Mobility of workers, regional disparities, and immigration policy

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Immigration and imperfect mobility

The standard framework in the literature on immigration: one integrated labor market - perfect mobility of workers.

- Workhorse model: one-region economy with 2 complementary factors (Borjas, 1995)
- More complex models: more factors (Ottaviano Peri, 2008, 2012); different tasks (Peri Sparber, 2009), but *still one regional market*.
- Empirical studies: the factor proportion approach sees immigration as a shock to factor inputs at the global (country) level.

$\rightarrow$ Most of the literature adopts a one-region approach.

Why (imperfect) mobility matters

- Host countries are fragmented economies: regional wage disparities persist, i.e. workers are not perfectly mobile
- Foreign workers take this into account, when choosing where to settle or re-settle

  → modifies the impact of immigration on **wages, welfare** and **immigration policy**.

- Differences in workers' mobility across host countries: e.g. US workers are more mobile than EU workers.

  → workers' mobility smoothes regional cycles more in the US (Blachard and Katz, 1992; Decressin and Fatas 1995).

Objectives of this paper

Address 3 questions:

- Is the impact of immigration different in a country with low mobility, high fragmentation?
- Do natives benefit more, or less, from immigration then?
- Do they vote for more or less immigration?

This paper's approach

Build a 2-region, 2-factor model of the host economy with imperfect mobility of workers between regions
$\rightarrow$ Idiosyncratic costs of moving across regions

Focus on **unskilled migration**: the contentious issue in host countries.

- Immigration impact on natives' welfare and wages: how does it vary with natives/foreigners' mobility?
- Political equilibrium: consider **a quota on entries**. How does it depend on mobility / on regional disparities
    - *in a referendum*
    - *in a process with political support groups*

Main results

- Foreign workers' mobility **increases the net Welfare gain** to natives
  - the gain accrues to skilled workers (the complementary factor). Unskilled labor loses more.
  - so mobility increases the polarization of immigration impacts.
- In a referendum, the admissible quota $\hat{\mathtt{I}}$ increases with immigrants' mobility

  $\rightarrow$ voters in the less attractive region have more weight
- It is reversed if policy is shaped by support groups bidding for influence.

Literature

- Theo. studies on labor market adjustment to immigration: through wages (Borjas, 2003), employment (d'Amuri et al., 2010), tasks (Peri and Sparber, 2009): all consider **an integrated labor market**.

  Empirical studies: endogeneity of immigrants' location choices well identified since Altonji and Card, 1989. But the "factor proportions approach" ignores frictions across local markets (Borjas and Katz 2007, Ottaviano and Peri 2012).
- Political economy of immigration policy: building on a Grossman and Helpman (1994) framework , as in Facchini and Willmann (2005).

Literature

- Immigration policy in a median voter framework: as in Benhabib (1996), but focusing on a quota, not on selection.
- How does a referendum work in a multi-region country? $\rightarrow$ impact of polarization on the policy: regions most impacted by a policy have less influence on the decision.

  Related to Meltzer and Richard (1981)'s result on inequality and government spending.

The model

- 2 regions, A and B
- 2 factors: unskilled and skilled labor - producing one good (price 1).

In each region i, production function $y_i = \theta_i f(\bar{h}_i)$, $\bar{h}_i = H_i/(N_i + I_i)$.
Standard conditions on f: $f'(\bar{h}_i) > 0, f''(\bar{h}_i) < 0$.

θ_i: total factor productivity.

Regional gap: assume $\theta_A = 1 + \epsilon$, $\theta_B = 1 - \epsilon$

- Linear utility.

Human capital distribution

- Native workers differ by their human capital (or skill) level h.
- Native population N initially split equally across regions. Same distribution $G(h)$ in both populations.
- Human capital stock in each region: $H = \int_h h.dG(h)$

Native with human capital h in region i earns an income:
$R_i(h) = w_i + h.r_i$

Immigration policy

The government can choose to restrict inflows of foreign workers to a level $\mathtt{I}$.

Restrictions have a per-capita cost: $c(\mathtt{I}_{max} - \mathtt{I})$, shared equally among natives.

- $c' > 0$, $c'' > 0$
- $c'(\mathtt{I}_{max})$ "very high": blocking entries to 0 is prohibitively costly.
- depends on country-level immigration $\mathtt{I}$.

Quota chosen by natives. Immigrants do not vote.

