



Ministry of Economic Affairs

The Spatial Industrial Organization of Innovation

Empirical Reflections from a Homogenizing Research Perspective

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Territorial innovation models and the spatial industrial organization of innovation

Territorial innovation models

- starting point of the region
- particularizing approach
- sociology (embeddedness), economics (endogenous growth theory; regulation theory; systems of innovation approach)

Spatial industrial organization of innovation

- starting point of the firm engaging in cooperative innovation trajectories
- homogenizing approach
- industrial organization (transaction cost theory and competence-based approach), international management



Territorial innovation models – a plea for a complementary approach

The need for a broader insight:

- generalization versus contingencies
- multi-dimensional space versus spatial bifurcation
- learning regions, smart regions and dumb regions

The need for a deeper insight:

- business economic considerations
- nature of knowledge spillovers
- intraregional divisions and tensions





Theoretical building blocks – 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



Theoretical building blocks – Competence based approaches

Competences (capabilities)

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

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



Hypotheses

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



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



Empirics – Cluster synergies through partnership

Logistic regression with the impact of innovation as dependent, 1996 to 1998

Independents	Moderate	Considerable
Innovation expenditures	4.47 (88.8)**	1.70 (9.1)**
Innovation expenditures above the median	1.34 (8.1)**	1.90 (46.2)**
Government subsidies	1.69 (20.7)**	1.39 (9.8)**
Information sources	1.60 (15.9)**	1.34 (7.3)**
Purchase of licenses	0.98 (0.1)	0.87 (2.3)
Partnership difficulties*Regional network embeddedness	0.18 (33.3)**	0.23 (14.4)**
Partnership difficulties*National network embeddedness	0.30 (18.2)**	0.18 (16.4)**
Partnership difficulties*International network embeddedness	0.86 (0.3)	0.75 (1.2)
Other difficulties	0.82 (0.5)	0.93 (0.6)
R&D-company*Regional network embeddedness	1.45 (3.4)	2.25 (24.1)**
R&D-company*National network embeddedness	1.25 (1.8)	0.77 (2.7)
R&D-company*International network embeddedness	0.91 (0.3)	1.47 (5.8)*
Non-technological innovation	1.78 (21.6)**	1.08 (0.4)



Conclusions

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