Heterodox Migration Decisions under Unemployment: A Socioeconomic Perspective from China

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Research Motivation

- Puzzle: Regional wage disparities persist despite unemployment

$$\Delta w_{ij} = w_j - w_i > 0 \quad \text{but} \quad M_{ij} = 0$$

where:

- Δw_{ij}: wage differential between regions i and j
- M_{ij}: migration flow from i to j

Key Question: Why don't the unemployed migrate despite higher wages elsewhere?

Theoretical Framework

$$\max_{M} U = f(C, S, H) \quad \text{subject to:}$$

$$
\begin{aligned}
C &= w(1 - M) - cM - h\tau \\
S &= s_0 + \gamma N(M) \\
H &= h_0 + \beta M - \alpha\tau
\end{aligned}
$$

where:

- C: Consumption
- S: Social capital
- H: Human dignity
- M: Migration decision
- τ: Hukou status
- h: Hukou-related costs

Hukou Constraints

Migration costs under hukou system:

$$TC = c_0 M + h\tau + \delta(1-\tau)N$$

$$\frac{\partial TC}{\partial \tau} = h - \delta N > 0$$
$$\frac{\partial^2 TC}{\partial \tau \partial M} = \gamma\delta > 0$$

Key implications:

- Hukou status increases direct costs
- Network effects partially offset costs
- Cost increases with migration distance

Network Effects Model

Social network utility function:

$$V(N, M) = \alpha \ln(N) + \beta M - \frac{\gamma}{2} M^2$$

Network evolution:

$$\dot{N} = \sigma M - \delta N$$

Steady state condition:

$$N^* = \frac{\sigma M}{\delta}$$

Optimal migration rate:

$$M^* = \frac{\beta + \alpha\sigma/\delta}{\gamma}$$

Dynamic Optimization

Hamilton-Jacobi-Bellman equation:

$$\rho V(N) = \max_{M} \{ U(M, N) + V'(N)[\sigma M - \delta N] \}$$

First-order conditions:

$$\frac{\partial U}{\partial M} + \sigma V'(N) = 0$$

Value function guess:

$$V(N) = A \ln(N) + B$$

Empirical Strategy

Base regression model:

$$M_{it} = \alpha + \beta U_{it} + \gamma X_{it} + \delta H_{it} + \eta_i + \epsilon_{it}$$

Instrumental variables approach:

$$U_{it} = \pi_0 + \pi_1 Z_{it} + \nu_{it}$$
$$M_{it} = \beta \hat{U}_{it} + \gamma X_{it} + \epsilon_{it}$$

where Z_{it} represents historical hukou policy variations

Heterogeneous Effects

Treatment effect model:

$$Y_i = \begin{cases} Y_{1i} = X_i\beta_1 + \epsilon_{1i} & \text{if } M_i = 1 \\ Y_{0i} = X_i\beta_0 + \epsilon_{0i} & \text{if } M_i = 0 \end{cases}$$

Selection equation:

$$M_i^* = Z_i\gamma + u_i, \quad M_i = 1[M_i^* > 0]$$

Average treatment effect:

$$ATE = E[Y_{1i} - Y_{0i}|X_i]$$

Welfare Analysis

Social welfare function:

$$W = \int_0^1 \omega(i) U_i(C_i, S_i, H_i) di$$

Subject to resource constraint:

$$\int_0^1 C_i di \leq F(K, L, M)$$

First-best condition:

$$\frac{\partial U_i / \partial C_i}{\partial U_i / \partial S_i} = \frac{F_M}{F_L}$$

Policy Design

Optimal hukou reform path:

$$\min_{\tau(t)} \int_0^T e^{-rt}[L(\tau, \dot{\tau}) + \phi(M(\tau))]dt$$

Subject to:

$$\begin{aligned} \dot{N} &= \sigma M - \delta N \\ \dot{K} &= sF(K, L, M) - \delta K \\ \tau(0) = \tau_0, &\quad \tau(T) \text{ free} \end{aligned}$$

Simulation Results

Migration probability under different hukou costs:

$$P(M = 1) = \Phi(\beta_0 + \beta_1 w + \beta_2 h + \beta_3 N)$$

Equilibrium outcomes:

$$\begin{aligned} M^* &= f(w^*, h^*, N^*) \\ w^* &= MPL(K^*, L^*) \\ N^* &= g(M^*, \delta) \end{aligned}$$

Policy Implications

- Optimal reform speed:

$$\frac{d\tau}{dt} = -\lambda(\tau - \tau^*)$$

where:

$$\tau^* = \arg\max\{W(\tau) - C(\tau)\}$$

- Key recommendations:
  - Gradual hukou relaxation
  - Network-based targeting
  - Social welfare consideration

Future Research

- Dynamic general equilibrium effects

$$\begin{cases} \dot{K} = sY - \delta K \\ \dot{L} = n(w)L + M(h, N) \\ \dot{N} = \sigma M - \delta N \end{cases}$$

- Spatial equilibrium with heterogeneous agents
- Optimal policy with learning

Conclusions

Main theoretical predictions:

$$\frac{\partial M}{\partial h} < 0 \qquad \text{(hukou costs)}$$
$$\frac{\partial M}{\partial N} > 0 \qquad \text{(network effects)}$$
$$\frac{\partial^2 M}{\partial h \partial N} < 0 \qquad \text{(interaction)}$$

Key findings:

- Non-economic factors crucial
- Network effects significant
- Gradual reform optimal

Contact Information

Thank You For Your Attention!

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Questions & Comments Welcome