

Social Networks and Labor Market Inequality between Ethnicities and Races

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Outline

① Introduction

② Methodology

③ Estonia

④ the U.S.A.

⑤ Conclusions

Introduction

Stylized facts:

- Large income gap between ethnic/racial groups
 - unexplained
 - of order 10-15% for B/W in US
 - persistent
- Why is there a persistent wage gap?
 - Combination of imperfect markets, state dependency, discrimination
 - Statistical discrimination
 - More prospects in social network-based explanations (Arrow 1998)

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Social Networks and Labour Markets

- Economic theories on networks and labor markets:
 - Montgomery (1991): network links (references) enable screening of employees
 - Calvó-Armengol & Jackson (2004): network structure affects distribution of job vacancies
- Empirical evidence at the micro-level:
 - About 50% of employees obtained their job through a social contact (Granovetter, 1974)

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Macro-level relation networks and outcomes

Sufficient evidence at the *micro-level*, no evidence at the *macro-level*.

- *Community* network Structure \Rightarrow community's outcome?
- Micro-level cannot simply be aggregated to macro-level
 - Small preferences for segregation \Rightarrow fully segregated neighborhoods (Schelling, 1978).
 - Market forces smooth out discrimination (Becker, 1957)

We Show

Macro-level relation b/w network structure and wage gap

- Network structure: Inbreeding Homophily
 - Individuals interact with similar ones
 - Isolation dimension of segregation (Massey & Denton, 1988)
- Two economies:
 - Estonia: ethnic Estonians, Russians by counties
 - US: blacks and whites by SCBS “communities”
- We compare regions
- Main result:

The bigger the network segregation, the bigger the unexplained wage gap

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Related literature

- Wage gaps and discrimination: Altonji & Blank (1999)
- Segregation: Schelling (1971), Benabou (1993)
- Networks and Labour Markets:
 - Mortensen & Viswanath (1994)
 - Calvó-Armengol & Jackson (2004),
 - Calvó-Armengol & Zenou (2005),
 - Ioannides & Soetevent (2006)
- Network Formation and Homophily: Currarini, Jackson & Pin (2009, 2010)
- School segregation and test score gap (Vigdor & Ludwig, 2007; Card & Rothstein 2007)
- Prejudices (Charles & Guryan, 2008)

Homophily

Homophily is the tendency of people to interact with similar others

- Baseline homophily:

$$h = \frac{n_{\text{similar}}}{n} \quad n: \text{ a measure of contacts}$$

- Inbreeding homophily corrects for group size:

$$IH = \frac{h - w_{\text{similar}}}{1 - w_{\text{similar}}} \quad w: \text{ relative group size}$$

2-step approach

How are regional disparities related to segregation?

- 1 Estimate regional disparities
- 2 Regress to regional network measures

Wage gaps: first stage

Two-stage regression

- First stage: Estimate wage gaps for each region

$$\log w_i = \alpha \cdot \mathbf{region}_i + \beta \cdot \mathbf{race}_i + \gamma \cdot \mathbf{region}_i \times \mathbf{race}_i + \delta \cdot X_i + u_i$$

- i - individual
- **region** - region dummies
- γ - regional wage gaps
- X - other individual characteristics

