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Institutions and regional development

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structure of my talk

- how do regions **diversify** over time
- **local capabilities**: mapping diversification opportunities of regions
- **institutions** and regional diversification
 - institutions at **national** and **regional** scale
 - role of **institutional change**



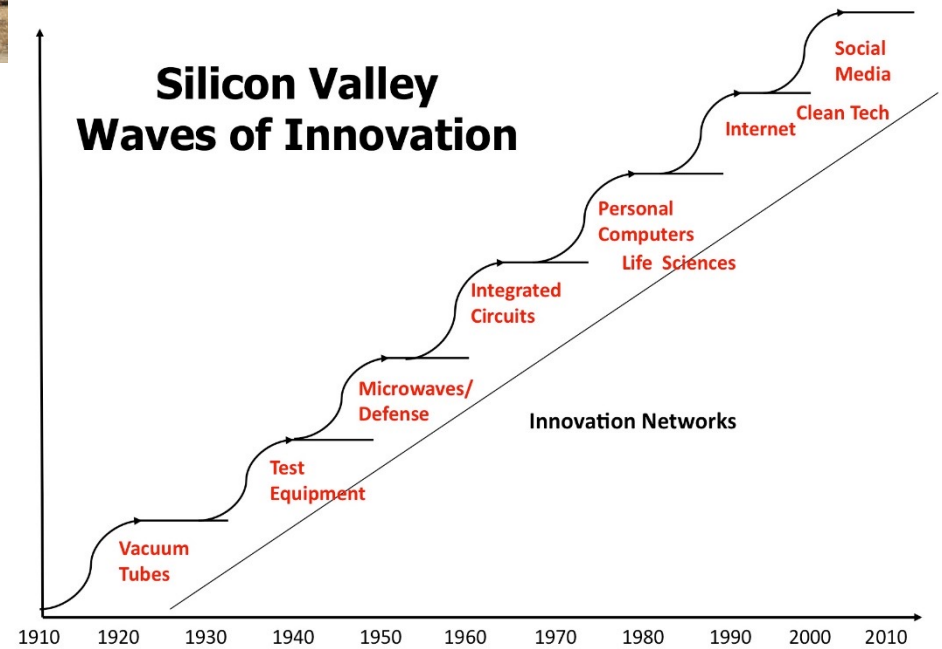


need for structural change

- economies are **constantly changing**: activities (firms, technologies, industries, occupations, value chains, etc.) come and go
- in the long-run, all activities will either cease to exist, or they will be completely transformed due to technological change
- therefore, economies need to **diversify** into new activities to be resilient and secure **long-term economic development**
- but their **capacity** to do so **differs**



contrasting cases: Detroit and Silicon Valley





how do regions diversify?

- how do regions create **new activities?**: new activities do **not start from scratch**
- **local capabilities** (knowledge, skills, 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
- regions develop new activities **closely related** to existing activities in the 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)

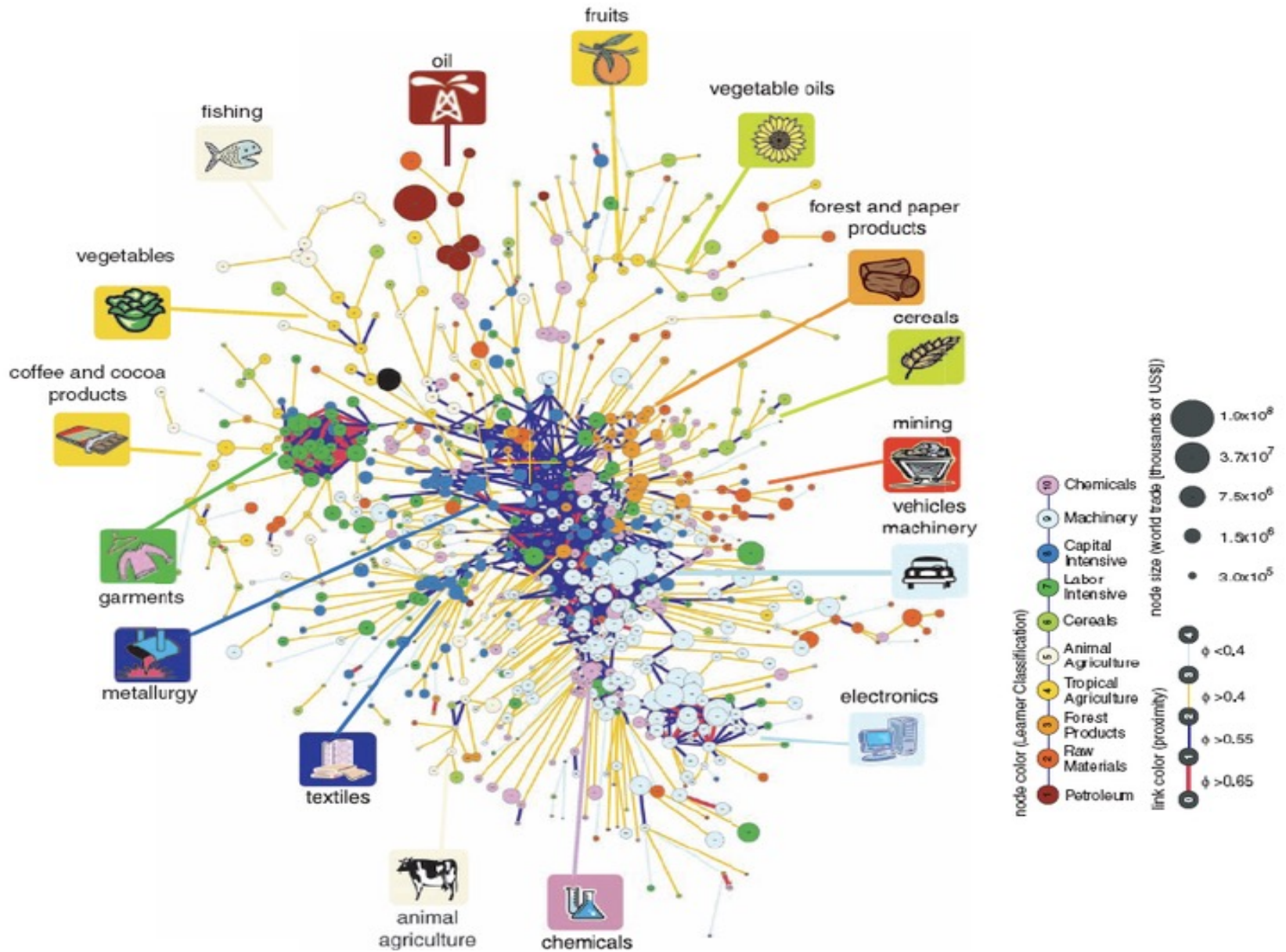


regional diversification

- Hidalgo, Klinger, Barabasi and Hausmann (2007)
 - how countries build comparative advantage in **new export products**
 - **national capabilities** condition which new export products will be feasible to develop
 - **product space: relatedness** between products: co-occurrence of products in countries' export portfolios
 - countries develop new export products that are **closely related** to existing export products
 - **rich countries** have more opportunities to diversify and sustain higher economic growth rates



product space



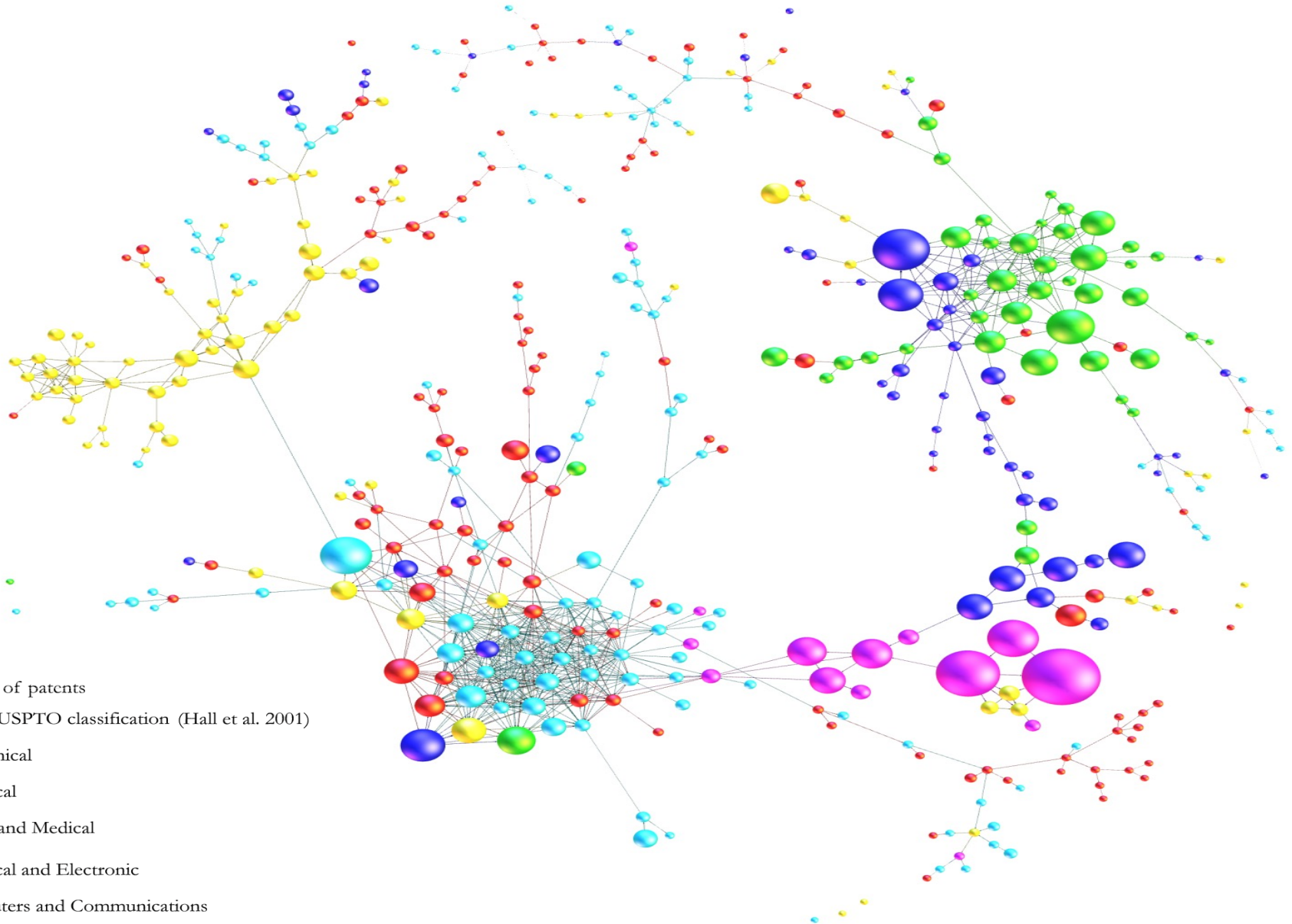


technological diversification

- how do regions diversify into **new technologies**, such as AI or green technologies?
- **patent data** are used to measure **new technologies**, and to determine the degree of relatedness between **technologies**
- **relatedness** between technologies: co-occurrence of technology classes on **patents: technology space**
- technologies **related** to pre-existing technologies in a region are more likely to **develop** in the region



