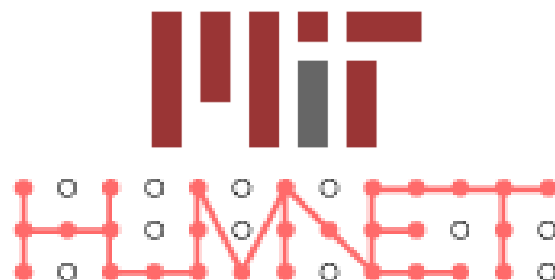


Social networks in agglomerations – important questions in dual economies

Balázs Lengyel

MTA KRTK

ASNET Lendület Group



Why does the economy concentrate in space and in urban areas?

Agglomeration economies

Advantages in cities:

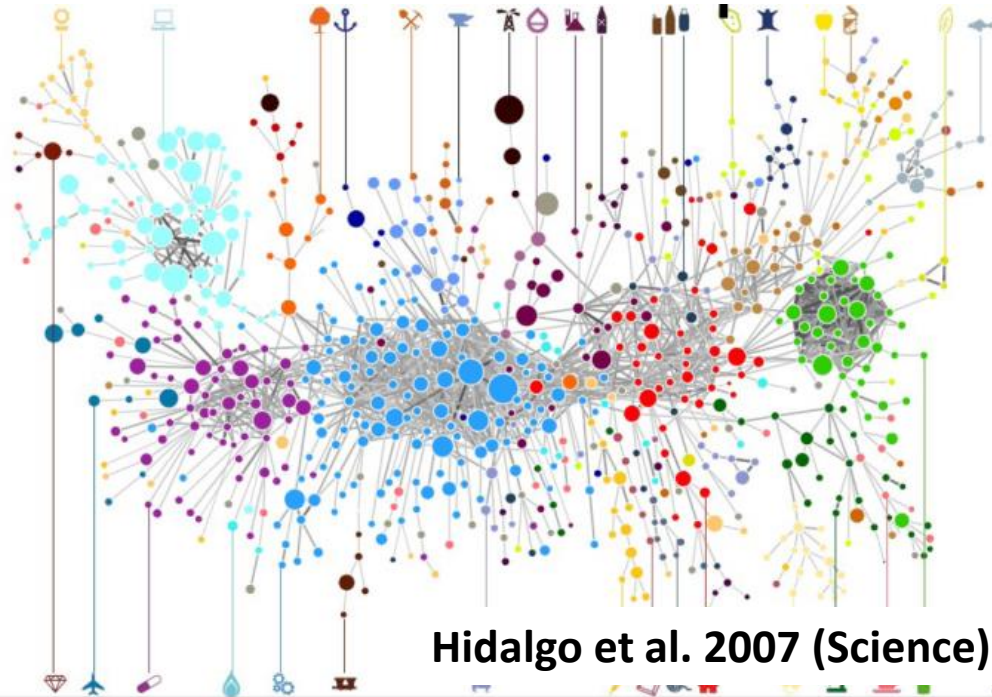
- Shared goods (eg. Infrastructure, higher education)
- Better matching on labor markets
- Inter-firm learning



Limited understanding on how social networks induce agglomeration economies.

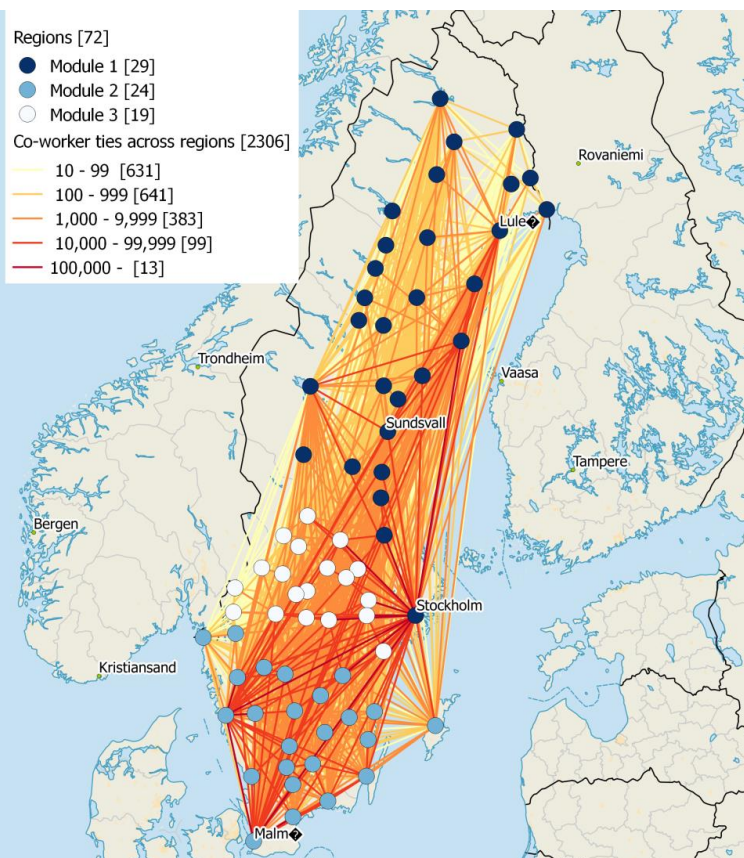
Economic progress and urban success

- Social interaction:
population density
- Learning in the city:
industry structure
- Related knowledge is
easier to learn but
contains less novelty