Location choices: a Hotelling type model for imperfect mobility

Workers have *varying preferences for living in A or B* (family links, networks, specific information about jobs...)

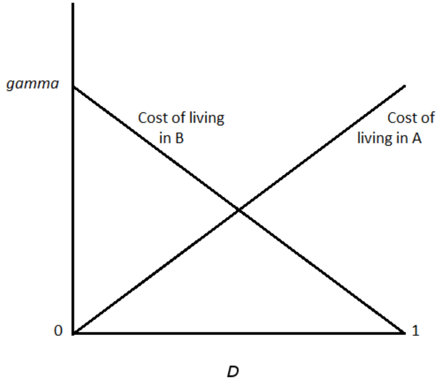
Each individual draws D, uniform on $[0, 1]$: represents the **relative preference for region A**.

Settlement costs:
in A: γD **in B:** $\gamma(1 - D)$

Worker i's utility:
in A: $u_i = w_A - \gamma D_i$ **in B:** $u_i = w_B - \gamma(1 - D_i)$

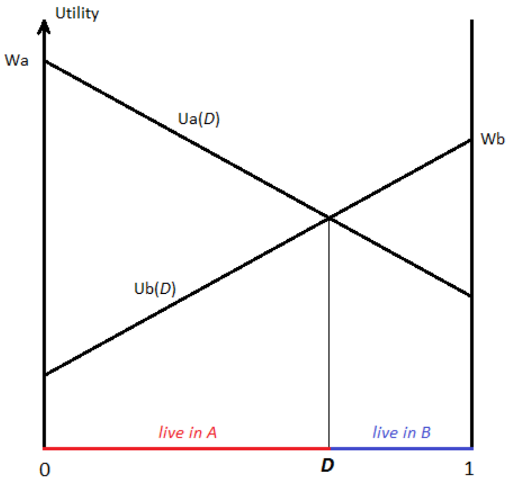
γ: an inverse measure of workers' *spatial mobility*.

Location choices



Cost of settling in A / in B

Location choices



Location choices: case with $W_A > W_B$

$$u_A(D) = w_A - \gamma D \qquad u_B(D) = w_B - \gamma(1 - D)$$

Spatial equilibrium

First case: natives are not mobile (equally split across both regions).

Threshold value D: foreign worker indifferent between settling in either region:

$$w_A - \gamma.D = w_B - \gamma(1 - D)$$

Wage levels are given by:

$$\begin{aligned} w_A &= (1+\epsilon).\big(w_N - 2\mu i(D - 1/2)\big) \\ w_B &= (1-\epsilon).\big(w_N + 2\mu i(D - 1/2)\big) \end{aligned}$$

w_N: benchmark wage level (for $\theta_A = \theta_B = 1$).
μ: wage/labor elasticity
i immigration ratio, $i = \frac{\mathtt{I}}{N+\mathtt{I}}$

Spatial equilibrium

Solving yields the wage gap and mobility rate at equilibrium:

$$D = 1/2 + \frac{\epsilon w_N}{\gamma + \mu w_N i}$$

$$\Delta w = \frac{2\epsilon w_N}{1 + \mu \frac{w_N}{\gamma} i}$$

- Polarization of foreign-born workers increases with the productivity differential ϵ, the spatial flexibility of immigrants $1/\gamma$, decreases with the wage elasticity μ.
- The wage gap is higher when immigrants are less flexible.

Welfare impact of mobility

Native welfare in each region:

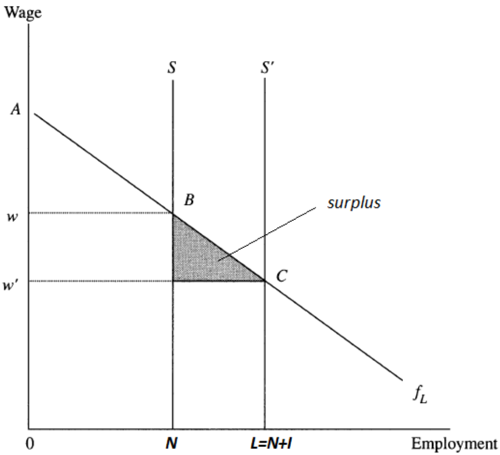
$$W_N^A = \bar{W} + (1+\epsilon)\mu \frac{w_N}{N + \mathtt{I}} \left[(D - 1/2).\mathtt{I}\right]^2$$
$$W_N^B = \bar{W} - (1-\epsilon)\mu \frac{w_N}{N + \mathtt{I}} \left[(D - 1/2).\mathtt{I}\right]^2$$

Immigration yields a surplus to natives, quadratic in the number of new workers entering the market (Borjas, 1995).

