Immigration and Worker-Firm Matching

Gianluca Orefice* and Giovanni Peri**

*University Paris-Dauphine, PSL, **University of California, Davis and NBER

Immigration and Firm Productivity: a new channel

Immigration and Productivity: three explored and one new channel.

1. *Knowledge diffusion*: Immigrants bring new skills at destination that may spur knowledge (Bahar and Rapoport 2018) or innovation (Hunt 2010).
2. *Comparative advantage*: Improved task allocation between immigrant and native workers within/across firms (Peri and Sparber 2009).
3. *Technology adoption*: Thanks to *skilled* immigrants (Lewis 2013).
4. *New channel*: Immigration as an injection of workers with **heterogeneous** and **unknown** abilities $\Rightarrow$ screening becomes crucial for firms $\Rightarrow$ *Positive Assortative Matching* (PAM, the right worker for the right task).

What do we do

1. Test whether a positive shock in the supply of migrant workers improves the strength of worker-firm PAM across French local labor markets.
2. Test whether migration shocks affect the reallocation of workers *across* firms *within* a local labor market - channel for PAM.

Theoretical Mechanism: The idea

- Immigrants increase the *variance* of workers' ability (types) in the local labor market and give to firms the incentive to invest in screening to select the optimal worker.
- With a production function supermodular in the quality of firms and workers, improved screening effort will result in Positive Assortative Matching.
- A similar mechanism is illustrated for the effect of trade liberalization on the intensity of PAM by Helpman et al. (2010) and Davidson et al. (2008).

Empirical Strategy: Definition of types

Worker Type

- Baseline definition: Average lifetime wage of worker i ($\overline{w}_i$) purged by worker's experience. Intended as the "*revealed worker type*".
- Rob Check: Worker's fixed effects from a mincerian wage regression à la Abowd, Kramarz and Margolis (1999).

Firm Type

- Baseline definition: Value Added per Worker (VAPW) as an intuitive measure of firm type.
- Rob Checks: (i) firm fixed effects from AKM regression, (ii) co-worker types (i.e. co-worker average lifetime wage), and (iii) TFP.

Empirical Strategy: Baseline specification

$$y_{d,t} = \beta_1 M\,Sh_{d,t} + \beta_2 X_{d,t} + \theta_d + \theta_{rt} + \epsilon_{d,t}$$

where:

- Subscripts d and t stand respectively for district and year.
- The dependent variable $y_{d,t}$ is in turn:
  - **Rank correlation** between firm and worker type (Dauth et al. 2018).
  - **Strength of PAM**= $(\pi_{HH} + \pi_{LL}) - (\pi_{HL} + \pi_{LH})$, where π_{ij} is the share of workers of type i employed in firm with productivity j (Davidson et al. 2012).
- The main explanatory variable is the share of immigrants (M) in each district and year.
- θ_d and θ_{rt} are district and region-by-year fixed effects.
- $X_{d,t}$: (i) population, (ii) firm concentration, (iii) share of skilled workers.

Empirical Strategy: Instrumental Variable

Bartik type of instrument where the initial share of origin-specific migrants in the district is augmented by aggregate immigrant inflows at t:

$$\widehat{M}_{d,t} = \sum_o \frac{M_{d,o,\mathbf{1982}}}{M_{o,\mathbf{1982}}} * \widehat{M}_{o,t}$$

We use the predicted inflow of immigrants ($\widehat{M}_{o,t}$) based on supply-driven component of migration toward *similar* destination countries other than France (EU15). See Autor et al. (2013) $\Rightarrow$ Validity of IV.

Data

- **Matched Employer-Employee Data** (DADS)
  - DADS *Panel*: info on employed workers (all workers born in the month of October) $\Rightarrow$ worker ID to recover the worker type.
  - DADS *Poste*: info on *all* employed workers used to compute the population of immigrants in each French district.
- **Firm Level Data** (Ficus/Fare)
  - Information on value added and employment $\Rightarrow$ Value added per worker.
- **French Census and LFS**
  - Distribution of immigrants in 1982 by origin (shift-share IV).
- 92 French districts (no overseas); period 1995-2005.

Baseline 2SLS results

Dep Var:	*Rank Correlation*		*Strength PAM*		*Firm Profit*
	(1)	(2)	(3)	(4)	(5)
Immi Share	2.423**	5.105***	3.361***	4.718***	16.613**
	(1.191)	(1.722)	(1.184)	(1.619)	(7.560)
$X_{d,t}$	yes	yes	yes	yes	yes
Worker Type	Lifetime wage	AKM	Lifetime wage	AKM	
District FE	yes	yes	yes	yes	yes
Region-Year FE	yes	yes	yes	yes	yes
Observations	1,012	1,012	1,012	1,012	1,003
$\mathbf{1}^{st}$ stage coeff	0.121***	0.121***	0.121***	0.121***	0.122***
F-stat	16.18	16.18	16.18	16.18	15.00

Notes: Robust standard errors in parenthesis. *** $p < \mathbf{0,01}$; ** $p < \mathbf{0,05}$; *$p < \mathbf{0,1}$.

The Mechanism

Migration induces the re-allocation of high type workers from low to high type firms, and of low type workers from high to low type firms.

	# High-type movers	
	low to ***high*** type firm	***high*** to ***low*** type firm
	(1)	(2)
Immi Share	31.126***	18.690
	(12.790)	(11.570)
	# Low-type movers	
	high to ***low*** type firm	***low*** to ***high*** type firm
	(1)	(2)
Immi Share	36.544***	8.036
	(13.635)	(11.564)
Worker Type	Lifetime	
Firm Type	Value Added per Worker	
Observations	1,012	1,012
First stage coeff	0.120***	
F-stat	16.18	
Partial R-squared	0.046	

Notes: Robust standard errors in parenthesis. *** $p < \mathbf{0,01}$; ** $p < \mathbf{0,05}$; *$p < \mathbf{0,1}$.

Conclusion

- Immigration improves the strength of assortative matching in the local labor market: a 1pp increase in the share of migrants implies 3.3 pp increase in the share of net assortative match.
- This effect is bigger in magnitude for districts with a more spread distribution of immigrants' types.
- Migration induces PAM through the reallocation of workers across-firms:
  - High-type workers move from low- to high-type firms.
  - Low-type workers move from high- to low-type firms.

https://sites.google.com/site/oreficegianluca/home gianluca.orefice@cepii.fr