

Network Dynamics of Innovation-driven Mergers & Acquisitions across European Regions, 2003-2017

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Mergers and Acquisitions: mechanisms of integration

- Since the beginning of the century, worldwide M&A activity has increased, especially in Asia and Europe. Within this wave of transactions, acquisitions in Europe have become particularly remarkable in terms of their size and geographical dispersion (Moschieri and Campa 2014).
- M&A have been object of extensive research for their impact on industry market power and their consequences on companies' shareholders as well as economic and innovative performance.
- A smaller number of studies also looked at their role as drivers of economic integration (Chapman 2003) by transferring business models (Moschieri and Campa 2014) and knowledge (Stiebale 2013) across places (Boschma and Hartog 2014, Colombo and Turati 2014), though with a sectoral approach.
- This study takes this second perspective in a broader setting. The transfer of corporate control implies the need of adjusting work organizations, knowhow and technologies across companies. When this occurs in different regions, processes of learning and hybridization are likely to occur across space as well.

Object

The study investigates the structure of the innovative (technological-intensive) and non-innovative networks of acquisitions connecting EU and EFTA regions and their dynamics between 2003 and 2017.

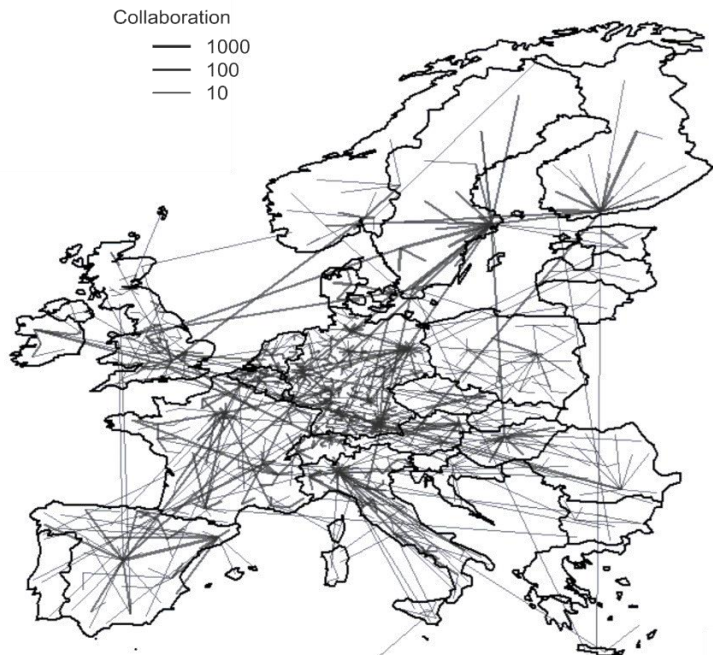
Motivations behind innovative and non-innovative M&As are different: knowledge access vs market access.

We explore:

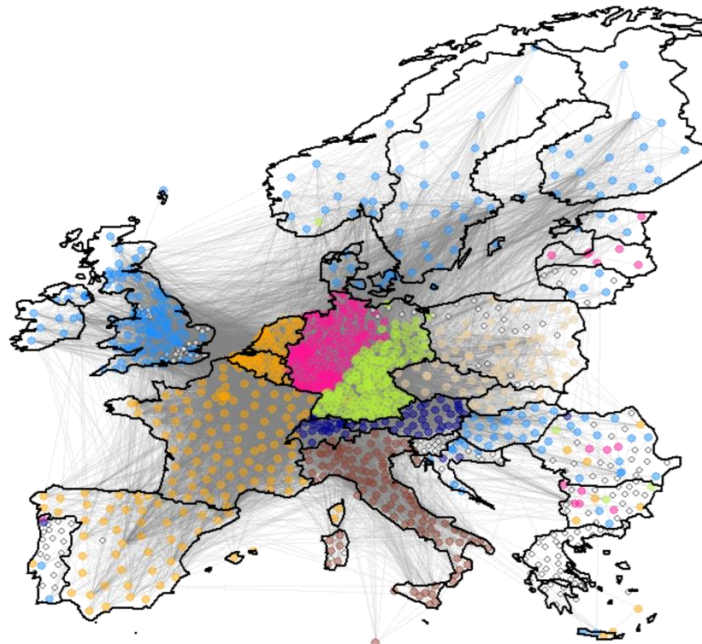
- i. differences in the structure and dynamics of the two networks,
- ii. the connections of regions leads to regional integration in EU.

Networks to understand EU integration

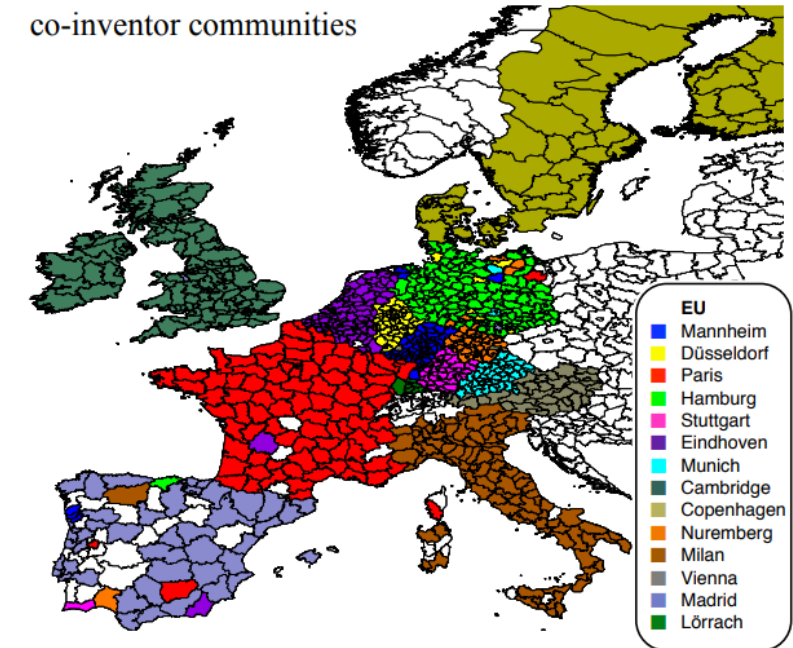
- The structure and dynamics of this network is a tool to understand the system.
- Complex networks can be decomposed by hierarchical clustering into subnetworks/modules/communities.
- A network fragmented into communities is a sign that integration is not completed.



