



Ministry of Economic Affairs

The Spatial Industrial Organization of Innovation

Towards a micro-level understanding of collective learning within and across regional innovation systems

Pieter de Bruijn
Senior Policy Advisor Spatial Economic Policy
Dutch Ministry of Economic Affairs

Regional Innovation Systems: New Facts and Policies
Paris, 7th June 2010

Organisation for Economic Development and Co-operation

Working Party on Territorial Indicators
Territorial Development Policy Committee





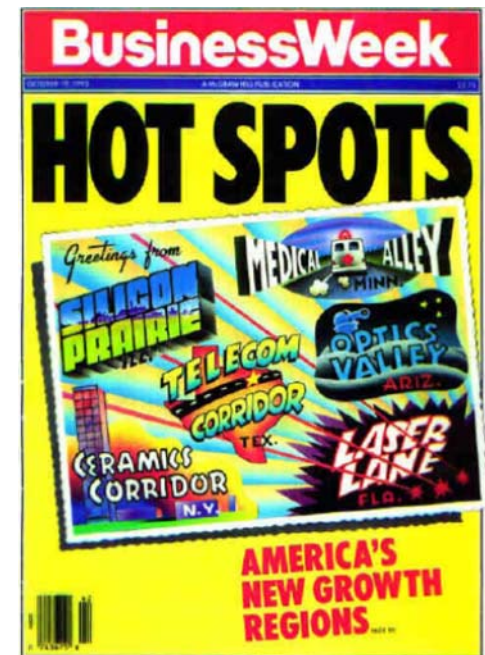
Territorial innovation models and the spatial industrial organization of innovation

Territorial innovation models

- starting point of the region
- contingencies in specific case studies

Spatial industrial organization of innovation

- starting point of the firm engaging in cooperative innovation trajectories
- generalization based on comparative research design





Spatial industrial organization – transaction cost theory

Transaction costs

- costs of contact, contract and control
- costs of persuading, negotiating, coordinating and teaching potential partners in learning trajectories

Spatial relevance

- a positive connection exists between distance and transaction costs
- transaction costs especially matter in innovative and volatile high-technology environments



Spatial industrial organization – competence-based approaches

Competences (capabilities)

- (tacit) knowledge resources
- idiosyncratic synergies – core competences
- partnership as a means to gain access to complementary competences

Spatial relevance

- variegated landscape of technological competences in which state-of-the-art competences are less widely distributed than more commonly used competences
- exploration of new technological opportunities through differentiation in search strategies across space



Data – The Community Innovation Survey (CIS 2.5)

Advantages

- interactive nature of the innovation process
- explicit recognition of spatial dimensions in partnership
- micro level of individual firms
- broadly delineated population of firms
- response rate

Disadvantages

- secondary data
- time frame (1996-1998)



Empirics – Spatial patterns of partnership

Spatial scope of partnership, 1996-1998

	Regional	National	International
Total population	44.7 (2123)	29.2 (1389)	26.1 (1241)
<i>High-technology activities</i>			
high-technology sectors	31.7** (272)	28.9 (248)	39.5** (339)
other	47.5** (1851)	29.3 (1141)	23.2** (902)
<i>Firm size</i>			
small	50.5** (1575)	26.6** (829)	22.9** (716)
medium	36.1** (384)	33.1** (352)	30.9** (329)
large	29.0** (165)	36.6** (208)	34.4** (196)
<i>Character of product innovations</i>			
new to the market	30.3** (273)	31.4 (283)	38.2** (344)
new to the firm	50.6 (645)	30.5 (389)	18.8 (240)

Source: Ministry of Economic Affairs, on the basis of Statistics Netherlands, CIS 2.5



Empirics – Spatial dimensions in transaction costs

Difficulties in partnerships by spatial scope of partnership, 1996 to 1998

	Regional	National	International	Total
Total population	5.4** (115)	7.1 (99)	10.6** (132)	7.3 (346)
<i>High-technology activities</i>				
high-technology sectors	3.5** (9)	8.1 (20)	12.4** (42)	8.3 (72)
other	5.7** (105)	6.9 (79)	10.0** (90)	7.0 (274)
<i>Firm size</i>				
small	4.6** (72)	5.0** (41)	12.0** (86)	6.4 (199)
medium	6.4 (24)	8.5 (30)	8.0 (26)	7.6 (81)
large	11.0 (18)	13.5 (28)	10.2 (20)	11.6 (66)
<i>Character of product innovations</i>				
new to the market	7.4* (20)	9.2 (26)	13.8* (48)	10.4 (94)
new to the firm	7.2 (46)	7.0 (27)	12.2** (29)	8.1 (102)

Source: Ministry of Economic Affairs, on the basis of Statistics Netherlands, CIS 2.5



Empirics – Spatial dimensions in access to competences

R&D-companies by spatial scope of partnership, 1996 to 1998

	Regional	National	International	Total
Total population	14.2** (302)	28.4** (394)	35.0** (435)	23.8 (1131)
<i>High-technology activities</i>				
high-technology sectors	50.0 (136)	51.7 (128)	60.7* (206)	54.7 (470)
other	9.0** (166)	23.3** (266)	25.4** (229)	17.0 (661)
<i>Firm size</i>				
small	8.8** (138)	14.9 (124)	24.5** (175)	14.0 (437)
medium	24.4** (94)	42.6** (150)	38.4* (126)	34.7 (370)
large	42.4** (70)	58.0 (120)	68.0** (133)	56.9 (324)
<i>Character of product innovations</i>				
new to the market	65.2 (178)	73.6 (209)	71.0 (244)	70.1 (631)
new to the firm	2.7** (17)	12.4* (48)	20.2** (48)	9.0 (114)

Source: Ministry of Economic Affairs, on the basis of Statistics Netherlands, CIS 2.5



Conclusions

1. Transaction costs and distance between partners in cooperative agreements are positively related
2. Compared to more stable environments, transaction costs are relatively high in environments characterized by high levels of uncertainty
3. Small- and medium-sized firms engage relatively often in partnership at limited distance, whereas large firms engage more often in partnerships at wider levels.
4. Firms exploring new technological opportunities have to search at greater distance for complementary competences than firms exploiting more prevalent technologies in their innovation strategies



Policy implications

1. The focus on regional organizing capacity in cluster policies is supported
 - by the spatially discriminating role of transaction costs in networks of open innovation
 - by cluster synergies in competitive position

2. Spatial innovation policies also need to focus on external linkages
 - in border regions
 - indirect linkages through global gatekeepers (multinationals; higher education)
 - acquisition of foreign investments
 - access for foreign parties to subsidy instruments