Hidalgo et al. 2007 (Science)

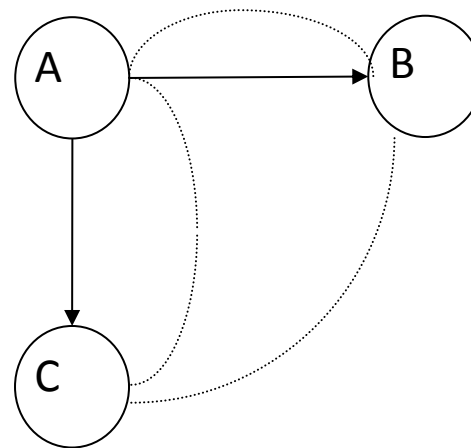
Evidence from co-worker networks



Labor mobility:

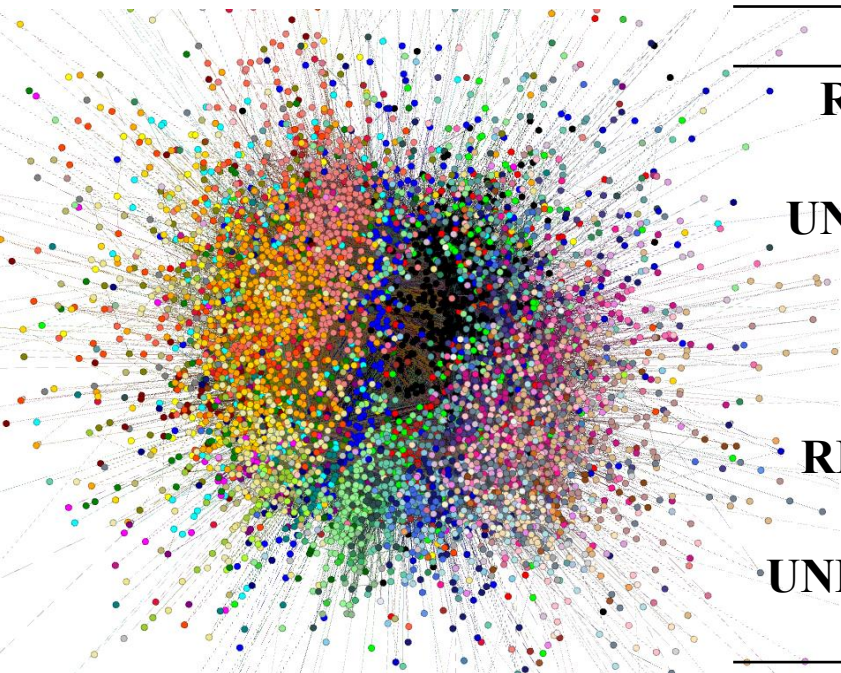
direct effect – knowledge transfer

indirect effect – social ties



Productivity growth in the region is induced not only by A-B and A-C links, but also by B-C links.

Industry specialization and links to co-located industries



	PRODUCTIVITY (INCREMENTAL INNOVATION)		EMPLOYMENT (RADICAL INNOVATION)	
	1	2	3	4
RELATED	0.044*** (0.013)	0.145* (0.077)	0.023** (0.010)	0.052 (0.054)
UNRELATED	0.043** (0.019)	-0.024 (0.040)	0.022* (0.012)	-0.057** (0.027)
SPEC		0.096* (0.052)		0.522*** (0.043)
REL x SPEC		-0.016* (0.009)		-0.005 (0.007)
UNREL x SPEC		0.006 (0.006)		0.009** (0.004)
Year FE	Yes	Yes	Yes	Yes
R²	0.162	0.228	0.294	0.430
N	11428	11428	11428	11428

Dual economy

„ A **dual economy** is the existence of two separate economic sectors within one country, divided by different levels of development, technology, and different patterns of demand.”

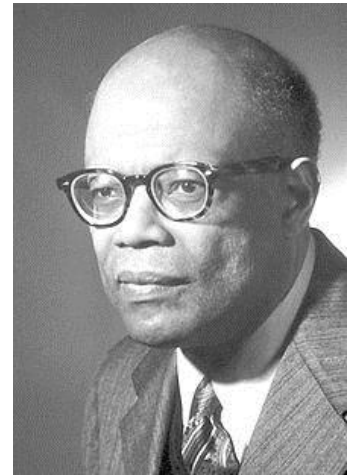
Sir William Arthur Lewis (1915 – 1991)

Nobel prize in economics 1979

General trend of development :

capital accumulates in capitalist sector;

development diffuses to non-capitalist sector.