Tóth et al. (2019)



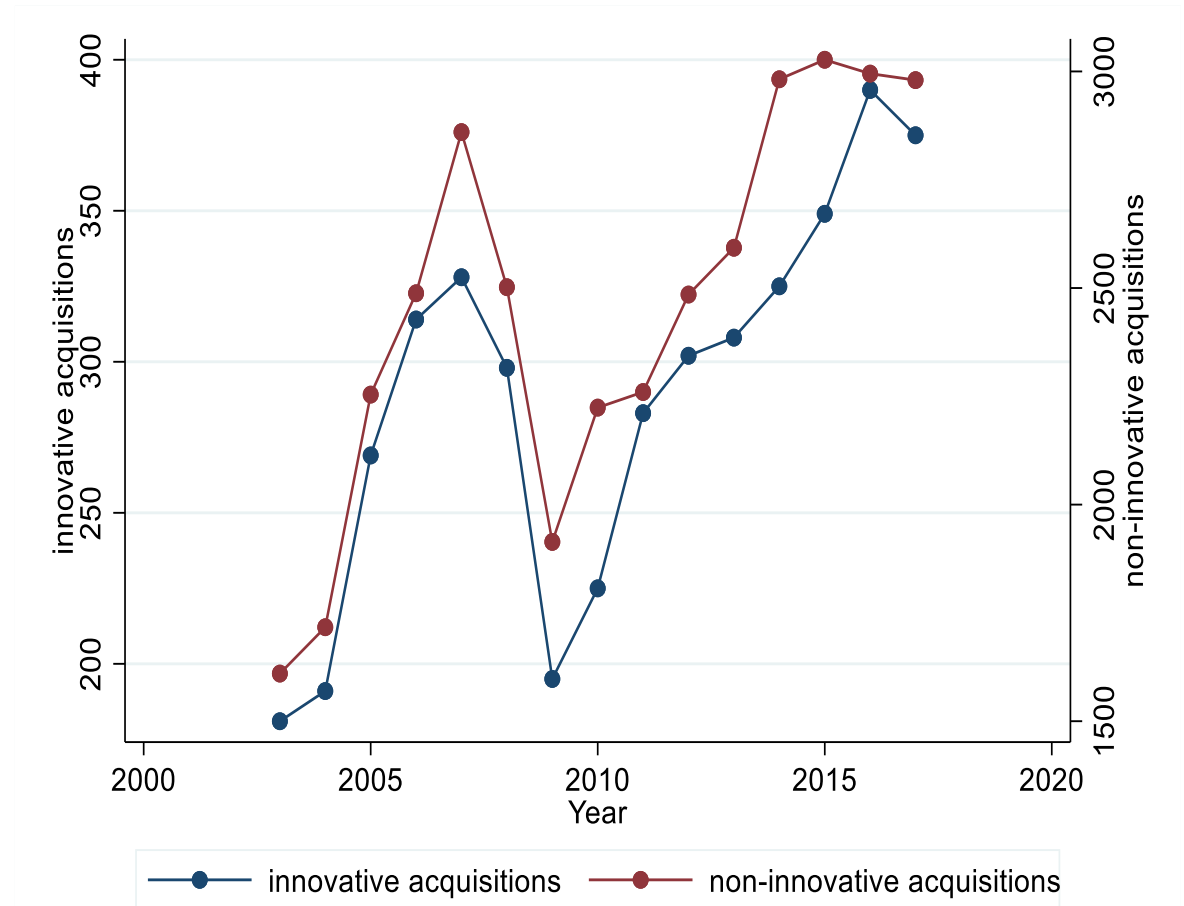
Does the European Research Area evolve into a dynamic and unified space?



