

Immigration, occupational choice and public employment

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Outline

1. Introduction/Motivation
2. Model
3. Results
4. Illustration
5. Discussion
6. Conclusion

Introduction

Intro: Motivation

!!! *Immigration stands for low-skilled immigration.*

Observations

1. Natives adapt to immigration: change region, occupation, task...
→ e.g. *locate* to jobs less exposed to competition with immigrants
(*public sector: specific job requirements*)
2. Immigrants have fiscal effects
→ contribute to tax revenues + demand for public goods (civil servants)

Research question:

- What is the impact of immigration on wages & welfare when
→ *natives can adapt occupational choices* (**Intersectoral mobility**)
→ *natives have public job opportunities* (**public employment**)

⇒ **Theoretical** analysis

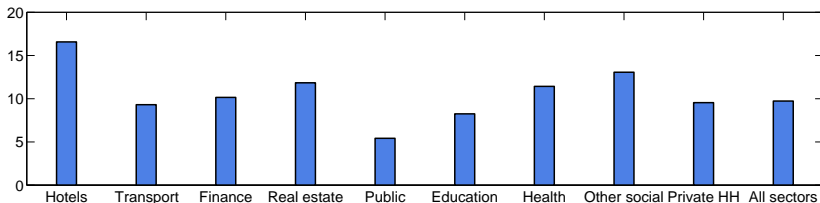
Intro: Evidence

1. Empirical evidence: *intersectoral mobility*

Natives can adapt edu choices and end up in occup. with less immi.

- Evidence of intersectoral mobility (Ortega & Verdugo 11)
- Immi affects natives edu choices
(e.g. higher proba to complete high-school, see Hunt 12)
- Natives and immi work in diff. occupations
(e.g. natives → communication-intensive jobs, see Peri & Sparber 09 AEJ)

Percentage of foreign-born employment by sector (total OECD)



Source: OECD (2008).

Intro: Evidence

2. *Public employment*

- non-negligible share of employment in many countries
- Few foreign-borns in public sector
- Immigration → taxes, benefits, demand for public services (labor)

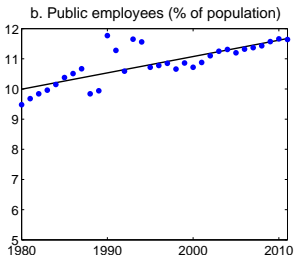
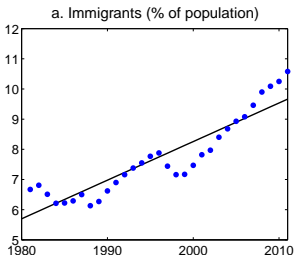
▶ Fig

1. 1994-2010 in UK (Dustmann & Frattini 11):

- (i) growth in empl due mainly to immi
 - (ii) $gr\ pu\ empl > gr\ priv\ empl > 0$
- } but few new public jobs for immi (<30%)

2. Spiale JPuE 11: immi → ↓ public edu spending per pupil

Immigrants and public employees in EU-15 countries



Intro: Related literature

Standard textbook model: extended in many directions

→ *but few models with intersectoral mobility and/or public employment*

Immigration & Intersectoral mobility (*edu. choices*): few papers

- Chiswick (1989 JLE): partial equilibrium
- Eberhard (2012): calibrated general equilibrium
→ *but no public sector, ignore related fiscal and employment effects*
- Dottori, Estevan & Shen (2013 JET) political economy model
→ *no public employment, endogenous fertility model*

Immigration (labor flows) & Public employment: one paper

- Pierrard (2008 RSUE): search & matching, cross-border workers
→ *no taxes / public goods*

Intro: Main Findings

Methodology

- This study presents occupational choice model with 3 sectors: low-skilled (LS), high-skilled (HS) and public (PU) sector
- Contribution: *Natives can respond to immigration by*
 1. their educational decisions (*intersectoral mobility*)
 2. engaging in public sector (*public employment*)

Results:

1. The inclusion of a public sector is crucial to our results.
In the absence of a public sector, immigration unambiguously reduces wages and welfare of all workers.
2. Immigration may augment wages of civil servants and high-skilled workers when immi. workforce not too large and access to public jobs not too easy.
3. Immigration may be welfare-improving for all workers.

