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# The principle of relatedness

**Ron Boschma**

Department of Human Geography and Planning,
Utrecht University

UiS Business School
Stavanger University

New Science of Cities - GEO4-3632

Utrecht, 30 September 2021

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# structure of lecture

1. relatedness and regional diversification
2. agents of (structural) change
3. smart specialisation policy

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# regional diversification

- regions need to diversify into new activities to secure long-term economic development
- but their capacity to do so differs …..
- how do regions create new activities?: new activities do not start from scratch
- local capabilities (knowledge, skills, networks, institutions) condition which new activities will be feasible to develop in a region
- local capabilities provide opportunities but also set limits to the diversification process in a region

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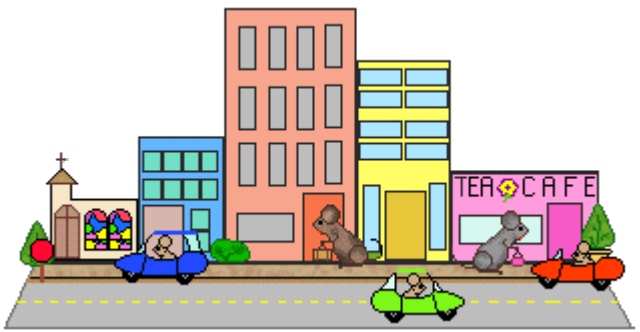
**related diversification** **unrelated diversification**

region A region B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studies: **related diversification is rule**, unrelated diversification the exception (Hidalgo et al 2018)

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# regional diversification

- Hidalgo, Klinger, Barabasi and Hausmann (2007)

- how countries build CA in new export products

- national capabilities condition which new export products will be feasible to develop

- product space: relatedness between products based on co-occurrence of products in countries' export portfolios

- countries develop new export products that are closely related to existing export products

- countries with related variety have more opportunities to diversify and sustain higher economic growth rates

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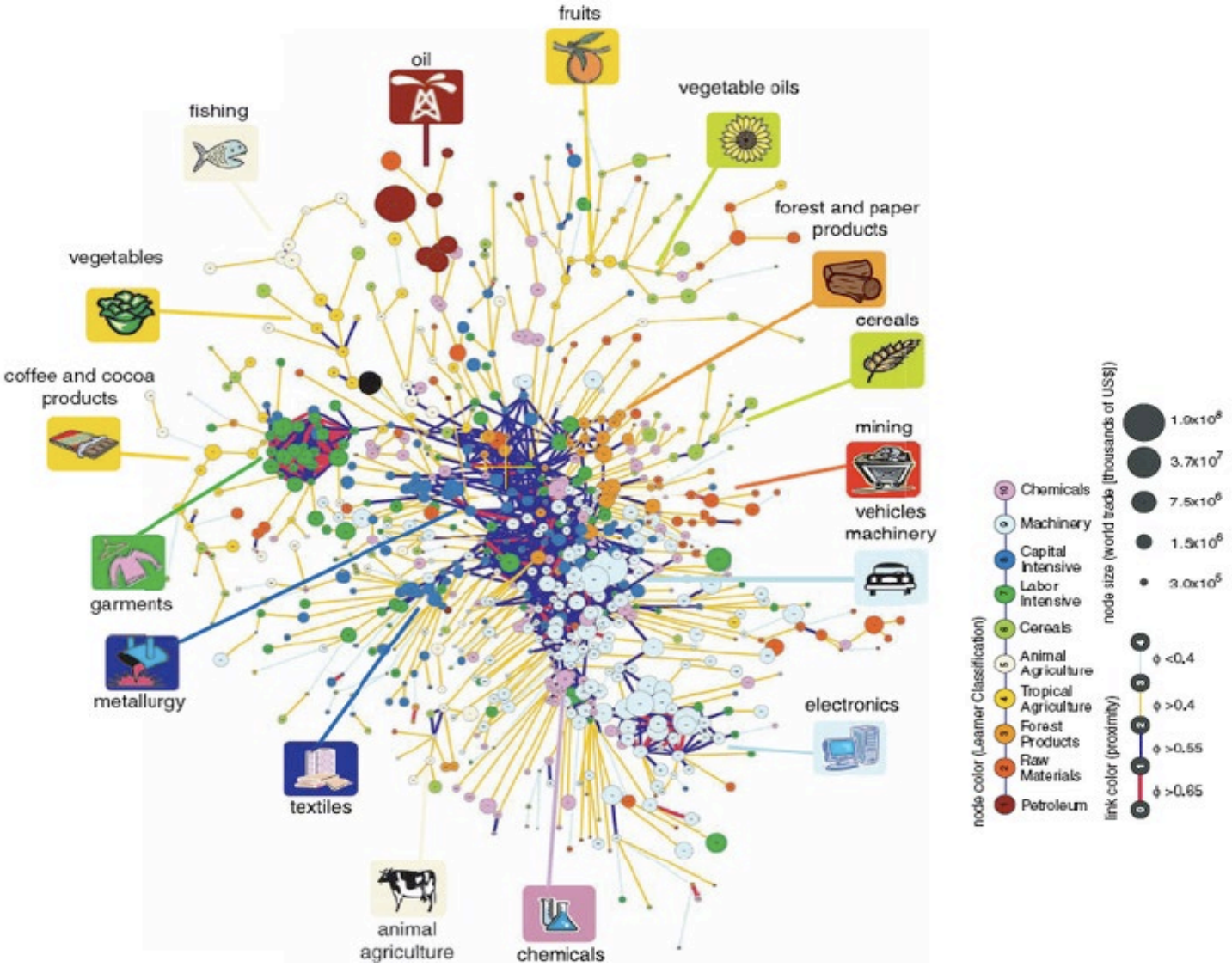
# product space

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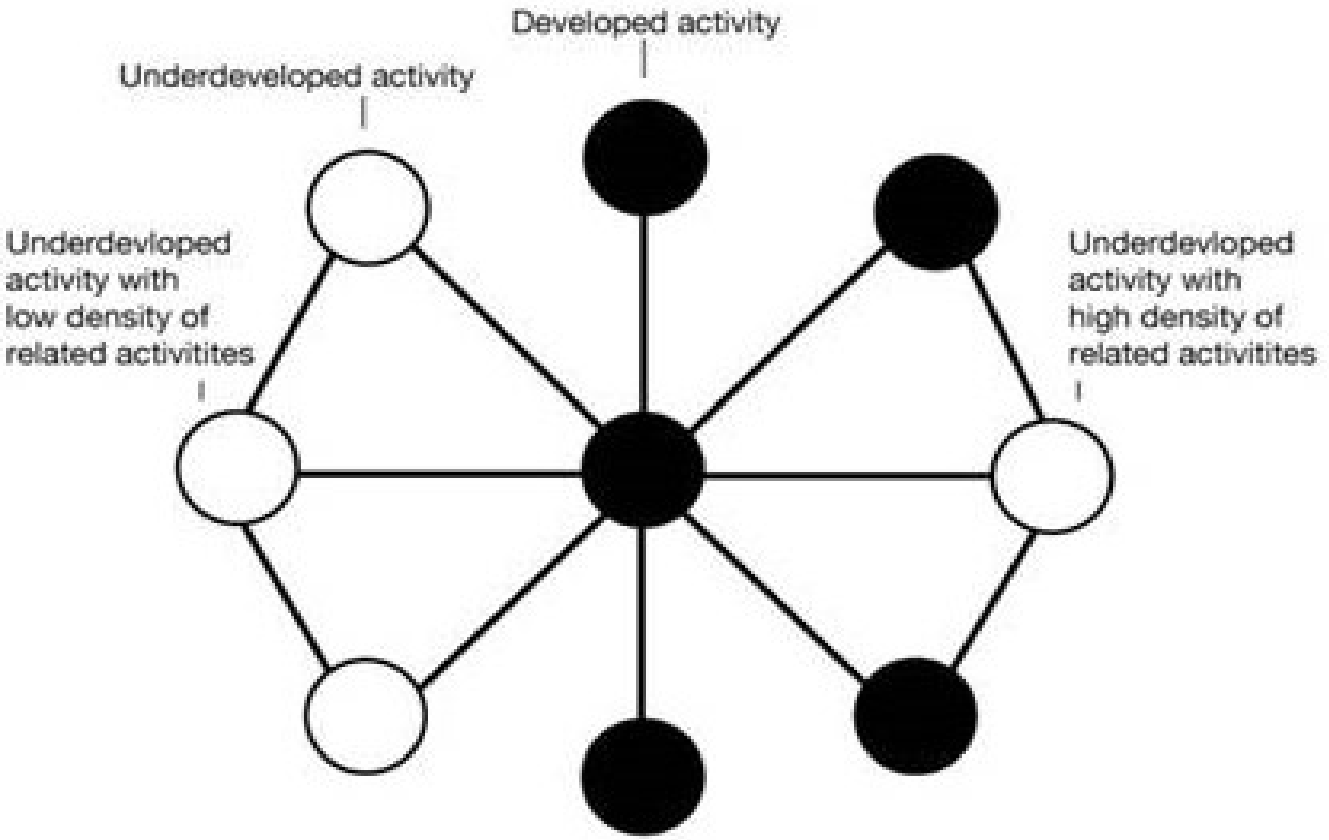
# related diversification in regions