Chessa et al. (2013) Science

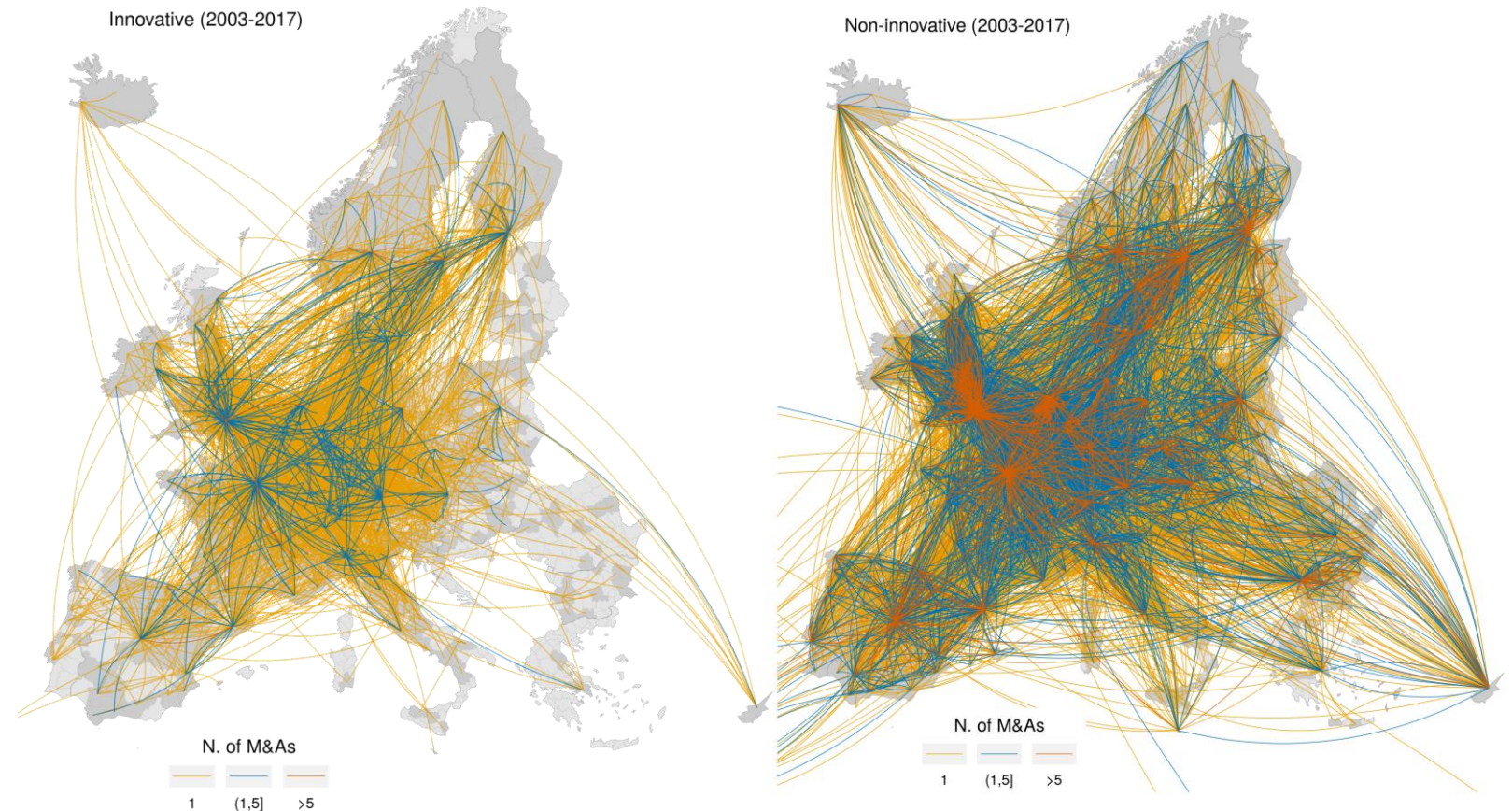
Data

- Change in corporate control: completed acquisitions with participation of the acquirer company crossing the 50% of the shares of the target one
- Innovative deal: target has a non-empty patent portfolio at the moment of the acquisition



Network creation

- Directed links from the acquirer region to the target region (NUTS 3)
- Links are weighted by the number of M&A deals
- Links are by years



Questions

1. Does M&A networks constitute an integrated system in the EU or are fragmented into national/regional subsystems?
2. Is the innovative M&A or the non-innovative M&A network more fragmented?
3. What does the dynamics of M&A networks tell us about business system integration?
4. Which regions/links contribute the most to integration?
5. Which regions/links fail integration during financial crisis?

Network description

The innovative M&A network is

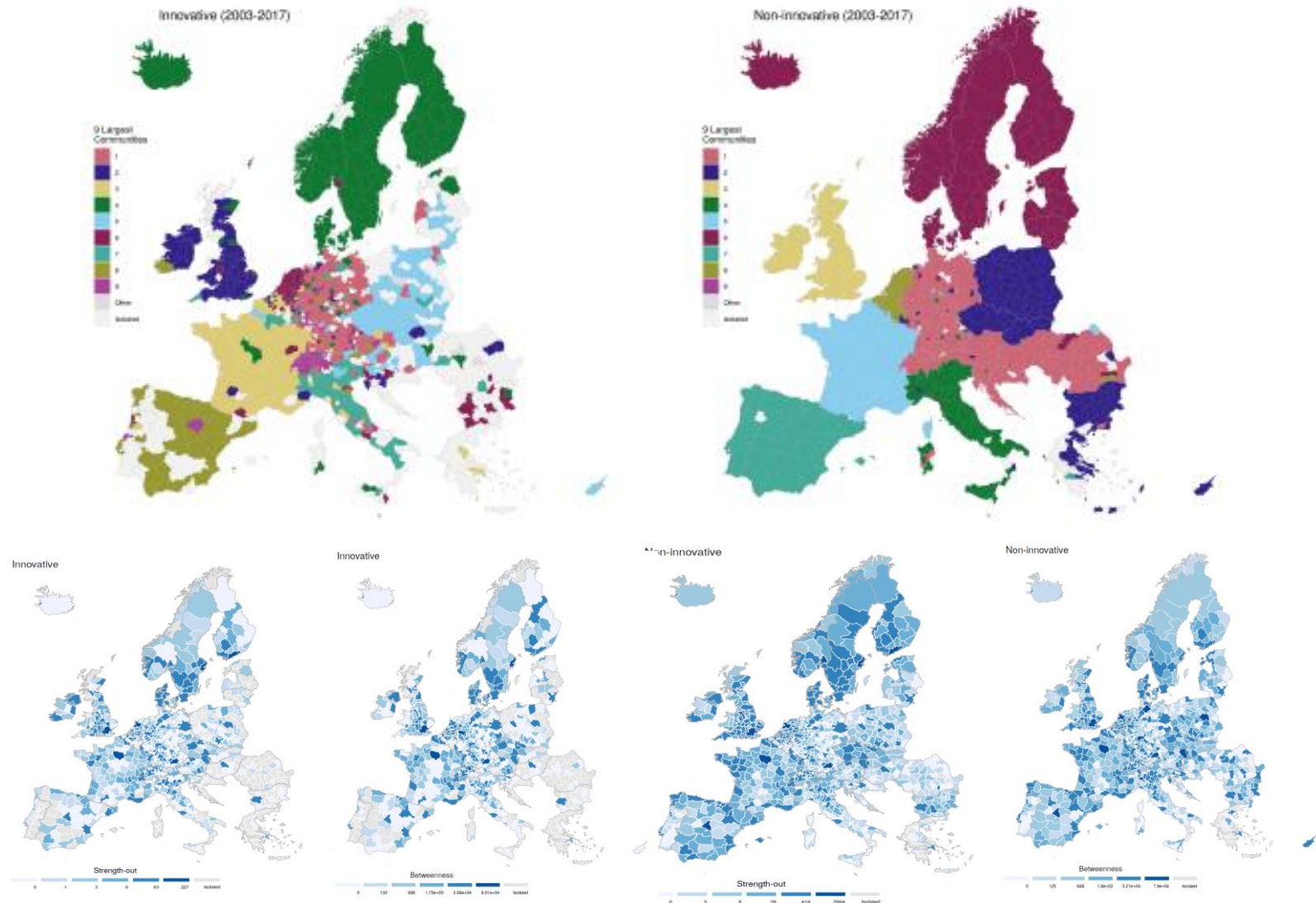
- Sparser
- Less cohesive
- More international

Then the non-innovative M&A network.