technology space in the US



Node size: # of patents

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

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

technology space 1901-30: Detroit and Silicon Valley

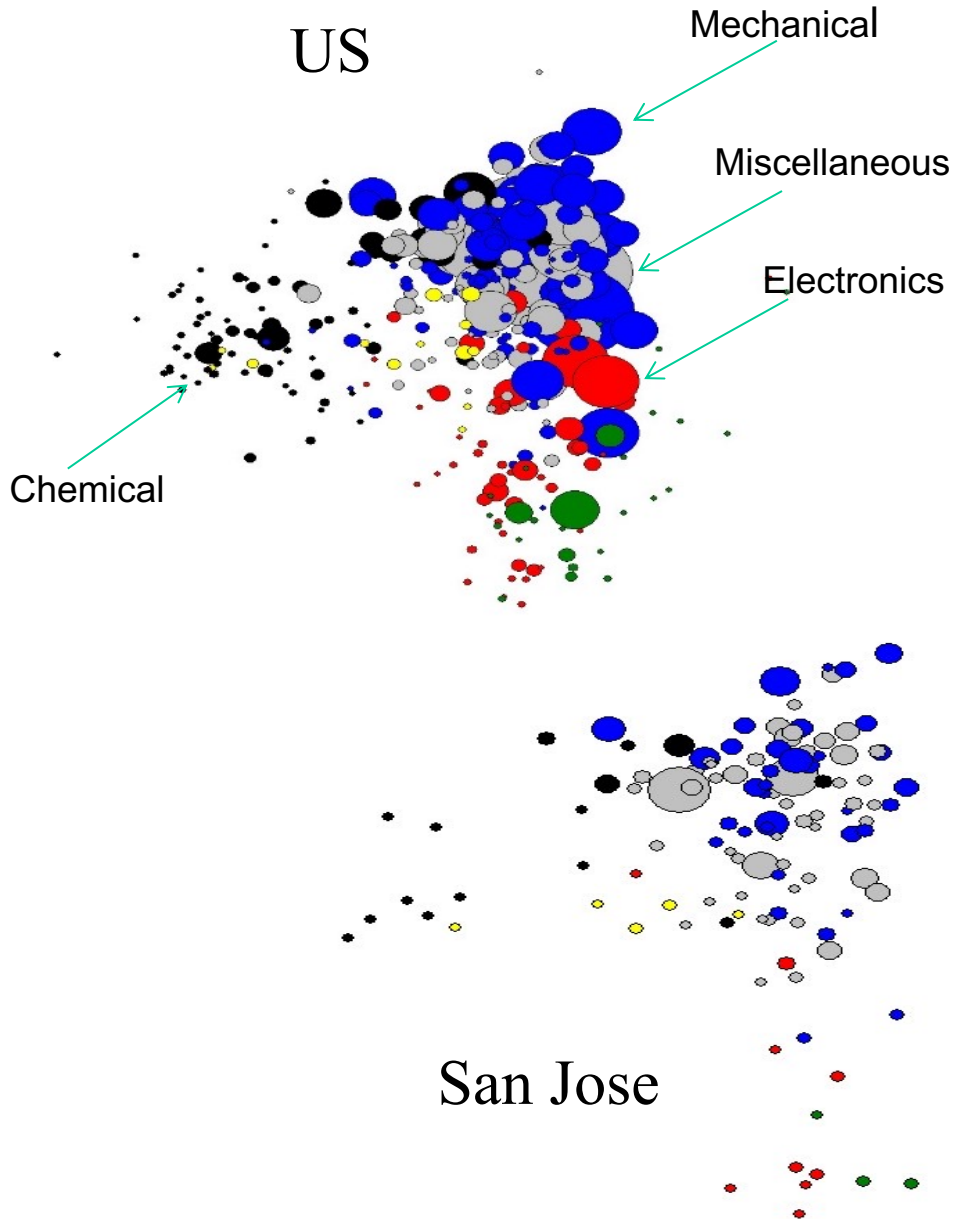
US

Mechanical

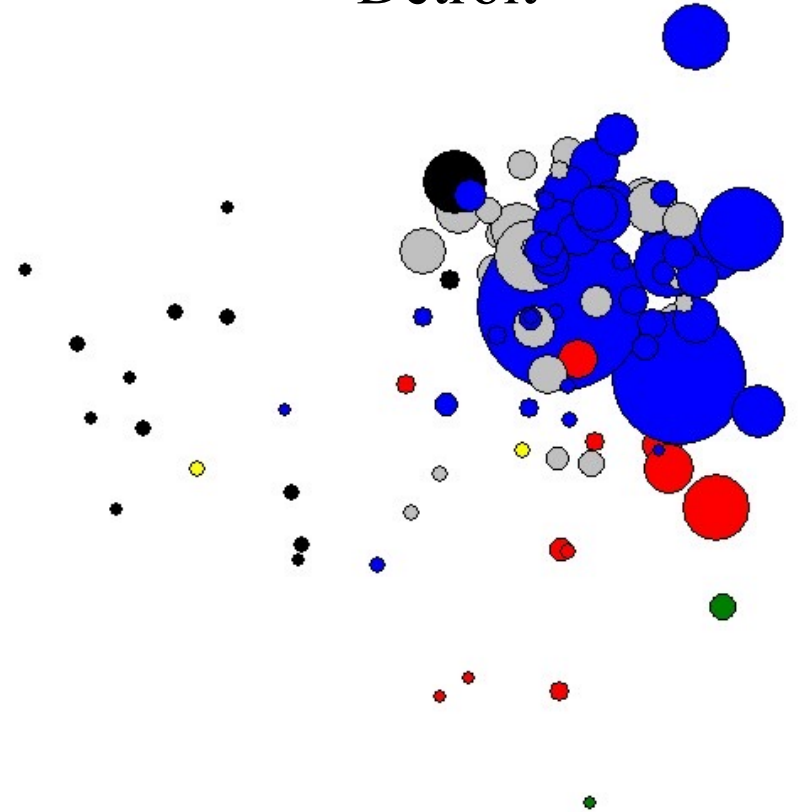
Miscellaneous

Electronics

Chemical



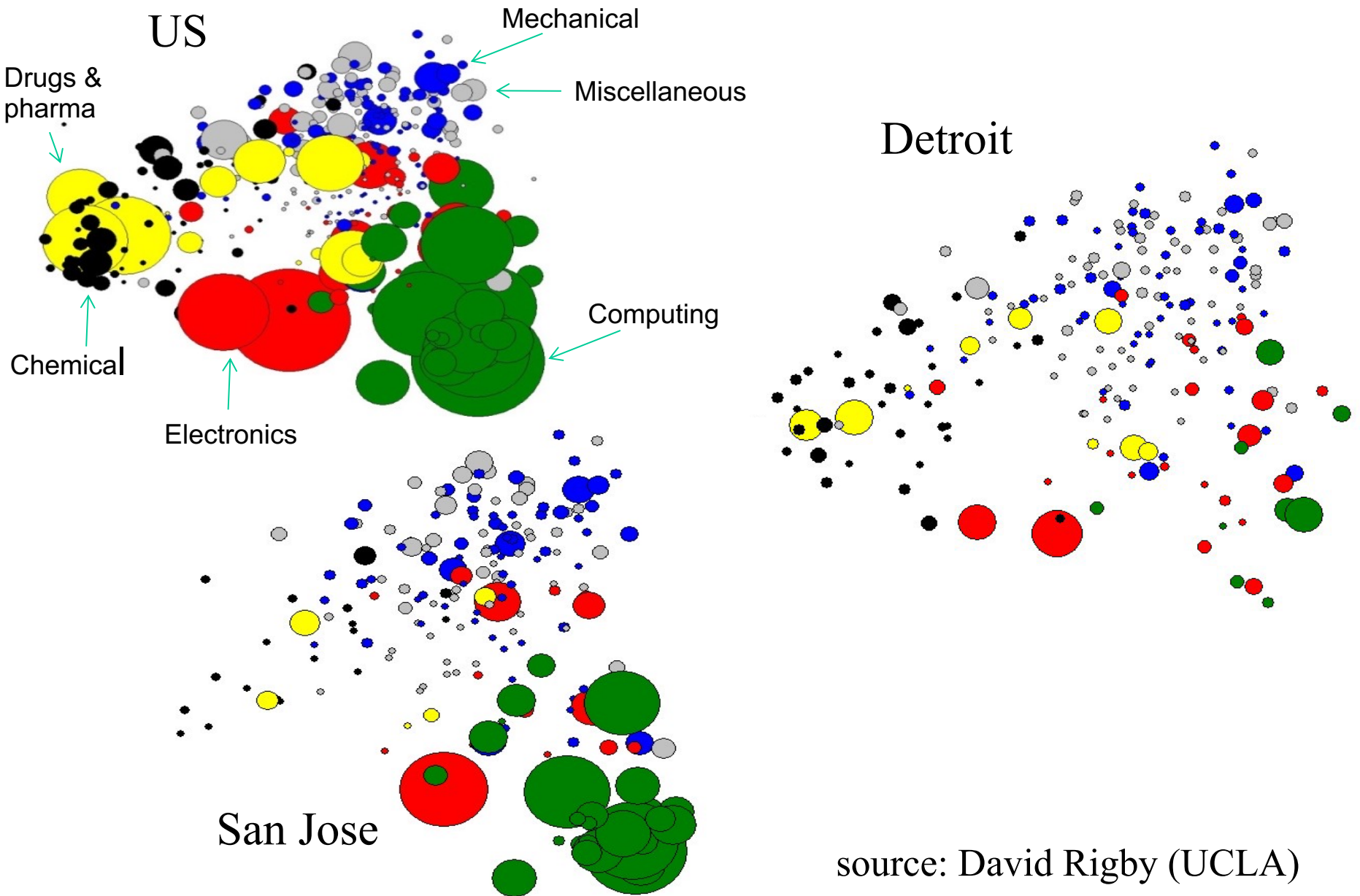
Detroit



San Jose

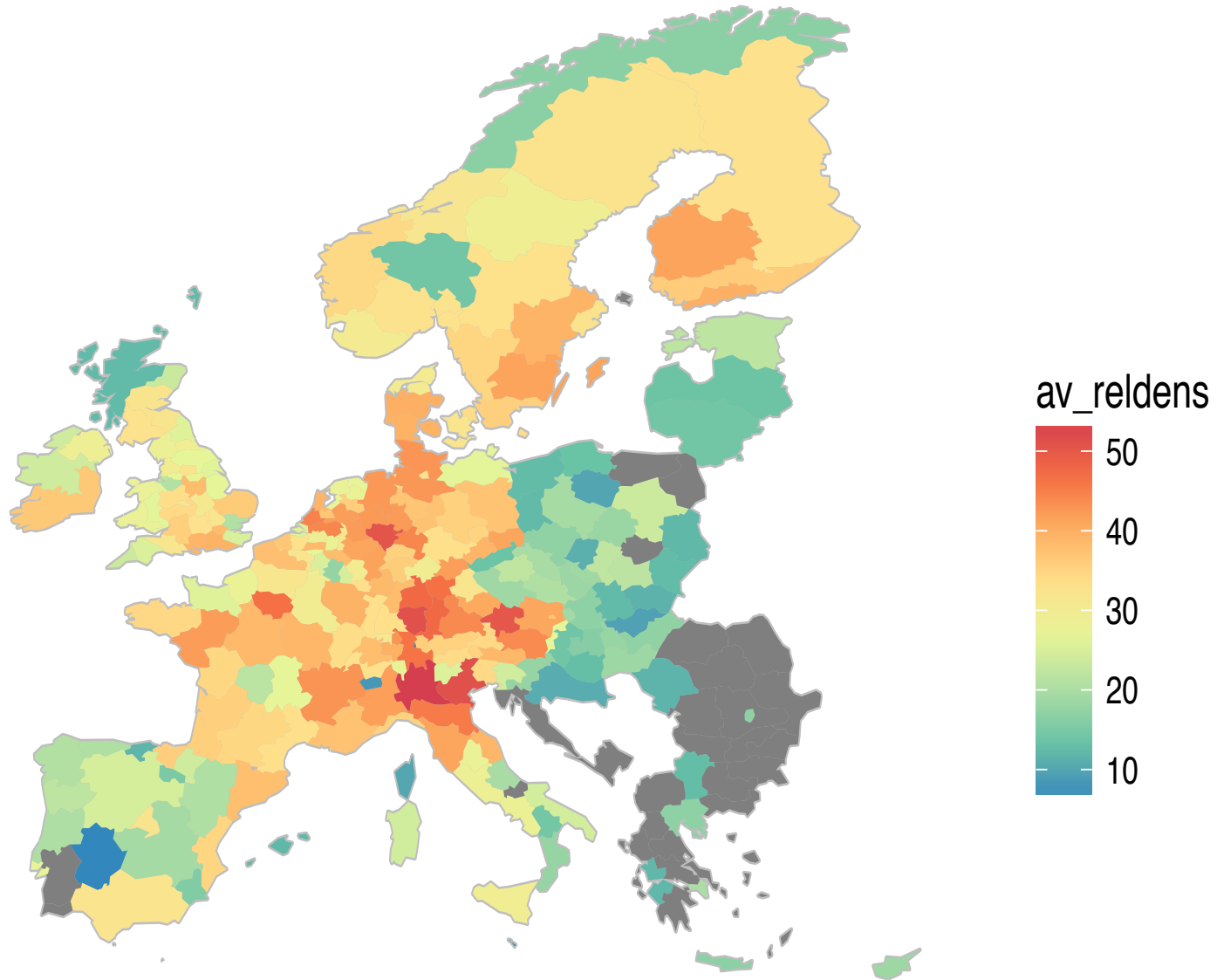
