

# International comparison and perspectives on clusters

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# Outline

- I. Rationale of cluster policies
- II. Cluster policies and network failures
- III. Structural effects of cluster policies
- IV. Case study: The Wine Cluster in South Africa (*group work*)
- V. Discussion and Q&A
- VI. Conclusions

# **I Rationale of cluster policies**

# Context

- ↪ The role of innovation in growth and competitiveness is well-established (Solow, 1957)
- ↪ Due to **market failures**, the activities, compared to the socially desirable level:
  - ↪ Costs of R&D projects and long pay-back times
  - ↪ Knowledge has characteristics of a public good
- ↪ **Need for public intervention**
  - ↪ Direct innovation policies focusing on public R&D subsidies
  - ↪ Indirect innovation policies focusing on tax incentives
- ↪ Collaboration as an important vehicle for innovation (Kline and Rosenberg, 1986)

# Key characteristics of clusters and cluster policies

- A cluster is “a geographical proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and externalities”. (Porter, 1998)
  - Two main policy instruments: direct R&D support (subsidies to R&D projects) and non- nancial support (training, partnership building, technical assistance, etc.)
- Cluster policies as:
  - Collaboration-based policies*, by providing incentives for collaborative research
  - *Network-based policies*, by integrating cluster participants into innovation networks
  - *Place-based policies*, by enhancing the spatial concentration of economic activities
  - *Structural policies*, by aiming to affect the long-term economy
- ➤ Better connections between innovation actors would result in greater innovation outputs

## **II. Cluster policies and network failures**

# Cluster policies as network-based policies

- Clusters have emerged as important policy instruments in recent decades, calling for evidence to support their implementation
- However, despite the growth of a body of literature evaluating cluster policies, changes in the structure of innovation networks resulting from cluster policies remain unclear
- Network failures: refer to the insufficient and/or inefficient levels of networking and knowledge exchange between organizations

# Key network topologies (1)

- ↗ • **Size and composition:** the number and type of actors that make up the local network (cluster)
- ↗ • **Connectivity:** the extent to which the actors in the cluster are linked to one another constituting connected components
- ↗ • **Closeness:** measures how far the actors of the cluster are on average
- ↗ • **Clustering:** measures the existence of closed triplets and the formation of subgroups of actors highly interconnected among them

