



OPENNESS VALUES AND REGIONAL INNOVATION: A SET ANALYSIS

Roel Rutten

Introduction

Roel Rutten



Tilburg School of Social and Behavioural Sciences



European Regional Affairs Consultants



Aim of the presentation

- Explain how openness values contribute to regional innovation
- Introduce QCA as a robust method for cross-case comparison
- Identify four mechanisms that corroborate/ are corroborated by the literature

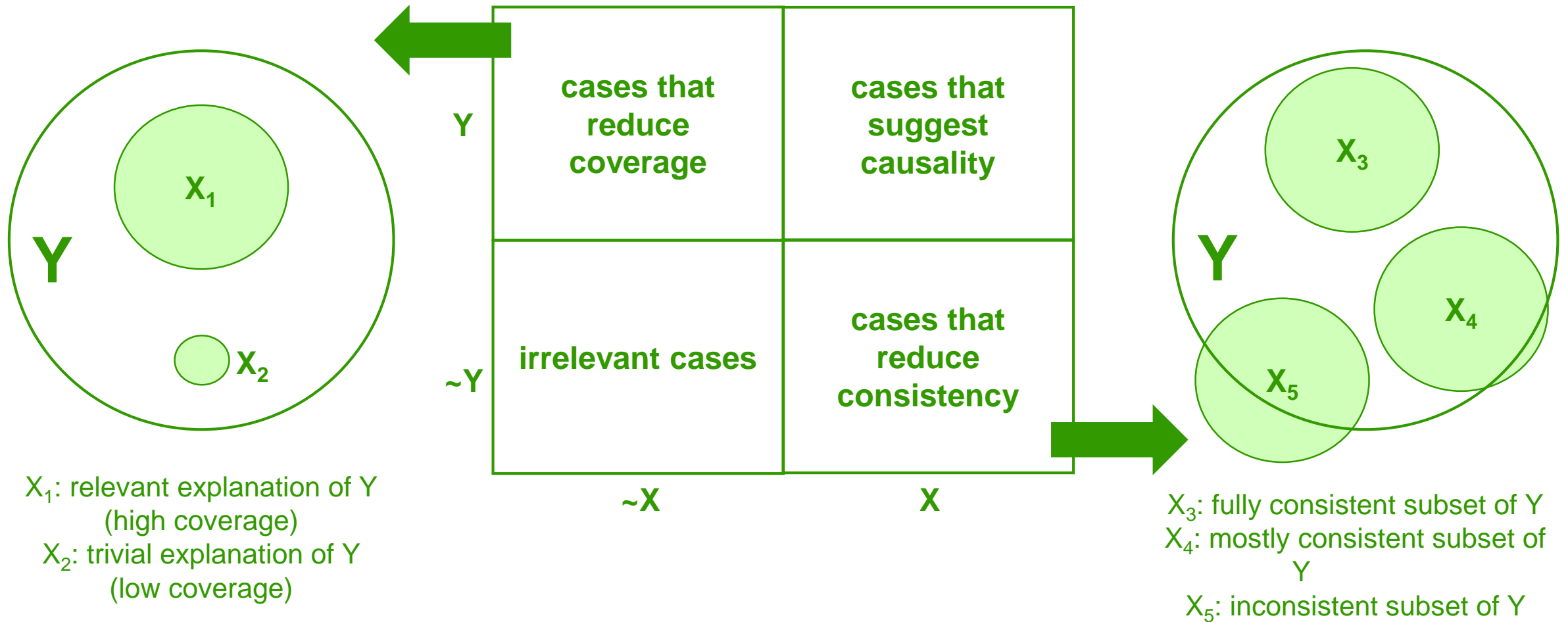
Innovation

- Definition
 - Outcome of a process of knowledge creation between individuals in 'social space'.
- Openness values
 - Encourage exchange of knowledge, ideas between communities, networks
- Theoretical arguments
 - Melting pot argument → Tolerance, socio-cultural diversity
 - Self-expression argument → Modernization values, personal freedom
 - Economic diversity argument → Related and unrelated economic diversity
 - Territorial Innovation Models argument → Local clusters of collaborating firms
- Equifinality issue
 - Very difficult in statistical methods
 - Set-analysis (QCA) designed for that

Set-analysis (I)

- Comparative case-study method
 - Statement of sufficiency (necessity) based on set-relationships
 - Sufficiency: openness-values regions a subset of innovation regions
- Set-analysis
 - Distinguishes between difference in kind, difference in degree
 - Configurational causality rather than 'net effects'
 - Equifinal causality
- QCA (Qualitative Comparative Analysis)
 - Formalized, structured cross-case comparison
 - Boolean algebra
 - Allows generalizing cross-case patterns

Set-analysis (II)



QCA a causal method? Yes!