Total native welfare:

$$W_N = 2\bar{W} + 2\epsilon\mu \frac{w_N}{N + \mathtt{I}} \left[(D - 1/2).\mathtt{I}\right]^2$$

$\Rightarrow$ W_N is increasing in $D - 1/2$, the foreigners' polarization: there is a *mobility surplus*.



Immigration surplus

Welfare impact of mobility

Two effects behind this surplus:

- *efficiency:* higher mobility $\Rightarrow$ foreign workers go to the high-productivity region A - increases total GDP and natives' share.
- *surplus sharing:* the welfare gain in each region is quadratic in immigration DI ($(1-D)I$). Skilled workers gain more when immigrants concentrate in one region, where the impact on wages is larger.

Note: the mobility surplus is captured by owners of the complementary factor (skilled workers) in the rich region A.

Gain polarization

Average welfare level of native with skill h:

$$W(h) = \bar{w} + h\bar{r} = w_N + hr_N + \underbrace{\frac{\mu\epsilon^2}{\gamma/w_N + \mu i}\left(\frac{h}{\bar{h}} - 1\right)i}_{mobility\ \ gain/loss} - c(\mathtt{I}_{max} - \mathtt{I})$$

⇒ *skilled workers gain more from immigration, unskilled workers lose more* when foreign workers are more mobile across regions.

In addition, skilled workers in region A capture more of the gains; unskilled workers in A face larger wage losses.

Immigration policy

First case: **referendum** on $\mathtt{I}$

Each voter with human capital h has a preferred immigration level, solution of:

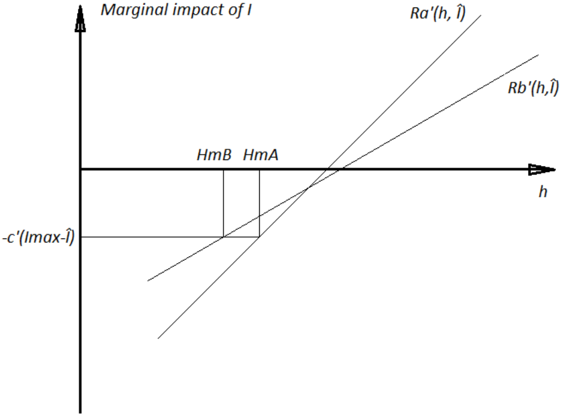
$$\underset{\hat{\mathtt{I}}}{\text{Max}} \quad w_j(\hat{\mathtt{I}}) + h.r_j(\hat{\mathtt{I}}) - c(\mathtt{I}_{max} - \hat{\mathtt{I}})$$

- Skewed distribution of capital $\Rightarrow$ median voter is unskilled ($h_m < \bar{h}$).
- Voters in A are more adverse to immigration (wages more impacted)

$\rightarrow$ 2 **pivotal voters** h_m^A, h_m^B, with $h_m^A > h_m^B$:

$$\frac{\bar{h} - h_m^A}{\bar{h} - h_m^B} = \frac{(1-\epsilon)(1-D)}{(1+\epsilon)D}$$

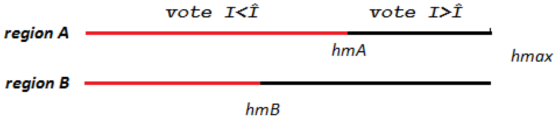
Pivotal voters



$$R'_A(\mathtt{I}) = \frac{\partial w_A}{\partial \mathtt{I}} + h.\frac{\partial r_A}{\partial \mathtt{I}} \qquad R'_B(\mathtt{I}) = \frac{\partial w_B}{\partial \mathtt{I}} + h.\frac{\partial r_B}{\partial \mathtt{I}}$$

Pivotal voters

Coalitions of voters:



- a majority in A + a minority in B wanting **less** Immig.
- a minority in A + a majority in B wanting **more** Immig.