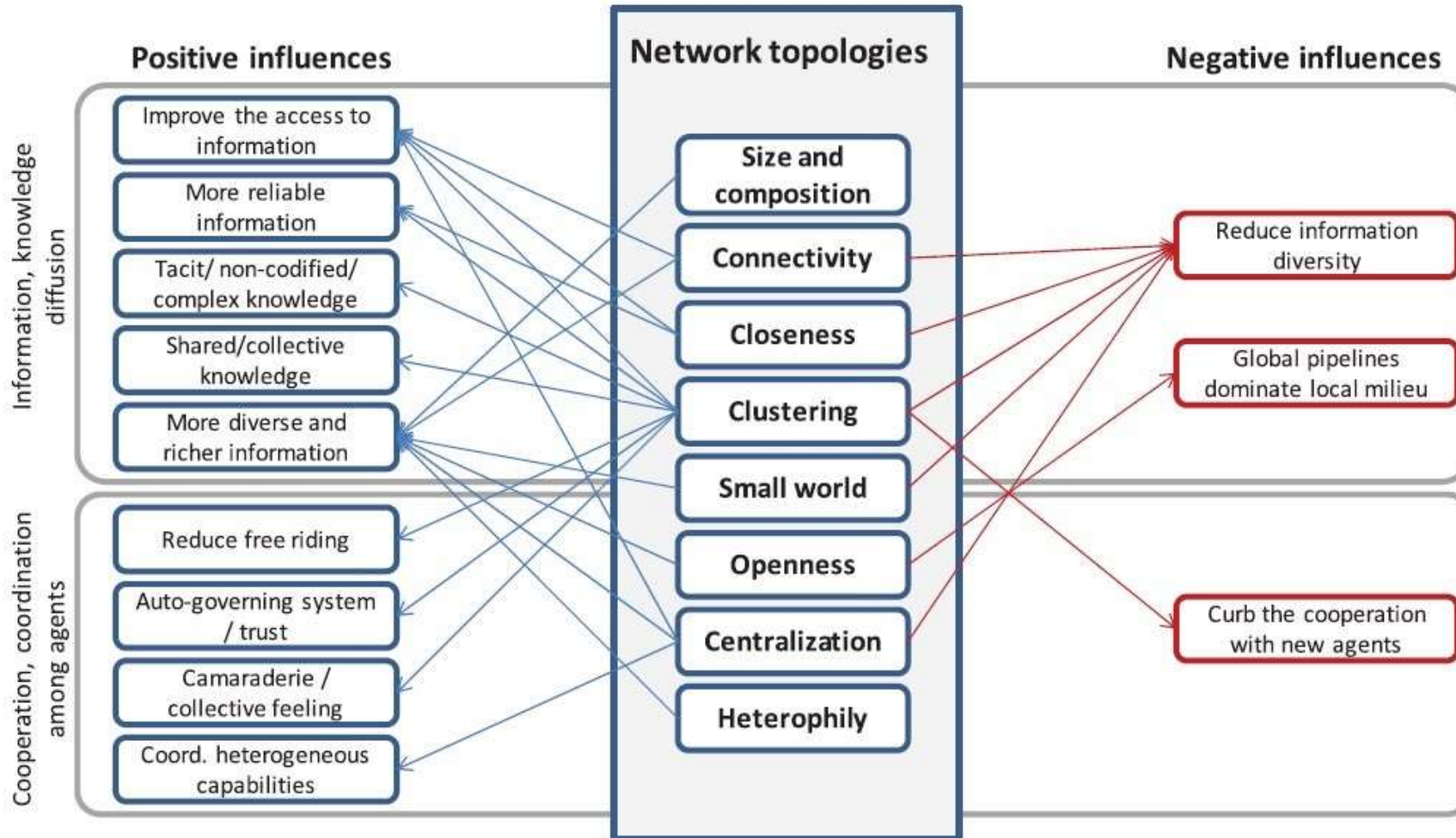
Galaso, P. 2017. Network topologies as collective social capital in cities and regions: a critical review of empirical studies, European Planning Studies



## Key network topologies (2)

- ↗ • **Small world:** small world networks are those with high levels of both clustering and closeness (Watts & Strogatz, 1998)
- ↗ • **Openness:** the extent to which local actors are connected to actors located outside the city/region
- ↗ • **Centralization:** refers to the distribution of connections among actors within the cluster
- ↗ • **Heterophily:** tendency of actors connecting to others with dissimilar characteristics

# Influence of network topologies (3)



Galaso, P. 2017. Network topologies as collective social capital in cities and regions: a critical review of empirical studies, European Planning Studies

## **III. Structural effects of cluster policies**

### Evidence from France

Alain N'Ghauran and Corinne Autant-Bernard. 2022. *Effects of cluster policies on regional innovation networks: Evidence from France*. Regional Studies

# Motivation

- Increasing importance is given to supporting R&D clusters. The EU Commission records cluster policies in all the EU countries (Report of the European Observatory for Clusters and Industrial Change, 2019).
- Whereas such policies aims at favoring knowledge diffusion through strengthening regional innovation networks, most policy impact evaluations focus on input and output additionality.
- The literature trying to assess the effectiveness of collaboration and network-based policies on systemic additionality (Larosse, 2001) remains scarce and far between.