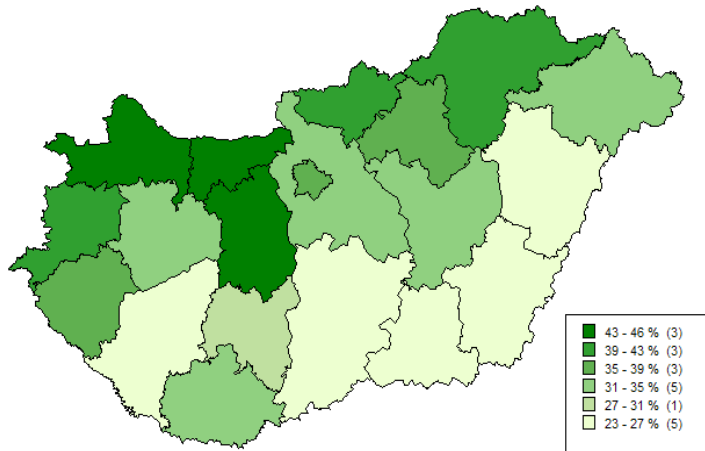


Dual economy in CEE



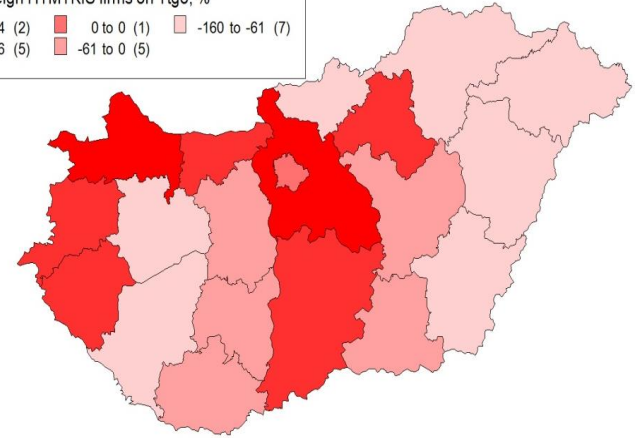
Spatial patterns of FDI effect

Foreign companies

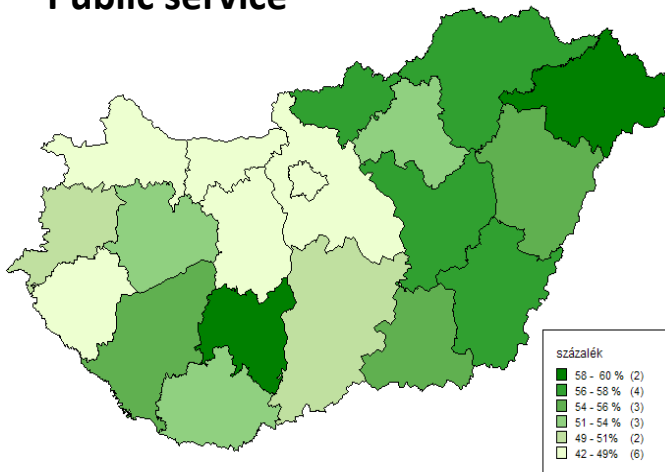


Effect of foreign HTMTKIS firms on Ttgo, %

236 to 334 (2)	0 to 0 (1)	-160 to -61 (7)
1 to 236 (5)	-61 to 0 (5)	

