u + D\bar{X}_r](\hat{\beta}_u - \hat{\beta}_r) \\
+ \hat{\gamma}_u \bar{\lambda}_u - \hat{\gamma}_r \bar{\lambda}_r
\]

- Migrants may enter only in the urban informal sector
- Surplus workers
- Gap between prices of industrial/agricultural

\[
\log \tilde{W}_u - \log \tilde{W}_r = (\bar{X}_u - \bar{X}_r)\hat{\beta}_u + \bar{X}_r(\hat{\beta}_u - \hat{\beta}_r) + \hat{\gamma}_u \bar{\lambda}_u - \hat{\gamma}_r \bar{\lambda}_r
\]
Ratio of urban income on rural income $R$

$$R = \frac{\tilde{W}_u}{\tilde{W}_r} = (1 + P_X)(1 + P_\beta)(1 + P_\lambda)$$

Corrected for selection bias $R'$

$$R' = \frac{\tilde{W}_u}{\tilde{W}_r (1 + P_\lambda)} = (1 + P_X)(1 + P_\beta)$$

where

$$P_X = e^{(\bar{X}_u - \bar{X}_r)\hat{\beta}_u} - 1, \quad P_\beta = e^{\bar{X}_r(\hat{\beta}_u - \hat{\beta}_r)} - 1 \quad \text{and} \quad P_\lambda = e^{\hat{\gamma}_u\hat{\lambda}_u - \hat{\gamma}_r\hat{\lambda}_r} - 1$$
MIGRANTS

China National Social Science Fund

1993 in Hubei province → 2 573 households

2 types of questionnaire: household and individual

Migration is « a change of usual residency between towns, townships, or streets »

Two categories of migrants: permanent & temporary (= residence place ≠ hukou place)

Hukou place = registration system for residents

Permanent migrants are more qualified, better integrated in employment programs than temporary one and have a social protection
EMPIRICAL RESULTS

The sex is selective for migration

=> 2 equations for each sex: income and selection

Men’s characteristics compared to women:
- better educated
- higher income

Migrants’ characteristics compared to non-migrants:
- younger
- better educated
- higher incomes
- less married
Age is significant for men

Experience $\rightarrow$ increase in income

Education is significant for men and non-migrant women

GDP of destination place is not significant for migrant women

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### Table 2
Logarithmic income equation adjusting for sample selectivity

<table>
<thead>
<tr>
<th></th>
<th>Males Migrants Regression 1</th>
<th>Males Non-migrants Regression 2</th>
<th>Females Migrants Regression 3</th>
<th>Females Non-migrants Regression 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>0.039* (1.92)</td>
<td>0.041*** (2.73)</td>
<td>$\ldots$ (0.01)</td>
<td>0.069*** (4.17)</td>
</tr>
<tr>
<td>Age$^2$ /100</td>
<td>$-0.047^*$ (-1.77)</td>
<td>$-0.051***$ (-2.91)</td>
<td>$-0.015$ (-0.40)</td>
<td>$-0.081***$ (-4.27)</td>
</tr>
<tr>
<td>Education level</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Primary school</td>
<td>0.056 (0.30)</td>
<td>0.325*** (2.88)</td>
<td>$-0.415^*$ (-1.91)</td>
<td>0.088 (0.87)</td>
</tr>
<tr>
<td>Junior secondary school</td>
<td>0.379** (2.08)</td>
<td>0.720*** (5.67)</td>
<td>0.207 (1.02)</td>
<td>0.349*** (3.01)</td>
</tr>
<tr>
<td>Senior secondary school</td>
<td>0.630*** (3.26)</td>
<td>1.052*** (7.54)</td>
<td>0.381* (1.78)</td>
<td>0.644*** (4.64)</td>
</tr>
<tr>
<td>Per capita GDP of actual residency /100</td>
<td>0.036*** (5.23)</td>
<td>0.091*** (10.80)</td>
<td>0.007 (0.84)</td>
<td>0.095*** (11.36)</td>
</tr>
<tr>
<td>Inverse Mills ratio</td>
<td>0.053 (0.56)</td>
<td>$-0.338^*$ (-2.33)</td>
<td>$-0.015$ (-0.13)</td>
<td>0.030 (0.23)</td>
</tr>
<tr>
<td>Constant</td>
<td>3.577*** (8.65)</td>
<td>2.418*** (7.22)</td>
<td>4.931*** (8.74)</td>
<td>1.750*** (4.67)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>.263</td>
<td>.344</td>
<td>.156</td>
<td>.300</td>
</tr>
<tr>
<td>Number of observations</td>
<td>198</td>
<td>512</td>
<td>186</td>
<td>457</td>
</tr>
</tbody>
</table>
Results for the impact of income gap on the migration decision
Income gap is measured with the two previous income equations

Relation age/migration: increases and then decreases => threshold

For men → positive role of education
Marriage → negative role

Larger is the gap, stronger is the migration propensity
<table>
<thead>
<tr>
<th>Perloff (1991): two methods to measure it</th>
<th>2 simulations:</th>
</tr>
</thead>
<tbody>
<tr>
<td>- average</td>
<td>- 10% increase in the rural income</td>
</tr>
<tr>
<td>- share</td>
<td>- 10% decrease in the urban income</td>
</tr>
</tbody>
</table>

Different conclusions about the migration probability for men and women when the income gap changes

Urban income > rural income

So urban variation is more important in monetary value
### Table 4
Effect of an increase in the rural income or a decrease in the urban income

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Relative income $\bar{W}_u/\bar{W}_r$</td>
<td>Migration probability</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Average</td>
</tr>
<tr>
<td>Initial value</td>
<td>1.99</td>
<td>28.9</td>
</tr>
<tr>
<td>Rural income</td>
<td>1.56</td>
<td>24.0</td>
</tr>
<tr>
<td>increases 10%</td>
<td>(-21.5)</td>
<td>(-17.0)</td>
</tr>
<tr>
<td>Urban income</td>
<td>1.39</td>
<td>21.8</td>
</tr>
<tr>
<td>decreases 10%</td>
<td>(-30.1)</td>
<td>(-24.6)</td>
</tr>
</tbody>
</table>

The percentage changes compared with the initial situation are presented in parentheses. A negative sign means a decrease.

Initial ratio urban/rural = 1.99

1st simulation: for men’s ratio ↓ 21.5%  
for women’s ration ↓ 16.1%

2nd simulation: men’s ratio ↓ 30.1%  
women’s ratio ↓ 41.6%

More or less the same change in migration probability for men and women
Conclusion

- Larger is the income gap and stronger is the migration propensity
- The income gaps are mainly from different education levels, age

- What would be the migration decisions with public investments in rural sector?
- The data only take in account the migration inside Hubei province