source: David Rigby (UCLA)

technology space 2001-2010: Detroit and Silicon Valley

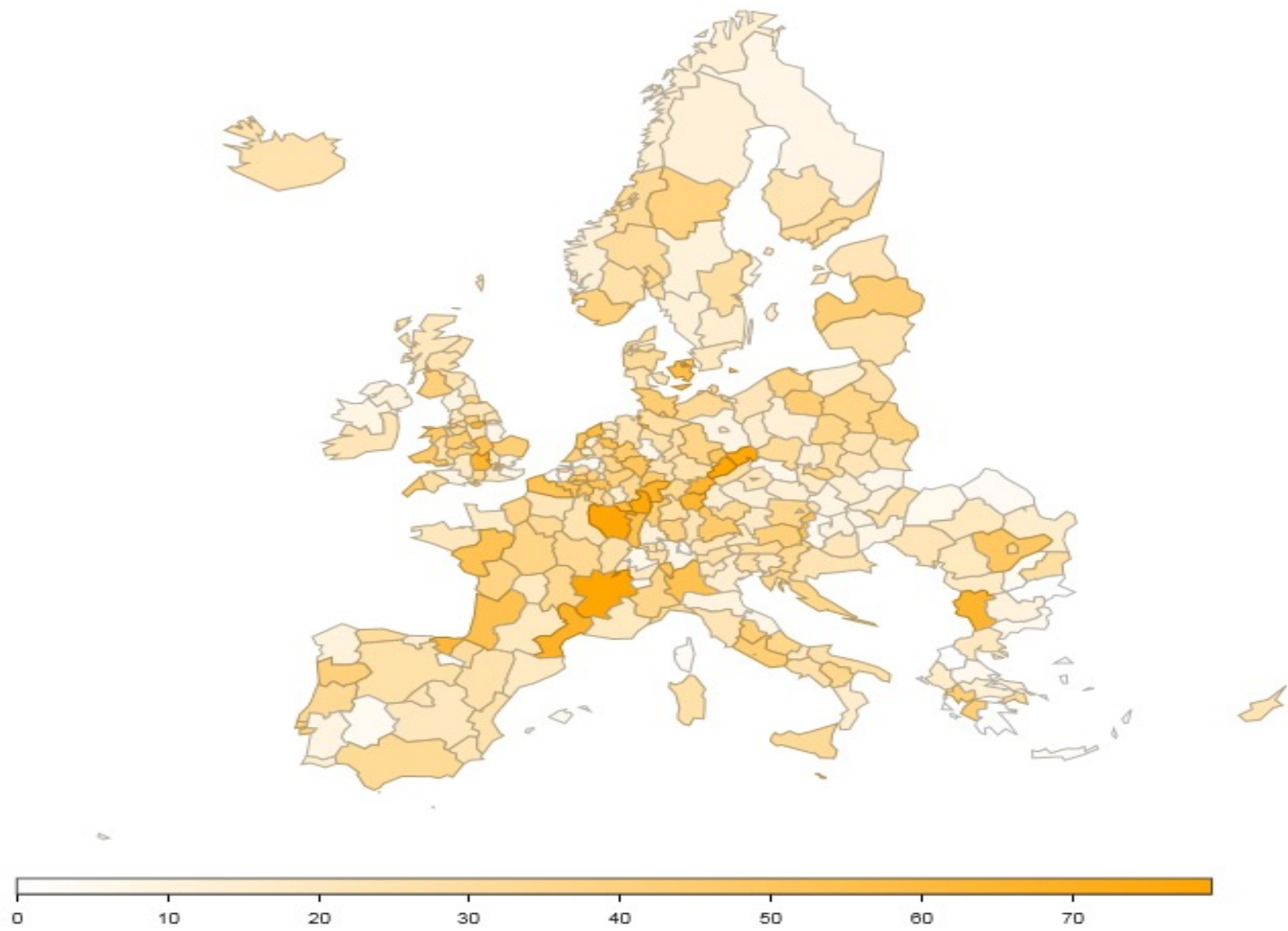


source: David Rigby (UCLA)

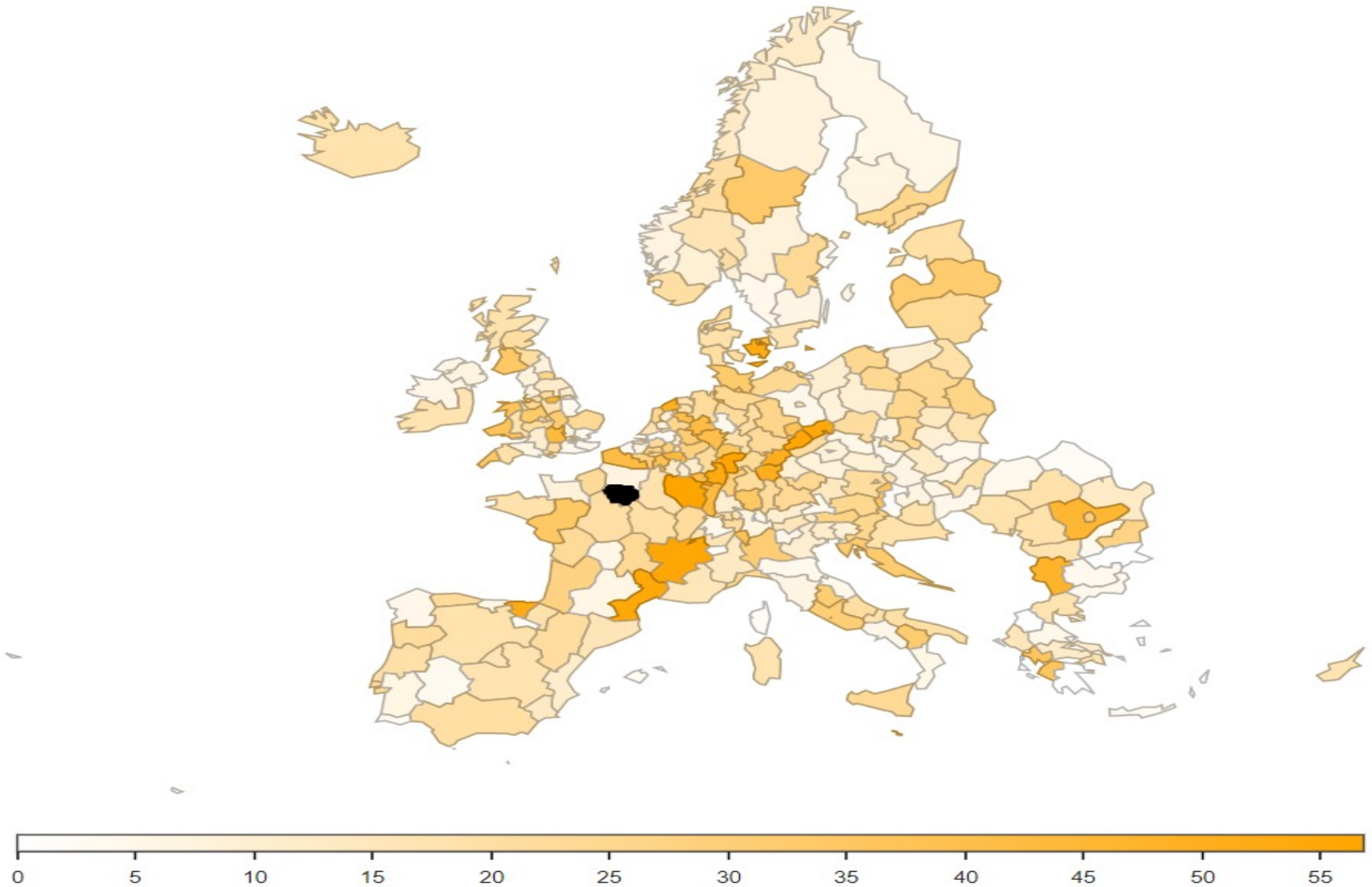
technological diversification opportunities of European regions



diversification potential of European regions in hydrogen technology



map of complementarity of all European regions to Île-de-France region in new hydrogen technologies