Variable-based analysis

- Effects-of-causes methods
- Predict the effect, uncertainty
 - Estimate the correct net effect
 - Causality inferred from correlations
- Empirical generalizations

Case-based analysis

- Causes-of-effects methods
- Detect the causes, factual
 - Balance consistency and coverage
 - Causality inferred from the cases
- Analytical generalizations



Goertz, G. and Mahoney, J. (2012), *A tale of two cultures: Quantitative and qualitative research in the social sciences*, Princeton, NJ: Princeton University Press.

Ragin, Ch. (2014), *The comparative method: Moving beyond qualitative and quantitative strategies*, Oakland, CA: University of California Press.

Empirical context

- Cases
 - EU Nuts 2-regions (approx. 265)
 - Selection: 108 North West EU regions
 - Sweden, Denmark, Germany, Netherlands, Belgium, United Kingdom
- Economic and institutional development
 - Affects regional innovation
 - Differences in degree – between cases
 - Differences in kind – between cases and Southern, Eastern, Central EU regions
- Data sources
 - Eurostat, European Values Studies, Regional Innovation Scoreboard, Social Progress Index, Regional Competitiveness Index

Conditions and outcome

Condition/outcome	Individual sets
Analytical knowledge creation	Patents per million inhabitants
	R&D expenditure
	Human resources in science and technology
Synthetic knowledge creation	Non-R&D innovation expenditure
	SMEs innovating in-house
	Innovating SMEs collaborating with others
Economic diversity	Herfindahl-Hirschman Index of: 1) agriculture, 2) industry, 3) construction, 4) wholesale, retail, trade, transport, 5) information and communication, 6) financial and insurance services, 7) real estate, 8) professional, scientific, technical, administrative, 9) arts, entertainment, recreation
Melting pot	Herfindahl-Hirschman Index of nationalities in the population: 1) EU, 2) other European, 3) Africa, 4) Caribbean, South and Central America, 5) North America, 6) Asia, 7) Oceania
	Tolerance and inclusion (attitudes towards minorities and gender equality)
Self-expression	Post-materialist values
	Personal freedom and choice
Regional innovation	Firms with product and process innovation
	Exports of medium and high-tech manufacturing
	Sales of new to market and new to firm innovations

Conceptualizing conditions and causal interpretation

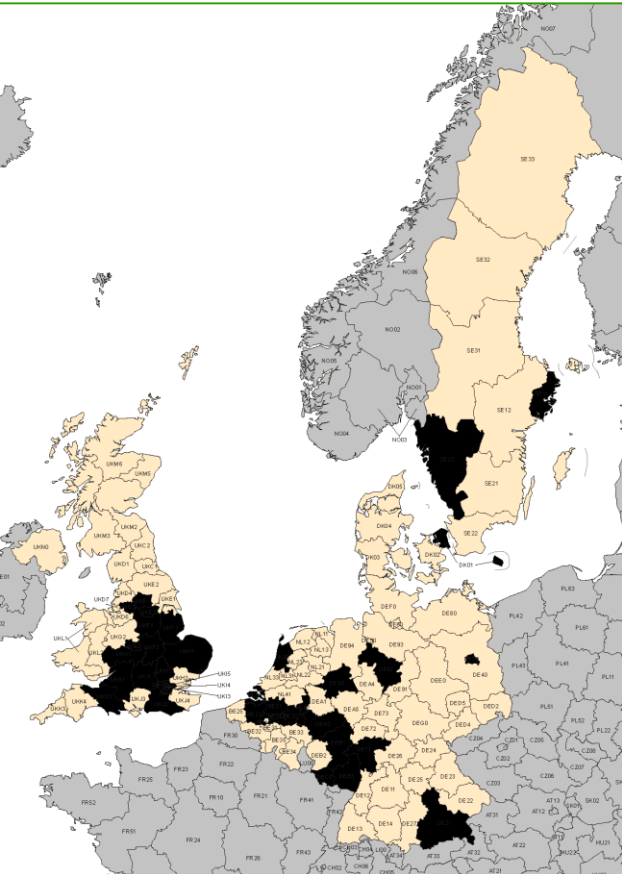
- Example: socio-cultural diversity
- Indicator approach
 - Non-nationals indicate socio-cultural diversity
 - Social-cultural diversity causes exchange of knowledge and ideas
 - Tolerance strengthens effect of socio-cultural diversity on exchange
- Set-analysis
 - Non-nationals do not cause innovation
 - Set-relationship between non-nationals and innovation is vacuous
 - Exchange happens in tolerant regions
 - Melting pot: socio-culturally diverse AND tolerant regions
 - Melting pot: basic mechanism, enables causal interpretation

