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Immigrants: Facts and Figures

- 3.1% of the world population is an international migrant
- 10% of European population is an immigrant
- 12% of the OECD-population is an immigrant

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1Immigrant: foreign born or foreign citizenship. Source: UN(2009), OECD(2009)
Immigrants in the Netherlands: non-western
Economic Impact of Immigrants

What is the (longer term) impact of immigrants on the receiving economy?

- **Productivity: externalities in the labor market:**
  - Jacobs’ externalities (+)
  - Increased transaction costs (-)

- **Utility: externalities in the housing market:**
  - Segregation due to neighborhood quality (-?)
  - Differentiated consumption goods (+)
Economic Impacts of Immigrants

- Spatial equilibrium approach as in Roback\(^2\)
- There seems to be an amenity effect of not only the share of immigrants, but also their diversity.\(^3\)
- Ottaviano and Peri \(^4\):
  - positive effect of diversity on average wages and rents
  - homogeneous preferences for diversity
  - loosely related markets

We assume heterogeneous preferences (sorting).

\(^2\) 1982 *JPE*
\(^3\) \(div_{c,t} = 1 - \sum_{i=1}^{M} (E_{i,t})^2\)
\(^4\) 2006 *JEGeo*
Equations 5

First step:

- **Wage equation:**
  \[ \ln(w_{i,t}) = X_{i,t} \phi + \delta_i + \gamma_{k(i,t)} + \tilde{X}\gamma_{k(i,t)} + \beta_{1c(i,t),t} + \epsilon_{i,t} \]  
  (1)

- **Rent equation:**
  \[ \ln(r_{i,t}) = X_{i,t} \phi + \delta_i + H_{h(i,t)} \theta + \beta_{2c(i,t),t} + \epsilon_{i,t} \]  
  (2)

Second step:

- **Labor market area effect (wage residuals):**
  \[ \hat{\beta}_{1c,t} = X_{c,t} \mu + I_{c,t} \gamma + \hat{\beta}_{2c,t} + \theta_t + \epsilon_{c,t} \]  
  (3)

- **Housing market area effect (rent residuals):**
  \[ \hat{\beta}_{2c,t} = X_{c,t} \mu + I_{c,t} \gamma + \hat{\beta}_{1c,t} + \theta_t + \epsilon_{c,t} \]  
  (4)

5Based on Combes, Duranton, and Gobillon (2008). JUE
Data

- Micro panel data of individual workers/house owners in the Netherlands (1999-2008)
- approx. 61,000 individuals
- amenity data: population diversity and proxy for product diversity, restaurants

Just so you have an idea.................

- The Netherlands:
  - 16,039 sq mi area
  - 18.4 % water
  - 1,048/ sq mi density

- Indiana:
  - 36,418 sq mi area
  - 1.5 % water
  - 182/ sq mi density
## Results First Stage: Sorting

<table>
<thead>
<tr>
<th></th>
<th>Wage</th>
<th>Rent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>St.dev.</td>
<td>Corr. with wage</td>
</tr>
<tr>
<td>Individual fixed effect</td>
<td>0.37</td>
<td>0.89</td>
</tr>
<tr>
<td>City-year fixed effect</td>
<td>0.04</td>
<td>−0.07</td>
</tr>
</tbody>
</table>
Results Second Stage: Wage Residuals

- All
  \[ wage_{res} = cons + control + diversity + rent_{res} + D_t \]  
  \[ (0.03) \quad (-0.06^{***)} \]

  \[ wage_{res} = cons + control + diversity + rent_{res} + D_{c,t} \]  
  \[ (0.56^{***}) \quad (-0.08^{*}) \]

- 25 largest cities
  \[ wage_{res} = cons + control + diversity + rent_{res} + D_t \]  
  \[ (-0.09) \quad (-0.003) \]

  \[ wage_{res} = cons + control + diversity + rent_{res} + D_{c,t} \]  
  \[ (0.61) \quad (-0.26^{***}) \]

- Excl. 25 largest cities
  \[ wage_{res} = cons + control + diversity + rent_{res} + D_t \]  
  \[ (0.03) \quad (-0.07^{***}) \]

  \[ wage_{res} = cons + control + diversity + rent_{res} + D_{c,t} \]  
  \[ (0.41^{*}) \quad (-0.07) \]
Results Second Stage: Rent Residuals

- **All**

  \[
  rent_{res} = cons + control + \text{diversity} + wage_{res} + D_t \\
  (-0.31^{***}) (-0.25^{***}) 
  \] (11)

  \[
  rent_{res} = cons + control + \text{diversity} + wage_{res} + D_{c,t} \\
  (-0.22) (-0.1) 
  \] (12)

- **25 largest cities**

  \[
  rent_{res} = cons + control + \text{diversity} + wage_{res} + D_t \\
  (-0.28^{***}) (-0.49) 
  \] (13)

  \[
  rent_{res} = cons + control + \text{diversity} + wage_{res} + D_{c,t} \\
  (-0.50) (-0.49^{***}) 
  \] (14)