	Innovative	Non-innovative
Regions	809	1076
Links	3545	14980
Density	0.005	0.013
Average path length	3.600	2.945
Modularity	0.442	0.447
Cross-border	52.1%	47.3%

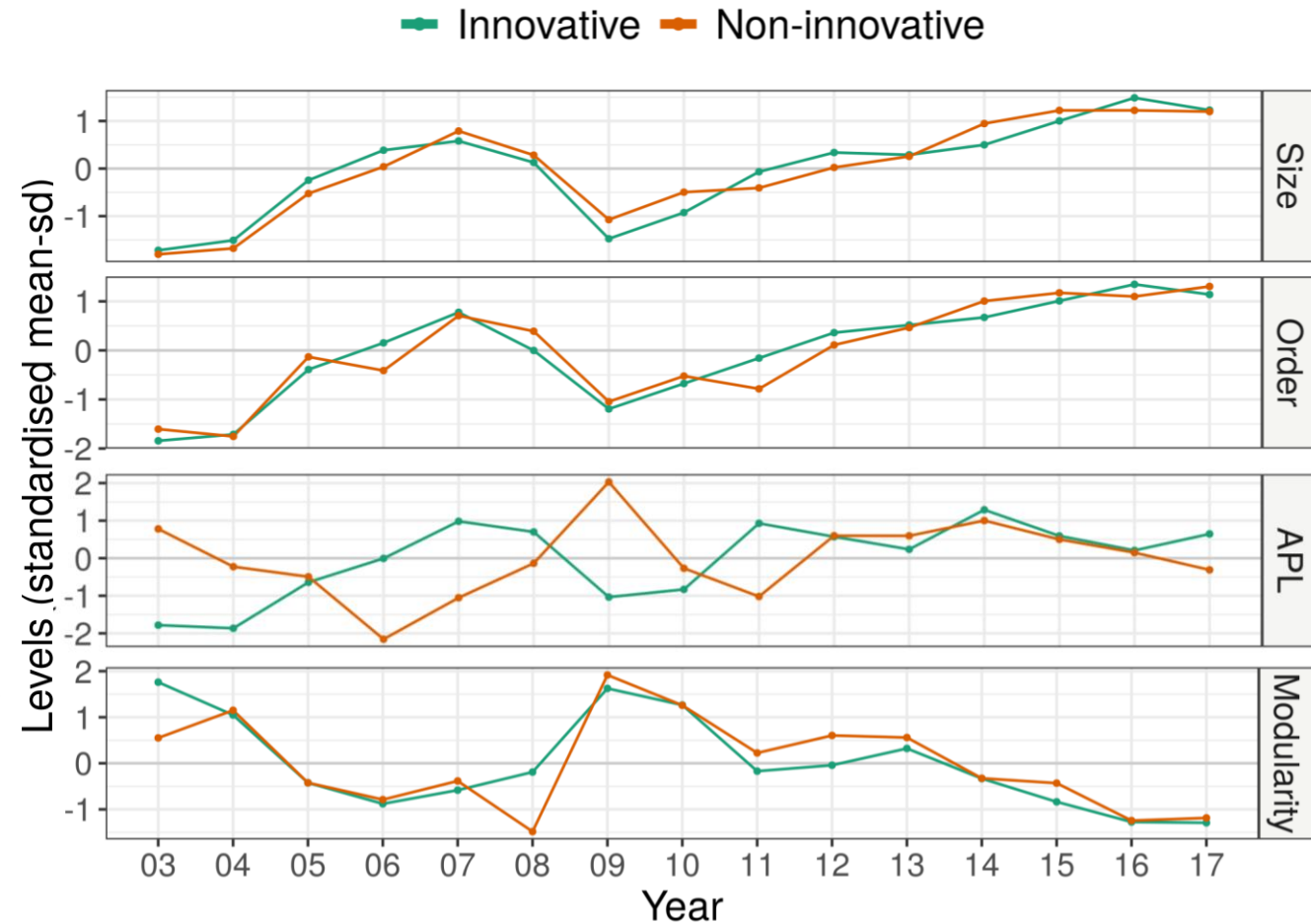
Spatial structure

- Both networks are fragmented into national/regional subnetworks
- These subnetworks are organized around hubs that stand out in
 - The number of transactions with other regions (Strength)
 - Bridging otherwise loosely connected communities (Betweenness centrality)
- The innovative network is spatially more diffused



