Does social capital make you healthier?
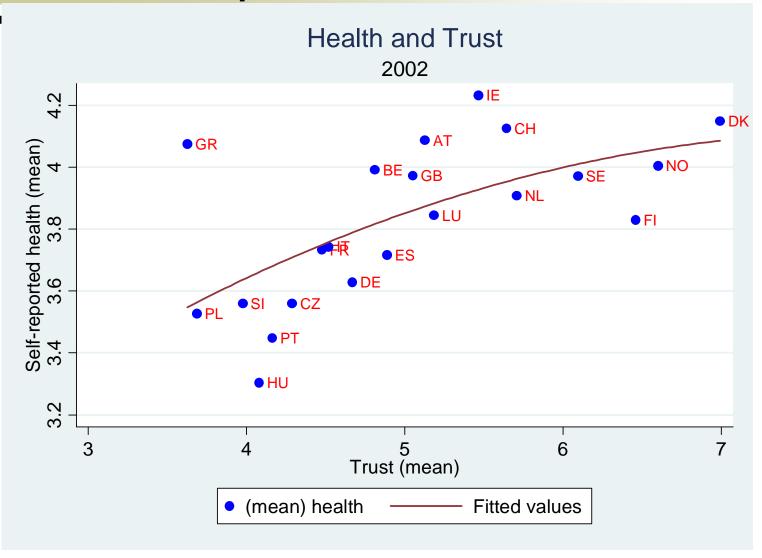
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Social Capital and Health I

- Social capital: complex definition
  - Putnam 1993: "features of social organization, such as trust, norms, and networks that can improve the efficiency of society by facilitating coordinated actions"
- Social capital
  - micro
  - macro (community)

Social Capital and Health II

Health and Trust
2002

Social Capital and Health III

- Is the relationship between social capital and health causal?
- Recent literature suggests it is:
  - Brown, Sheffler et al. HE (2006)
  - Folland SSM (2007)
  - Islam et al. HEPL (2006)
  - D'Hombres, Rocco et al. (2007a, 2007b)

Social Capital and Health IV

- Social capital improves health via:
  - intense flow of information coming from the social network
  - safety nets
  - lobbying for additional health services
  - "cooperation" between doctors and patients

Empirical Issues

- Identification is a problem:
  - confounders
  - reverse causality
  - *measurement error*

Measurement I

- Social capital is an elusive concept, often measured by proxies, related to ingredients or outcomes of social capital
  - trust
  - membership
  - voting turnout
  - participation to religious ceremonies
  - ...
- All this proxies are correlated to social capital but they are not social capital
  - measurement error

Measurement II

- Often individual health is self-reported and not medically diagnosed, either on
  - general assessment of health
  - presence of limitations in daily activities
  - presence of specific diseases (chronic)
- Therefore health variables suffer from measurement errors as well

Reverse causality

- People in bad health are less likely to have an intense social life: individual health affects individual social capital

- However individual health is unlikely to affect community social capital

This paper

- This paper
  - addresses the issues of measurement error in social capital (RHS) and health variables (LHS)
  - looks at which dimension of social capital (individual, community) does matter to individual health

The model I

Objective health (*) is related to objective individual (*) and community social capital

$$H^*_{irc} = \alpha_0 + \alpha_1 S^*_{irc} + \alpha_2 S^*_{irc} \overline{S}^*_{rc} + \alpha_3 \overline{S}^*_{rc} + X_{irc} \alpha_3 + R_{rc} \alpha_4 + u_c + \varepsilon_{irc}$$

but we only observe proxies

$$H_{irc} = H^*_{irc} + \eta_{irc}$$

$$S_{irc} = S^*_{irc} + \lambda \overline{S}_{rc} + \mu_{irc} \quad \text{with} \quad \overline{S}_{rc} = \sum S_{irc} / N_{rc}$$

$$\overline{S}_{rc} = \overline{S}^*_{rc} + \theta_{rc}$$

Self-reported individual social capital depends on true (*) social capital as well as reported mean social capital

The model II

- We allow for objective individual social capital to be endogenous (due to reverse causality)

- We assume objective community social capital to be exogenous
  - many regional controls and country fixed effects are included
  - there is no reverse causality from individual health

The model III

By substitution we get:

$$H_{irc} = \alpha_0 + \alpha_1 S_{irc} + \alpha_2 S_{irc}\bar{S}_{rc} + (\alpha_3 - \alpha_1\lambda)\bar{S}_{rc} - \alpha_2\lambda\bar{S}_{rc}^2 + X_{irc}\alpha_4 + R_{rc}\alpha_5 + u_c +$$

$$+\varepsilon_{irc} + \eta_{irc} - \alpha_1\mu_{irc} + \alpha_2\theta_{rc}(\lambda\bar{S}_{rc} - S_{irc}) - \alpha_2\mu_{irc}\bar{S}_{rc} + \alpha_2\mu_{irc}\theta_{rc} - \alpha_3\theta_{rc}$$