- **Excl. 25 largest cities**

  \[
  rent_{res} = cons + control + \text{diversity} + wage_{res} + D_t \\
  (-0.33^{***}) (-0.24^{***}) 
  \] (15)

  \[
  rent_{res} = cons + control + \text{diversity} + wage_{res} + D_{c,t} \\
  (-0.15) (-0.08) 
  \] (16)
Results Second Stage: Rent Residuals

All

\[
\text{rent}_{\text{res}} = \text{diversity} + \text{QoL} + \text{interaction} \\
(1.05^{***}) \quad (0.13^{***}) \quad (-0.21^{***})
\]

\[
\text{rent}_{\text{res}} = \text{diversity} + \text{restaurants} + \text{interaction} \\
(-0.52^{***}) \quad (-0.07^{*}) \quad (0.19^{*})
\]

25 largest cities

\[
\text{rent}_{\text{res}} = \text{diversity} + \text{QoL} + \text{interaction} \\
(2.78^{***}) \quad (0.32^{***}) \quad (-0.63^{***})
\]

\[
\text{rent}_{\text{res}} = \text{diversity} + \text{restaurants} + \text{interaction} \\
(-2.07^{***}) \quad (-0.25^{***}) \quad (1.04^{***})
\]

Excl. 25 largest cities

\[
\text{rent}_{\text{res}} = \text{diversity} + \text{QoL} + \text{interaction} \\
(0.71) \quad (0.19^{**}) \quad (-0.13)
\]

\[
\text{rent}_{\text{res}} = \text{diversity} + \text{restaurants} + \text{interaction} \\
(-0.12) \quad (-0.004) \quad (-0.11)
\]
Results Second Stage: Rent Residuals

- **All**

  \[ \text{rent}_{res} = \text{diversity} + \text{QoL} + \text{interaction} + \text{restaurants} + D_t \]  
  \[ (0.77^{***}) \quad (0.11^{***}) \quad (-0.15^{***}) \quad (0.03) \]  

  \[ \text{rent}_{res} = \text{diversity} + \text{QoL} + \text{interaction} + \text{restaurants} + D_{c,t} \]  
  \[ (0.10) \quad (0.04^*) \quad (-0.06) \quad (0.04) \]

- **25 largest cities**

  \[ \text{rent}_{res} = \text{diversity} + \text{QoL} + \text{interaction} + \text{restaurants} + D_t \]  
  \[ (2.21^{***}) \quad (0.29^{***}) \quad (-0.54^{***}) \quad (0.32^{***}) \]  

  \[ \text{rent}_{res} = \text{diversity} + \text{QoL} + \text{interaction} + \text{restaurants} + D_{c,t} \]  
  \[ (-2.28) \quad (0.06) \quad (-0.06) \quad (0.46^{***}) \]

- **Excl. 25 largest cities**

  \[ \text{rent}_{res} = \text{diversity} + \text{QoL} + \text{interaction} + \text{restaurants} + D_t \]  
  \[ (0.63) \quad (0.11^{***}) \quad (-0.11) \quad (0.01) \]  

  \[ \text{rent}_{res} = \text{diversity} + \text{QoL} + \text{interaction} + \text{restaurants} + D_{c,t} \]  
  \[ (0.45) \quad (0.06) \quad (-0.11) \quad (0.04) \]
## Endogeneity: IV-estimates

<table>
<thead>
<tr>
<th></th>
<th>Base wage residual</th>
<th>Base rent residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diversity</td>
<td>0.14** (0.06)</td>
<td>-0.63*** (0.09)</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.29</td>
<td>0.64</td>
</tr>
</tbody>
</table>

**first stage results**

<table>
<thead>
<tr>
<th></th>
<th>Base wage residual</th>
<th>Base rent residual</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share soc housing</td>
<td>0.16*** (0.03)</td>
<td>0.31*** (0.04)</td>
</tr>
<tr>
<td>Share chr votes</td>
<td>-0.37*** (0.03)</td>
<td>-0.43*** (0.04)</td>
</tr>
<tr>
<td>Partial $R^2$</td>
<td>0.26</td>
<td>0.36</td>
</tr>
<tr>
<td>F-test</td>
<td>129.47</td>
<td>156.98</td>
</tr>
<tr>
<td>Hansen J</td>
<td>1.69</td>
<td>1.01</td>
</tr>
</tbody>
</table>
Conclusion

- Sorting indeed matters
- Diversity positive (but very small) effect on wage residuals
- Diversity negative effect on rent residuals, even after controlling for QoL and product variety

Now:

- Who sorts where?
- Unexplained effects due to spatial level: less aggregate
Economic Impacts of Cultural Diversity in the Netherlands

Jessie Bakens

Introduction

Model

Results

Conclusion