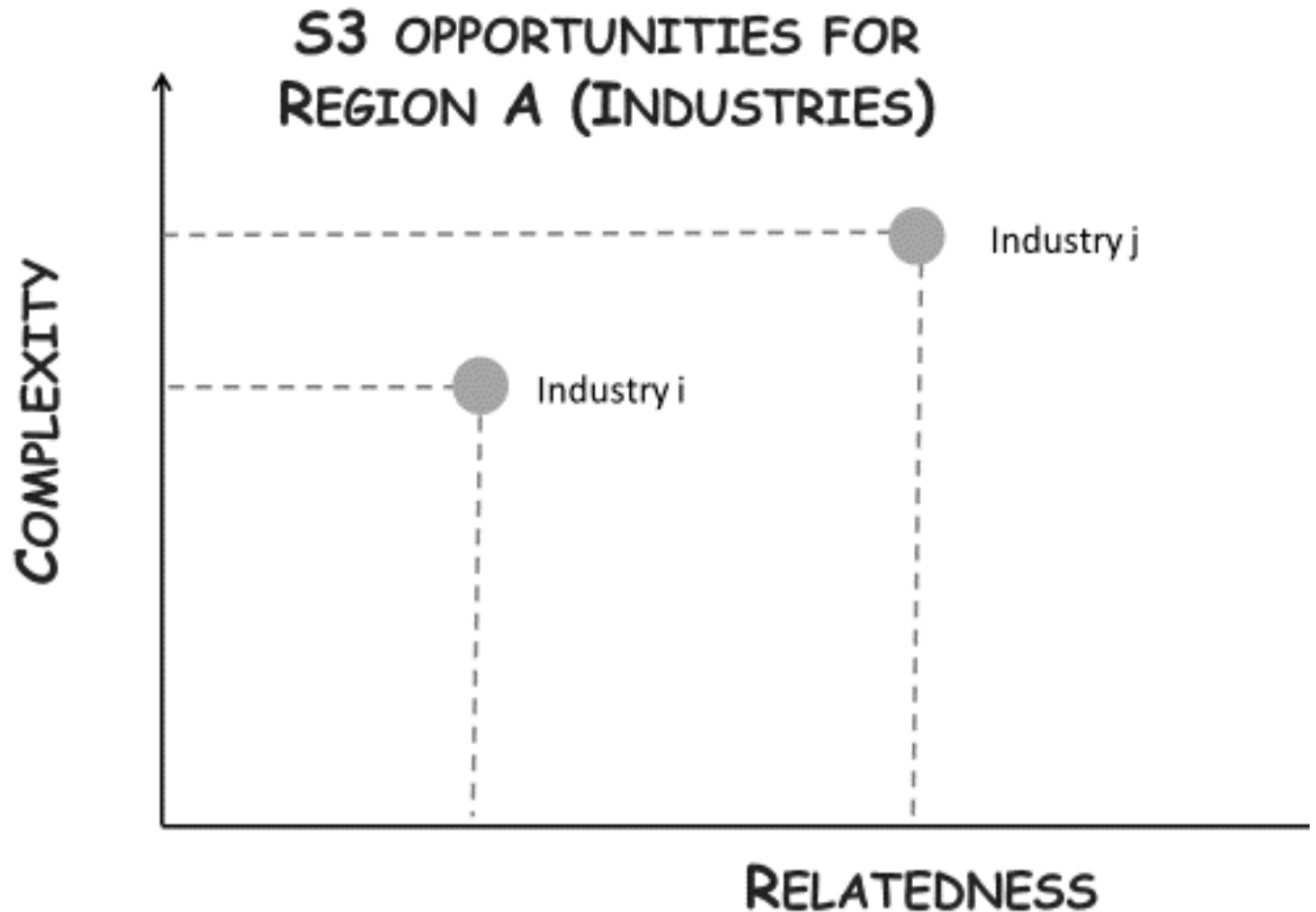
which priorities to select in a region

- the **more related** a new activity is to existing activities in a region, the **lower the costs** to develop this new activity in a region
- focus also on **complex activities** because these bring **higher economic benefits** in terms of GRP and employment growth (Rigby et al. 2022)
- activities are considered **complex** when being unique (non-ubiquity), and when relying on a wide range of capabilities (diversity) (Hidalgo and Hausmann 2009)
- the higher complexity of a new activity, the **higher economic benefits** for a region