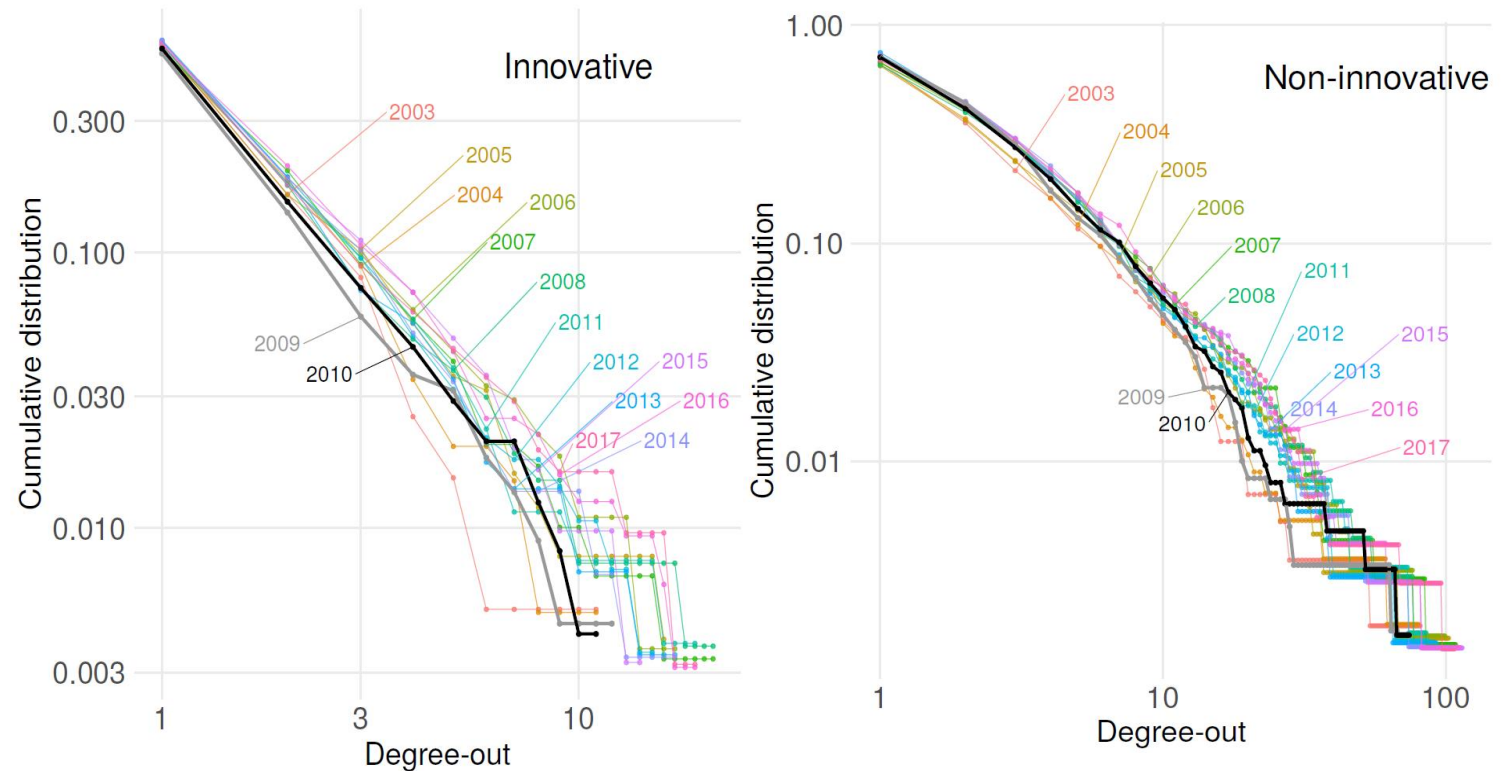
Dynamics

- General trends
 - Both networks are growing
 - EU integration: modularity is decreasing
- Financial crisis
 - The innovative network becomes smaller in path length: investments to Eastern and Southern regions are missing
 - Both networks become more fragmented



What regions are hit the most by the crisis?

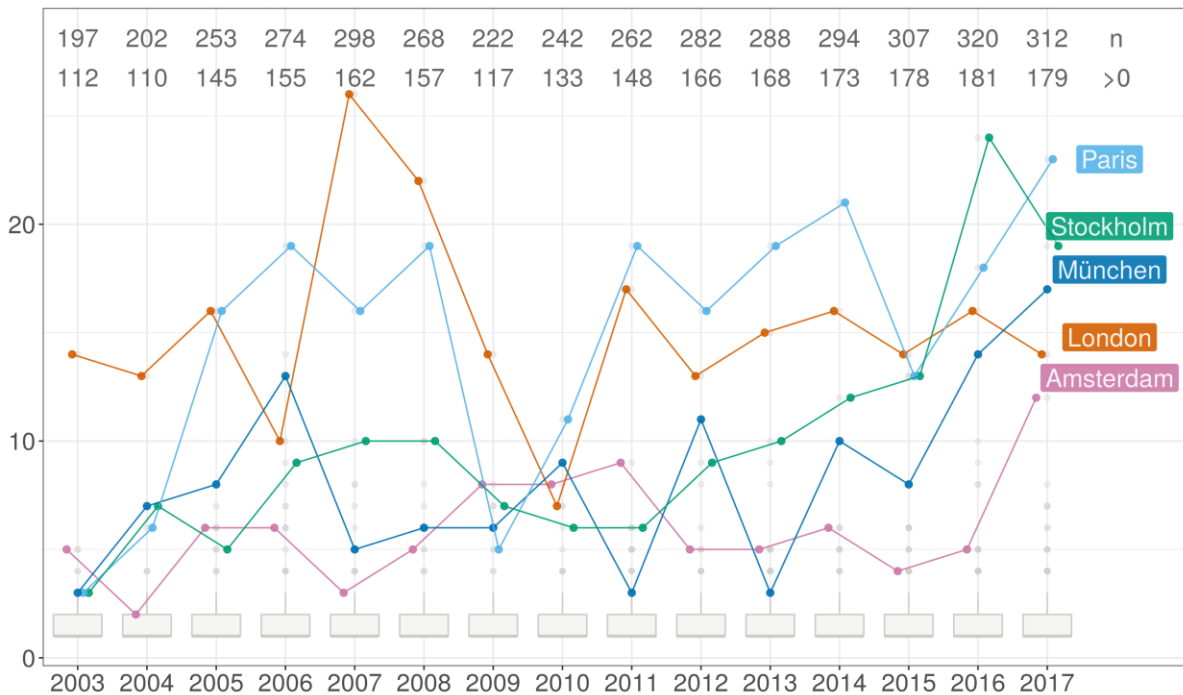
- Degree distribution on log-log scale reveals a power law for the innovative network
 - This network is dominated by large hub regions
- Following the financial crisis (2009-2010)
 - Innovative: small and medium degree decreases but high degree decreases the most
 - Non-innovative: only medium degree decreases