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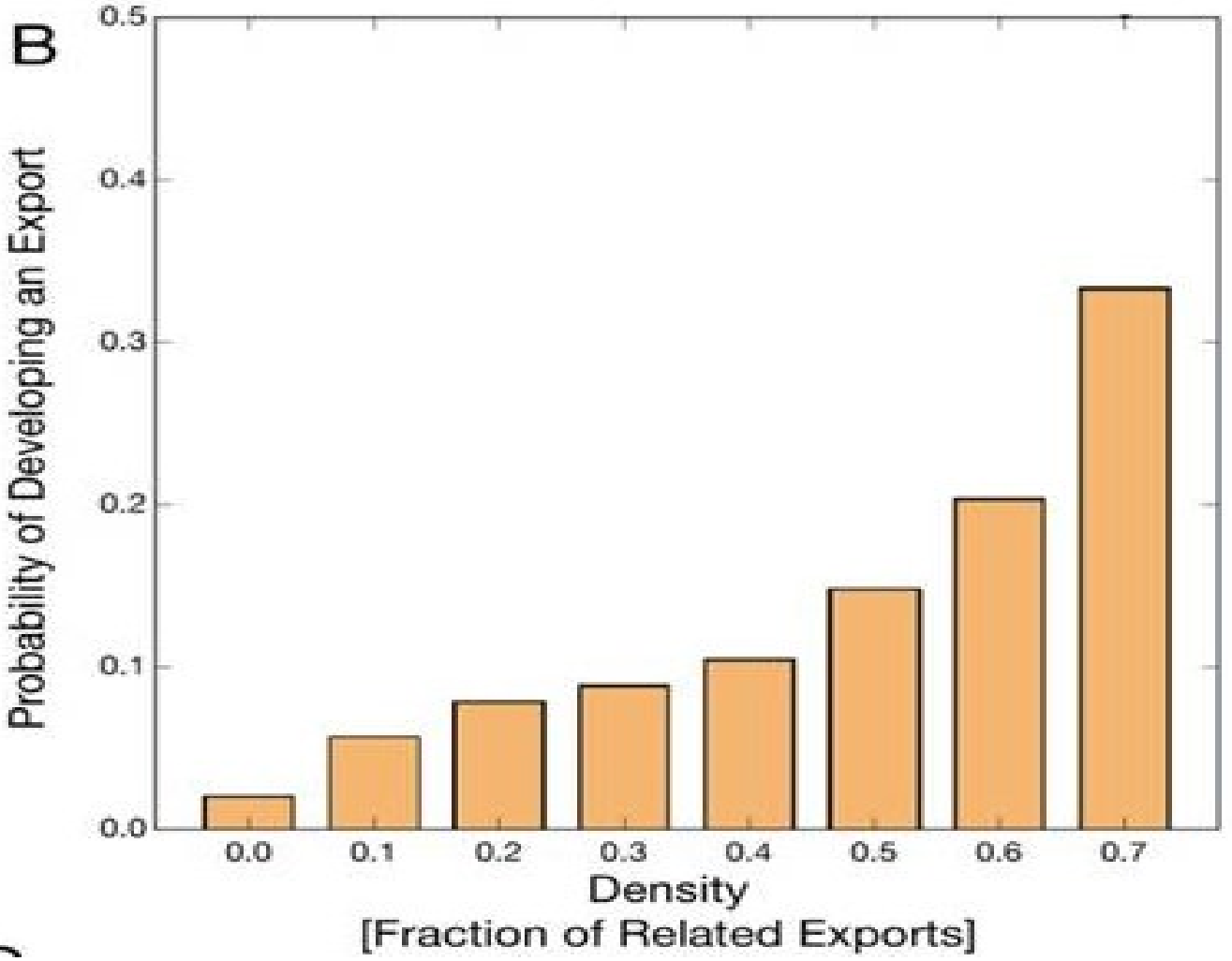
# related diversification in regions

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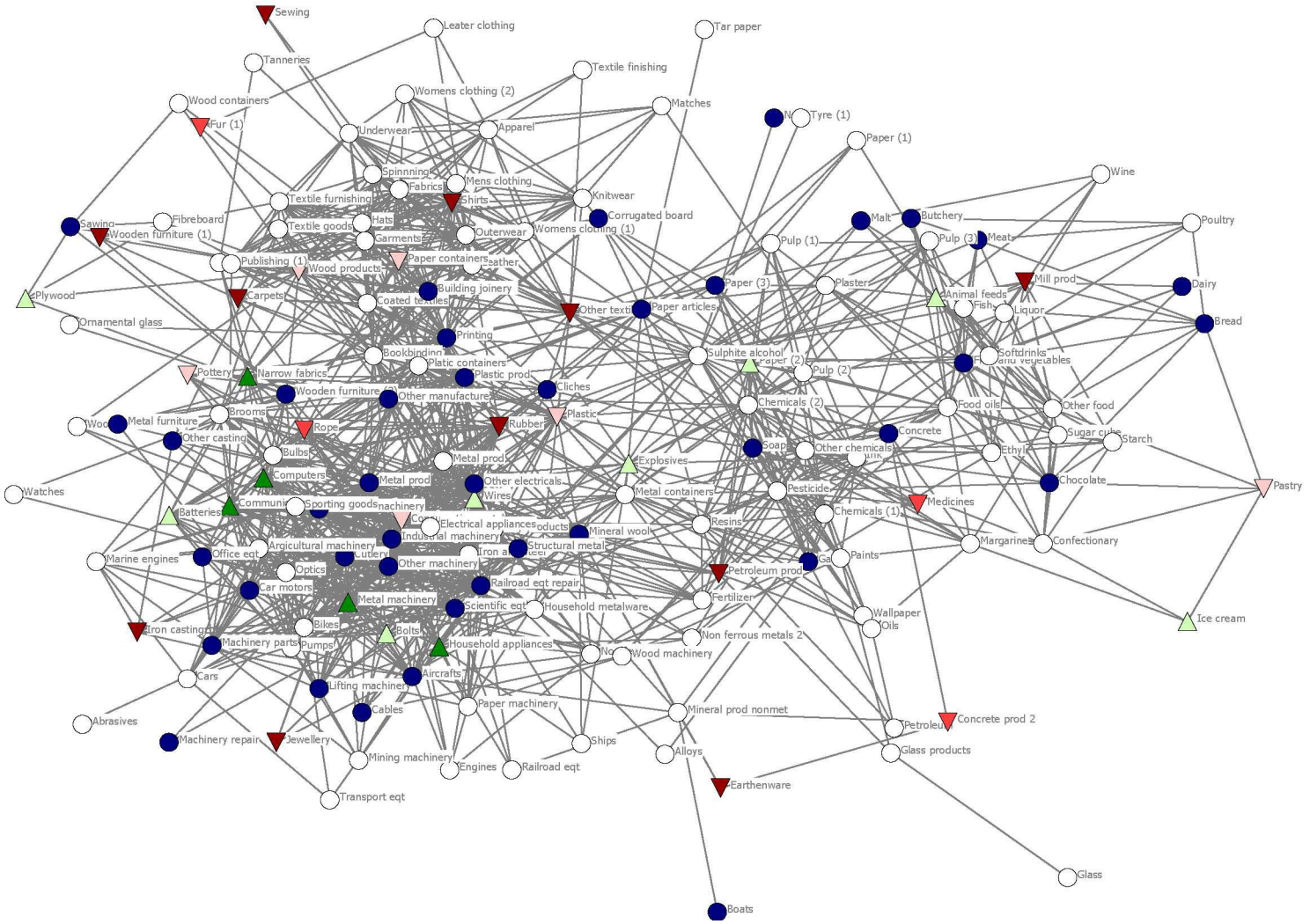
# diversification in Linkoping region (Neffke et al. 2011)

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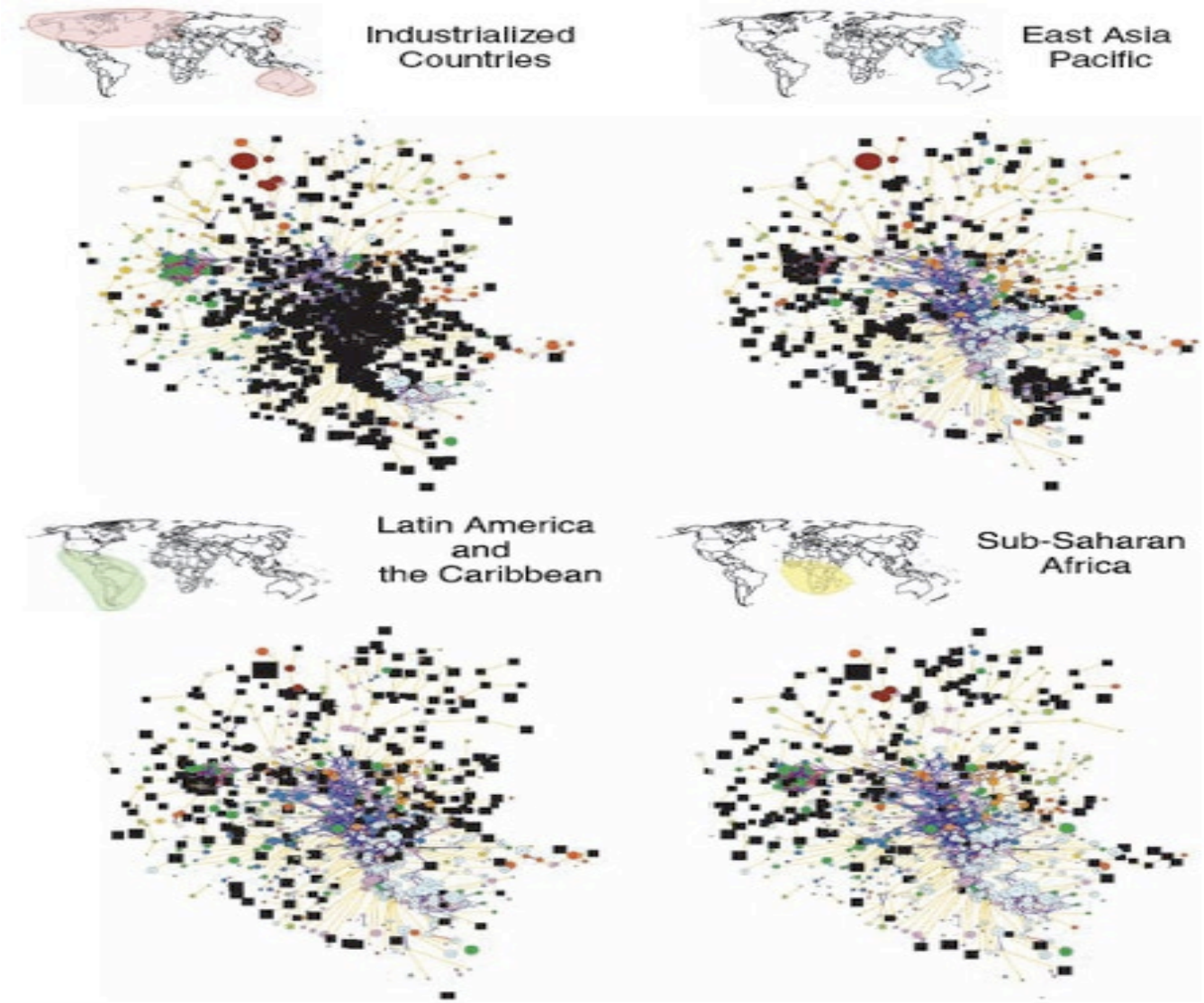
# (Hidalgo et al)

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## regional diversification

- other relatedness measures (Boschma 2017), e.g.:

- technology space: relatedness between technologies: co-occurrence of technology classes on patent documents

- solar technology space: relatedness between solar technologies and with other technologies

- industry space: relatedness between industries: based on similarities of skills requirements: intensity of labor flows

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# example of a patent document

US005410453A

**United States Patent** [19]

**Ruskouski**

[11] **Patent Number: 5,410,453**

[45] **Date of Patent: Apr. 25, 1995**

[54] **LIGHTING DEVICE USED IN AN EXIT SIGN**

[75] Inventor: **Charles R. Ruskouski, Danbury, Conn.**

[73] Assignee: **General Signal Corporation, Stamford, Conn.**

[21] Appl. No.: **160,583**

[22] Filed: **Dec. 1, 1993**

Patent Classes

[51] Int. Cl.[6] ..... **F21V 17/04**

[52] U.S. Cl. ..... **362/20**; 362/249; 362/240; 362/800; 362/812; 40/570

[58] Field of Search ..... 362/812, 800, 31, 20, 362/240, 250, 249; 40/570, 564, 580, 573

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22990 of 0000 United Kingdom .