which priorities to select in a region



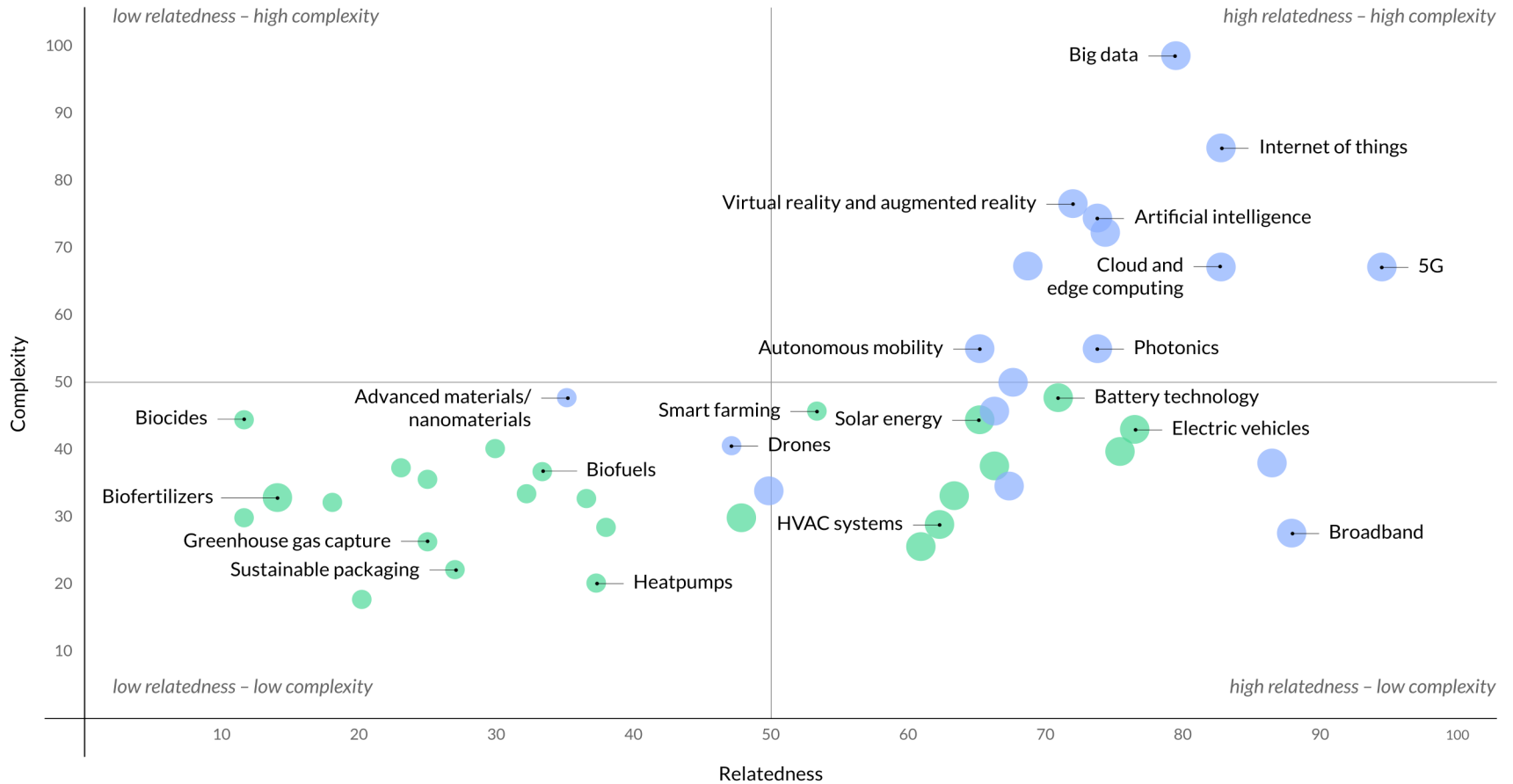


which priorities to select in a region

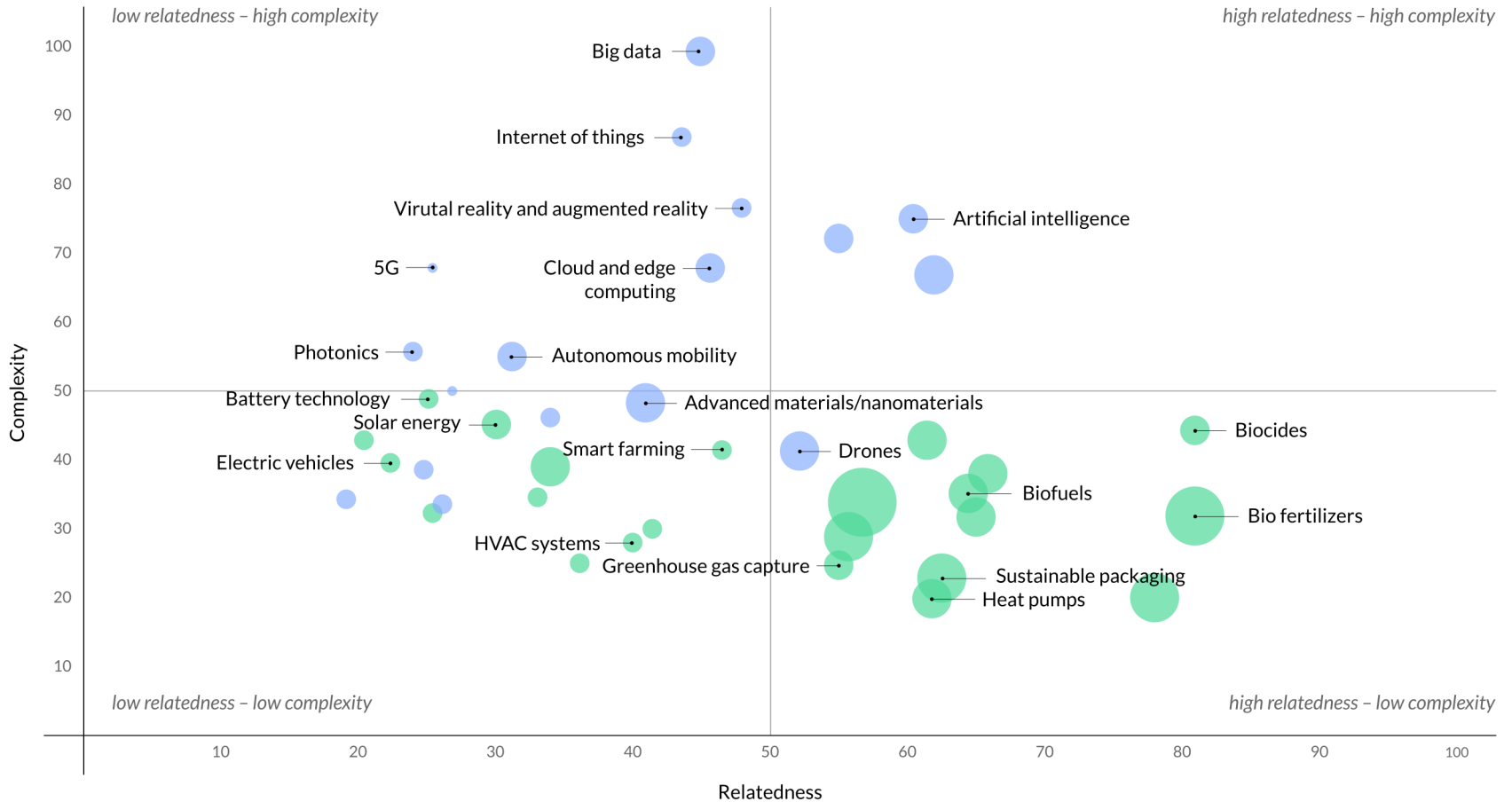
- so, every region has a **strong incentive** to develop **complex** activities
- however, this requires a local presence of the **right set of capabilities** in terms of relatedness
- **not every region** can diversify into complex activities: the **opportunity spaces** differ between EU regions



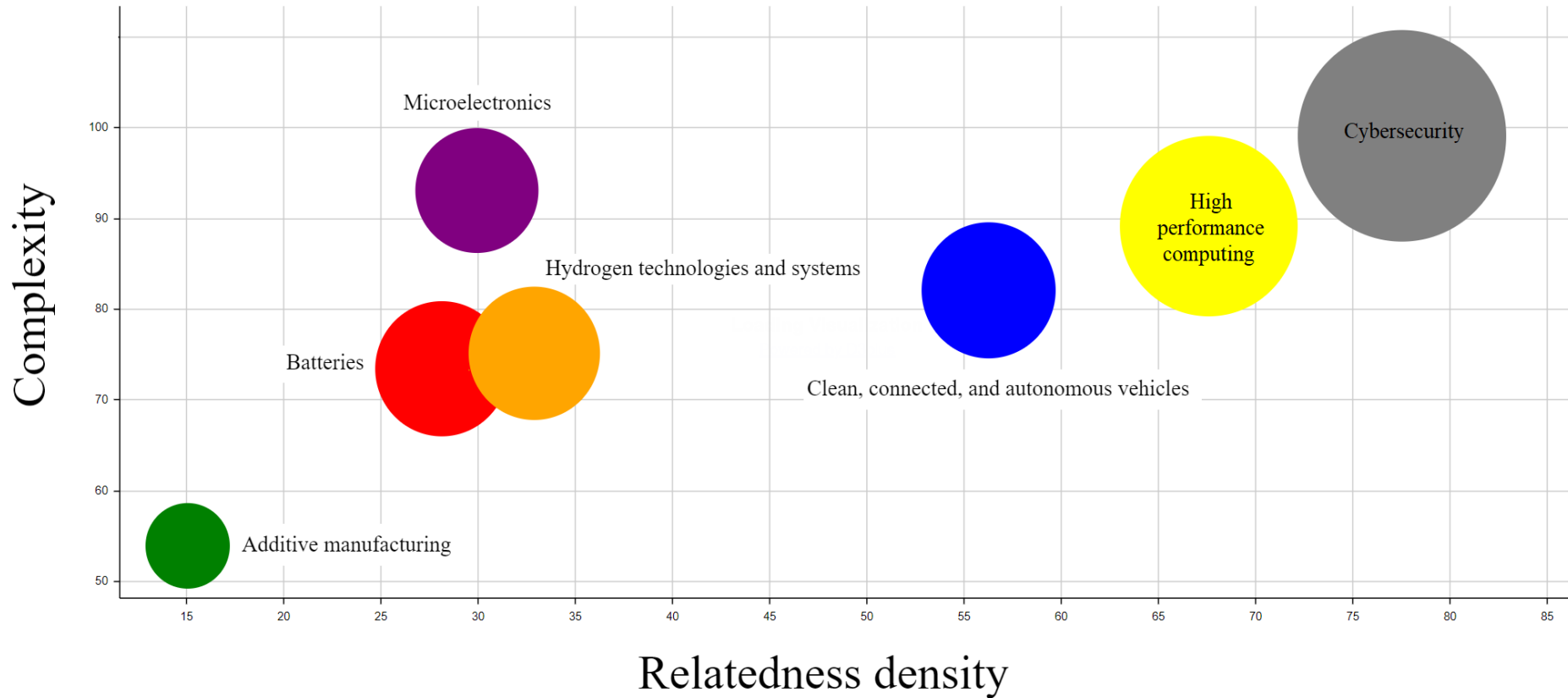
potential of the more developed EU regions to develop digital and green technologies



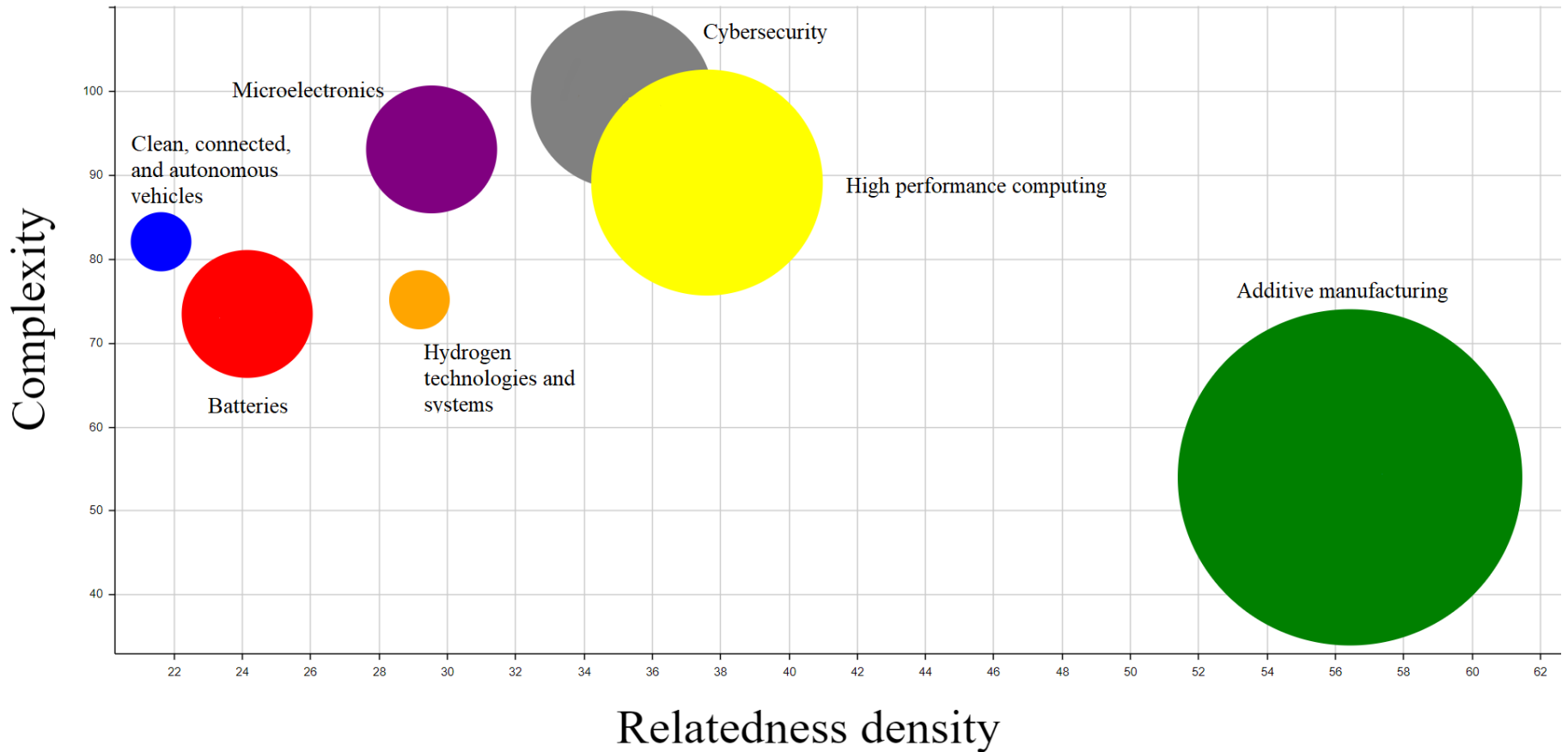
potential of the **less developed EU regions** to develop **digital and green technologies**



