

Innovation and Industrial Dynamics: Challenges for the next decade

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Impact of EUREKA Projects on the performance of R&D SMEs

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Agenda



1. Background theory
2. Objectives
3. Methodology
4. Empirical results
5. Conclusion

1. Background theory

Promoting SME is one of the main goals of the EU through the Small Business Act (European Commission 2002; 2008, 2010)

Evidence that government support can lead to positive as to negative results (Bergström, 2000; Curran, 2000; Lambrecht & Pirney, 2005; Norrmann & Bager-Sjögren, 2010)

How to improve the general effectiveness of SME policies ?

The one-size-does-fit-all assumption as an analytical base (Wagner & Sternberg, 2004; Minitti, 2008; Tödting and Tripl, 2005)

1. Background theory

The form of intervention might determine the outcomes of policies (Storey, 1994; Robson et al., 2009)

Focus on EUREKA R&D collaborative projects: Network and Cluster projects

Launching: 1985; Goal: promote research and commercial collaborations within Europe

Networks are smaller R&D consortia while Clusters are larger R&D consortia.

H1: Consortium size is positively correlated with the outcome of projects (Sevon & Kreiner, 1998; Koza & Lewin, 2000; Mothe & Quélin, 2000)

H2: The duration of projects is positively correlated with the expected outcomes (Fischer & Molero, 2012 ; Bayona-Sáez & García-Marco, 2010; Baraias et al. 2012; Hidalgo et al. 2015)

1. Background theory

CONTRIBUTION AND ORIGINALITY OF THE PAPER

Determine the influence of R&D consortium size on the outcomes of policies considering EUREKA projects

Determine the influence of project duration on the outcomes of policies

Formulate policy recommendations

2. Objectives

Assess the overall impact of Network and Cluster projects in terms of turnover and employment growth

Compare Network (NP) and Cluster (CLS) projects

Highlight the influence of size and project duration

STUDY FOCUS:

R&D SMEs participants to EUREKA between 2006-2015

3. Methodology- Analytical Model

Generalised difference-in-differences Model (G-DID) in repeated cross sections (Heckman & Vytlacil, 2007; Blundell & Dias, 2009; Gertler et al., 2011)

$$\mathbf{Log} Y_{it} = \mu + \alpha X_{it} + \beta \mathbf{Treatment}_{it} + \gamma (t+\delta)_{it} + \lambda \mathbf{Treatment}^* (t+ \delta) + \varepsilon_{it}$$

Y_{it} is the outcome variable

$\mathbf{Treatment}_{it}$ = 1 if a given firm i belongs to the treatment group (beneficiaries of NP or CLS projects), and 0 otherwise

$(t+\delta)_{it}$ = 1 if a given firm i is observed after the end of projects at time $t+\delta$ (e.g. 1, 2, 3), and 0 otherwise

X_i = vector of control variables (*EU_15 member or not, sector of activity, start years of projects*)

λ = Average effect of participating in NP or CLS projects: $\lambda = \frac{\Delta \mathbf{Log} Y_{it}}{\Delta \mathbf{Treatment}^*(T+\delta)}$

3. Methodology - Data and Sources

The data and sources

The treatment group : the EUREKA Secretariat & AMADEUS

The control group : AMADEUS

Provisory sample:

Type of projects	Number of firms	
	Beneficiary group	Control group
NP Projects	2,294	28,644
CLS Projects	802	26,170
Total	3,096	54,814

3. Methodology - Matching procedure

Nearest-neighbour matching without replacement (Rosenbaum & Rubin, 1983; Heckman et al., 1997)

Matching variables : country, age, sector, size, intangible fixed assets, etc

Final sample:

Type of projects	Number of firms	
	Beneficiary group	Control group
NP Projects	2,294	5,493
CLS Projects	802	3,197
Total	3,096	8,690