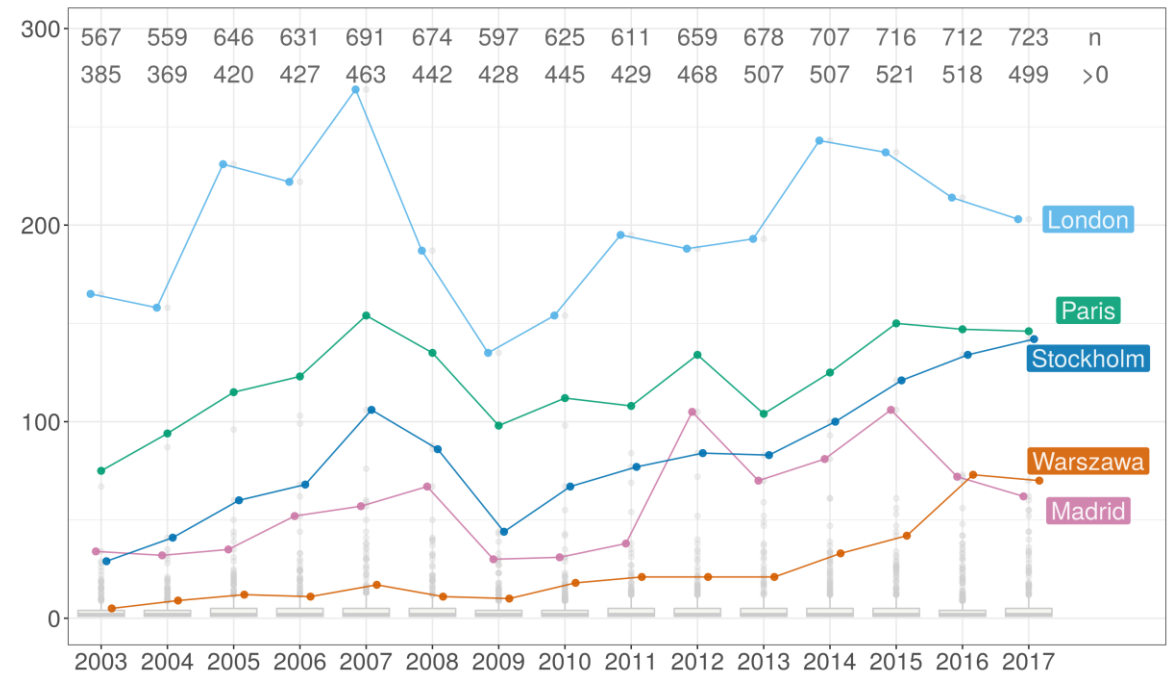
Top acquirer regions

The number of acquisitions fall over financial crisis.

Innovative (Strength-out)



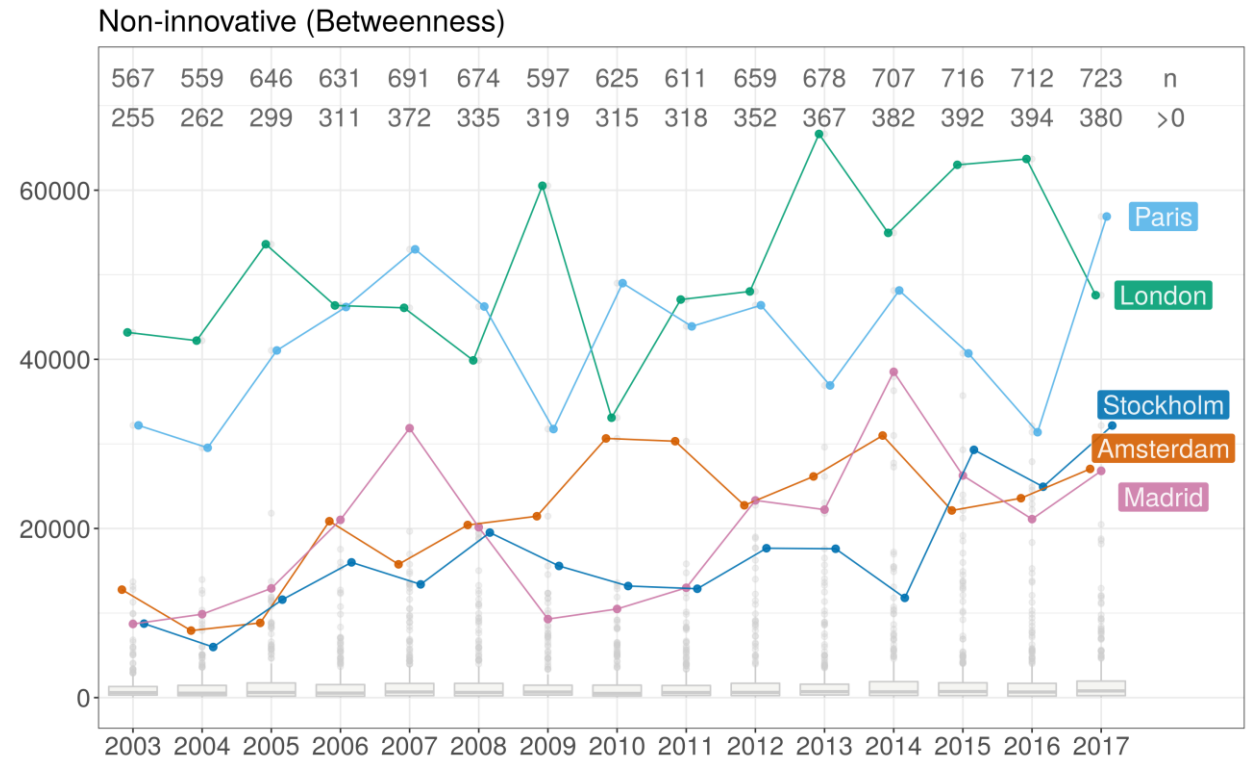
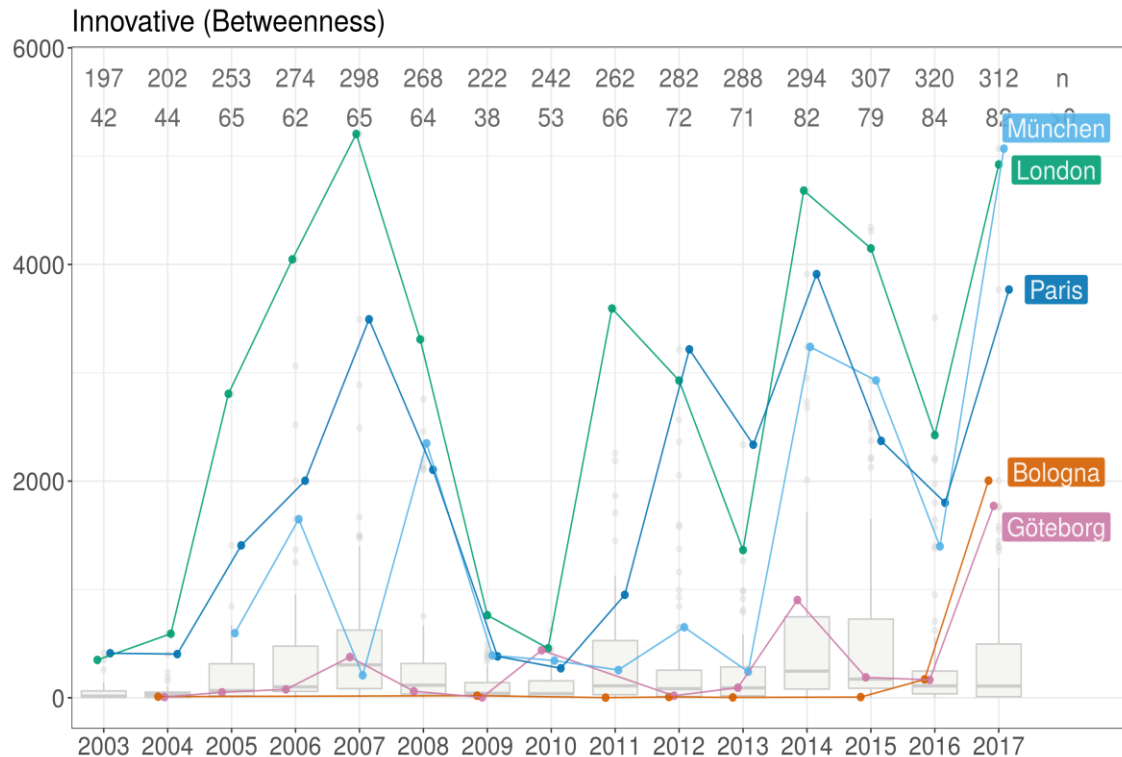
Non-innovative (Strength-out)