Note *The mechanism underlying these results does not require complementarity between natives and immigrants.*

Model

Model: Main Features

Model class:

- occupational choice model (e.g. Docquier and Rapoport, 2012 JEL)
- static approach (\approx steady-state approach)

Main structure

- 3 agents: Individuals, Firms, Government
- 3-sector model: low-skilled (LS), high-skilled (HS) and public (PU) sector.

Individuals

- Natives differ in their **born ability** to learn (difficulty to learn)
⇒ can work in either sector, depending on their edu. decisions
- Immigrant workers work only in the LS sector

Public sector

- collects taxes, offers medium-skilled jobs and provides public services
(*Individuals derive utility from public services*)

Model: Individuals (1)

Population

- Size of native population: $N = 1$ (*normalized*)
- Size of total population: $1 + m$,
where m is the number of low-skilled immigrants ($m < 1$)

Utility

- The utility function of an individual of type γ is given by

$$U_i(\gamma) = w_i - \gamma\theta_i - t + \left(G - \frac{G^2}{2}\right) \quad (1)$$

- i is sector type: $i = h, l, p$ (high-skilled, low-skilled, public)
- t is lump-sum tax, G are public services
- γ is individual's born ability (high γ = low ability).
→ *Individuals distributed according to γ ($\in [0, 1]$)*
- θ_i is the uniform cost to get a job in sector i
- $\gamma\theta_i$ is total monetary cost to enter occupation in sector i

Model: Individuals (2)

Education costs: $\theta_h = c$, $\theta_p = e$, $\theta_l = 0$

Assumption 1: $c > e$ (> 0)

(\rightarrow implies that $w_h^* > w_p^* > w_l^*$, in accordance with evidence)

(\rightarrow wage-skill profile in public is flatter than in private sector)

Sectoral labor supplies

- Individuals compare U_h, U_p, U_l
 - \rightarrow solution gives threshold levels of γ
 - \rightarrow and natives labor supplies in each sector (N_i^s)
- Then total labor supply in each sector equals:

$$L_h^s = N_h^s, \quad L_p^s = N_p^s \text{ and } L_l^s = N_l^s + m$$

Model: Firms, Government and Equilibrium

Firms

- 2 sectors producing same final good (like in Galor & Zeira 93 JEG)
- DRS (e.g. Facchini & Willmann 05 JIE): $X_j = \alpha_j(L_j - \frac{1}{2}L_j^2)$, $j = h, l$
- Max Profits $\rightarrow L_h^d$ and L_l^d (Sectoral labor demand)

Government

- One civil servant provides 1 unit of public service: $L_p^d = G$
- Policy maker maximizes median voter's utility s.t. budget constraint:
 $w_p G = t(1 + m)$
 \Rightarrow Solution: provision of G ($= L_p^d$)

Equilibrium

$$L_h^s = L_h^d \rightarrow w_h^*$$

$$L_l^s = L_l^d \rightarrow w_l^*$$

$$L_p^s = L_p^d \rightarrow w_p^*$$

To sum up

- w_p^* is function of parameters ($c, e, m...$)
- $N_l^*, N_p^*, N_h^*, w_l^*, w_h^*$ are function of w_p^*

Results

Results: Impact on employment and wages

Without public sector ($G = 0$), immigration ($\uparrow m$) leads to

⇒ decrease in wages and welfare of all workers

(1. $L_I \uparrow \rightarrow w_I \downarrow \Rightarrow$ 2. **crowding-out**: $N_I \downarrow \Rightarrow$ 3. $L_h \uparrow \rightarrow w_h \downarrow$)

With public sector ($G > 0$), effects of immigration are:

Proposition

- $\uparrow m \rightarrow$ always \uparrow tax revenue and demand for $G \rightarrow \uparrow L_p^d$
 - $\uparrow m \rightarrow$ always $\downarrow w_I \rightarrow$ crowding-out: $N_I \downarrow \rightarrow \uparrow L_p^s$
1. When the crowding-out of native workers is **substantial**,
(i.e. PU sector accessibility is easy and/or immi population is large),
then $\downarrow w_p \rightarrow \uparrow N_h \rightarrow \downarrow w_h$
 2. When the crowding-out of native workers is **moderate**,
(i.e. PU sector accessibility is difficult and immi pop is moderate),
then $\uparrow w_p \rightarrow \downarrow N_h \rightarrow \uparrow w_h$

Results: Impact on welfare

Individuals' utility can be written: $U_i(\gamma) = [w_i - \theta_i\gamma] + \Omega$,

where net benefit of public goods $\Omega \equiv \left(G - \frac{G^2}{2}\right) - t$.

$$\text{Effect of immigration: } \frac{\partial U_i}{\partial m} = \frac{\partial w_i}{\partial m} + \frac{\partial \Omega}{\partial m}. \quad (2)$$

Proposition

Immigration always increases the net benefit of public goods ($\frac{\partial \Omega}{\partial m} > 0$).

Proposition

Immigration affects welfare of different types of natives as follows:

- $U_p \uparrow$ when $w_p \uparrow$ i.e. moderate crowding-out ($e > \hat{e}$ and $m < \hat{m}$),
 $U_p \downarrow$ when $w_p \downarrow\downarrow$ i.e. substantial crowding-out ($e < \hat{e}$ or/and $m > \hat{m}$)
- $U_h \uparrow$ when $U_p \uparrow$ or moderately \downarrow .
- $U_l \downarrow$ when $U_p \downarrow$ or moderately \uparrow .

Results: Summary of results

Overview of results: Increased LS immigration ($m \nearrow$) leads to:

Model	Case		L_j^*	w_l	N_j^*	L_p^*	w_p	L_h^*	w_h	U_p	U_l	U_h
$G = 0$			+	-	-	n.a.	n.a.	-	+	n.a.	-	-
$G > 0$	$e < \hat{e}$		+	-	-	+	-	-	+	?	?	?
	$e > \hat{e}$	$m < \hat{m}$	+	-	-	+	+	-	+	+	?	+
		$m > \hat{m}$	+	-	-	+	-	+	-	?	?	?

Numerical analysis

Simulations: Numerical exercises

Calibration for a *typical* OECD destination country:

skill premium: $w_h/w_l = 3$, public employees: $N_p/N = 20\%$,

low-to-high-skilled: $N_l/N_h = 2$, immigrant workforce: $m/N = 10\%$

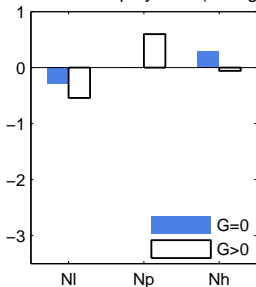
2 types of simulation:

1. Effects of immigration on economy? (when “ $G > 0$ ” and “ $G = 0$ ”)
2. How do results change when access to PU jobs varies?

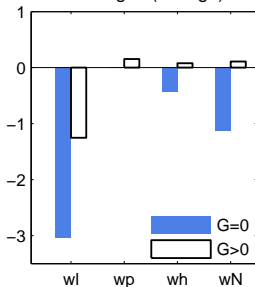
Immigration effects: model with and without PU sector

Effects of immigration on employment, wages and welfare

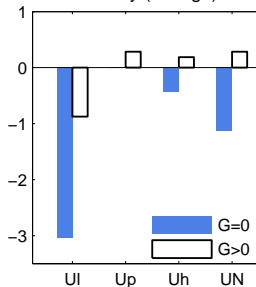
a. Native employment (change)



b. Wages (change)



c. Utility (change)



This calibration exercise confirms that:

Result 1: Without public sector ($G = 0$), immi \downarrow wages and welfare of all workers.