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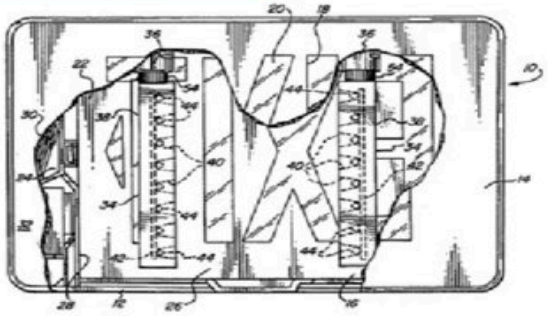
Brochure–Astralite 2000 LED Exit Sign Retrofit Kit Single Sided L.E.D. Retrofit Kit Instructions.
Dual–Lite brochure–We've Created A Masterpiece. Again.


*Primary Examiner*—Ira S. Lazarus
*Assistant Examiner*—Thomas M. Sember
*Attorney, Agent, or Firm*—Ware, Fressola, Van Der Sluys & Adolphson

[57] **ABSTRACT**

In a lighting fixture such as an exit sign, a light emitting diode lighting device is provided for mating engagement with an electrical socket of the lighting fixture. The light emitting diode device has a plurality of light emitting diodes recessed in apertures for directing light into a desired illumination pattern.

**37 Claims, 5 Drawing Sheets**



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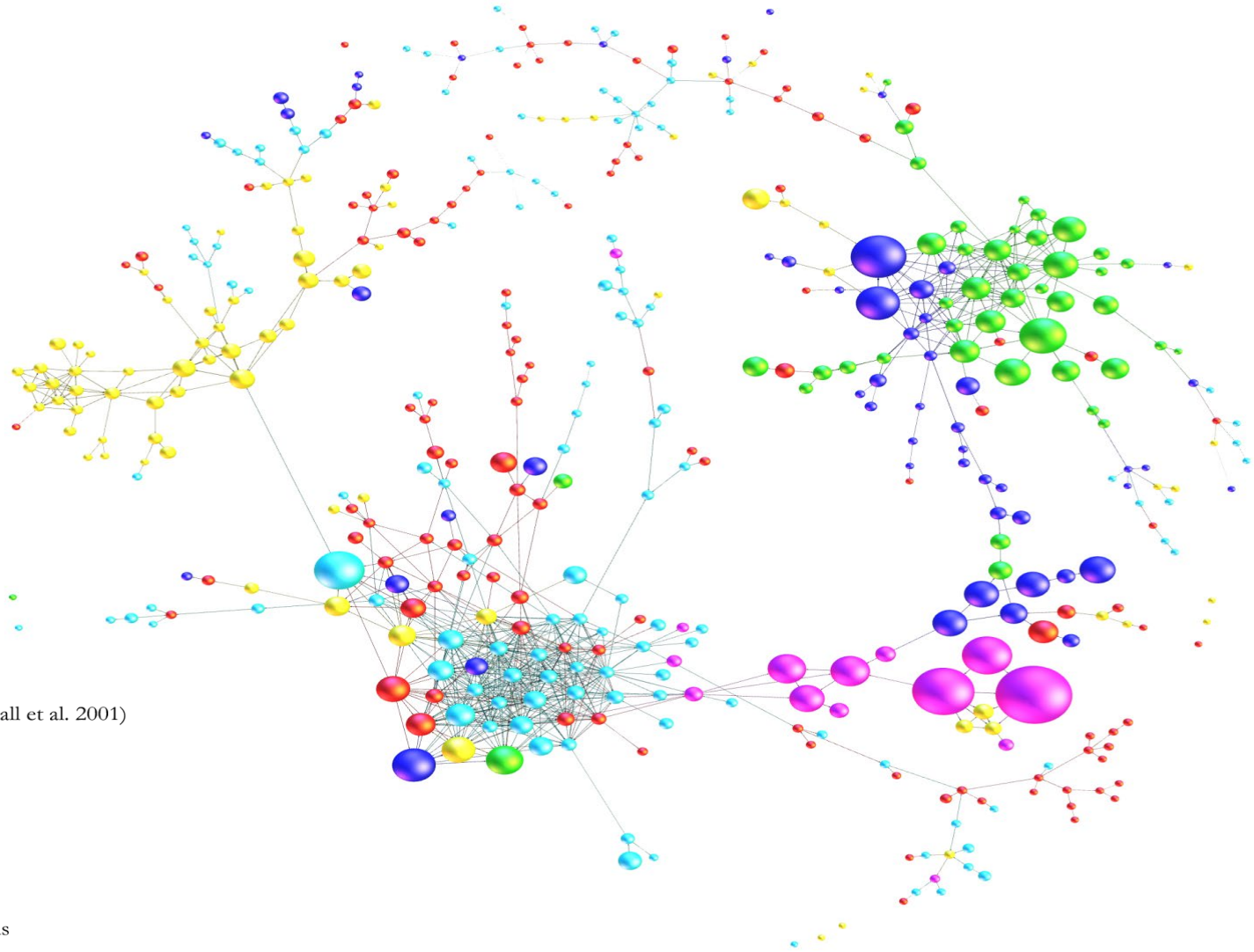
# technology space (Boschma et al. 2015)



Node size: # of patents

Node color: USPTO classification (Hall et al. 2001)

- Mechanical
- Chemical
- Drugs and Medical
- Electrical and Electronic
- Computers and Communications
- Others

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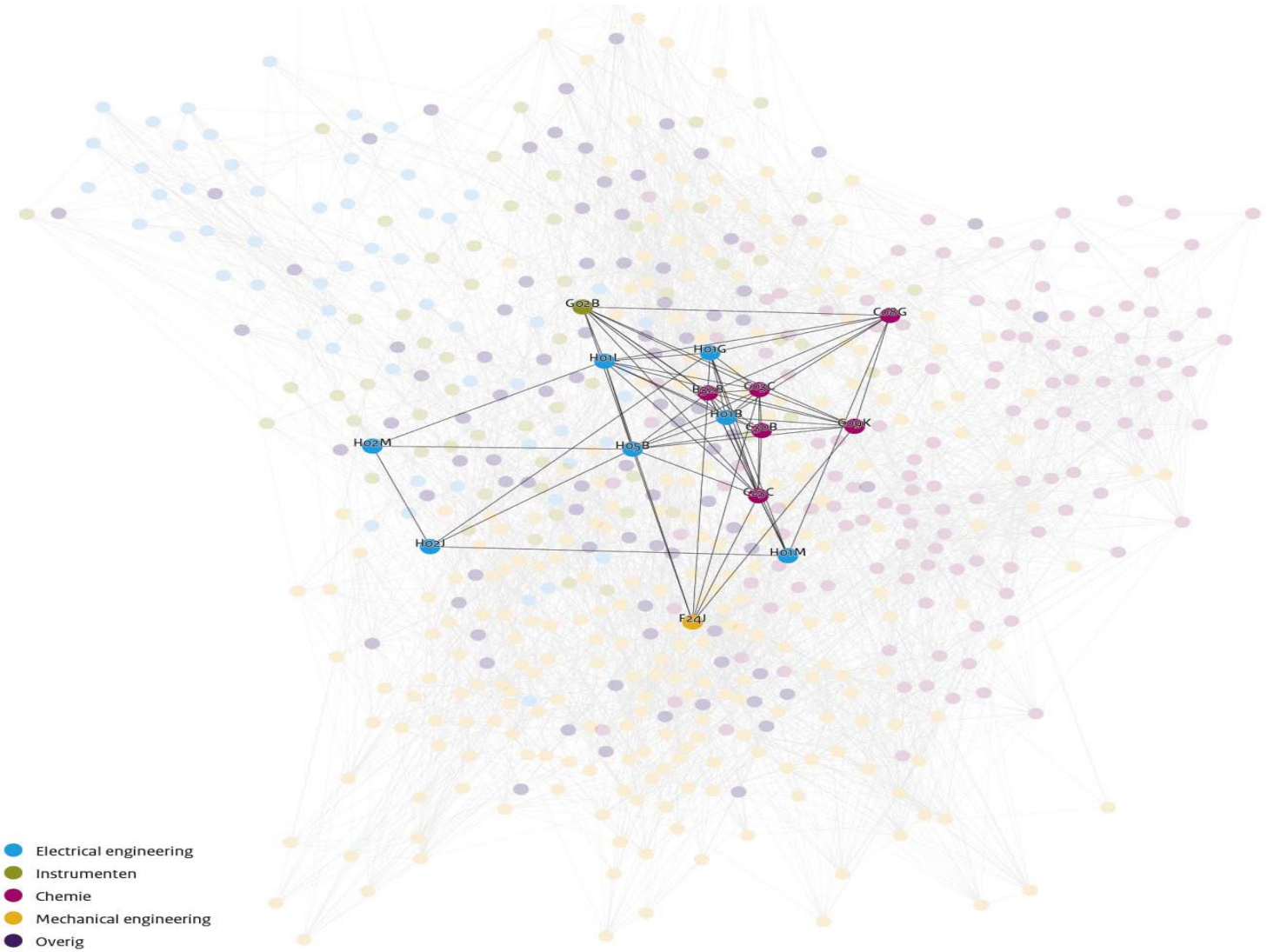
# solar technology space




Bron: OECD REGPAT database

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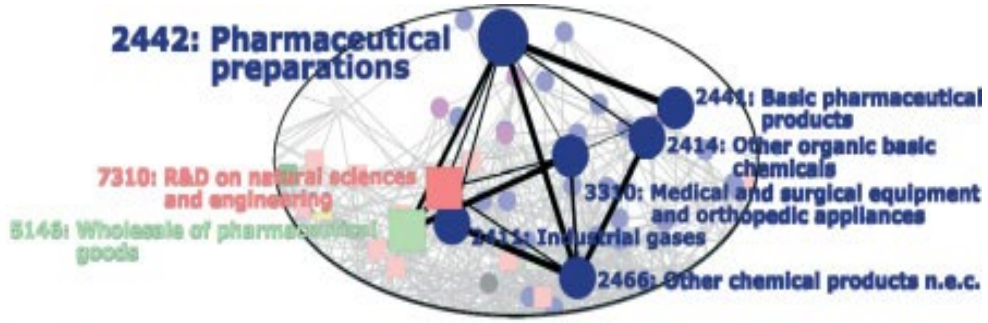
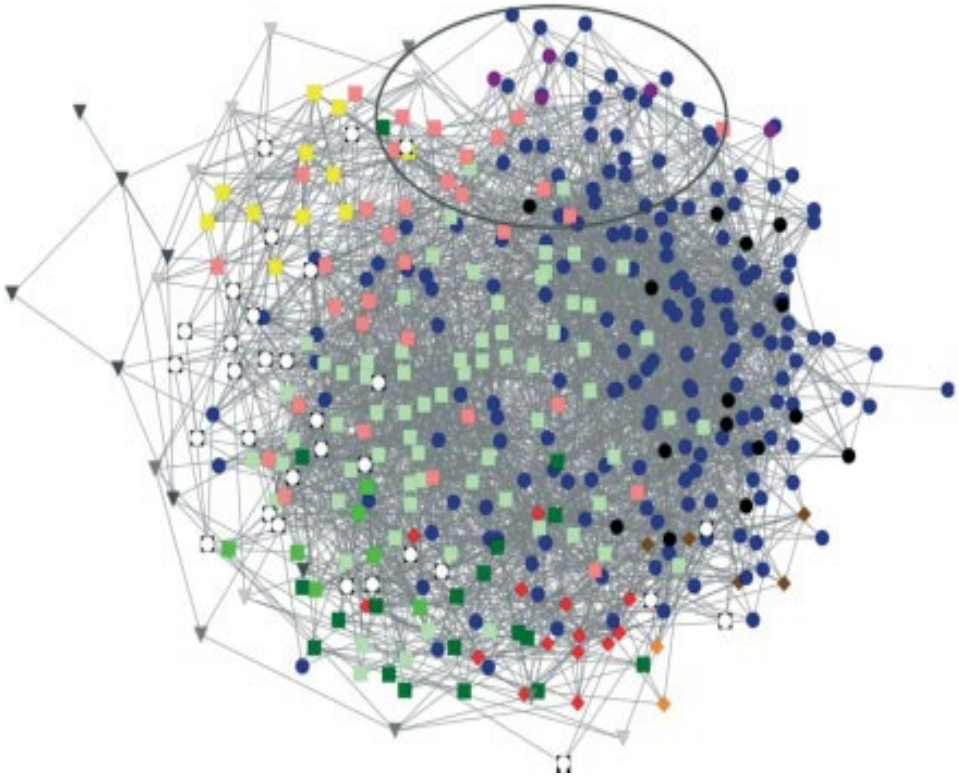
# skill space