Second stage

- Second stage

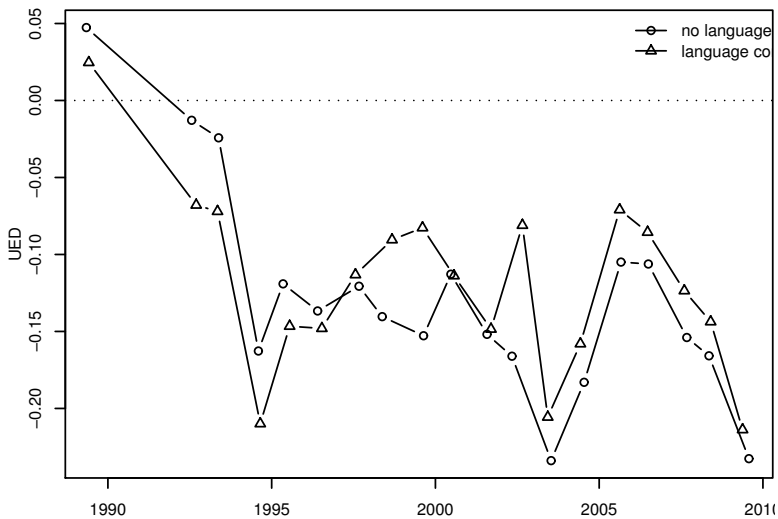
$$\begin{aligned} \text{wage gap } \gamma_r = & \text{constant} + \\ & + \alpha \cdot IH_r + \\ & + \beta \cdot \text{Minority pct} + \\ & + \varepsilon_r \end{aligned}$$

- r : region
- weighted by inverse squared standard error of the first regression

Estonia

- A former Soviet Republic
- roughly 70-30% Estonian-Russian speaking
- Persistent ethnic wage gap about 10-15% (Leping & Toomet, 2008)

EE Wage Gap

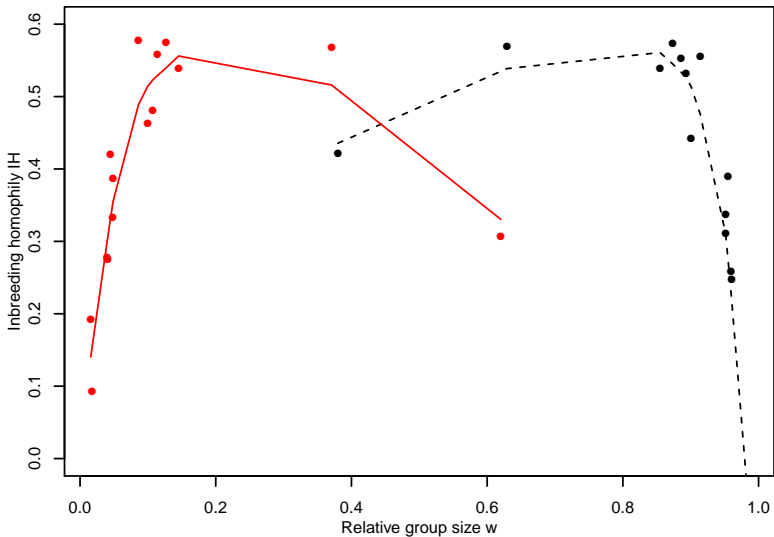


- Landline telephone calls
 - ca 200,000 phones; 250,000 calls
 - preferred language of the contract holder
 - region (county) of the phone
 - we observe actual communication (but not content 😊)
- Labour Force Survey
 - years 2000-2010
 - region (15 counties)
 - wage, common human capital variables

Contact Measures

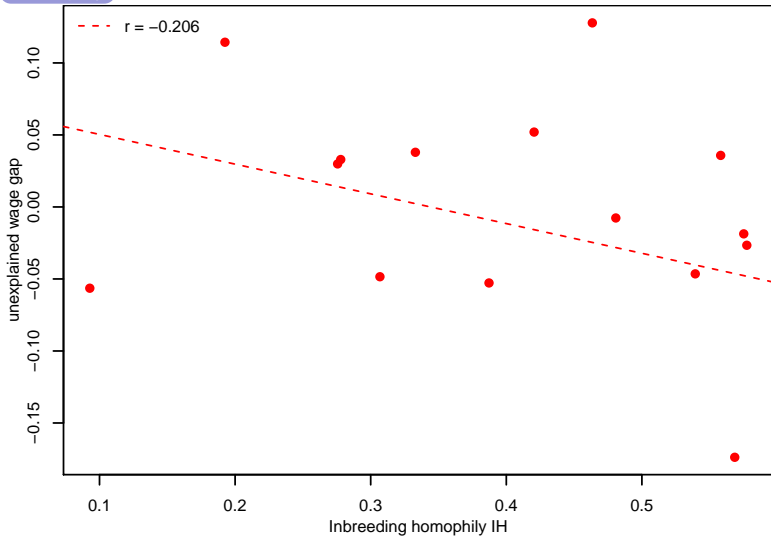
- Actual intra/intergroup communication
 - How many calls inside/outside of the group
 - How many seconds