Most important bridge regions

Top regions do not bridge fragments of the innovative network over the crisis.

The innovative network became more fragmented over crisis because big regions were hit.



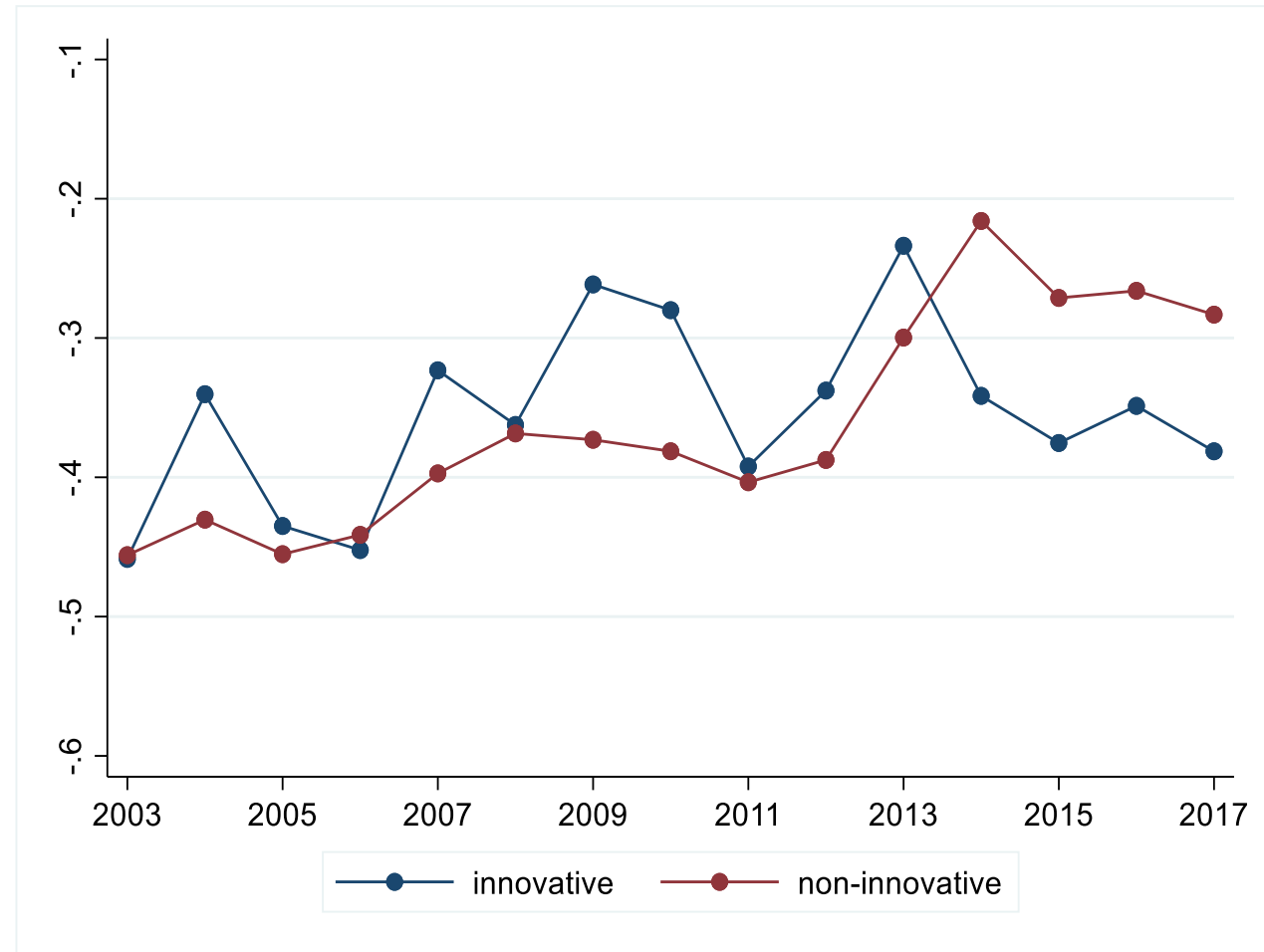
Work in progress: motivations behind M&A types