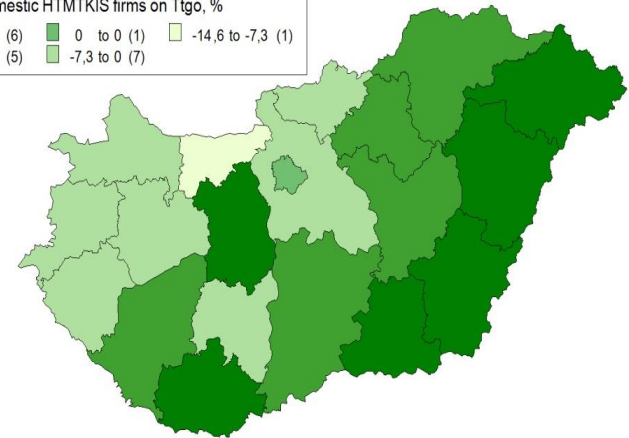


Public service

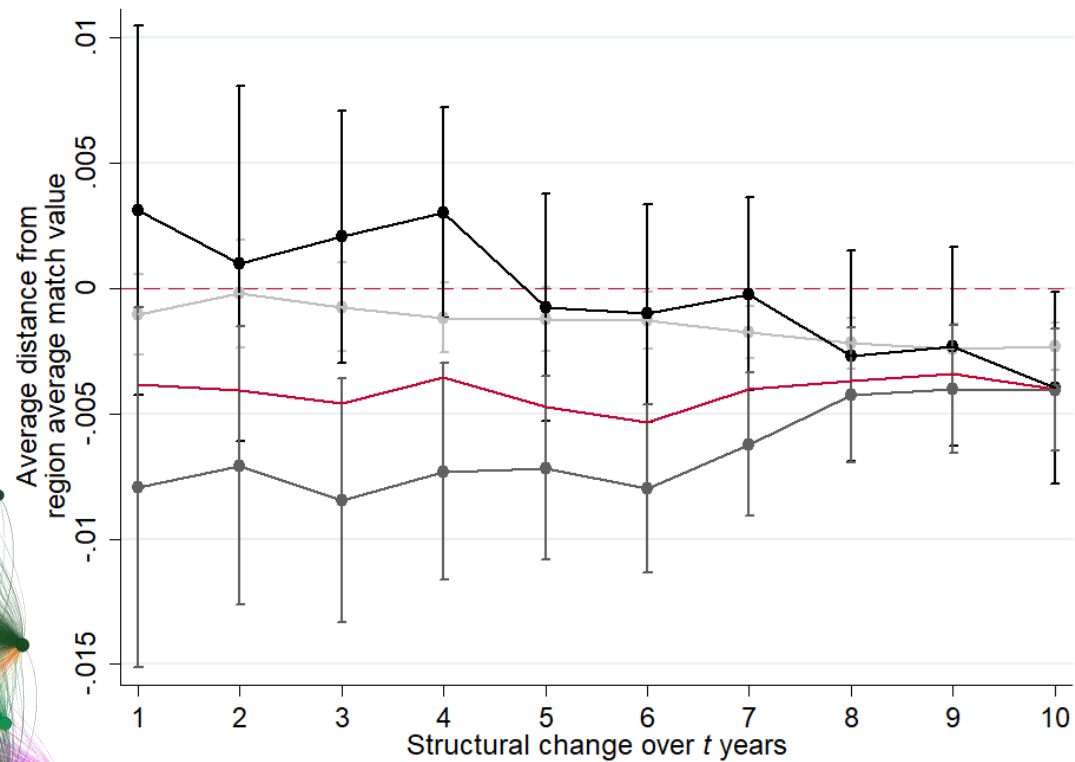
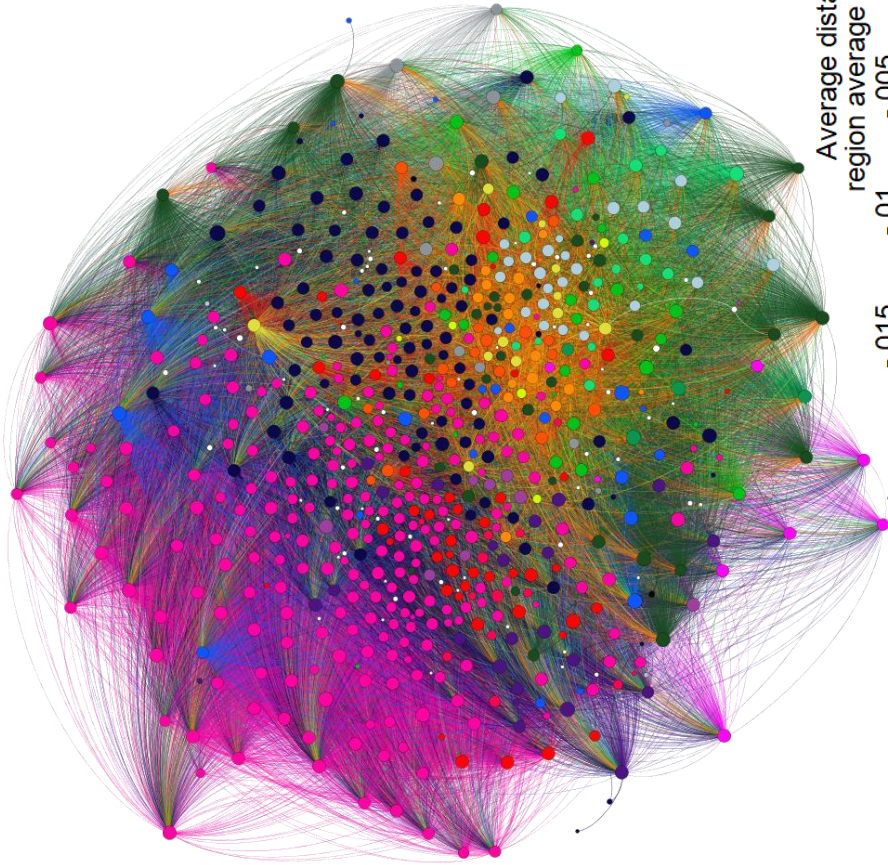


Effect of domestic HTMTKIS firms on Ttgo, %

3,5 to 7 (6)	0 to 0 (1)	-14,6 to -7,3 (1)
0 to 3,5 (5)	-7,3 to 0 (7)	



Foreign firms and change in regions



Elekes, Boschma, Lengyel (2017)

Firm networks

- Small industry in a small town
- Interviews with managers
- Which firm do you ask if you need technical advice?

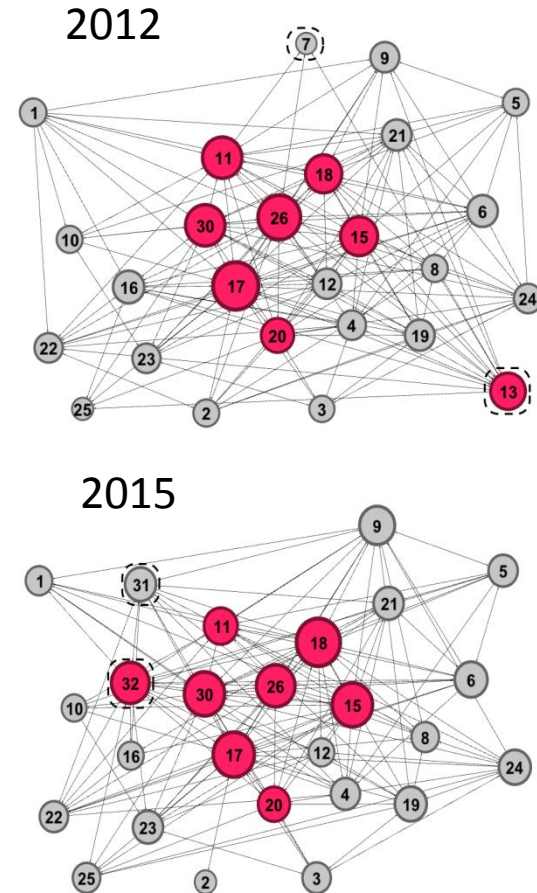
Analysis:

- Creation and persistence of ties
- Statistical model based on simulations

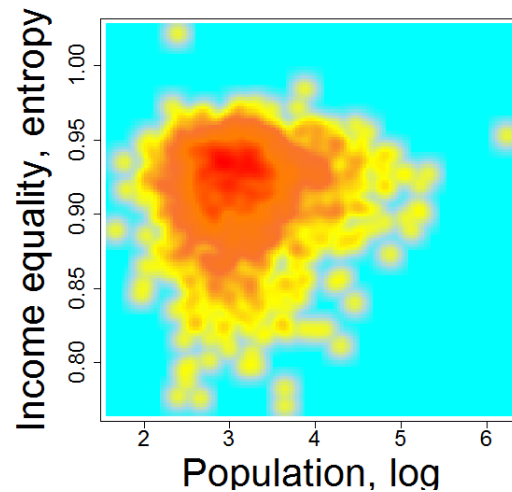
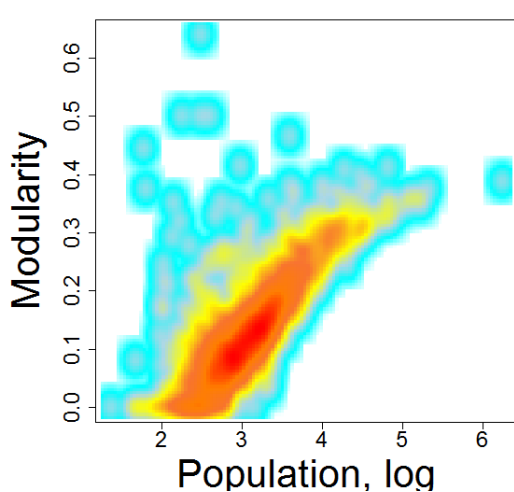
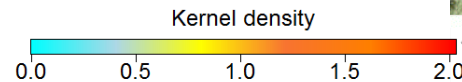
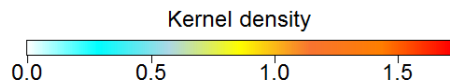
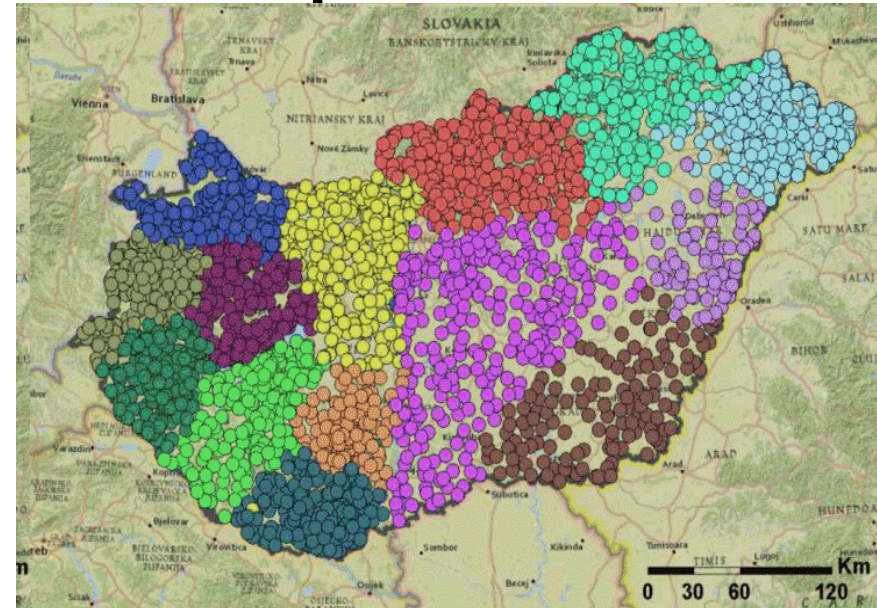
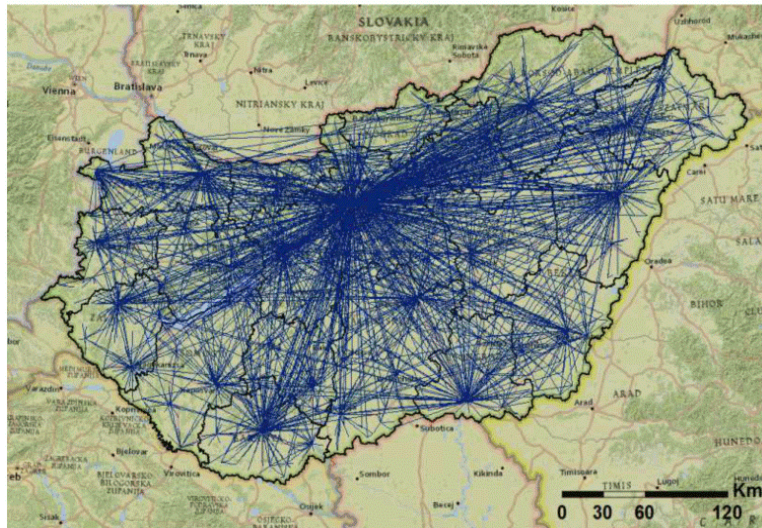
Results:

- Creation of new ties is more likely:
 1. physical proximity
 2. shared contacts
- Persistence of existing ties is more likely:
 3. technological proximity

Links between domestic and foreign-owned firms are not likely to be created.