potential of the Île-de-France region to develop 7 key technologies

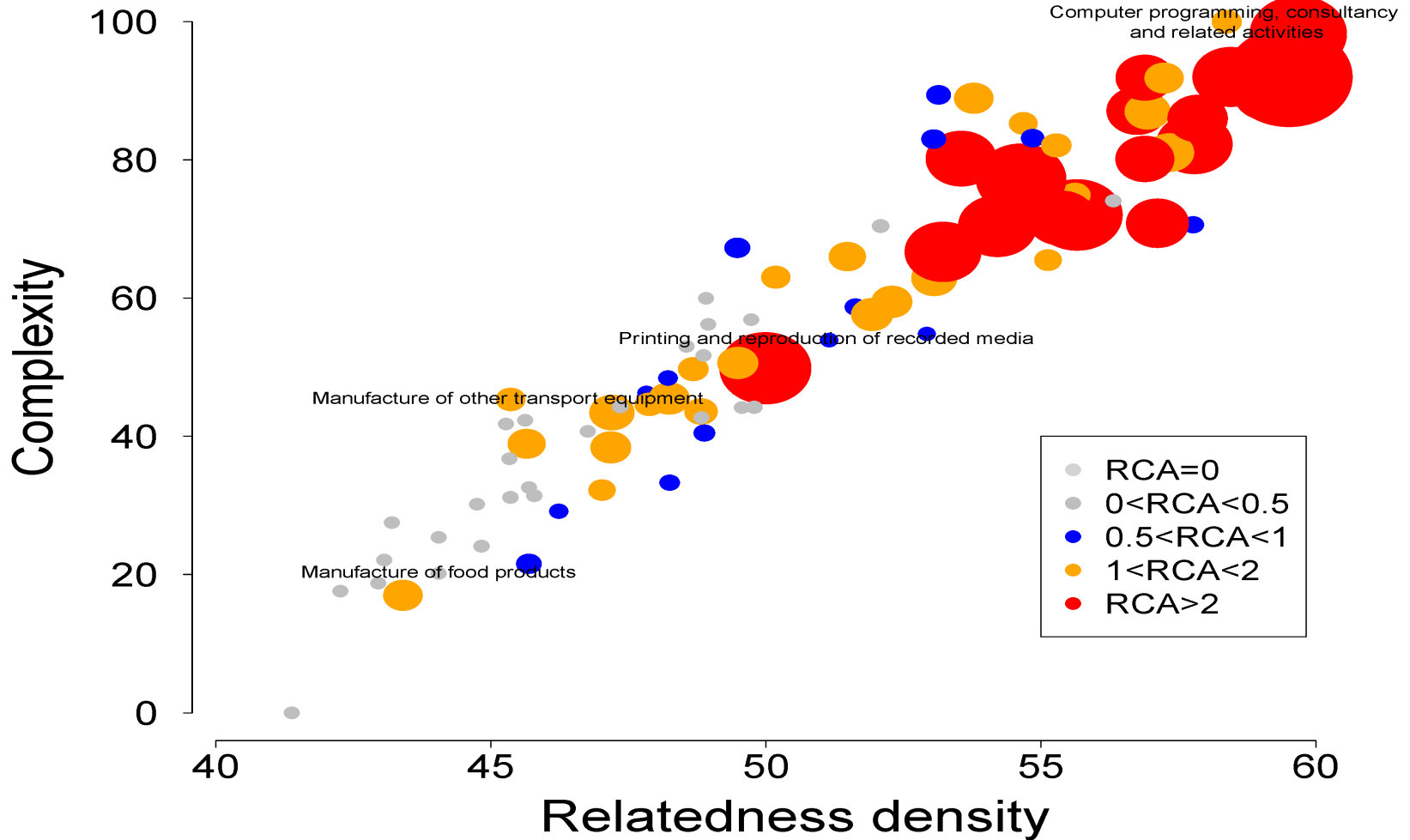


potential of Silesia region to develop 7 key technologies



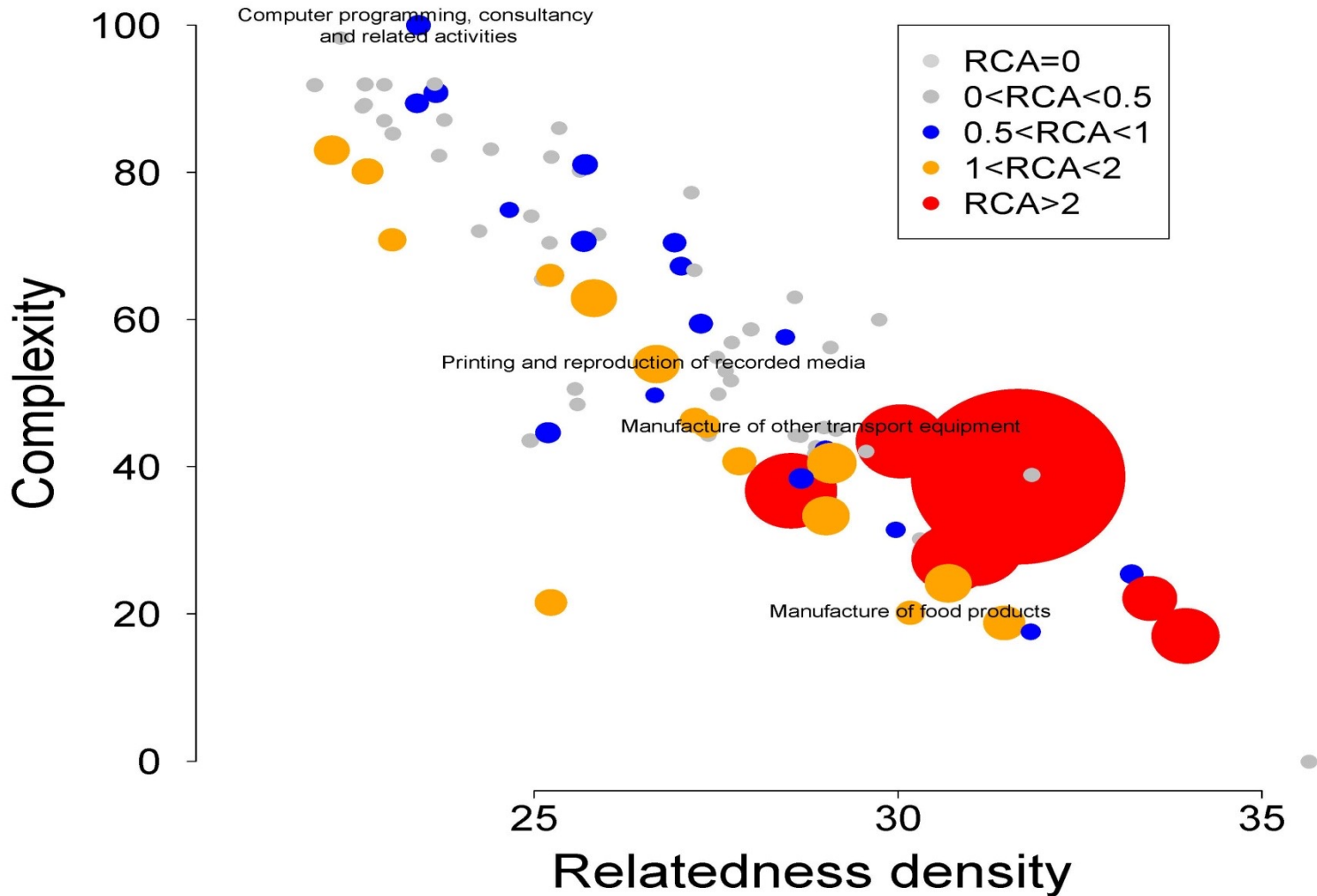
diversification opportunities in industries

Île-de-France (FR10)



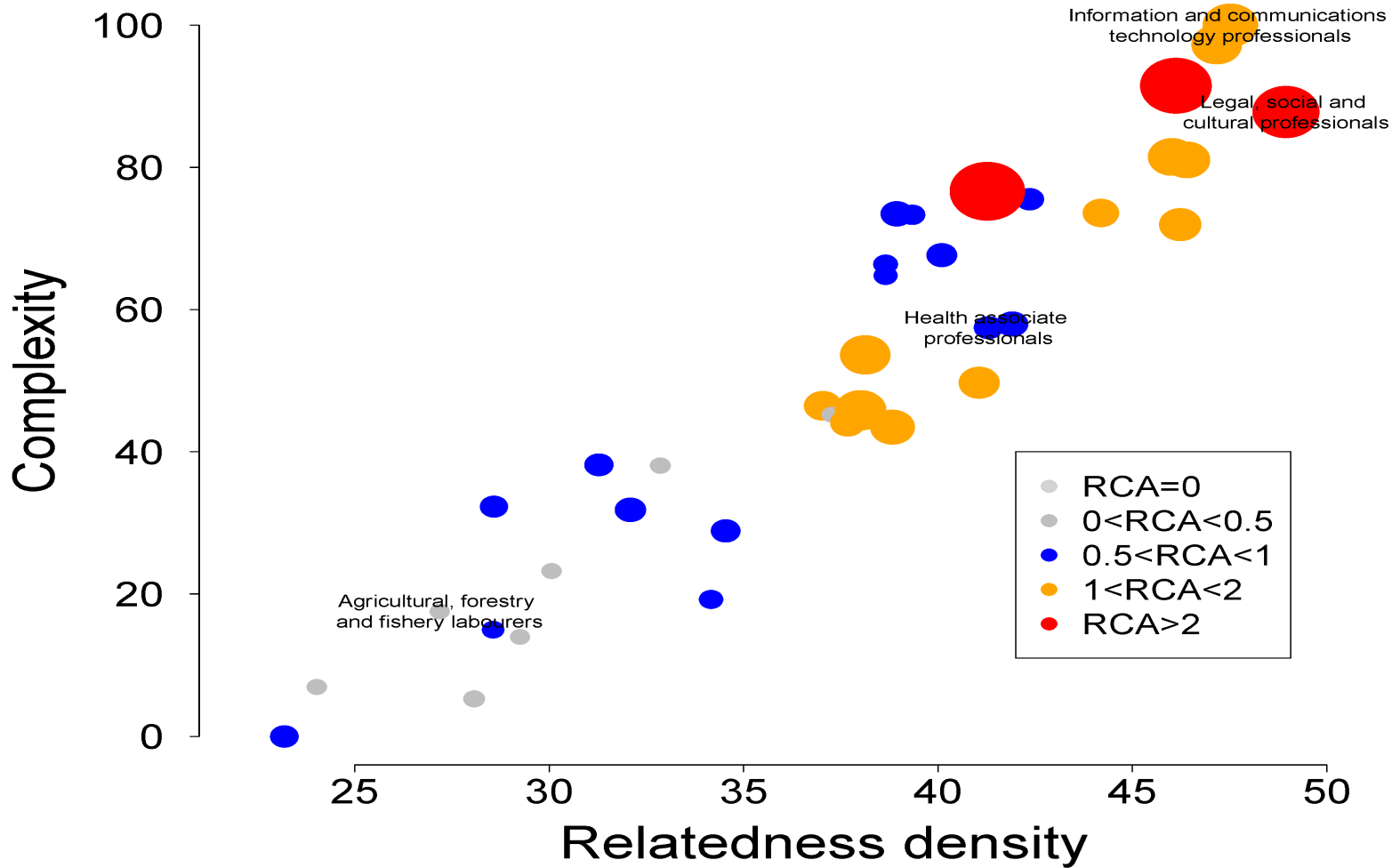
diversification opportunities in industries