# Aim of the paper

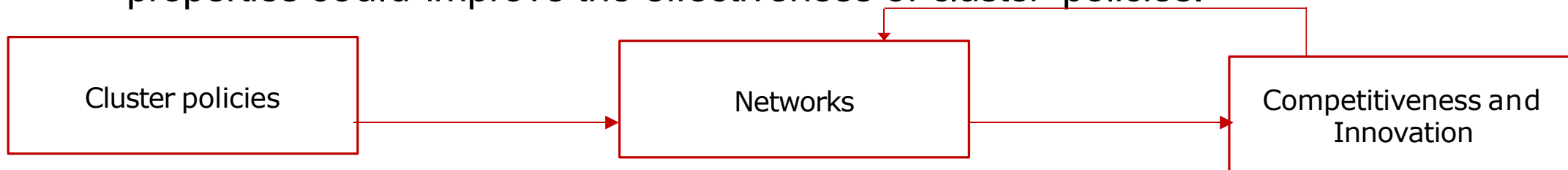
- Identifying the network properties that may favor knowledge diffusion and production.
- Investigating whether cluster policies can successfully shape local network properties
- Exploring whether the policy ability to improve local network properties differs according to the local industrial structure

# Originality of the paper

- We consider three key network topologies properties (network cohesion, efficiency and resilience)
- We consider pre and post-treatment periods to assess the policy impact
- We use patent data to build an external to the policy R&D network
- We rely on a spatial model to take into account the regional interdependencies due to local collaborations

# Main findings and policy implications (focusing on the French Cluster Policy over the period 2002-2013)

- Overall, the results do not provide clear evidence supporting that the French cluster policy has strengthened the cohesion, efficiency and resilience of local inventor networks
- French cluster policy has strengthened network assortativity (homophily)
- Better identifying the specific objectives in terms of system and network properties could improve the effectiveness of cluster policies.



## **IV. Case study: The Wine Cluster in South Africa**

Martina Lorenzon. 2019. The role of Industrial Clusters in the development of African countries. Master thesis n°869973. Ca' Foscari University



# Context

- • South African wine traditions date back to 1659 and today South Africa is the ninth-largest wine producing market globally
- • South Africa exports almost 50% of its wine, with Europe being its most important export market
- • The wine industry in South Africa counted only for 0,57 per cent of global wine exports in 2017 ([www.atlas.cid.harvard.edu](http://www.atlas.cid.harvard.edu)), and this is not a promising result considering that the industry is strongly export-oriented
- • The definition and identification of wine clusters remain the subject of debate in the scientific community (Begalli et al., 2014), as sometimes the definition can concern **a wine region**, a **local production system**, an **industrial district** and so forth.

# The Wine Cluster in South Africa (1)

- ↗ The Industry is characterized by major players and several, increasing little producers, creating a network with more or less strong links among enterprises
- ↗ Concentration of producers is in Western Cape (i.e. Stellenbosch, Paarl, Swartland, Bredekloof)
- ↗ Producers in the cluster are essentially divided into 4 segments:
  - ↗ Established producers
  - ↗ New producers,
  - ↗ Cooperative producers
  - ↗ Wholesalers
- ↗ Cooperatives play an important coordination role

## The Wine Cluster in South Africa (2)

### ➤ Supporting institutions include:

Agricultural Research Council (ARC) – a partially state-funded science council for the agricultural industry

Wine Industry Network for Expertise and Technology (Winetech) – a hub that allocates funding to research on competitive bidding...

### ➤ Active research organizations

South African Grape and Wine Research Institute (SAGWRI)

South African Wine Industry Information and Systems (SAWIS)

### ➤ Most successful companies are the one with greater available resources dedicated to innovation initiatives

### ➤ Wide disparity in performance between the different industry segments

# Group work

- Assuming the government decide to officially create and support a Wine Cluster in Western Cape
- Taking a network perspective, what would be the **top 3 network topologies** you may suggest to the Government to consider in the policy design? Why?
- Assuming the government want to rely on R&D subsidies, could you propose some **eligibility criteria** in order to impact the network topologies you suggest?
- What would be the **role of academia** in structuring the such a cluster ?

# Main takeaways

- Cluster policies are structural policies
- Their effect on a region will strongly depend on the resulting network dynamics from the policy
- There is no “one size fits all” cluster policy
- The network topologies to tackle will vary depending on the region, the industry, the life cycles, etc.
- Building strong and relevant South African cluster policies will require involving multiple stakeholders
- In a study on Chile and South Africa, Giuliani and Rabelotti (2011) show that talented university researchers are more likely than others to act as brokers between the local industry and their international colleagues in academia