Impact of mobility

With a more mobile foreign workforce: polarization of the wage effects

- unskilled workers in A become more adverse, in B more open to $\mathtt{I}$.
- overall impact: $\frac{\partial \hat{\mathtt{I}}}{\partial \gamma} < 0$, $\frac{\partial \hat{\mathtt{I}}}{\partial \epsilon} > 0$: quota $\hat{\mathtt{I}}$ **increases with mobility, regional gap.**

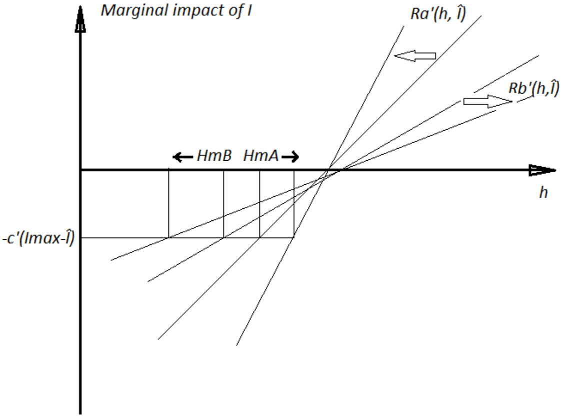
Conditions:

$$\frac{G'(h_m^B)}{G'(h_m^A)} > \frac{(1-\epsilon)(1-D)^2}{(1+\epsilon)D^2}$$

$$\frac{G'(h_m^B)}{G'(h_m^A)} > \frac{1-\epsilon}{1+\epsilon}\frac{(1-D)}{D}\frac{1+\frac{\epsilon}{1+\epsilon}}{\frac{D}{1-D}+\frac{\epsilon}{1-\epsilon}}$$

These conditions hold for a log-normal distribution $G(h)$ and small values of ϵ.

Impact of mobility



Displacement of pivotal workers when $\gamma \searrow$ (mobility $\nearrow$)

Impact of mobility

Intuition: polarization of the wage impacts $\Rightarrow$ unskilled workers in rich region A are marginalized: they are too far away from the pivotal voter

$\rightarrow$ *Even if the median voters are unskilled workers, immigrants' mobility increases the quota level, bringing policy closer to skilled workers' optimum*

A referendum leads to a policy in line with natives' global welfare, but contrary to unskilled workers' interests.

The case with lobby groups

Political groups (business and labor) influence immigration policy (Hanson, 2010; Facchini, Mayda and Mishra 2011).

What if interest groups in each region bid for protection from the impacts of immigration on wages?

Take:

- A framework as in "Protection for Sale" (Grossman and Helpman, 1994)
- to keep it simple: assume only unskilled labor is organized in political groups

  Observed restrictions consistent with unskilled labor having more weight in the policy choice

The political game

Each group in region $i = A, B$ proposes a contribution schedule to the government so as to maximize welfare net of contributions:

$$\underset{\mathtt{I}}{\text{Max}}\, W_i - C_i(\mathtt{I}) \quad \Rightarrow \quad C_i'(\mathtt{I}) = N_U \frac{\partial w_i(\mathtt{I})}{\partial \mathtt{I}}$$

The government's objective function:

$$\underset{\mathtt{I}}{\text{Max}} \quad a\,[C_A(\mathtt{I}) + C_B(\mathtt{I})]$$

$$+ (N/2).\left[\left(w_A + r_A.\bar{h}_A^N - c(\mathtt{I}_{max} - \mathtt{I})\right) + \left(w_B + r_B.\bar{h}_B^N - c(\mathtt{I}_{max} - \mathtt{I})\right)\right]$$

h_A^N, h_A^N: average human capital level of natives in region A, B

a : relative weight of lobbies' contributions.

Solution of the political game

Solution to the gov't program $\hat{\mathrm{I}}$ is defined by:

$$-\alpha \underbrace{(1+\epsilon)[aN_U - D\hat{\mathrm{I}}]D}_{mg.\ impact\ on\ w_A} \quad -\alpha \underbrace{(1-\epsilon)\left[aN_U - (1-D)\hat{\mathrm{I}}\right](1-D)}_{mg.\ impact\ on\ w_B}$$

$$= - \underbrace{(aN_U + N)c'(\mathrm{I}_{max} - \hat{\mathrm{I}})}_{mg.\ cost\ of\ restrictions}$$

One obtains the result:

The equilibrium quota level $\hat{I}$ decreases **with workers' mobility** $1/\gamma$ *and* **with the inter-regional productivity gap ϵ.**

Solution of the political game

Intuition: Immigration $\mathtt{I}$ has a bigger impact on wages in region A. Thus A's contribution schedule is steeper.