Silesia (PL22)



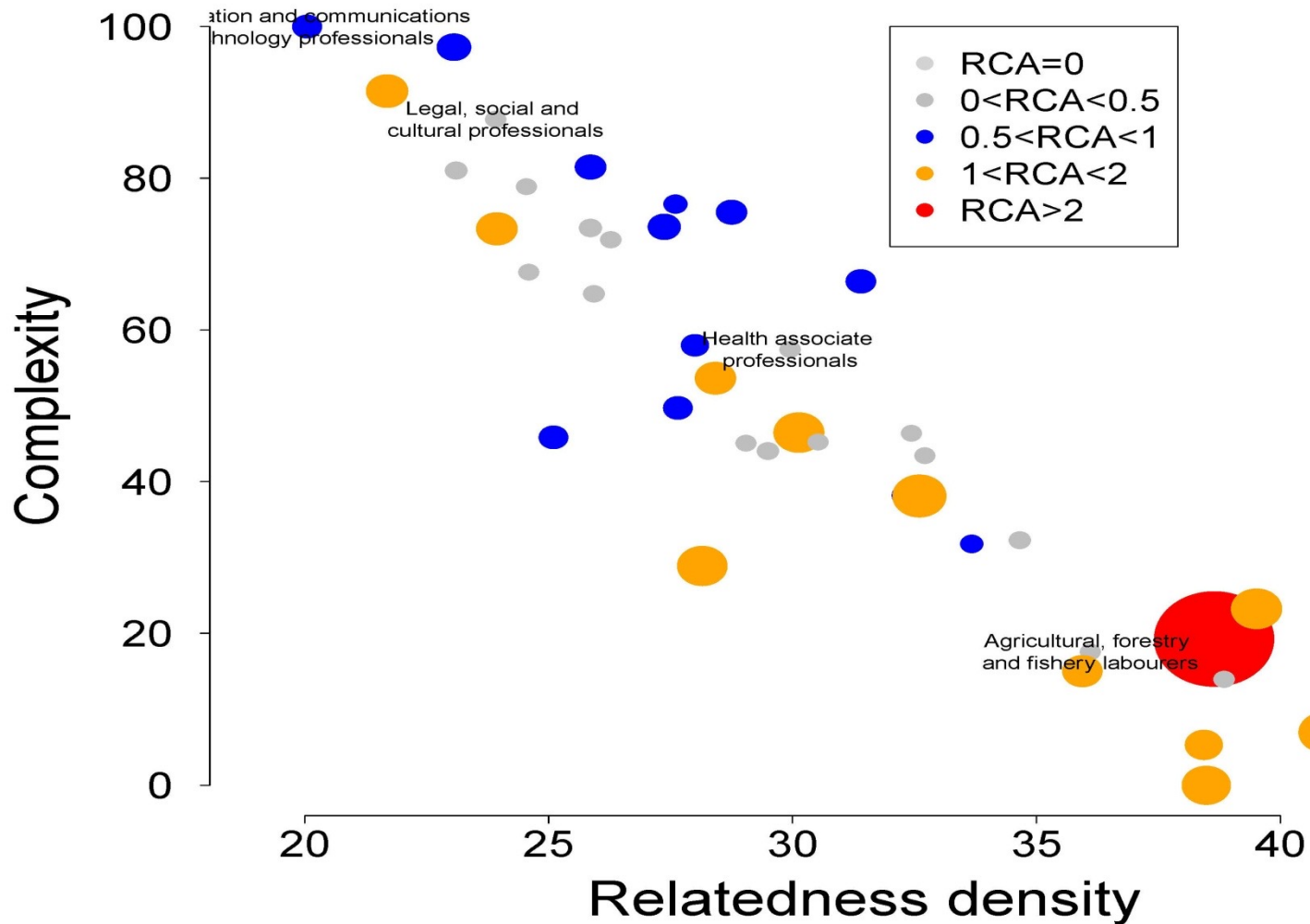
diversification opportunities in occupations

Île-de-France (FR10)



diversification opportunities in occupations

Silesia (PL22)





diversification and national institutions

- **Varieties of Capitalism**: overarching institutional framework affects economic specialization of countries (Hall and Soskice 2001)
- **institutional complementarities**: systems of institutions that regulate and coordinate labour relations, corporate governance relations, product market regulation, and inter-firm cooperative relations
- distinction: **liberal** and **coordinated market economies**
 - **liberal market economies** (example of US/UK): switchable and flexible assets
 - **coordinated market economies** (example of Germany): specific and committed assets





Institutional dimension	LMEs	CMEs
(Organized) Industrial relations	Largely restricted to the wage – profit game	Main role for strategic interaction and negotiations
Corporate governance	Financial reliance on the stock-market; short-term orientation	Dependence on bank capital; long-term orientation
Inter-firm relations	Competitive; price-governed contractor-supplier relationships	Networking and cross-shareholding; strategic interaction
Employer-employee relations within firms	Firms unidirectional controlled by management	Some form of employee involvement
Training and education systems	Stress on general skills; limited vocational training	Stress on specific skills, to be acquired by apprenticeship systems or the like
Level of social protection	Residual social security; easy hiring and firing	Relatively generous social security; considerable employment protection
Product market regulation	Only few limits on competition; laissez faire principle	Level of competition related to other, e.g. social goals



diversification and national institutions

- **national institutions** affect the nature and direction of **diversification** into new sectors: relatedness is a stronger driver in the presence of coordinated market institutions (Boschma and Capone 2015)
- **CMEs**: institutions favor diversification in **related** activities, due to more specific, committed assets
- **LMEs**: institutions favor diversification in **unrelated** activities, due to mobile, switchable assets that can be deployed to alternative uses





toward a measure of institutional relatedness

- leave behind **pre-defined measure** of institutional complementarities
- toward a derived measure of **revealed institutional relatedness**: proximity based on co-occurrence of institutional portfolio's of countries
 - using **institutional variables** at country level, such as in the Varieties of Capitalism literature
 - using **policies features** at country level (economic, research, education policy, etc.): **policy mix** literature: identify tensions/bottlenecks in institutional systems





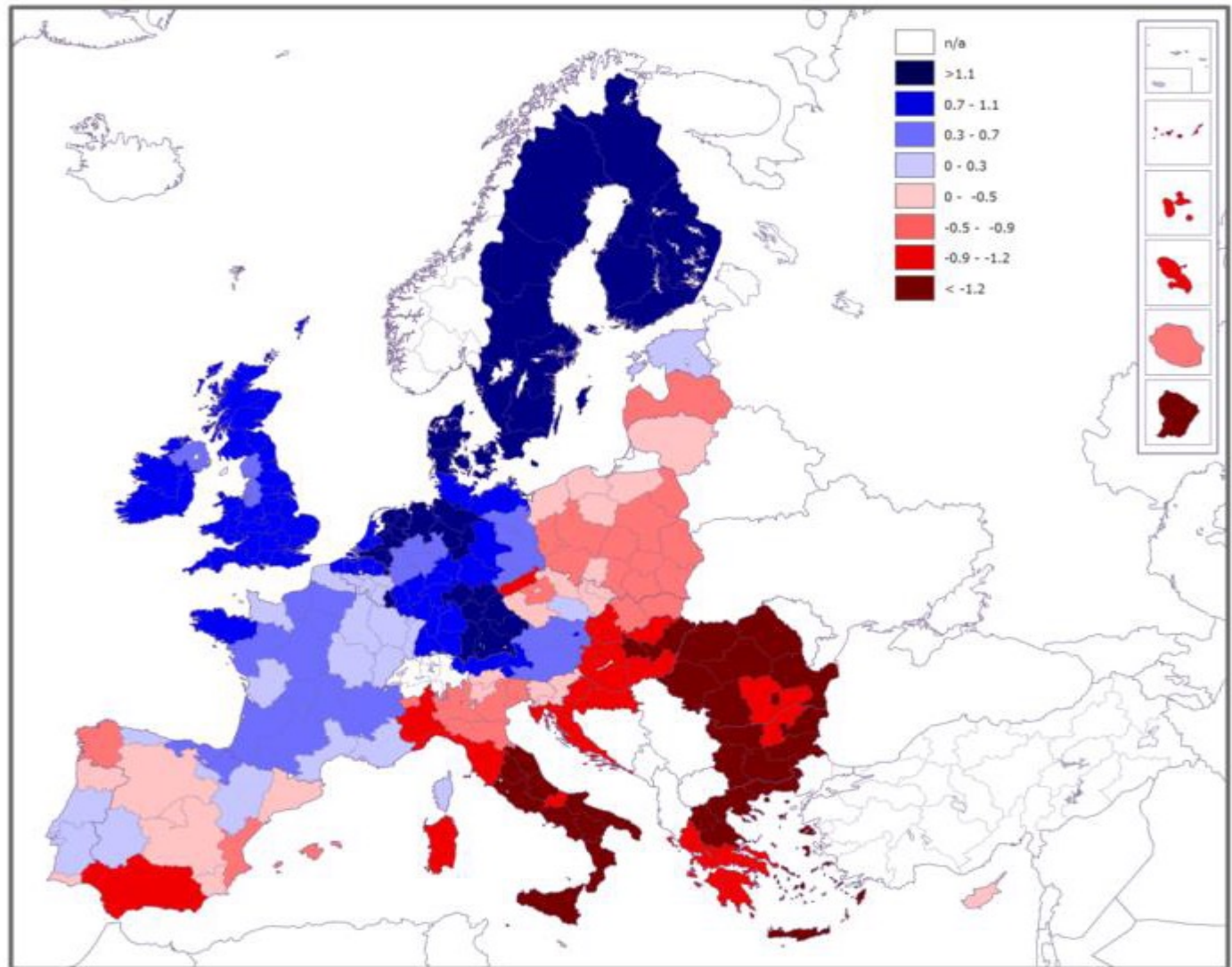
diversification and regional institutions