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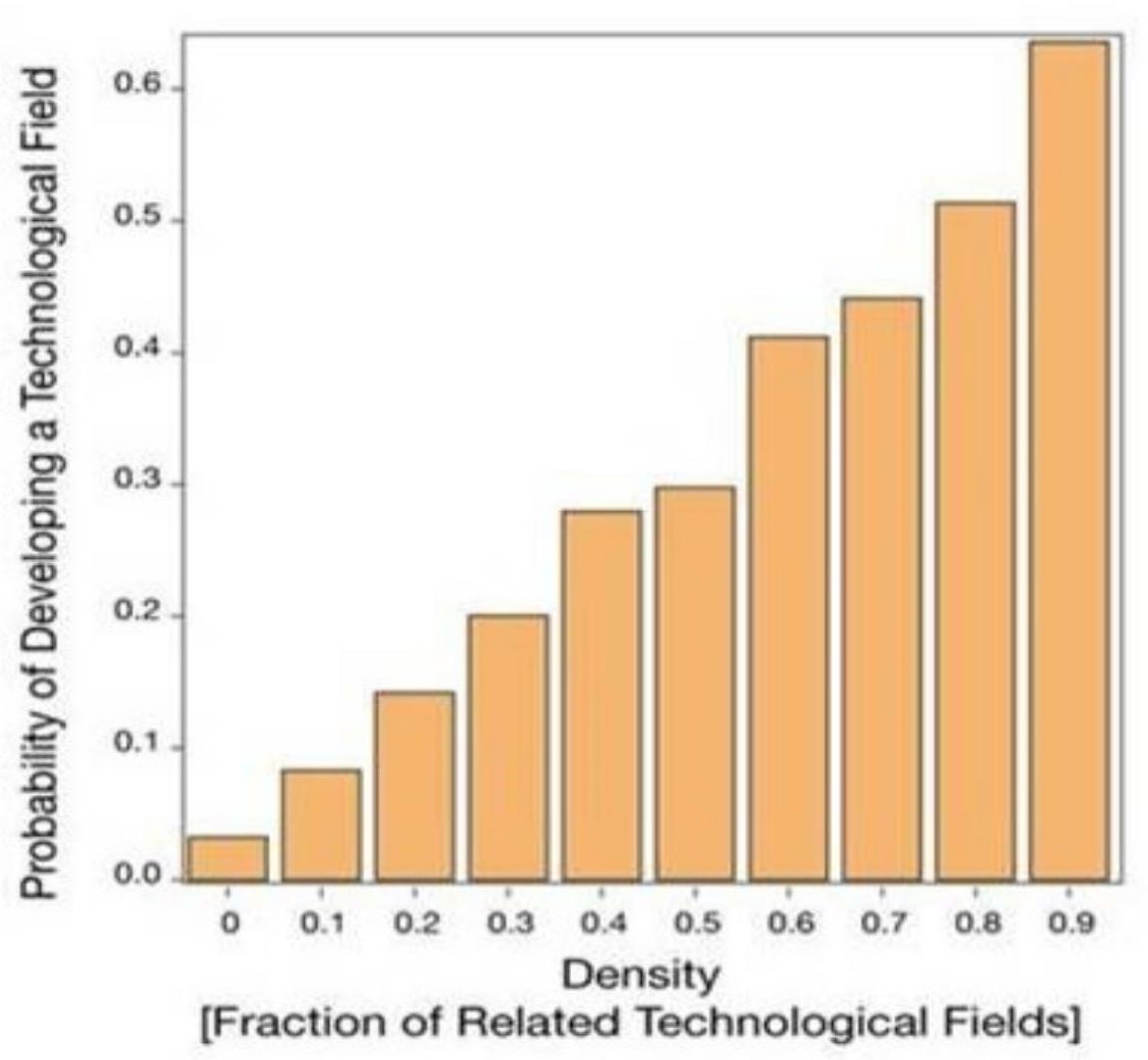
# regional diversification

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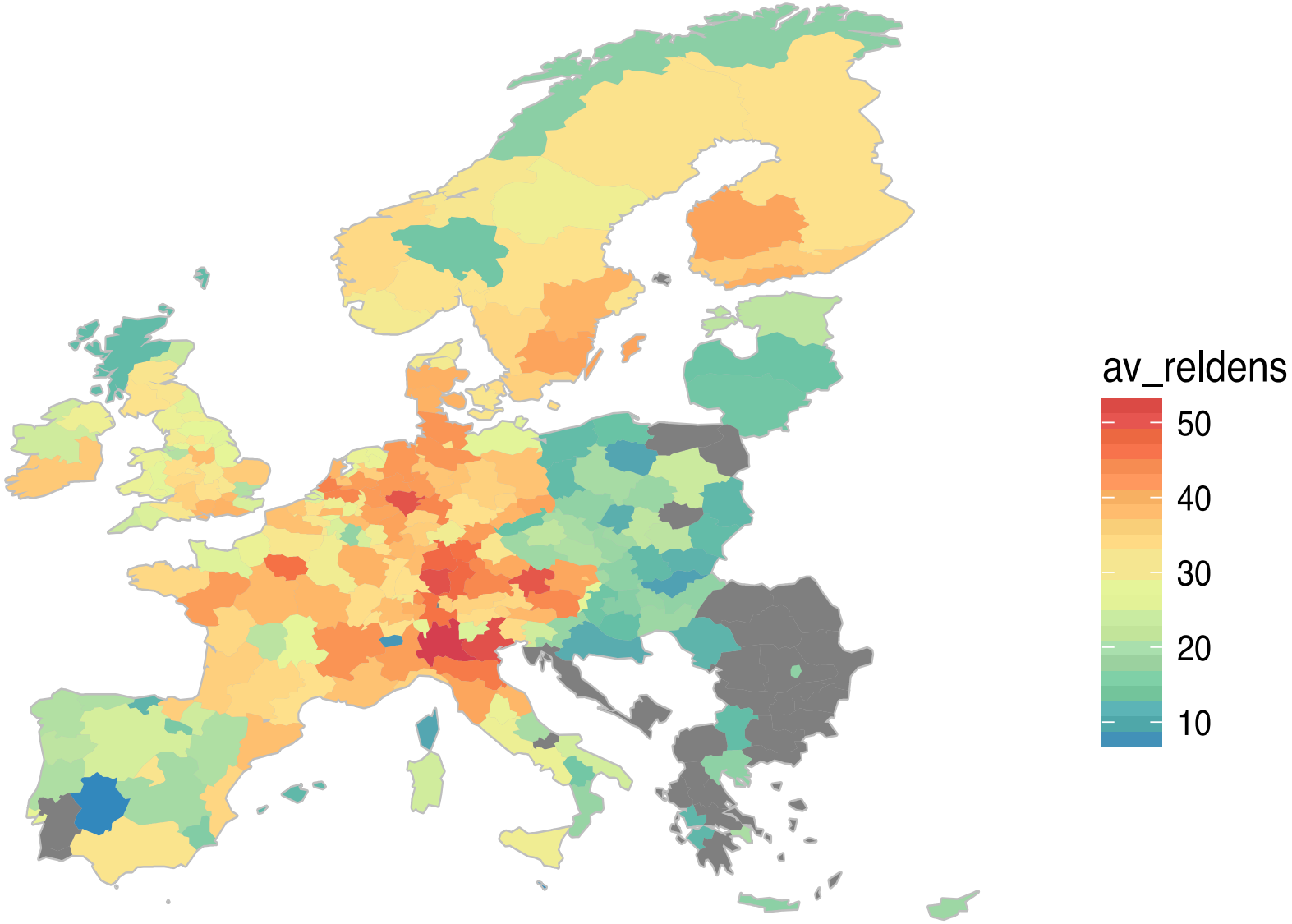
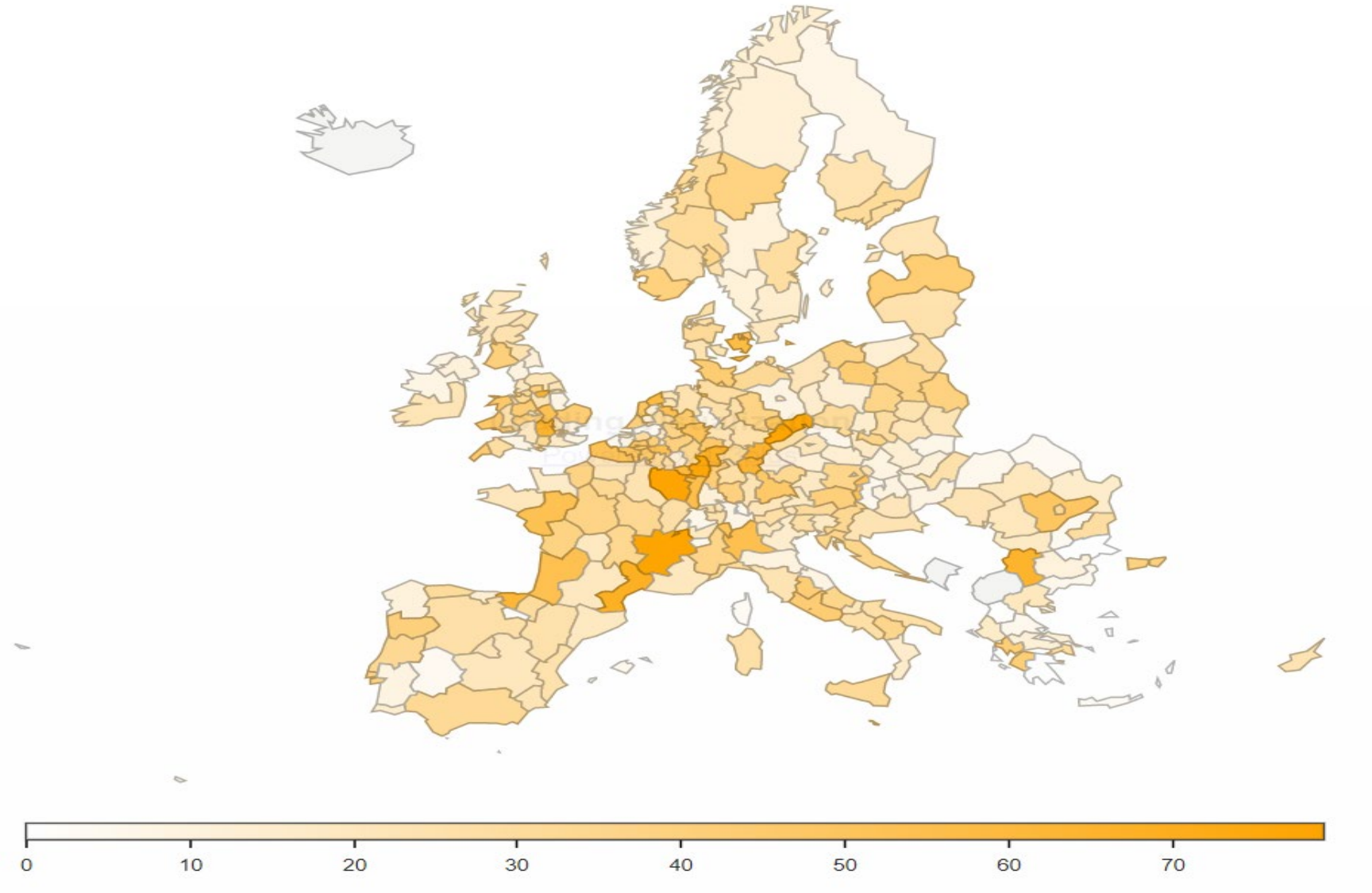
# diversification opportunities of European regions