Fixed effect regressions reveal that there is more innovative M&A activity targeted to R&D intensive regions and more non-innovative M&A to regions with high market potential.

	Innovative				Non-Innovative			
	Acquirer regions		Target regions		Acquirer regions		Target regions	
	Degree-out	Strength-out	Degree-in	Strength-in	Degree-out	Strength-out	Degree-in	Strength-in
Economic development	1.081*	1.453**			1.904*	8.013***		
	(0.562)	(0.634)			(0.982)	(2.668)		
R&D intensity	-0.178*	-0.207*	0.243**	0.214*	-0.141	-0.356	-0.175	-0.360
	(0.104)	(0.121)	(0.095)	(0.116)	(0.203)	(0.395)	(0.136)	(0.322)
Market potential			0.038	0.078			1.022	4.201**
			(0.189)	(0.188)			(0.691)	(1.809)
Unemployment rate	0.015	0.023	0.022*	0.025*	0.001	0.116*	-0.003	0.038
	(0.014)	(0.016)	(0.012)	(0.013)	(0.024)	(0.063)	(0.018)	(0.051)
Constant	-9.595*	-13.272**	0.097	-0.248	-14.462	-73.606***	-6.431	-38.606*
	(5.685)	(6.409)	(2.061)	(2.044)	(9.822)	(26.735)	(7.461)	(19.641)
N	2429	2429	2439	2439	3767	3767	3784	3784
Log-likelihood	-3931.453	-4192.984	-3805.141	-4032.167	-8776.923	-11947.689	-8563.497	-11717.999
Specification	FE	FE	FE	FE	FE	FE	FE	FE

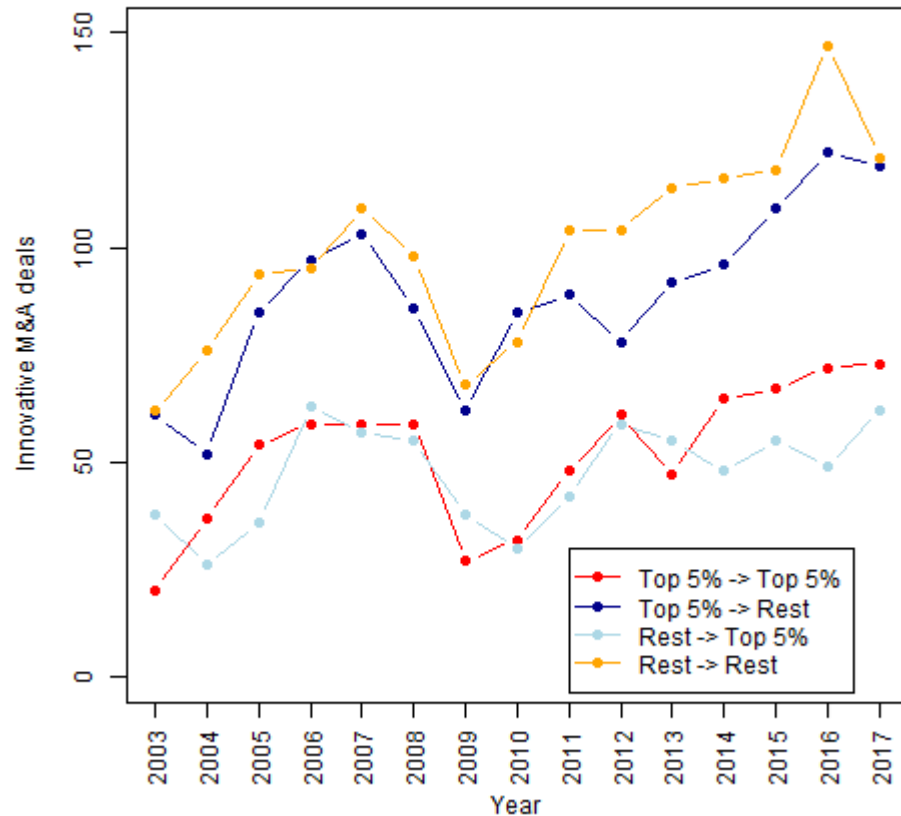
Work in progress: Homogeneity in terms of EU Structural fund Objective categories

The E-I index [-1;1] of network homophily reveals that M&A transactions tend to happen across regions of same Objective category.



Work in progress: links between high- and low-rank regions

Innovative M&As are likely to target regions that are involved in few transactions only.



Conclusions

1. The innovative network is sparser and spatially more diffused than the non-innovative network.
2. Both innovative/non-innovative M&A networks are fragmented into national/regional subnetworks organized around hub regions.
3. Fragmentation of both networks is decreasing over time signaling an integrated European business area but this is stopped during the financial crisis.
4. The integration of the innovative M&A network stops over the crisis due to decreasing activity in hub regions.
5. Innovative M&A is motivated by knowledge access while non-innovative M&A is motivated by access to new markets.

Thank you for your attention!

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