- **institutions** at **regional scale** also matter for regional diversification (Cortinovis et al. 2017)
- European **quality of government data** at **regional** scale (Charron et al. 2018), based on survey data on quality of governance, impartiality, and corruption
- **trust** and **social capital** (Putnam et al. 2001):
 - **bridging social capital**: focus on inclusiveness and interactions across groups: access to capabilities
 - **bonding social capital**: internal cohesion enhances solidarity but only to the benefit of the group: conformity/rent-seeking behavior





Quality of government 2017





study of European regions

- regional institutions matter for regional diversification in the EU (NUTS2-regions) (Cortinovis et al. 2017)
- no effect of quality of government
- positive effect of bridging social capital
- no effect of bonding social capital
- regions with low quality of government: bonding social capital turns into a negative effect
- example of Italy: weak national institutions, good institutions in parts in Northern Italy, weak institutions in South of Italy





next step to take

- identify **crossovers between activities** (technologies, industries, occupations) in terms of similar institutional requirements
- to explain **regional diversification** based on **institutional relatedness**
 - entry of new activities in regions
 - exit of existing activities in regions





need for institutional change

- regional diversification also requires institutional change
- North (2005): institutions are hard to change, especially when they form a system: how to break path dependencies?
- institutional lock-in (old industrial regions): adaptation leads to specialization of resources and focus on innovations that reproduce existing structures: the local system optimizes the 'fit' into its environment but loses its adaptability (Grabher 1993)
- which regions are capable of inducing institutional change, and what kind of institutional change?





need for institutional change

- transitions and socio-technical systems (Markard et al. 2012): actors (individuals, firms, other organizations) and institutions (norms, regulations, etc.)
- green transition requires transformations that are contested by vested players: role of power
- which regions are best to govern conflicts, and how?





need for institutional change

- **role of agency** to overcome constraints, vested interests and technological lock-ins:
 - agents **collectively** mobilize resources, build legitimacy, and create and reshape institutions
 - focus on **experimentation**: learning process in a context of high uncertainty (Battilana et al. 2009)
 - formation of **new niches**: ‘incubation spaces’ protect key innovations against market selection and institutional pressures from an established regime, and allow actors to learn about these novelties and their use through experimentation





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thank you for your attention!



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how to measure relatedness between activities

- regions will diversify into new activities that are close to their existing activities
- **relatedness density**: how close a potential new activity i is from current set of activities j in region c

$$\text{relatedness density}_{ic} = \frac{\sum_j \phi_{ij} x_{jc}}{\sum_j \phi_{ij}}$$

- density around activity i in region $c = 1$ when region c has CA in all activities j related to activity i
- density around activity i in region $c = 0$ when region c has no CA in none of activities j related to activity i





method

- to estimate effects of density and institutions at t on **developing** CA in new products, and **keeping** CA in current products at $t+5$
- world trade data: 1,241 products in 23 countries 1995-2010
- **dependent variable**: value 1 if country has CA in product i at $t+5$, value of 0 otherwise
- **density**: positive effect: countries diversify into related products
- **institutions** variables interact with density: **positive interaction** term identifies a stronger effect of density in the presence of **coordinated market institutions**
- we control for time-varying product and country characteristics, and product categories (liberal vs coordinated market products)



regional diversification and institutions

- multiple **institutional indicators**:
 - **corporate governance**: shareholder power, dispersion of control, size of stock markets
 - **labor relations**: level/degree wage coordination, labor turnover
 - **product market regulation**: index 17 product markets
 - **inter-firm relations**: multiple indicators firm cooperation





study of European regions

Hypotheses 2 and 3: direct effects of institutional variables

VARIABLES	Model 1	Model 2	Model 3	Model 4	Model 5
density	0.0208*** (0.00129)	0.0205*** (0.00129)	0.0203*** (0.00129)	0.0206*** (0.00129)	0.0204*** (0.00130)
EQI	9.72e-06 (0.000428)			-0.000570 (0.000442)	-0.000341 (0.000444)
Trust		0.00136*** (0.000444)		0.00156*** (0.000458)	
Brid. SK			0.00223*** (0.000669)		0.00233*** (0.000681)
Bond. SK			-0.000332 (0.000456)		-0.000415 (0.000474)
Observations	99,037	97,768	97,768	97,768	97,768
R-squared	0.025	0.025	0.026	0.025	0.026
Industry_year FE	YES	YES	YES	YES	YES

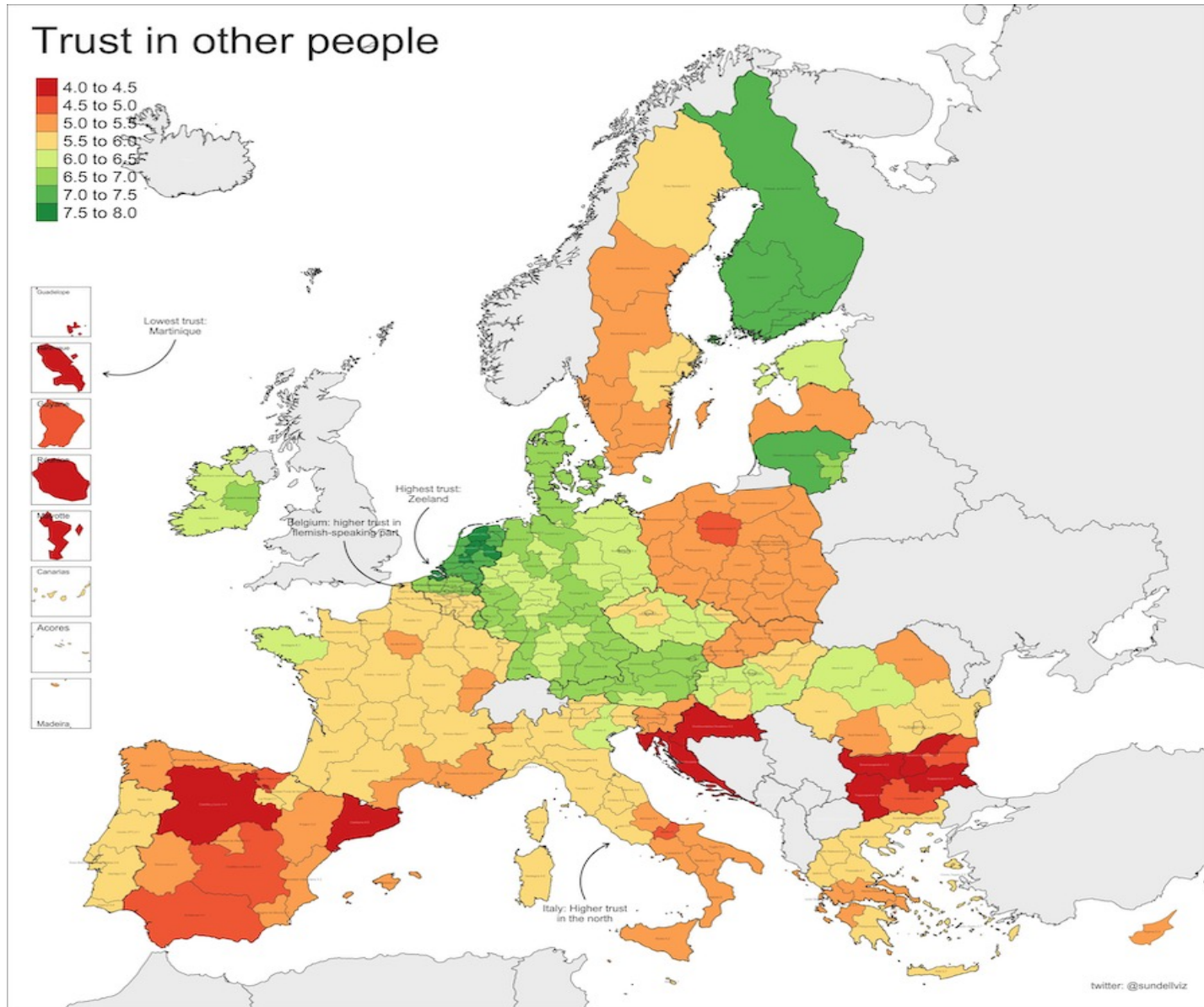


study of European regions

Hypothesis 4: substitution effects between quality of government and social capital

VARIABLES	Model 1	Model 2	Model 3	Model 4
	Low EQI	Low EQI	High EQI	High EQI
density	0.0212*** (0.00257)	0.0207*** (0.00257)	0.0270*** (0.00386)	0.0269*** (0.00387)
EQI	-0.000503 (0.00104)	-0.000109 (0.00101)	0.000490 (0.00607)	-0.00571 (0.00671)
Trust	0.00137 (0.000960)		0.000669 (0.00135)	
Brid. SK		0.00469*** (0.00136)		0.00224* (0.00121)
Bond. SK		-0.00188** (0.000835)		0.00317 (0.00194)
Observations	28,419	28,419	15,954	15,954
R-squared	0.067	0.068	0.088	0.089
Industry_year FE	YES	YES	YES	YES

trust in other people 2017



source: Quality of Government Institute



Bridging and bonding social capital: Putnam-type and Olson-type of associations

Bridging Social Capital (Putnam groups)	Bonding Social Capital (Olson groups)	Not included
Religious organizations	Trade unions	Social welfare organizations for handicapped and deprived people
Cultural activities	Political parties/groups	Local community action
Youth work	Professional associations	Third World development/Human rights
		Environment, ecology, animal rights
		Sports/Recreation
		Women's groups
		Peace movements
		Voluntary health organizations
		Others



role of institutions in peripheral regions?

- weak institutional capacity of peripheral regions (McCann and Ortega-Argiles 2015; Morgan 2015)
- Smart Specialization policy does not tackle structural weaknesses in peripheral regions (Rodriguez Pose 2014):
 - low absorptive capacity of small firms
 - traditional approach to governance (no experimentation)
 - low quality of government
 - lack of culture of collaboration
 - dominance of local vested players