Source: Balland et al. (2019)

# diversification potential of European regions in hydrogen technology



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# agents of change

- so regional capabilities matter, but who are the agents of change?

- what kind of entrepreneurs drive this process of regional branching?

- experienced entrepreneurs with relevant knowledge from related industries are crucial in the formative stage of a new industry in a region (Klepper 2007): higher survival rate

- regions with related industries have a higher probability to develop the industry: positive effect of related-industry externalities on survival (Boschma and Wenting 2007)

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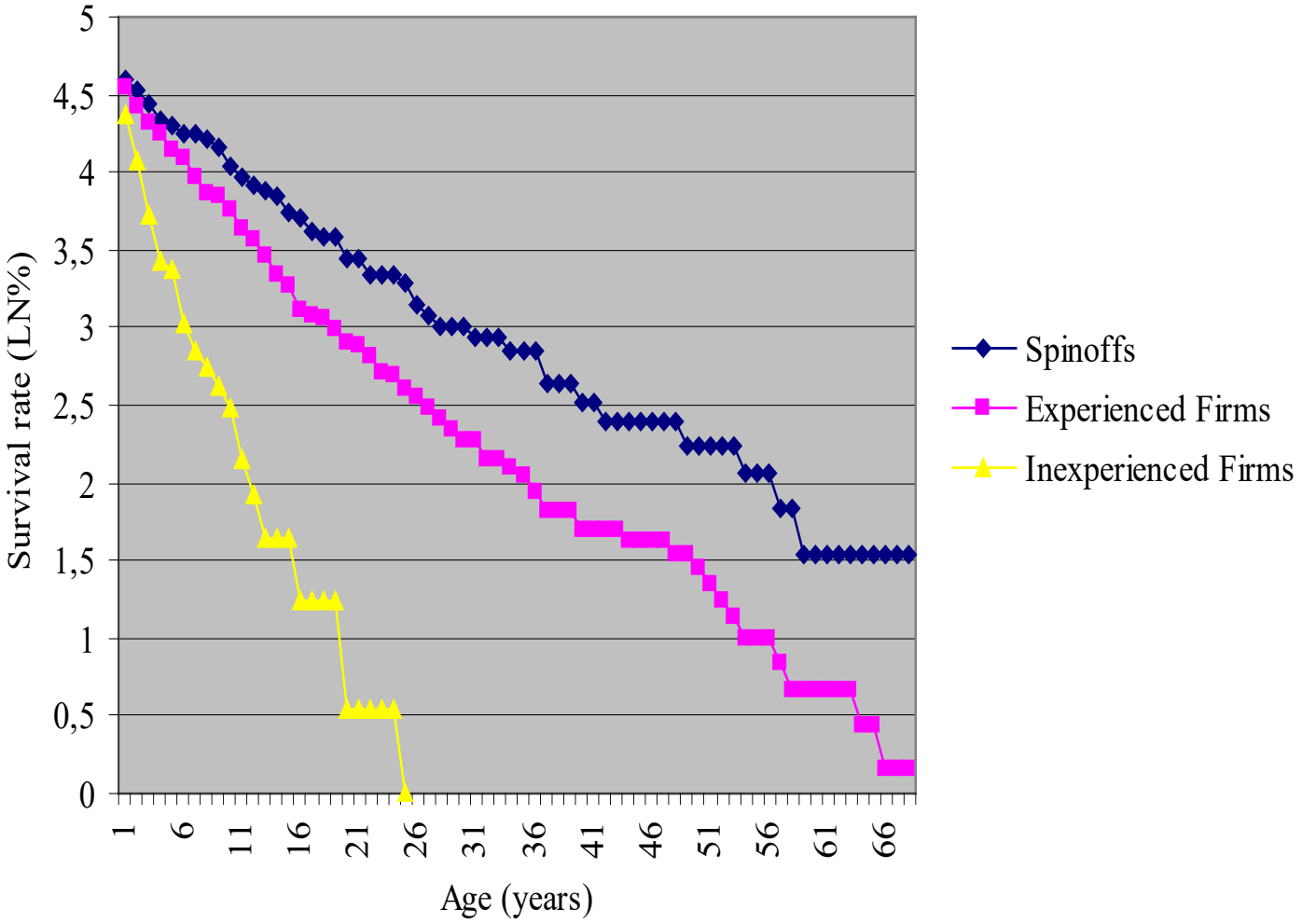
# agents of change

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# Boschma and Wenting (2007) on rise of British car industry

| Table 1. Estimation results of the Cox regressions (standard errors in parentheses) | | | | | |
|---|---|---|---|---|---|
| | M1 | | | | |
| *LOCREL* | -0.202** | -0.266** | -0.241** | -0.215** | -0.346* |
| | 0.069 | 0.073 | 0.075 | 0.076 | 0.139 |
| *URBECON* | 0.041 | 0.048 | 0.061 | 0.052 | 0.166 |
| | 0.053 | 0.053 | 0.053 | 0.053 | 0.094 |
| *LOCECON* | 0.025** | 0.030** | 0.029** | 0.028** | 0.026 |
| | 0.007 | 0.008 | 0.008 | 0.008 | 0.016 |
| *ENTR1* | | -0.370** | -0.313* | -0.292* | |
| | | 0.143 | 0.144 | 0.145 | |
| *ENTR2* | | -0,193 | -0,158 | -0,148 | |
| | | 0.149 | 0.148 | 0.149 | |
| *EXPEF* | | | -0.853** | -0.864** | -0.978** |
| | | | 0.154 | 0.154 | 0.310 |
| *SPINOF* | | | -1.293** | -0.300 | -0,607 |
| | | | 0.197 | 0.483 | 1.023 |
| *PARENTS* | | | | -0.356* | -0.280 |
| | | | | 0.165 | 0.344 |
| *Chi-square* | 13.121** | 20.191** | 72.390** | 75.390** | 24.442** |
| *-2 Log Likelihood* | 3626,713 | 3606,509 | 3565,284 | 3560,668 | 1027,602 |
| | N=380 | N=380 | N=380 | N=380 | N=133 |
| ** significant at the 0.01 level | | | | | |
| * significant at the 0.05 level | | | | | |

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# agents of change

- entrepreneurs from related local industries induce new industry formation in a region
- entrepreneurs create structural change in short run, but less in long run due to high failure in region with unrelated activities (Neffke et al. 2012)
- new subsidiaries are key agents of structural change in long run: to survive, they depend less on related employment in region (see Elekes et al. 2019, EG: effect of MNE's)
- structural change has to be brought in primarily by actors from outside the region (Neffke et al. 2018)

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# smart specialization policy

- EEG has been influential in the EU: smart specialization policy

- focus on **identifying possible diversification strategies** for regions, based on their **capabilities**

- **relatedness**: to assess **potential risks** of alternative diversification strategies for regions

- **complexity**: to assess **potential benefits** of policy

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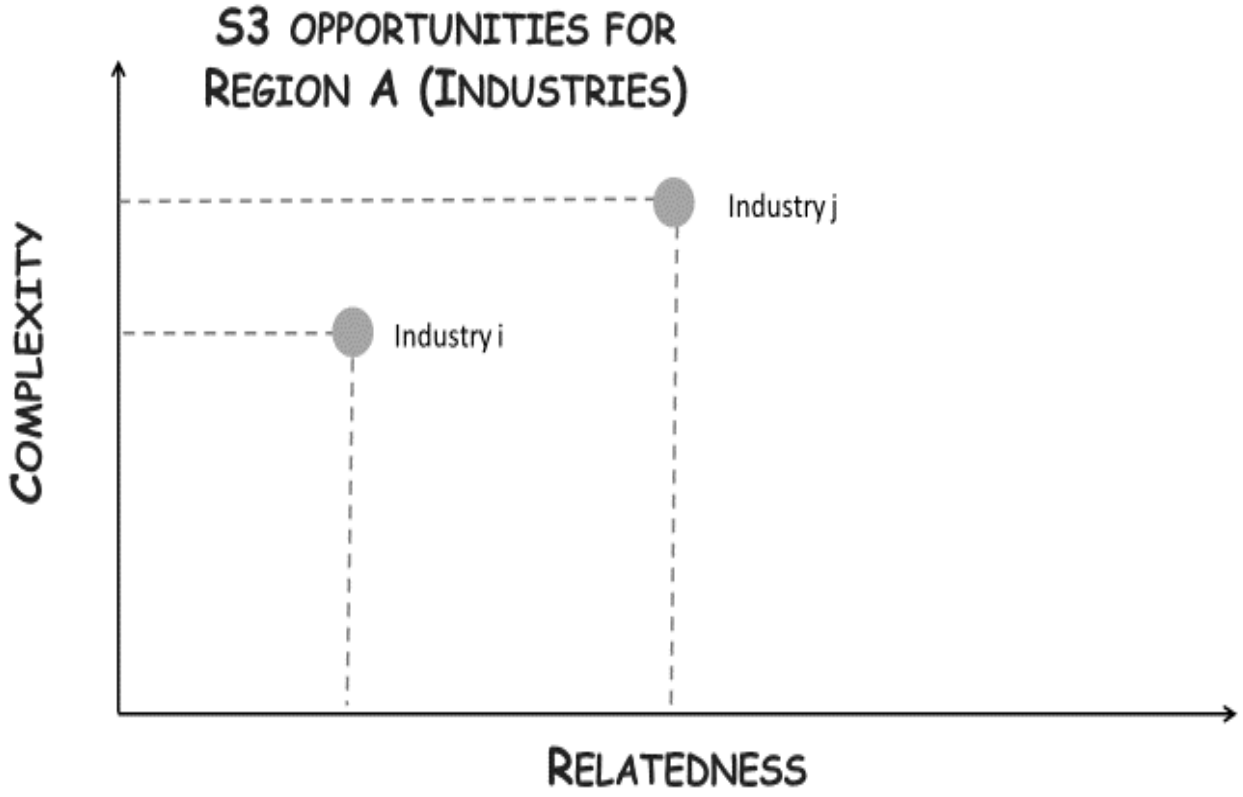
# toward a new S3 framework