Empirical findings

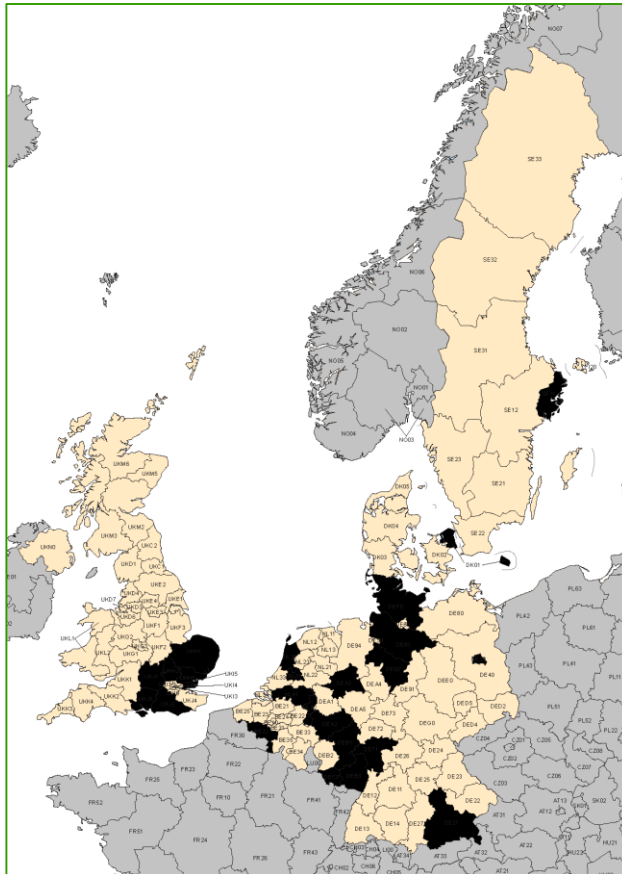
	Configuration 1 Diversity	Configuration 2 Technology transfer	Configuration 3 Cosmopolitan environment	Configuration 4 creativity
Analytical knowledge		●	●	●
Synthetic knowledge		●	●	
Economic diversity	●	●		●
Melting pot	●		●	
Self-expression				●
Consistency	0,944163	0,947369	0,962366	0,958333
PRI	0,845070	0,803922	0,887097	0,863636
Raw coverage	0,543860	0,526316	0,523392	0,605264
Unique coverage	0,061403	0,008772	0,099412	0,043859
Solution coverage	0,789474			
Solution consistency	0,944056			