Social networks and disparities



	Network modularity		
	(1)	(2)	(3)
Population (log)	0.122*** (55.32)		-0.050 (-0.71)
Income equality		0.061 (1.05)	-0.573* (-2.36)
Interaction			0.188* (2.43)
Intercept	-0.240*** (-34.39)	0.085 (1.62)	0.285 (1.28)
N	2,380	2,380	2,380
R ²	0.562	0.005	0.563

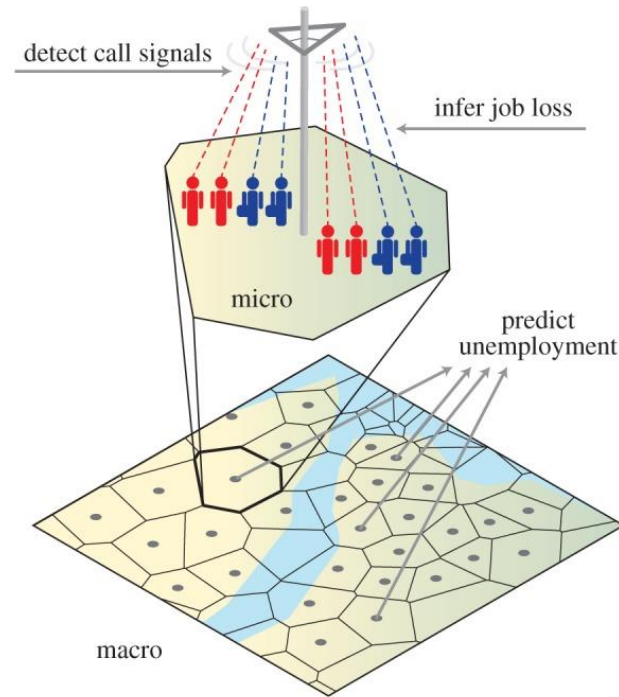
Standard errors in parantheses. *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$

Identify the firm or industry of individual cell-phone users

Telco Dataset for Hungary
over 2015
individuals, calls, SMS,
location

Plant and firm data from
CEU Microdata

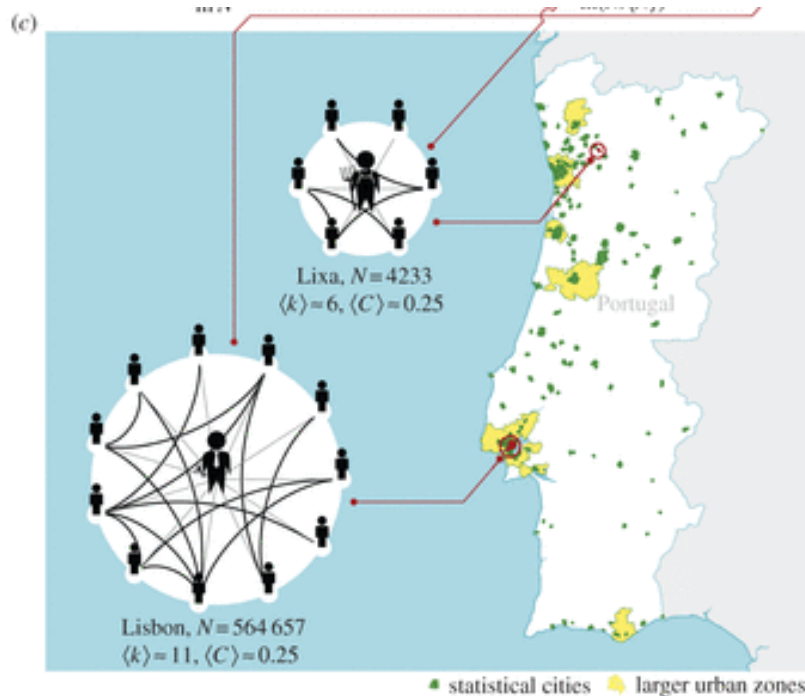
1. Matching company data to company-owned cells
2. Geo-locating the individual calls in working hours



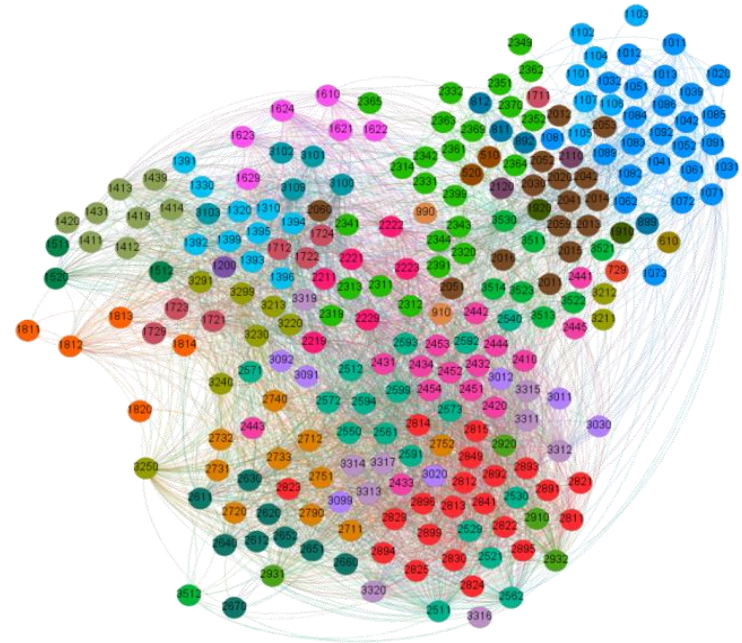
Toole et al. 2015 JRSI.