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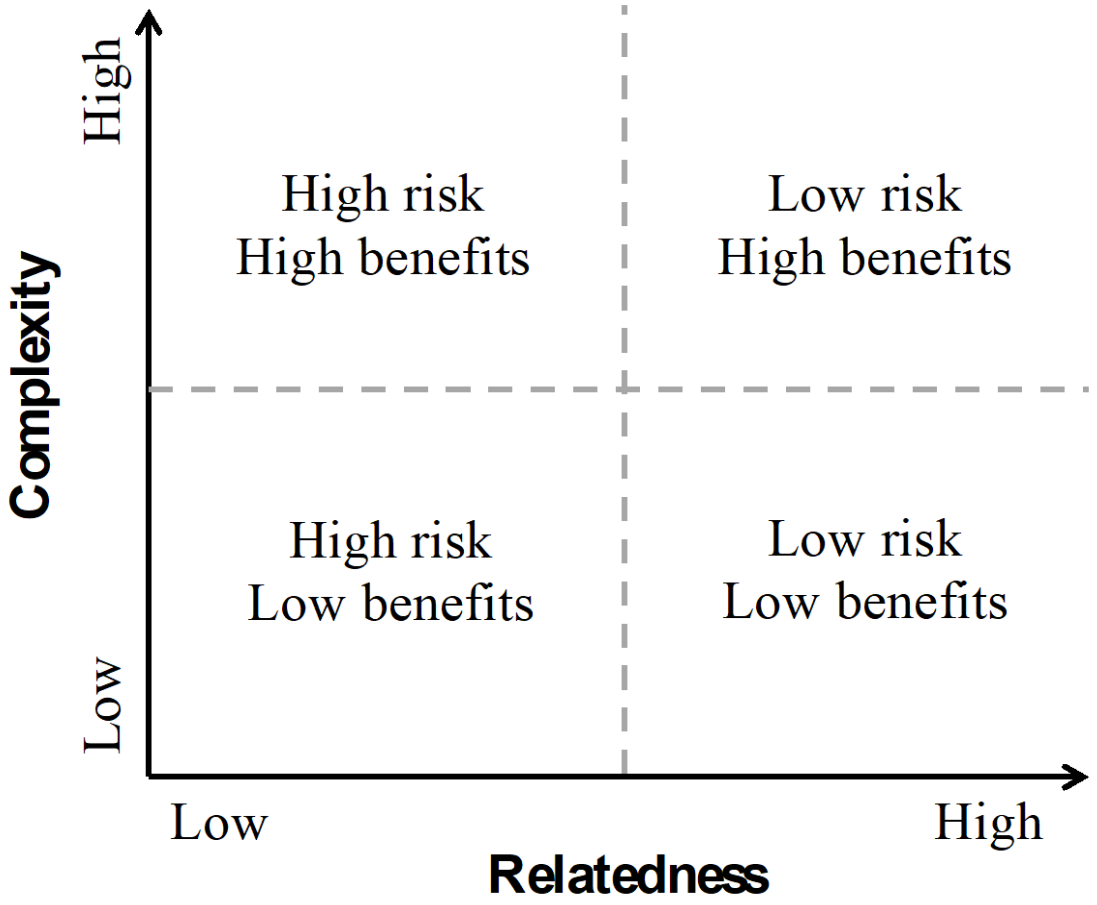
# smart specialization policy




Source: Balland et al. (2018)

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# smart specialization policy

- debate: which diversification strategy?
- critique on related diversification policy:

- it happens any how, so why bother?
- there is a risk of lock-in: related diversification makes regions more coherent over time
- unrelated diversification requires new capabilities (knowledge, skills, institutions): therefore, need for strong policy intervention

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# smart specialization policy

- critique on unrelated diversification policy (and what Smart Specialization was supposed to avoid):

- high risk policy failure (also because more experimentation is required)

- cathedrals in the desert: not sustainable in long run

- risk of duplication, especially when policy on ‘grand challenges’ is promoted (all regions go for the same)

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# smart specialization policy

- policy focus on related or unrelated diversification depends on region-specific context

- major urban regions: related diversification provides many opportunities to move in more complex activities, but they also have favorable conditions for unrelated diversification

- specialized old industrial regions: unrelated diversification is needed to overcome trap of related diversification in low complex activities (Detroit)

- peripheral regions: related diversification provides some opportunities, but they might become trapped in a low complexity economy after some time

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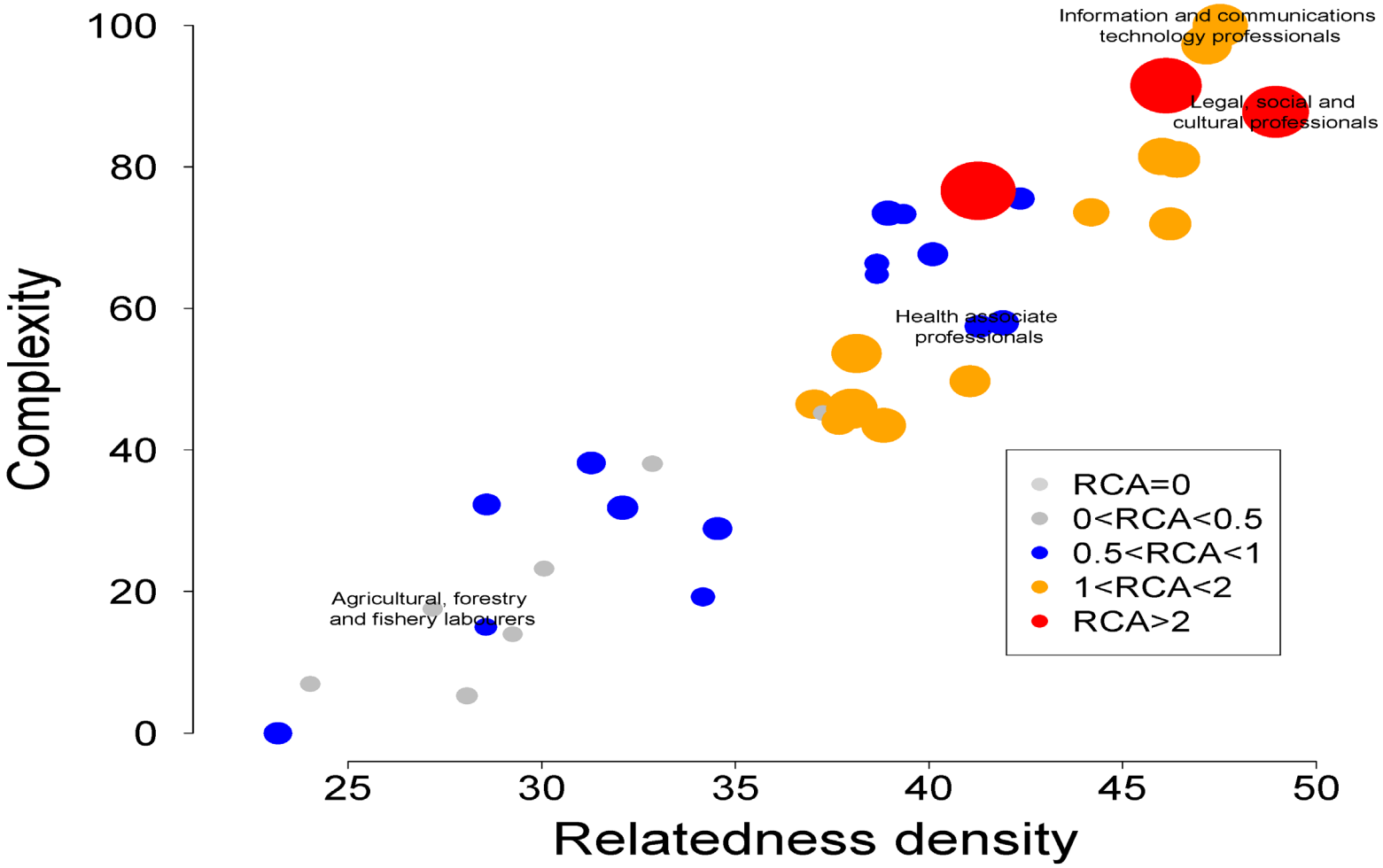
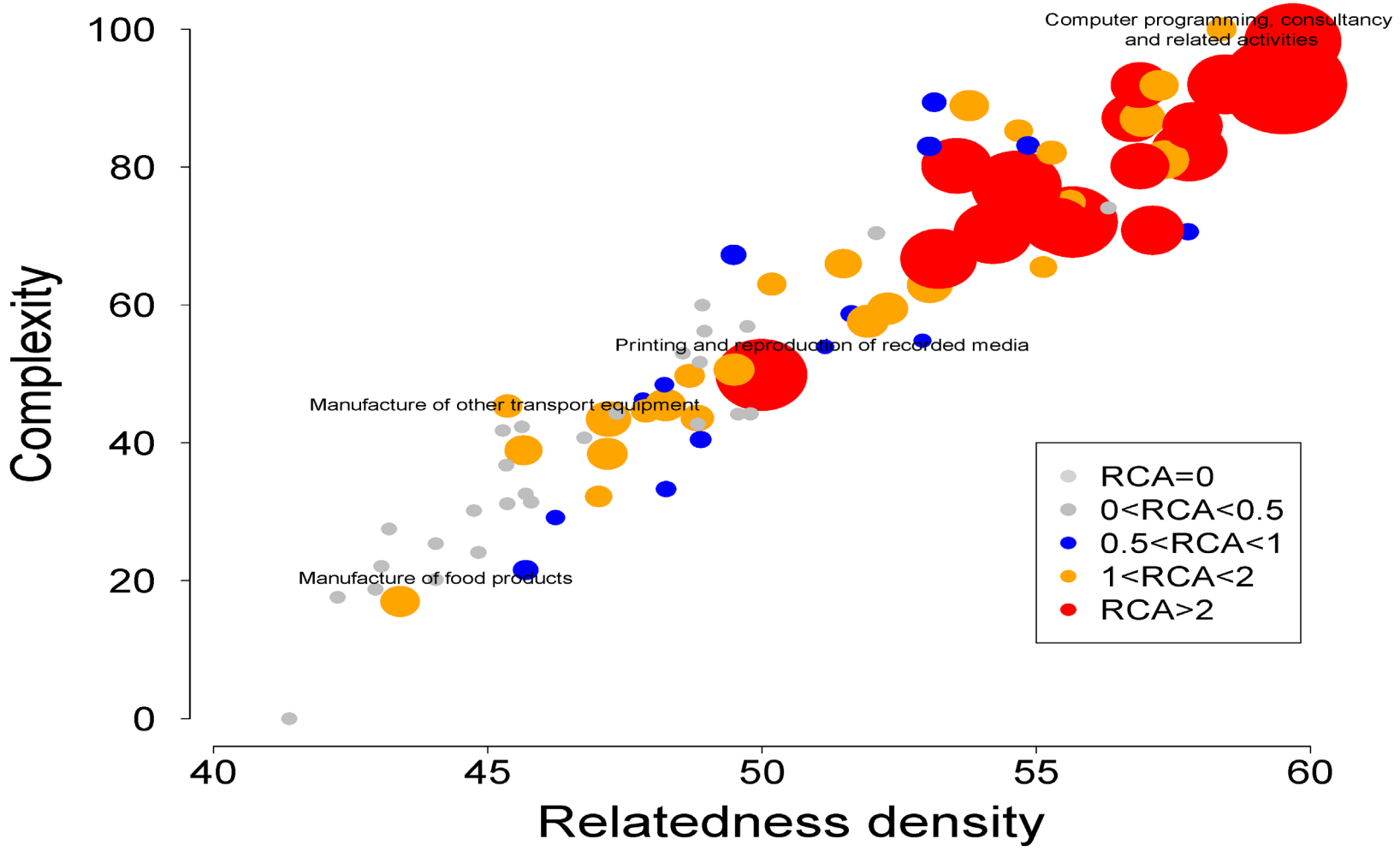
# diversification opportunities in occupations

