Summary:
Minimum Wages and Spatial Equilibrium

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Joan Monras

`https://github.com/s-saisw/readingSummary`

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1 Model

- There are two regions: Region 1 and Region 2.
- Each region has a population of P_i, where $i \in \{1, 2\}$ and $P_1 + P_2 = 1$
- Assumptions
  - Amenity levels are equal across regions.
  - Product demands are not necessarily local.
  - Home market effects (?)
  - There is no congestion except from the one coming from the labor market.

1.1 Labor demand

Firm maximizes

$$\max_{K_i, L_i} AF(K_i, L_i) - r_i K_i - w_i L_i \tag{1}$$

Therefore,

$$AF_l(\bar{K}_i, L_i) = w_i. \tag{2}$$

It follows that

$$\frac{\partial w_i}{\partial L_i} = \frac{A \partial F_l}{\partial L_i} < 0. \tag{3}$$

When people move into one region, they exert downward pressure on wage.

1.2 Mobility decision

Indirect utility is given by

$$V_i = u_i B_i^\rho + (1 - u_i)(1 - \tau_i)^\rho w_i^\rho, \tag{4}$$

where
u : probability of unemployment
B : unemployment benefits
τ : tax rate
w : wage
ρ : risk aversion (when $\rho = 1$, workers are risk neutral)

1.3 Equilibrium

Workers are indifferent between living in Region 1 or Region 2. That is

$$V_1 = V_2.$$

1.4 Government Budget Constraint

When unemployment benefits are locally funded,

$$(P_i - L_i)B_i = \tau_i w_i L_i. \tag{5}$$

When unemployment benefits are nationally funded,

$$(P_1 - L_1)B_1 + (P_2 - L_2)B_2 = \tau_1 w_1 L_1 + \tau_2 w_2 L_2. \tag{6}$$

1.5 Equilibrium without Minimum Wages

There is no unemployment or tax in both regions. Then for any i, $V_i = w_i^\rho$. Therefore, at equilibrium,

$$\begin{aligned} w_1 =& w_2 \\ F_l(\bar{K}_1, L_1^{FME}) =& F_l(\bar{K}_2, L_2^{FME}) \end{aligned}$$

1.6 Equilibrium with Minimum Wages

Introduce minimum wage to Region 1. In Region 2, there is still no unemployment.

1.6.1 Locally Funded Employment Benefits

At equilibrium,

$$u_1 B_1^\rho + (1 - u_1)(1 - \tau_1)^\rho \underline{w}_1^\rho = w_2^\rho.$$

By government budget constraint, $B_1 = \frac{\tau_1 w_1 L_1}{P_1 - L_1}$ and $u_1 = \frac{P_1 - L_1}{P_1}$. Then,

$$\underline{w}_1^\rho [u_1^{1-\rho}(1 - u_1)^\rho \tau_1^\rho + (1 - u_1)(1 - \tau_1)^\rho] = w_2^\rho. \tag{7}$$

This means expected utility is the minimum wage weighted by the relative employment loss.

Proposition 1: When unemployment benefits are financed locally, there is a threshold value of the labor demand elasticity (ϵ_1) above which Region 1 loses population when minimum wages increase ($\partial P_1 / \partial \underline{w}_1 < 0$).

Intuition: When ϵ_1 is small, employment loss is small and people move into Region 1. On the other hand, when ϵ_1 is large, employment effects do not compensate for higher wage.

1.6.2 Nationally Funded Employment Benefits

Unlike the previous case, now workers in Region 2 also pay for unemployment in Region 1 through tax transfers. At equilibrium,

$$u_1 B_1^\rho + (1 - u_1)(1 - \tau_1)^\rho \underline{w}_1^\rho = (1 - \tau)^\rho w_2^\rho. \tag{8}$$

Proposition 2: When unemployment benefits are financed nationally, Region 1 may gain population if unemployment benefits are sufficiently high, irrespective of the local labor

demand elasticity. In general, however, Region 1 gains or loses population depending on the local labor demand elasticity. That is, there is a threshold value of the labor demand elasticity above which Region 1 loses population when minimum wages increase.

Intuition: When unemployment benefits are not zero, there is a transfer from Region 2 to Region 1. If this is high enough, Region 1 can become more attractive. On the other hand, when there is no unemployment benefits, (8) reduces to (7).

2 Empirical Evidence

- Data: CPS 1962–2013
- Sample restriction: High-school graduates
- Empirical strategy: event study design
- Independent variables: in-migration, out-migration, low-skilled in-migration rate relative to high-skilled in-migration rate, low-skilled out-migration rate relative to high-skilled out-migration rate