Minority Size & Inbreeding



Wage gap & Inbreeding

▶ homophily



Regression:

$$\text{wage gap}_r = \text{constant} + \alpha \cdot \text{IH}_r + \beta \cdot \text{Minority pct} + \varepsilon_r \quad (1)$$

r – region

Variable	Counties	
	Estimate	stde
IH	-0.362**	0.159
Minority pct	-0.298**	0.099
Constant	0.198**	0.083
R ²	0.431	
# obs	15	

1st stage vars: gender, age, education

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The U.S.A.

- Look at blacks and whites
- Hump-shaped relationship between minority percentage and IH (Moody, 2001; Currarini, Jackson & Pin, 2008)
- Widely studied wage gap of $\sim 10\text{-}15\%$ (Altonji & Blank, 1999).

SCBS 2000

- Social Capital Benchmark Survey 2000 (SCBS)
- 30 “communities” (neighbourhoods)
- Common socio-economic characteristics
- Income in intervals

Contact measures

FRNDHOM2 How many times in the past twelve months have you had friends over to your home?

FRNDRAC2 How many times in the past twelve months have you been in the home of a friend of a different race or had them in your home?

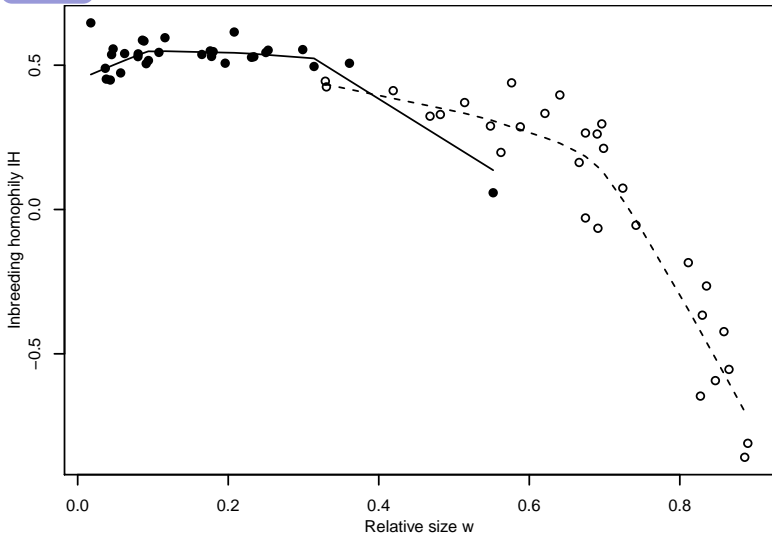
Define homophily as:

$$h = 1 - \frac{2 \times \text{FRNDRAC2}}{\text{FRNDHOM2}} \quad (2)$$

- Aggregate IH at community level
- Look only IH for blacks

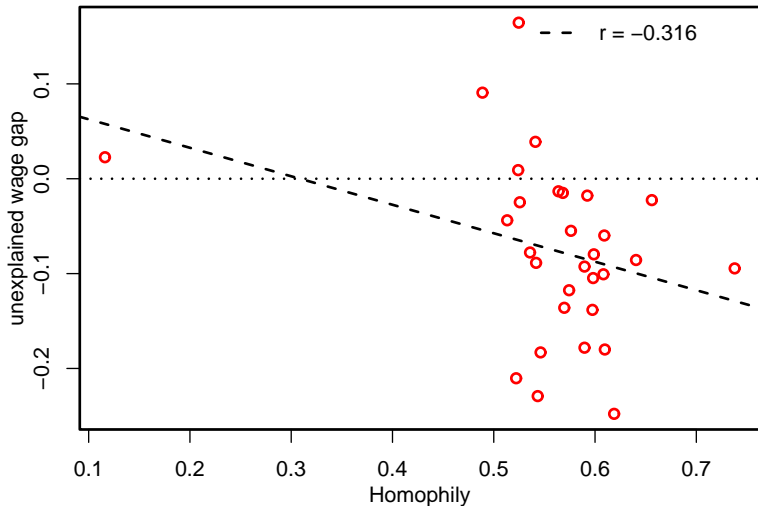
Minority Size & Inbreeding

▶ Estonia



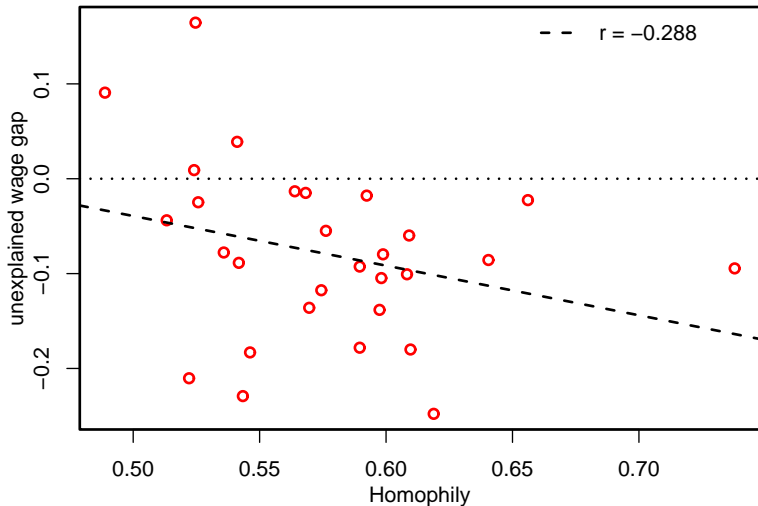
Wage gap & Inbreeding

► homphily



Wage gap & Inbreeding vol 2

► homphily



Regression:

$$\text{wage gap}_i = \text{constant} + \alpha \cdot \text{IH}_i + \beta \cdot \text{Minority pct} + \varepsilon_i \quad (3)$$

i – region

Variable	w/outliers		w/o outliers	
	Estimate	sd	Estimate	sd
IH	-0.397***	0.136	-0.549	0.357
Minority pct	-0.436*	0.213	-0.482*	0.238
Constant	0.037	0.059	0.073	0.094
R ²	0.240		0.155	
# obs	30		27	

1st stage variables: age, education, citizenship

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Discussion: Discrimination

Discriminatory preferences:

- Cause group inequality (Charles & Guryan, 2008)
- ... and inbreeding homophily (Carrarini, Jackson & Pin, 2009; Wimmer & Lewis, 2010)

Discussion: Segregation

Segregation:

- ... causes wage gaps
 - local externalities (Benabou, 1993)
 - human capital externalities (Lundberg & Startz, 1998)
- ... causes inbreeding homophily
 - Proximity important for friendship formation
- Hard to disentangle segregation, homophily preferences
 - Probably highly correlated
 - Better data needed

Discussion: Networks

- Networks matter for job search
(Granovetter, 1995)
- Minorities get job through networks
(Dustmann, Glitz, Schönberg, 2009; Hellerstein, McInerney & Neumark, 2011)
- Weaker networks hurt minorities
(Royster, 2007)
- Differential may be persistent through drop-out and educational choice
(Currarini & Jackson, 2004; van der Leij & Buhai, 2008)

Conclusions

- We establish a relation between networks and outcomes at the macro-level
 - More segregated communities experience larger unexplained wage gaps
 - This effects exists on top of 'minority size' effect

(A possible) policy conclusion:

NETWORK WITH MINORITIES!