## Île-de-France (FR10)



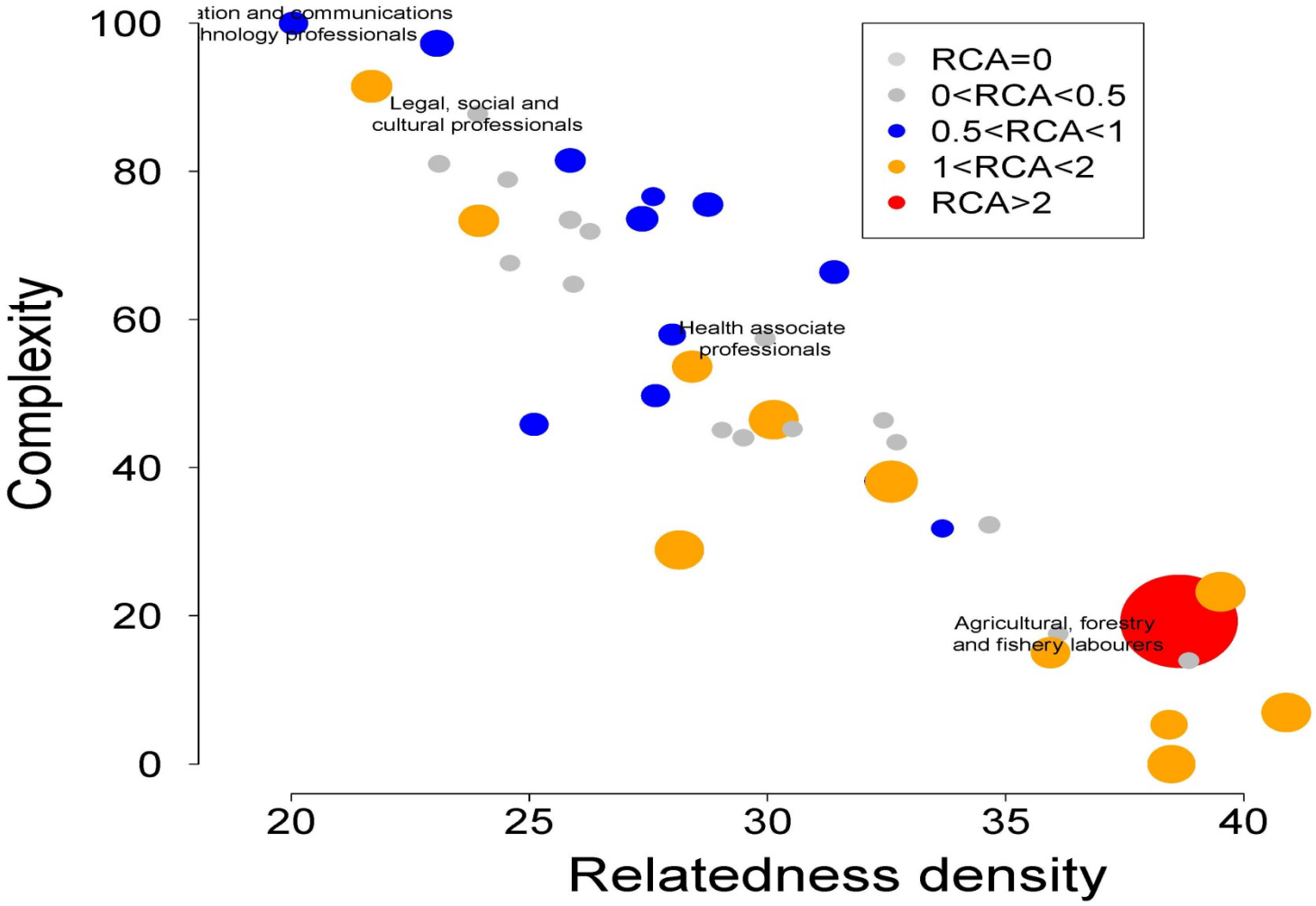
# diversification opportunities in sectors

## Île-de-France (FR10)



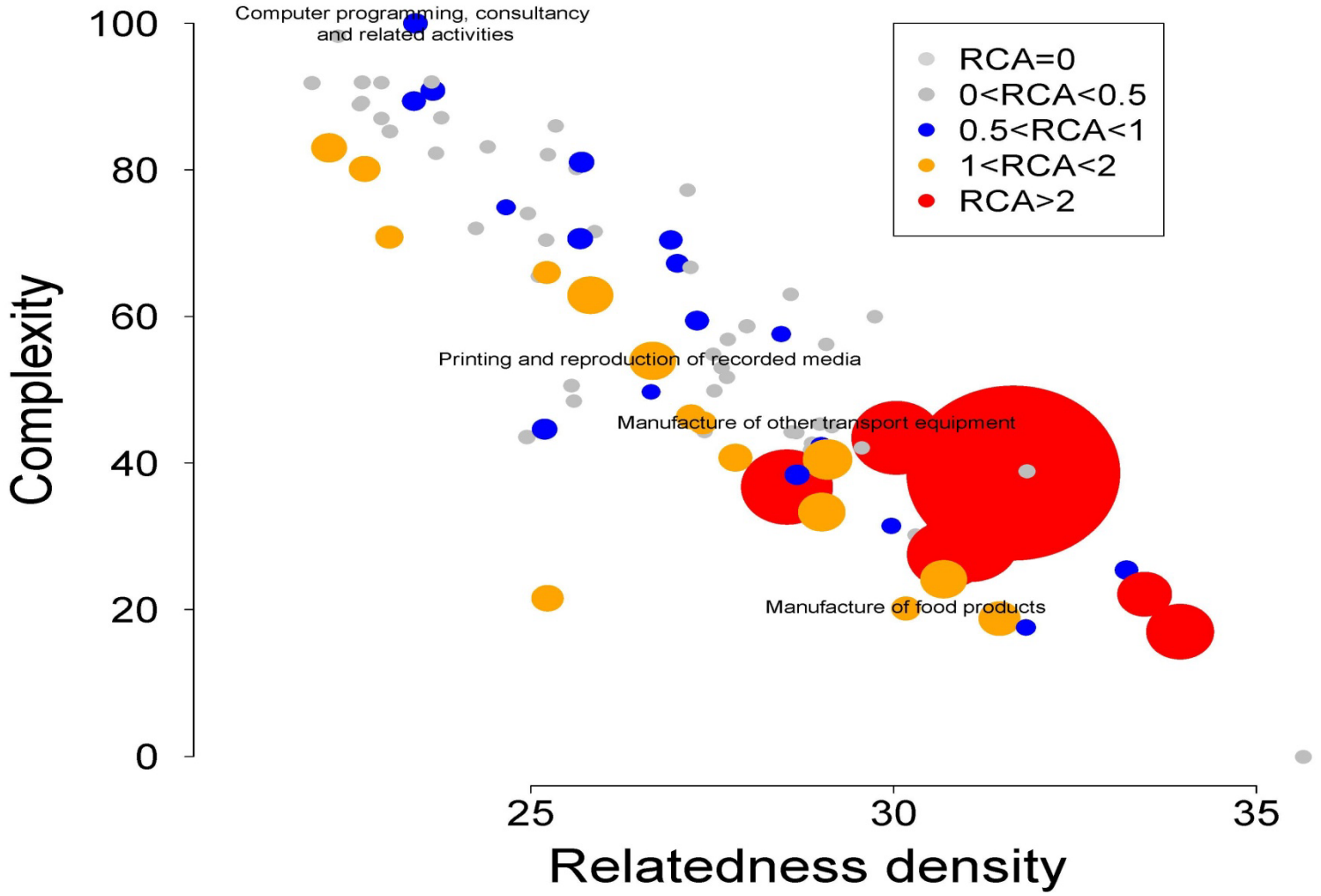
# diversification opportunities in occupations

Silesia (PL22)

