

# Soziale Netzwerke und Arbeitsuche

## Monetäre und nicht-monetäre Effekte aus suchtheoretischer Perspektive

### Netzwerke und Arbeitsmarkt

Herbsttagung der Sektion *Soziologische Netzwerkforschung*  
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Gerhard Krug (IAB; University  
of Erlangen-Nuremberg)

Martina Rebien (IAB)

# 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):  $\Delta_{wage} = E(wage \mid j.accept = NET) - E(wage \mid j.accept = FORM) > 0$
- 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):  $\Delta_{wage} = E(wage \mid j.accept = NET) - E(wage \mid j.accept = FORM) < 0$
- 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:  $F(\text{wage})$  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 (Rubin1974)

- $Y$ : monetary or non-monetary outcome variable
- $j.\text{found}$ : treatment variable

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

- Causal effect

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

- Conditional independence assumption

$$\delta = E_{\mathbf{x}} \left( E(Y^N \mid j.\text{found} = N, \mathbf{x}) - E(Y^F \mid j.\text{found} = N, \mathbf{x}) \right)$$

# 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"

	Before matching			After matching		
	Unadjusted difference	Standard error	Number of treated / controls	Causal effect	Standard error	Number of treated / controls
<b>Monetary outcomes</b>						
<i>Monthly gross wages (euro)</i>	99.28 **	43.62	216 / 654	23.22	54.48	195 / 195
<i>Hourly gross wages (euro)</i>	0.782 *	0.442	215 / 652	0.738	0.722	194 / 194
<b>Non-monetary outcomes</b>						
<i>Job satisfaction (Dummy, 1 if yes)</i>	0.077 ***	0.027	285 / 834	0.065 **	0.032	262 / 262
<i>Permanent contract (Dummy, 1 if yes)</i>	0.159 *	0.092	285 / 834	0.198 *	0.109	262 / 262

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

- Fixed-Effects-Model, IV-Estimator (Mouw 2003, 2006)
- 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"

	Before matching			After matching		
	Unadjusted difference	Standard error	Number of treated / controls	Causal effect	Standard error	Number of treated / controls
<b>Monetary outcomes</b>						
<i>Monthly gross wages (euro)</i>	-99.925 **	50.563	716 / 146	-37.213	71.297	137 / 137
<i>Hourly gross wages (euro)</i>	0.082	0.513	713 / 146	-0.002	0.457	137 / 137
<b>Non-monetary outcomes</b>						
<i>Job satisfaction (Dummy, 1 if yes)</i>	-0.022	0.032	924 / 183	0.012	0.042	169 / 169
<i>Permanent contract (Dummy, 1 if yes)</i>	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).

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

# 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)

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Thank you for your attention!

[Gerhard.Krug@iab.de](mailto:Gerhard.Krug@iab.de) (*corresponding author*)

[Martina.Rebien@iab.de](mailto:Martina.Rebien@iab.de)

[www.iab.de](http://www.iab.de)