And more compactly:

$$H_{irc} = \gamma_0 + \gamma_1 S_{irc} + \gamma_2 S_{irc}\bar{S}_{rc} + \gamma_3\bar{S}_{rc} + \gamma_4\bar{S}_{rc}^2 + X_{irc}\gamma_5 + R_{rc}\gamma_6 + u_c + \tau_{irc}$$

$$\tau_{irc} = \varepsilon_{irc} + \eta_{irc} - \alpha_1\mu_{irc} + \alpha_2\theta_{rc}(\lambda\bar{S}_{rc} - S_{irc}) - \alpha_2\mu_{irc}\bar{S}_{rc} + \alpha_2\mu_{irc}\theta_{rc} - \alpha_3\theta_{rc}$$

Due to measurement errors "observed" individual and community social capital are endogenous by construction → **IV estimates**

heteroskedasticity and spatial correlation → **s.e. correction**

The model IV

Identification of the structural parameters:

$$\lambda = -\frac{\gamma_4}{\gamma_2} \quad \text{and} \quad \alpha_3 = \frac{\gamma_2 \gamma_3 - \gamma_1 \gamma_4}{\gamma_2}$$

Problem: given the complexity of the error term, its variance is likely to be large.

Then instruments must be strong to
1) reduce the IV bias in finite samples
2) increase IV estimates precision

Data

- ESS 2002/03 and 2004/05 (40,000 obs per round), with indication of region of residence (NUTS 2)
- EUROSTAT REGIO to supplement information at regional level
- 14 European countries

- Health: self-reported health (reduced to good/bad health)
- Individual social capital: trust measured 1-10
- Recall: "observed" community social capital is average individual trust in each region

Instruments I

- birthplace of both parents
- whether the respondent has been victim of a burglary in the past 5 years
- regional population density
- extension of regional network of roads
- percentage of regional residents without internet access
- percentage of residents with the status of citizens

Instruments II

- to assure that instruments have no autonomous effect on individual health, we have included controls in the main equations to capture possible other channels through which instruments affect health beyond social capital
  - Example1: being victim of a burglary is not purely random, but it is correlated with individual wealth, age, place of residence, strength... which likely affect health. We include all these controls
  - Example2: population density, internet access, network roads, might be correlated with regional economic development, and so with availability of doctors and hospitals... We include these controls

Results I

	Model 1			
	Probit (ME) goodhealth	Probit (ME) goodhealth	OLS goodhealth	IV goodhealth
trust	0.0049 (10.84)***	0.0051 (10.71)***	0.0077 (11.73)***	0.0905 (5.05)***
controls omitted	+++++++	++++++++	++++++++	+++++++
religion dummies	yes	yes	yes	yes
occupation dummies	yes	yes	yes	yes
region dummies	yes	no	no	no
country dummies	yes	yes	yes	yes
Constant			0.8928 (39.23)***	0.6297 (9.95)***
Observations	31914	31914	31914	31914
Anderson LR (p)				0.00
Sargan (p)				0.25
F trust				9.16

Absolute value of z statistics in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

Results II

reduced form coefficients

	Model 2		Model 3		Model 4
	OLS goodhealth	IV goodhealth	OLS goodhealth	IV goodhealth	IV goodhealth
trust	0.0078 (11.82)***	0.0936 (4.43)***	0.0177 (3.64)***	-0.0972 (1.05)	-0.6889 (2.83)***
mean trust	-0.0086 (1.73)*	-0.0152 (0.35)	0.0004 (0.05)	-0.2335 (2.76)***	0.6231 (2.14)**
trust*mean trust			-0.0021 (2.25)**	0.0343 (1.93)*	0.1480 (3.10)***
mean trust ^ 2					-0.1395 (2.85)***
Observations	31914	31914	31914	31914	31914
R-squared	0.11		0.11		
Anderson LR (p)		0.00		0.00	0.57
Sargan / Hansen J (p)		0.60		0.15	0.66
F trust		8.45		7.23	7.41
F trust*mean trust				8.74	8.46
F mean trust		2.24		6.36	6.00
F mean trust^2					5.65

Absolute value of t statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

marginal effect of individual social capital is positive only if *i* lives in a community with sufficiently high social capital (4,655).

$$\frac{\partial H_{irc}}{\partial S_{irc}} = \gamma_1 + \gamma_2 \overline{S}_{rc}$$

Results III

Structural coefficients

$$\lambda = -\frac{\gamma_4}{\gamma_2} = 0.9328 \text{ (s.e. } 0.1343)$$

$$\alpha_3 = \frac{\gamma_2\gamma_3 - \gamma_1\gamma_4}{\gamma_2} = -0.0263 \text{ (s.e. } 0.0597)$$

1) People tend to over report their individual social capital more in communities with high social capital

2) Community social capital does not play an autonomous role

Concluding remarks I

- Individual social capital is a significant ingredient of health with some caveats:
  - high individual social capital in a community with low social capital is detrimental (free riding?)
  - high social capital in a community with high social capital is positive (cooperation?)
- Community social capital has no autonomous effect
- There is evidence of mis-reporting in individual social capital: people reporting is correlated with reported community social capital

Concluding remarks II

- Accumulation of social capital is not easy and it is not clear what policies should be implemented to favor it

- However policies should aim at increasing individual social capital of as many residents as possible in a given community to maximize social capital return.