When mobility increases: $\frac{\partial C_A(\mathtt{I})}{\partial \mathtt{I}} \uparrow$, $\frac{\partial C_B(\mathtt{I})}{\partial \mathtt{I}} \downarrow$ (in abs. value) ; **the effect on $C_A(\mathtt{I})$ is larger.**

i.e. opposition to $\mathtt{I}$ grows more in A than it decreases in B.

This time, polarization gives those most negatively impacted (unskilled workers in A) more influence on policy.

Adding natives' mobility

2 reasons to add natives' mobility to the picture:

- Potential substitution between immigrants and natives mobility (saving mobility costs)
- We would like to compare countries by **relative mobility**, γ_N / γ_I

Note: whether $\gamma_N > \gamma_I$ depends on context (Schuendeln 2007, Boman 2011).

Changes in the modeling

Take a simple distribution of factor ownership among natives:

- N_U unskilled workers
- N_S skilled workers

Like immigrants, natives draw a value of D, uniformly distributed on $[0, 1]$.

2 threshold values, D_U and D_S, defined by:

$$\begin{aligned} w_U^A - \gamma_N D_U &= w_U^B - \gamma_N (1 - D_U) \\ w_S^A - \gamma_N D_S &= w_S^B - \gamma_N (1 - D_S) \end{aligned}$$

Internal migration equilibrium

Equilibrium is solution of:

$$\begin{aligned} \gamma_N(2D_S - 1) &= \Delta w_S \\ \gamma_N(2D_U - 1) &= \Delta w_U \\ \gamma_I(2D_I - 1) &= \Delta w_U \end{aligned}$$

with labor demand equations:

$$\begin{aligned} \Delta w_U &= 2\epsilon w_U^N + \beta.(2D_S - 1)N_S - \alpha\left[(2D_I - 1)I + (2D_U - 1)N_U\right] \\ \Delta w_S &= 2\epsilon w_S^N + \beta\left[(2D_I - 1)I + (2D_U - 1)N_U\right] - \delta.(2D_S - 1)N_S \end{aligned}$$

α, β, δ second derivatives of production function F:

$$\alpha = -\frac{\partial^2 F}{\partial U^2}, \beta = \frac{\partial^2 F}{\partial U \partial S}, \delta = -\frac{\partial^2 F}{\partial S^2}$$

Internal migration equilibrium

Defining the mobility ratio $m = \frac{\gamma_N}{\gamma_I}$, one shows that:

$$\frac{\partial(\Delta w_U)}{\partial m} < 0$$
$$\frac{\partial(\Delta w_S)}{\partial m} > 0 \frac{\partial D_U}{\partial m} < 0 \tag{1}$$

More mobile immigrants (relatively):

- reduce the unskilled wage gap, and unskilled natives' migration
- increase the skilled wage gap.

Welfare impact of mobility

One more term in natives' welfare: mobility costs.

$$W_U = \underbrace{D_U w_A + (1 - D_U) w_B}_{income} - \underbrace{\frac{\gamma_N}{2} \left(D_U^2 + (1 - D_U)^2 \right)}_{mobility\ \ costs} \qquad (2)$$

But the impact of immigrants' mobility on W_U remains negative, as before:

- an increases in m decreases average unskilled wages
- but reduces mobility costs incurred by them.

The net welfare effect is **negative**.

Welfare impact: skilled workers

Symmetrically: immigrants' mobility

- **increases** average skilled wages
- **increases** mobility costs for skilled workers.

The net welfare effect is **positive**.

Political equilibrium

- Consider the case with political influence groups
- Assume native workers are represented by the group of their region of residence

Results from the first part are valid, i.e.:

- an increase in relative mobility of immigrants m reduces the chosen quota level $\hat{I}$
- an increase in regional gap ϵ has the same effect.

Summary of results

How is the immigration impact on wages, welfare, and immigration policy modified by **the regional fragmentation** of the host economy?

- the wage impact of immigration is **more polarized** in a fragmented economy
- the net welfare impact is positive, benefiting skilled workers but hurting substitutable (unskilled) workers
- when workers' groups shape immigration policy, restrictions will increase with fragmentation.