Communication in cities and towns



Schlapfer et al. (2014) RSIF



Csáfordi et al. (2017)

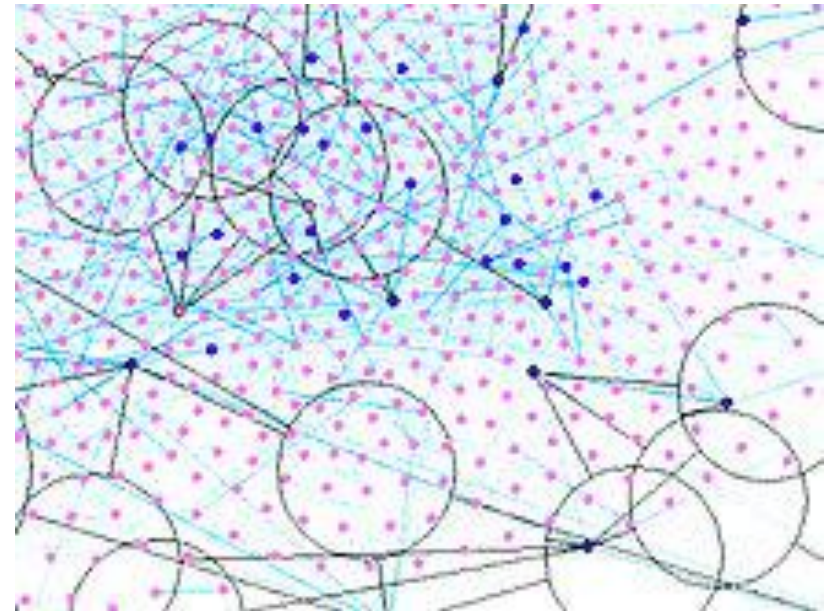
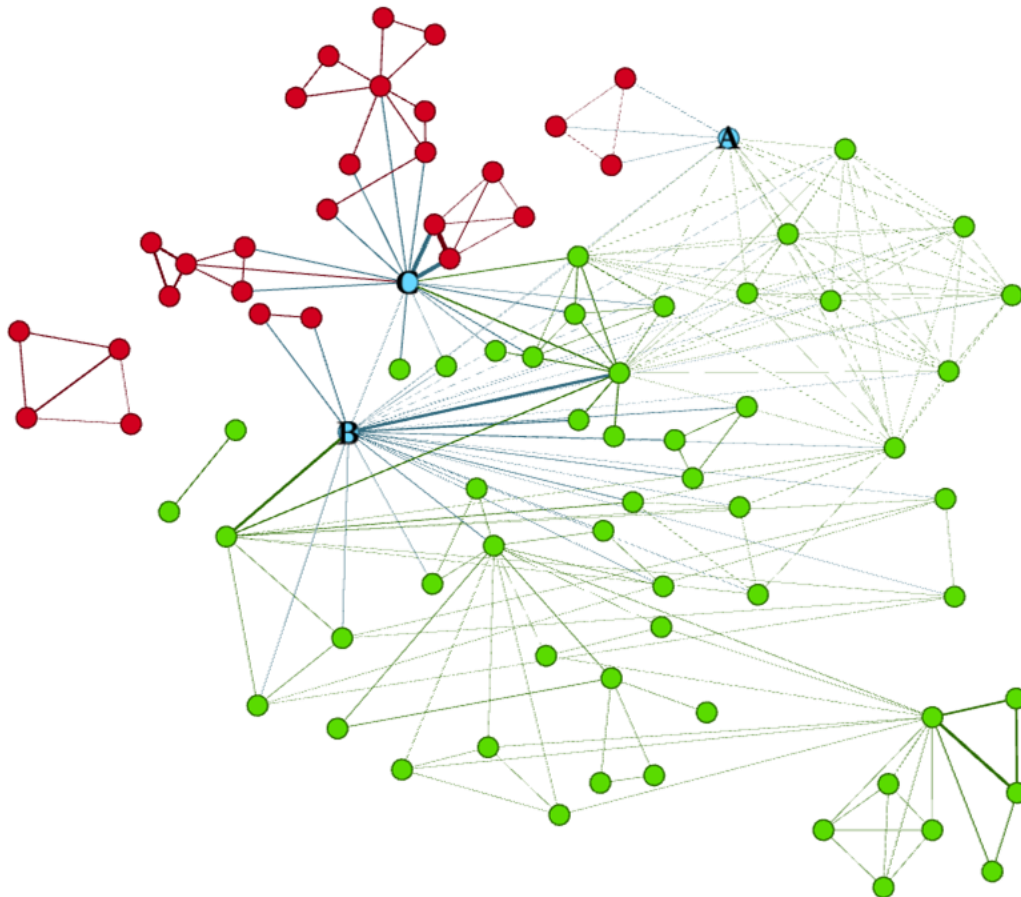
Does inter-industry communication correlate with other industry networks (labor mobility, technological similarity etc.)?

Are there moduls that describe dual economy? (firm ownership, export-orientation etc.)

Communication across firm boundaries

How does links to other industries channel external information to the communication network within the firm?

