Ruhr Research Institute for Innovation and Regional Policy (RUFIS e.V.)

European Interregional Boundary-Spanning Institutions:
The Case of the Aeronautics Industry

Silviya Draganinska

Rüdiger Wink

Bochum, Germany

RUFIS

Contents

- Research Questions
- Theoretical Background
- Methodology
- Aeronautical Sector
- Changes and Challenges in Aeronautics
- Empirical Findings in Germany
- Conclusions

Research Questions

- Which challenges do medium-tech SME face in the aeronautical industry? Do they need some institutional support to be integrated in international knowledge networks? How should they be supported by their needs?

- Which role play relational proximities for the emergence and development of boundary-spanning institutions? Do they differ for different types of clusters?

- Which are the most important prerequisites for effective institutional arrangements?

- How do institutions facilitate trust in co-operations with interregional organizations?

Theoretical Background

Knowledge Value Chain and Institutions

- Problems of interaction and institutional issues within the knowledge value chain (generation, transfer, exploitation)
  - asymmetries in information and quality uncertainties (risk of default),
  - different communication codes (risk of misperception),
  - free-rider problem in institutional arrangements,
  - creativity as a challenge to established knowledge pools.
- Institutional solution of the drafted problems would be to create an institutional framework, which could
  - enhance the development and establish common communication codes,
  - aid the learning process to deal with creativity,
  - help to recognize and keep out free-riders,
  - facilitate the work-out of a proper control and sanction systems.

Theoretical Background (cont.)

Spatial dimension

- Proximity (model of Boschma 2005)
  - *Geographical* – frequent communication, F2F contacts, developing routines, continuous interaction, social control
  - *Cognitive* – common professional or scientific background, joint cognitive dimension,
  - *Social and cultural* – personal contacts and joint informal norms,
  - *Organizational* and *institutional* – common communication codes on the basis of formal and informal rules.
- Geographical proximity:
  - is a specific feature of regional innovation systems,
  - Enhances the access particularly for SME for *social* and *cultural* proximity
  - has some disadvantages: 'lock-in', inertia, enhances imitation.
  - ➜ *Geographical* proximity is not a perfect and not the only solution.

Theoretical Background (cont.)

Institutional aspects

- Prerequisites for successful institutions
  - diversity of included knowledge through selection of different actors,
  - quality of exchanged knowledge,
  - commitment of network members,
  - exclusiveness of network benefits.
- Functions of boundary-spanning institutions (BSI)
  - help to overcome different barriers to interregional co-operations in terms of communication, language, legal support, etc.
  - reduce uncertainty and endow trust between the participants,
  - strengthen additional forms of proximity between organizations.

Methodology

- Cluster typology (model of Bottazzi et al., 2001)
  - horizontally diversified agglomerations,
  - agglomerations of vertically disintegrated activities,
  - hierarchical spatially localized relations (oligopolistic core),
  - agglomeration phenomena based on knowledge complementarities (science-based),
  - agglomerations characterized by path-dependency.
- Hypothesise:
  - Different cluster types could be linked to certain relational proximities. This favours the emergence of certain institutions.
  - Existing institutions strengthen certain types of proximities between the member-parts.

Aeronautical Sector

Framing Conditions

- oligopolistic market structure
- sector of strategic interest
- politically influenced
- formerly influenced by the defence sector
- high degree of engineering services
- multinational structure of the OEM
- high level of integration
- internationalization

Changes and Challenges in Aeronautics

- Organizational and Market Changes
    - Restructuring organizations into global-modular sourcing
    - International competition in price and quality matter
    - Interface management – searching for innovations in different science fields

- Challenges for SME
    - Access into international knowledge networks
    - Internationalization and knowledge management
    - Cost reduction and extension of market power
    - Facing more responsibility by organizational restructuring

Empirical Findings in Germany

- Cabin Interiors (Hamburg):

  Hierarchical

  - small firms with expertise in aerospace products and services,
  - weak linkages between the firms, hierarchical relationships between OEM and component suppliers,
  - predominantly focused on regional co-operations with weak participation in interregional activities,
  - OEM are the main driver for interregional activities,
  - no system suppliers so far.

- Composites (Stade):

  Science-based

  - 'knowledge-intensive SME' – small firms with high qualification level and R&D-intensive activities,
  - science-driven co-operations with firms from different sectors,
  - open for different partners, coming from different sectors and countries.

RUFIS

Empirical Findings in Germany

Hierarchical cluster

- Instruments for interregional exchange of knowledge:
    - organizing joint social events
    - co-operations with universities and polytechnics
    - joint programs on qualifications (Hamburg – Midi-Pyrenées and Aquitaine)
- Instruments to ensure trust and confidence
    - ECARE - strengthens the trust between participants in aeronautics by creating and maintaining co-operation between regional European networks of clusters
    - Organizing mutual internships helps foreign workers to integrate and firms to cope with specific communication problems

Empirical Findings in Germany

Knowledge complementarities cluster

- Instruments for interregional exchange of knowledge:
  - co-operation based on science and technology
  - exchange of scientists for research stays
  - conferences and joint publications

- Instruments to ensure trust and confidence
  - ACARE – association of research networks with participation of industry and universities

RUFIS

Conclusions

- The role of geographical proximity for SME has been relativized by the emergence of boundary-crossing institutions and displaced by other forms of relational proximities.

- Different kinds of relational proximities support the emergence of boundary-crossing institutions.

- The cluster types could be linked to certain proximity kinds:
    - *Social* and *organizational* proximity play a special role in the oligopolistic cluster.
    - The coherence of the science-based cluster depends on building-up *cognitive* proximity between the participants.
- Future steps

Thank you for your attention!

RUFIS e. V.

Ruhr-Universitaet Bochum

Universitaetsstr. 150

GC 3/154

D – 44801 Bochum

silvia.draganinska@rub.de

ruediger.wink@rub.de

RUFIS

Empirical Findings in Germany

European Communities Aeronautics Research (ECARE)

- Main targets
  - better involve R&D-intensive aeronautical SME into EU funded research
    - establish high-quality database and help project coordinators to get access to R&D-intensive SME
    - organize regional sessions for SME and trainings of regional contact points on FP7 opportunities
  - further establish the ECARE Group of local clusters as a representative of the European aeronautical SME
    - Expand consequentially from 19 to 30 clusters
- Members
  - pan-European network of local aeronautical cluster associations
- Key proximities
  - *social* and *organizational* proximity

RUFIS

Empirical Findings in Germany

Advisory Council for Aeronautics Research in Europe (ACARE)

- Main targets
    - launch and improve a Strategic Research Agenda (SRA),
    - make strategic and operational recommendations for its implementing,
    - recommend measures for optimising existing research infrastructures and achieving cost-effective investments,
    - develop and implement a communication strategy to promote awareness of the SRA
- Members
    - 35 - 40 members, representing the EU Member States, the Commission, manufacturing industry, airlines, airports, regulators, and an independent academia expert.
- Key proximities
    - *cognitive* proximity

RUFIS

Future Research Steps

- To enrich the analysis with empirical findings about clusters in the main countries with Airbus production sites.

- To gather more information about BSI and get insights at their internal organization and future intentions.

- To identify indicators for assessment for BSI.

RUFIS