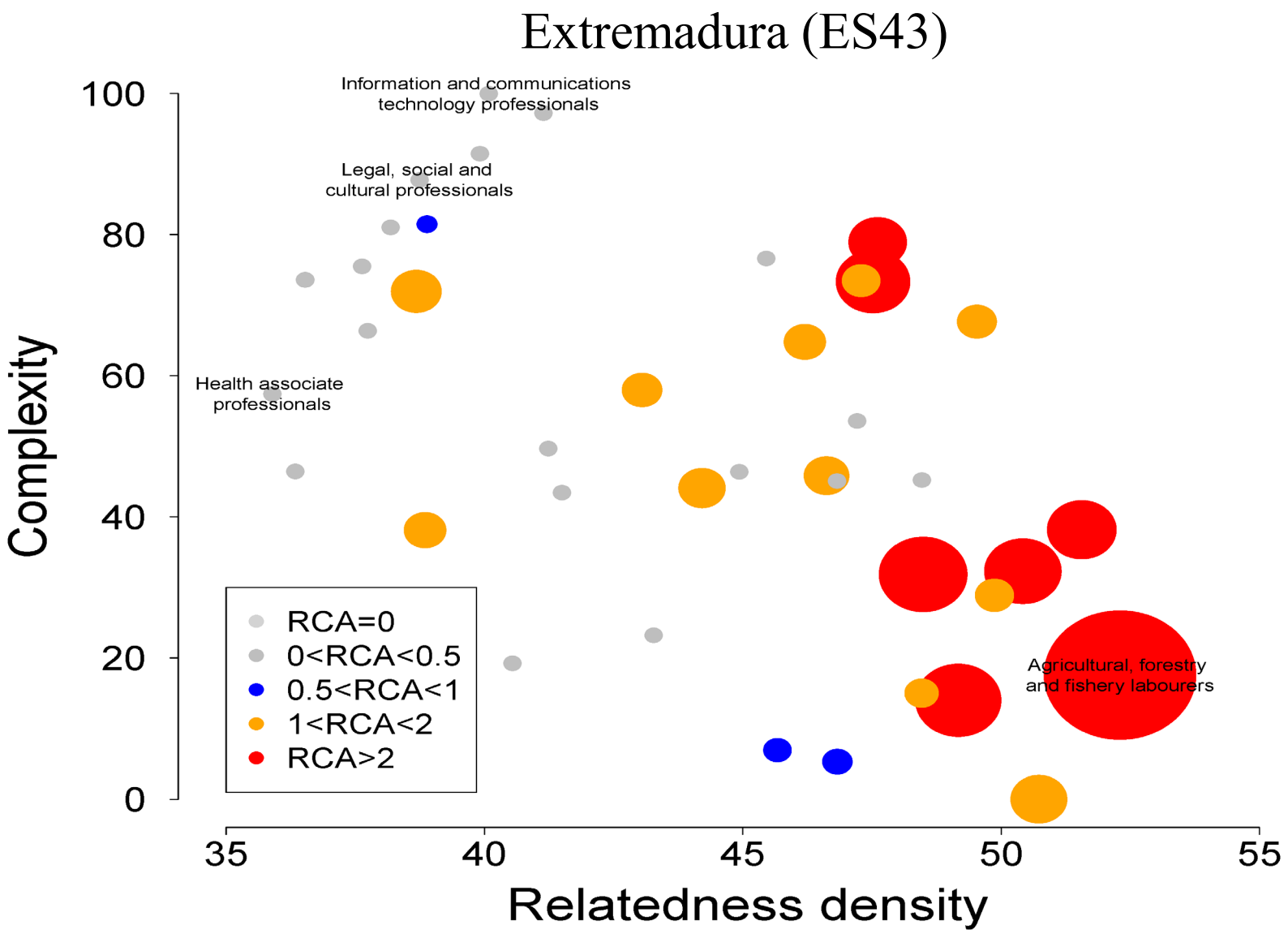


# diversification opportunities in sectors

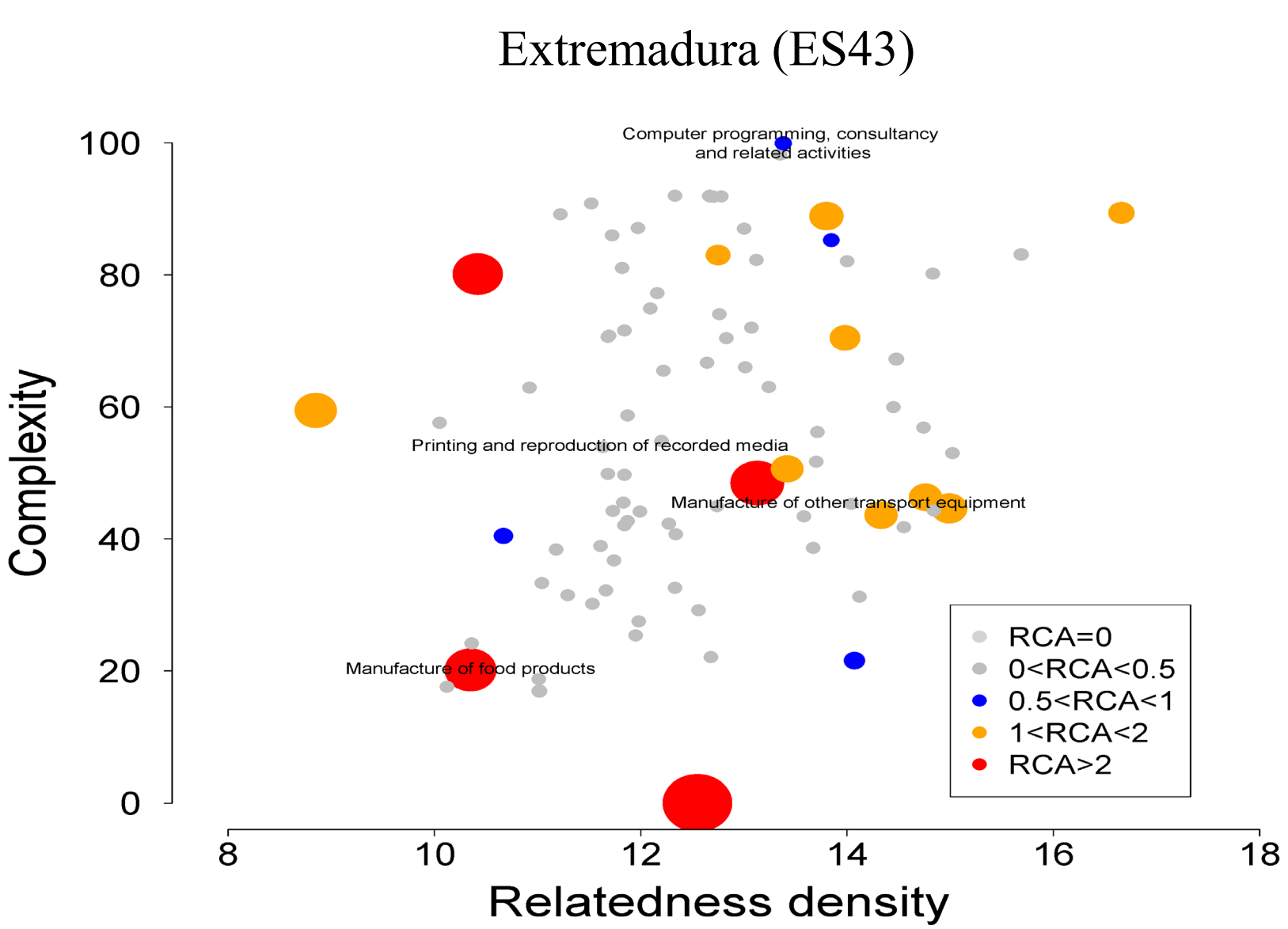
Silesia (PL22)



# diversification opportunities in occupations



# diversification opportunities in sectors



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# smart specialization policy

- effectiveness of policy also depends on institutional context

- institutional context differs across European regions

- national institutions (Boschma and Capone 2015)
- degree of political autonomy (Pike and Rodriguez Pose 2011)
- entrepreneurial culture (Andersson and Koster 2011)
- bridging and bonding social capital (Cortinovis et al 2017)
- quality of government (Charron et al. 2014)

- challenge for EEG: how to design and implement policy and governance: need to connect to transition studies and political sciences

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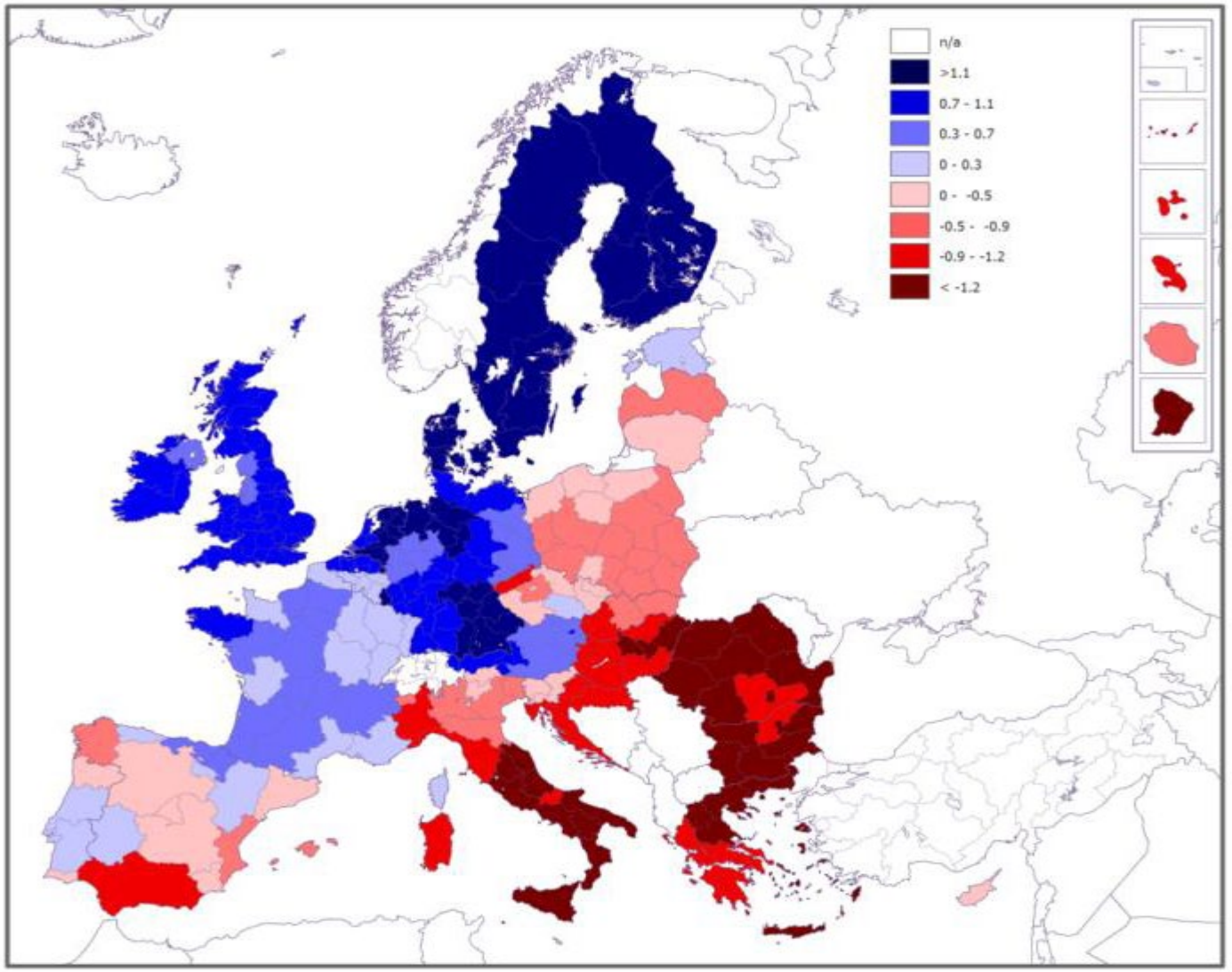
# Quality of government 2017




Source: Charron and Lapuente 2018

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**thank you for your attention!**

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