Soziale Netzwerke und Arbeitsuche

Monetäre und nicht-monetäre Effekte aus suchtheoretischer Perspektive

Netzwerke und Arbeitsmarkt
Herbsttagung der Sektion Soziologische Netzwerkforschung
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Job Search and Networks – Introduction

- Widespread use of networks in job search as source of information on vacancies (e.g. Rees 1966)
  - Acquaintances, friends, relatives
- Job search via networks is more productive than alternative search methods
  - Comparison of outcomes in jobs found via networks and formal search methods
  - Outcomes: monetary and non-monetary job aspects, e.g. wages, prestige, match quality, job satisfaction, employment stability, etc.
  - Empirical studies: mixed evidence, (Franzen, Hangartner 2006; Chua 2011; Huang, Western 2011; Yogo 2011; Mouw 2003)
Theoretical Model

- Montgomery’s (1992) model of multiple search methods
  - Standard sequential job search model
  - Two exogenous search strategies
  - Formal search and search via networks
- Productivity of networks v. formal search depends on
  - Differences in job offer arrival rates $r_{NET}$ and $r_{FORM}$
  - Differences in wage offer distributions $F(wage_{NET})$ and $F(wage_{FORM})$
Comparison of accepted jobs (Montgomery 1992)

- Given most job seekers use both search methods: comparison of accepted jobs can lead to ambiguous results
- (1) Productivity: better wages and more job offers
  - Wage offer distribution $F(wage_{NET}) > F(wage_{FORM})$ and
  - Job offer arrival rates $r_{NET} > r_{FORM}$
- Wage differential positive (straightforward): $\Delta_{wage} = \text{E}(wage \mid j.\text{accept} = \text{NET}) - \text{E}(wage \mid j.\text{accept} = \text{FORM}) > 0$
- If network search is productive with regard to both wages and wage offers: better job outcomes in jobs found via networks
Comparison of accepted jobs (Montgomery 1992)

- Given most job seekers use both search methods: comparison of accepted jobs can lead to ambiguous results

- (2) Productivity: equal wages but more job offers
  - Wage offer distributions $F(wage_{NET}) = F(wage_{FORM})$ and
  - Job offer arrival rates $r_{NET} > r_{FORM}$

- Wage differential negative (counterintuitive): $\Delta_{wage} = E(wage \mid j.\text{accept} = \text{NET}) - E(wage \mid j.\text{accept} = \text{FORM}) < 0$

- If network search is productive with regard to only wage offers: worse job outcomes in jobs found via networks!
Thought experiment for Case (2) (Montgomery 1992)

- Search via both methods, equal wage distributions accessed
  a) almost always wage offer from networks \( r_{NET} \) near 1;
  b) almost never wage offer from formal source \( r_{FORM} \) near 0

- Individuals who accepted job from formal source had 2 wage offers to choose from (networks: only one offer)

- Wage offer from formal source only chosen if higher than offer from networks!

- \( \Delta_{wage} < 0 \) in accepted jobs, even if network are productive
Comparison of accepted jobs (Montgomery 1992)

- **Problem:** \( F(wage) \) and \( r \) are unobservable
- **Observed wage differentials are only informative under specific theoretical assumptions about network productivity**
  - Case 1 e.g. Lin (1982); Mortensen, Vishwanath (1994)
  - Case 2 e.g. Granovetter (1995); Goel, Lang (2009)
- **There seem to be good reasons for both assumptions**
- **Different assumptions might be valid for different subgroups / institutional settings**
Data

- Survey conducted by TNS-Infratest for the Institute for Employment Research (IAB)
- Sample of job entries of low skilled and formerly unemployed workers between 2001 until 2003 in Germany
- Indicators for monetary job characteristics
  - Monthly and hourly gross wages
- Indicators for non-monetary job characteristics
  - Questions on job and task satisfaction and permanent contract
Potential Outcome Model (Rubin 1974)

- Y: monetary or non-monetary outcome variable
- j.found: treatment variable

\[ Y = \begin{cases} 
  Y^{\text{FORM}}, & \text{if } j.\text{found} = \text{FORM} \\
  Y^{\text{NET}}, & \text{if } j.\text{found} = \text{NET} 
\end{cases} \]

- Causal effect

\[ \delta = E(Y^N \mid j.\text{found} = N) - E(Y^F \mid j.\text{found} = N) \]

