Immigration and Worker-Firm Matching
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Immigration and Firm Productivity: a new channel

- Immigration and Productivity: three explored and one new channel.
- Knowledge diffusion: Immigrants bring new skills at destination that may spur knowledge (Bahar and Rapoport 2018) or innovation (Hunt 2010).
- Comparative advantage: Improved task allocation between immigrant and native workers within/across firms (Peri and Sparber 2009).
- Technology adoption: Thanks to skilled immigrants (Lewis 2013).
- New channel: Immigration as an injection of workers with heterogeneous and unknown abilities ⇒ screening becomes crucial for firms ⇒ 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 \( i \) \( (\bar{w}_i) \) 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) fixed effects from AKM regression, (ii) co-worker types (i.e. co-worker average lifetime wage), and (iii) TFP.

Empirical Strategy: Baseline specification

\[
y_{d,t} = \beta_1 M \cdot Sh_{d,t} + \beta_2 X_{d,t} + \theta_d + \theta_t + \epsilon_{d,t}
\]

where:
1. Subscripts \( d \) and \( t \) stand respectively for district and year.
2. The dependent variable \( y_{d,t} \) is in turn:
   - Rank correlation between firm and worker type (Daugh et al. 2018).
   - Strength of PAM = \( (\pi_{hit} + \pi_{it}) - \pi_{it} \), where \( \pi_{j} \) is the share of workers of type \( j \) 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.
   - \( \theta_d \) and \( \theta_t \) 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 \( t \):

\[
\hat{M}_{d,t} = \sum_{\alpha} \hat{M}_{d,\alpha} * \hat{M}_{\alpha,t}
\]

We use the predicted inflow of immigrants (\( \hat{M}_{d,\alpha} \)) based on supply-driven component of migration toward similar destination countries other than France (EU15). See Autor et al. (2013) ⇒ Validity of IV.

Data

- Matched Employer-Employee Data (DADS)  
  - DADS Panel: info on employed workers (all workers born in the month of October) ⇒ 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 ⇒ 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

<table>
<thead>
<tr>
<th>Dep Var.</th>
<th>Rank Correlation</th>
<th>Strength PAM</th>
<th>Firm Profit</th>
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<tbody>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>Immi Share</td>
<td>2.423***</td>
<td>5.105***</td>
<td>3.361***</td>
</tr>
<tr>
<td>(1.191)</td>
<td>(1.722)</td>
<td>(1.184)</td>
<td>(1.619)</td>
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<tr>
<td>X_{d,t}</td>
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<td>yes</td>
<td>yes</td>
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<tr>
<td>Worker Type</td>
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<td>Lifetime wage</td>
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<td>Distinct FE</td>
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<td>yes</td>
<td>yes</td>
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<tr>
<td>Region-Year FE</td>
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<td>yes</td>
<td>yes</td>
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<tr>
<td>Observations</td>
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<tr>
<td>1st stage coeff</td>
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<td>0.121***</td>
<td>0.121***</td>
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<tr>
<td>F-stat</td>
<td>16.18</td>
<td>16.18</td>
<td>16.18</td>
</tr>
</tbody>
</table>

Notes: Robust standard errors in parenthesis. *** \( p < 0.01 \); ** \( p < 0.05 \); * \( p < 0.1 \).

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  
  - (1) \( \text{Immi Share} \) \( 31.126*** \) (12.790) \( 18.690 \) (11.570)
  - Low to low type firm  
  - (2) \( \text{Immi Share} \) \( 36.544*** \) (13.635) \( 8.036 \) (11.584)

### Low to high type firm

- **High to low** type firm  
  - (1) \( \text{Immi Share} \) \( 36.544*** \) (13.635) \( 8.036 \) (11.584)
  - Low to low type firm  
  - (2) \( \text{Immi Share} \) \( 36.544*** \) (13.635) \( 8.036 \) (11.584)

Notes: Robust standard errors in parenthesis. *** \( p < 0.01 \); ** \( p < 0.05 \); * \( p < 0.1 \).

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.