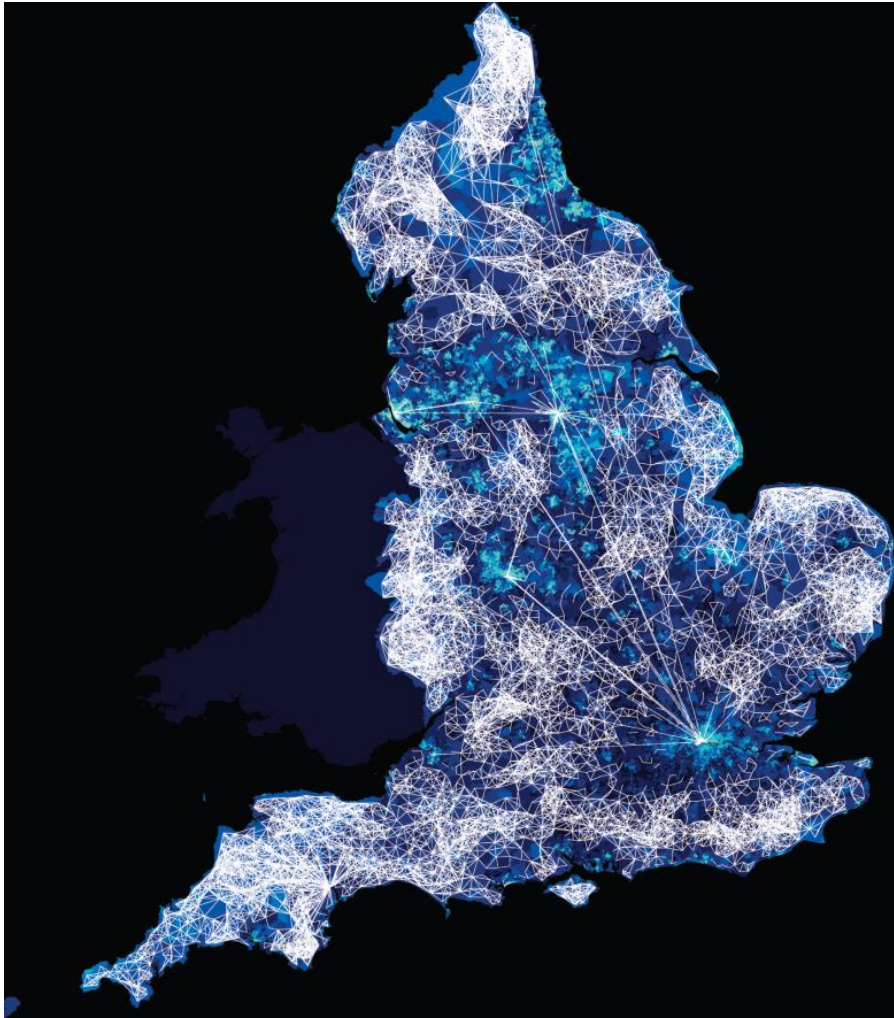
Does this pattern differ across foreign vs. domestic firms; productive vs. non-productive firms?



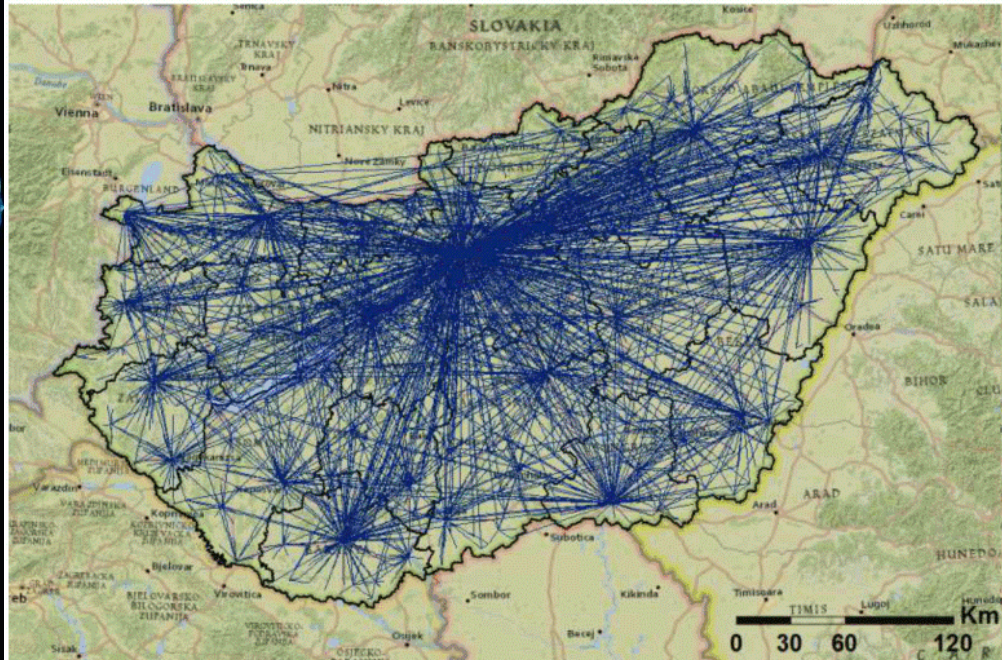
Disparities

Does the position in the telecommunication network correlate with development levels of towns?

How does fragmentation in the network into developed and underdeveloped parts influence spatial disparities?



Eagle, *et al.* (2010) Science.



Lengyel, *et al.* (2015) PLoS ONE.

Thank you for your attention!

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