- Conditional independence assumption

\[ \delta = E_x \left( E(Y^N \mid j.\text{found} = N, x) - E(Y^F \mid j.\text{found} = N, x) \right) \]
Propensity Score Matching Estimator (Rosenbaum, Rubin 1983)

\[ \hat{\delta} = \frac{1}{n_N} \sum_{i \in I_N \cap CS} Y_i^N - \frac{1}{n_N} \sum_{i \in I_N \cap CS} \sum_{j \in I_F \cap CS} w(i, j)Y_j^F \]

- \( I_F, I_N \) = persons in jobs found via networks (N) and formal search (F)
- \( CS \) = region of common support
- \( n_N \) = number of individuals in region of common support
- \( w(i, j) \) = weight given to observation \( j \) when matched with \( i \) in single nearest neighbor matching algorithm
Control variables

- **Job search behaviour:**
  - Search methods used, search intensity; search duration; unemployment / welfare benefit
- **Dimensions of homophily:**
  - Socio-demographics sex; age; education
- **Access to social capital:**
  - Partner employed; household income; health problems
## Results for treatment indicator “j.found”

<table>
<thead>
<tr>
<th>Monetary outcomes</th>
<th>Before matching</th>
<th>After matching</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted difference</td>
<td>Standard error</td>
</tr>
<tr>
<td>Monthly gross wages (euro)</td>
<td>99.28 **</td>
<td>43.62</td>
</tr>
<tr>
<td>Hourly gross wages (euro)</td>
<td>0.782 *</td>
<td>0.442</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-monetary outcomes</th>
<th>Before matching</th>
<th>After matching</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Unadjusted difference</td>
<td>Standard error</td>
</tr>
<tr>
<td>Job satisfaction (Dummy, 1 if yes)</td>
<td>0.077 ***</td>
<td>0.027</td>
</tr>
<tr>
<td>Permanent contract (Dummy, 1 if yes)</td>
<td>0.159 *</td>
<td>0.092</td>
</tr>
</tbody>
</table>

Single nearest neighbor matching, no replacement, caliper 0.005; p<0.10, ** p<0.05, *** p<0.01; propensity score matching performed in Stata using psmatch2 (Leuven, Sianesi 2003).
How to cope with ambiguity

- Analyze effect of network characteristics on job search outcomes (Montgomery 1992, Mouw 2003)
- Our Idea: focus on search method directly
  - Find subsample of persons who did not use networks in job search at all (few, maybe selective individuals!)
  - Compare with those who used networks
  - Results are less ambiguous: $\Delta_{wage} > 0$ if $F(wage_{NET}) > F(wage_{FORM})$ and/or $r_{NET} > r_{FORM}$
Results for alternative treatment indicator "j.search"

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<tr>
<td></td>
<td>Unadjusted difference</td>
<td>Standard error</td>
<td>Number of treated / controls</td>
<td>Causal effect</td>
</tr>
<tr>
<td>Monthly gross wages (euro)</td>
<td>-99.925 **</td>
<td>50.563</td>
<td>716 / 146</td>
<td>-37.213</td>
</tr>
<tr>
<td>Hourly gross wages (euro)</td>
<td>0.082</td>
<td>0.513</td>
<td>713 / 146</td>
<td>-0.002</td>
</tr>
</tbody>
</table>

| Non-monetary outcomes                  |                |                      |                |                     |
|                                        |                |                      |                |                     |
| Job satisfaction (Dummy, 1 if yes)     | -0.022         | 0.032                | 924 / 183      | 0.012               | 0.042          | 169 / 169                 |
| Permanent contract (Dummy, 1 if yes)  | 0.046          | 0.109                | 924 / 183      | 0.071               | 0.142          | 169 / 169                 |

Single nearest neighbor matching, no replacement, caliper 0.01; p<0.10, ** p<0.05, *** p<0.01; propensity score matching performed in Stata using psmatch2 (Leuven and Sianesi, 2003).

\[
E(\text{wage} \mid j.search = \text{NET}) - E(\text{wage} \mid j.search = \text{FORM})
\]
Conclusion

- Comparing wages in accepted jobs can be misleading!
- Networks are not productive
  - Neither with regard to monetary nor non-monetary job outcomes
  - At least for low skilled and long-term unemployed in Germany
- Why then do individuals search via networks?
  - Effect on unemployment duration
  - Benefits for employer (e.g. lower screening costs)
References

References

Thank you for your attention!

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