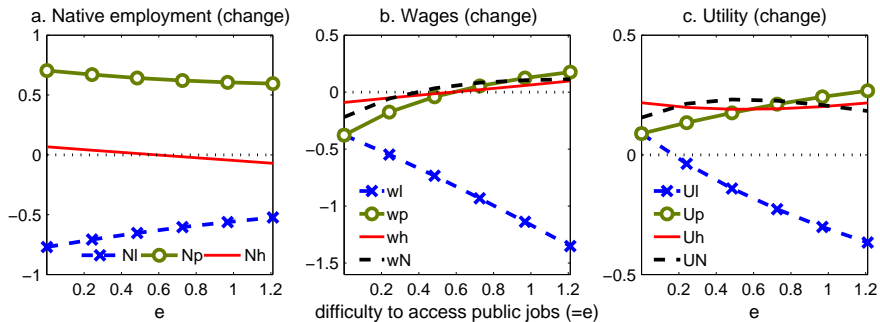
Result 2: With public sector ($G > 0$), immi can raise w_p and w_h

Result 3: With public sector ($G > 0$), immi can be welfare-improving (on avg)

Note: Low-skilled natives and immigrants are not complements

Immigration effects: changes in access to public jobs

Access to public jobs (e) becomes more difficult



This calibration exercise confirms that:

there is a threshold value for e above which $w_p \uparrow$

Further discussion

Discussion

What if following assumptions are relaxed:

- Intersectoral mobility
- Public wages are flexible
- No HS migrant workers
- No foreign-born workers in the public sector
 - *consider that immigrants are distributed according to ability*
 - *threshold for m lower and for e higher*
- Perfect substitution between LS natives and immigrants
 - *consider CES combination of N_l and m (\tilde{L}_l) with elast. of sub. $\sigma > 0$.*

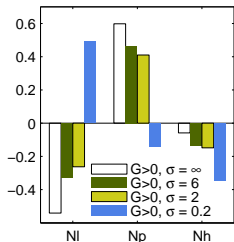
We then have $w_l = a(1 - \tilde{L}_l)^{\frac{\sigma}{\sigma-1}} \left(\frac{\tilde{L}_l}{N_l}\right)^{\frac{1}{\sigma}}$.

$$\frac{\partial w_l}{\partial m} \begin{cases} < 0, & \text{if } \sigma > \bar{\sigma} \left(\equiv \frac{\tilde{L}_l}{1-\tilde{L}_l}\right) \\ = 0, & \text{if } \sigma = \bar{\sigma} \\ > 0, & \text{if } \sigma < \bar{\sigma} \end{cases}$$

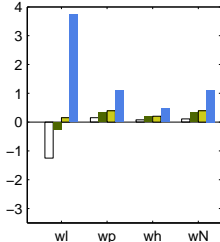
Different complementarity degrees between LS natives and immigrants

with public sector ($G > 0$)

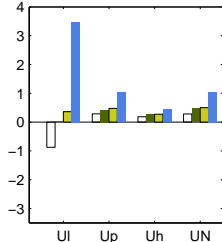
a. Native employment (change)



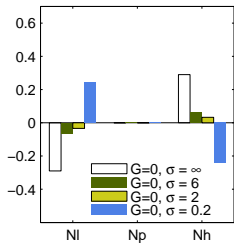
b. Wages (change)



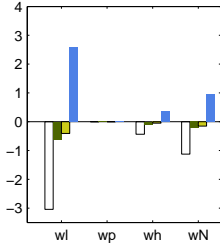
c. Utility (change)

without public sector ($G = 0$)

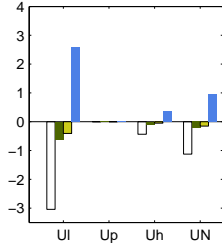
d. Native employment (change)



e. Wages (change)



f. Utility (change)



Conclusion

Conclusion: Findings

Contribution: *3-sector model with intersectoral mobility & public employment.*

Findings:

1. The inclusion of a public sector is crucial to our results.
In the absence of PU sector, immigration unambiguously reduces wages and welfare of workers in every sector.
2. Immigration may augment wages of civil servants and high-skilled workers when immi. workforce not too large and access to PU sector not too easy.
3. Immigration may be welfare-improving for all workers.

Remark:

- ⇒ The mechanism underlying these results does not require complementarity between natives and immigrants.
- negative impact of immigration: (*Borjas et al. 11...*)
 - positive impact of immigration: (*Ottaviano & Peri 2012 JEEA...*)

Thank you !