Geography of the configurations

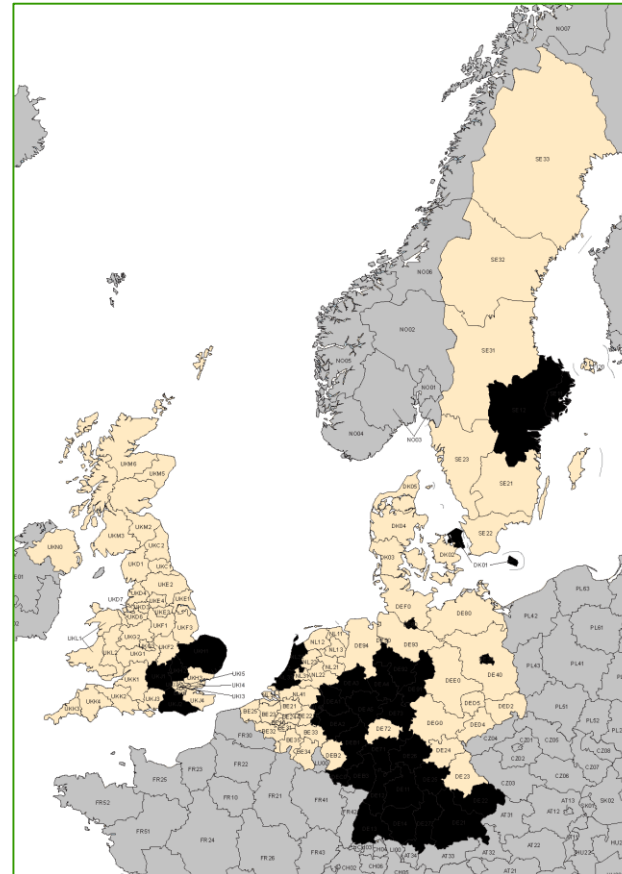
Diversity configuration



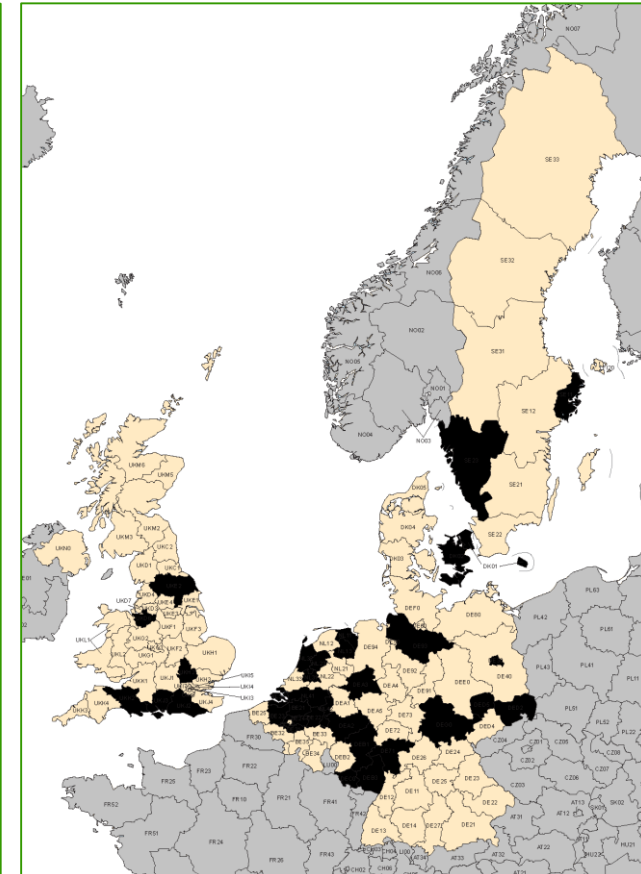
Technology-transfer configuration



Cosmopolitan environment configuration



Creativity configuration



Interpretation: four regional innovation mechanisms

- **Diversity mechanism**

- Configuration 1 – Economic diversity * Melting pot
- Crossover of knowledge, practices and ideas between economic sectors, groups in society and between economy and society produce regional innovation when crossovers are supported by tolerance and inclusiveness

- **Technology transfer mechanism**

- Configuration 2 – Analytical knowledge * Synthetic knowledge * Economic diversity
- Regional innovation follows from mutual transfer of knowledge, practices and ideas between science, application and a diverse economy. Openness values are logically redundant: cognitive proximity enables exchanges between scientists, technicians and engineers

- **Cosmopolitan environment mechanism**

- Configuration 3 – Analytical knowledge * Synthetic knowledge * Melting pot
- Individuals involved in knowledge creation thrive in open and diverse regional environment. They are good places to live and expose them to new knowledge and ideas

- **Creativity mechanism**

- Configuration 4 – Analytical knowledge * Economic Diversity * Self-expression
- The interaction between science (analytical knowledge), economic diversity (crossover of knowledge, practices, ideas between economic sectors) and an open society (self-expression) triggered a creative process that produces innovation.

Discussion and conclusions

- Four mechanisms
 - Empirical corroboration for four key theorized mechanisms
 - Complementary rather than competing explanations
- Openness values
 - Encourage exchanges across communities within a region
 - Encourage exchanges across communities in different regions
 - Enable more dynamic innovation
 - ~openness values is a necessary condition for ~regional innovation
- Introducing set-analysis, QCA
 - Robust method for cross-case comparisons
 - Answers how-questions in more detail than statistical methods

Thank you !

Questions ?