4. Results – Overall impact of projects at t+1

IMPACT IN TERMS OF TURNOVER

VARIABLES	Network projects	Cluster Projects
EU_15	0.585* (0.0794)	0.474*** (0.000678)
Less_KIS	-0.0648 (0.0234)	-0.199 (0.0664)
KIS	0.301* (0.0372)	-0.172* (0.0148)
Manuf_MT	0.0972 (0.0257)	0.0574 (0.132)
Manuf_HT	-0.127 (0.0228)	-0.00338 (0.218)
Treatment	-0.195** (0.0151)	0.156*** (0.000599)
t_1	-0.110** (0.00261)	-0.00196 (0.000481)
DID_t_1	0.151*** (0.00228)	0.132** (0.00291)
Constant	1.752** (0.0740)	1.943** (0.0448)
Observations	12,038	7,670
R-squared	0.116	0.053

IMPACT IN TERMS OF EMPLOYMENT

VARIABLES	Network projects	Cluster Projects
EU_15	0.176** (0.00303)	0.171* (0.0227)
Less_KIS	-0.0881** (0.00260)	-0.144** (0.00410)
KIS	0.135 (0.0218)	-0.0830* (0.0112)
Manuf_MT	0.0459 (0.0138)	0.00935 (0.0326)
Manuf_HT	-0.0271 (0.0127)	0.00934 (0.0872)
Treatment	0.194*** (0.000746)	0.376*** (0.00319)
t_1	-0.0402*** (0.000245)	0.0146** (0.000598)
DID_t_1	0.0420*** (0.000168)	0.0720*** (0.000340)
Constant	0.538*** (0.00310)	0.731** (0.0225)
Observations	12,668	7,992
R-squared	0.075	0.062

4. Results – Impact in terms of turnover growth in t+1

IMPACT OF NETWORK PROJECTS

VARIABLES	Very small firms	Small firms	Medium firms
EU_15	0.350*** (0.00394)	0.257* (0.0380)	0.241 (0.0775)
Less_KIS	-0.00947 (0.0417)	0.178** (0.00491)	0.261** (0.0164)
KIS	0.353 (0.0637)	0.00791 (0.0489)	0.0505 (0.0206)
Manuf_MT	-0.0970 (0.0419)	0.153 (0.0425)	0.0725 (0.0207)
Manuf_HT	-0.280** (0.0175)	0.0609 (0.0651)	0.270** (0.0187)
Treatment	0.139*** (0.00105)	0.419*** (0.00162)	0.286*** (0.00426)
t+1	-0.283** (0.00647)	0.0939* (0.0117)	0.130** (0.00380)
DID_t+1	0.394*** (0.00491)	-0.0647* (0.00775)	-0.127** (0.00474)
Constant	1.131*** (0.00514)	1.327** (0.0650)	1.709** (0.0673)
Observations	1,493	1,455	2,367
R-squared	0.196	0.258	0.408

IMPACT OF CLUSTER PROJECTS

VARIABLES	Very small firms	Small firms	Medium firms
EU_15	0.184** (0.00769)	0.224** (0.0108)	0.199** (0.00514)
Less_KIS	0.0392 (0.00810)	0.0307 (0.0658)	0.0580** (0.00393)
KIS	-0.102* (0.0114)	-0.207 (0.0557)	-0.121 (0.0643)
Manuf_MT	-0.0585 (0.0228)	-0.0543 (0.0759)	-0.0183 (0.0504)
Manuf_HT	-0.121 (0.0279)	-0.190 (0.0905)	-0.0274 (0.102)
Treatment	0.0635*** (0.000895)	0.0900** (0.00428)	0.541** (0.0134)
t+1	-0.107*** (2.17e-05)	-0.00892* (0.000770)	0.0120 (0.00562)
DID_t+1	0.0816*** (0.00111)	0.0527*** (0.000302)	0.0189 (0.00667)
Constant	1.215*** (0.00191)	1.579** (0.0455)	1.847** (0.0470)
Observations	743	1,121	1,159
R-squared	0.086	0.159	0.194

4. Results – Impact in terms of employment growth in t+1

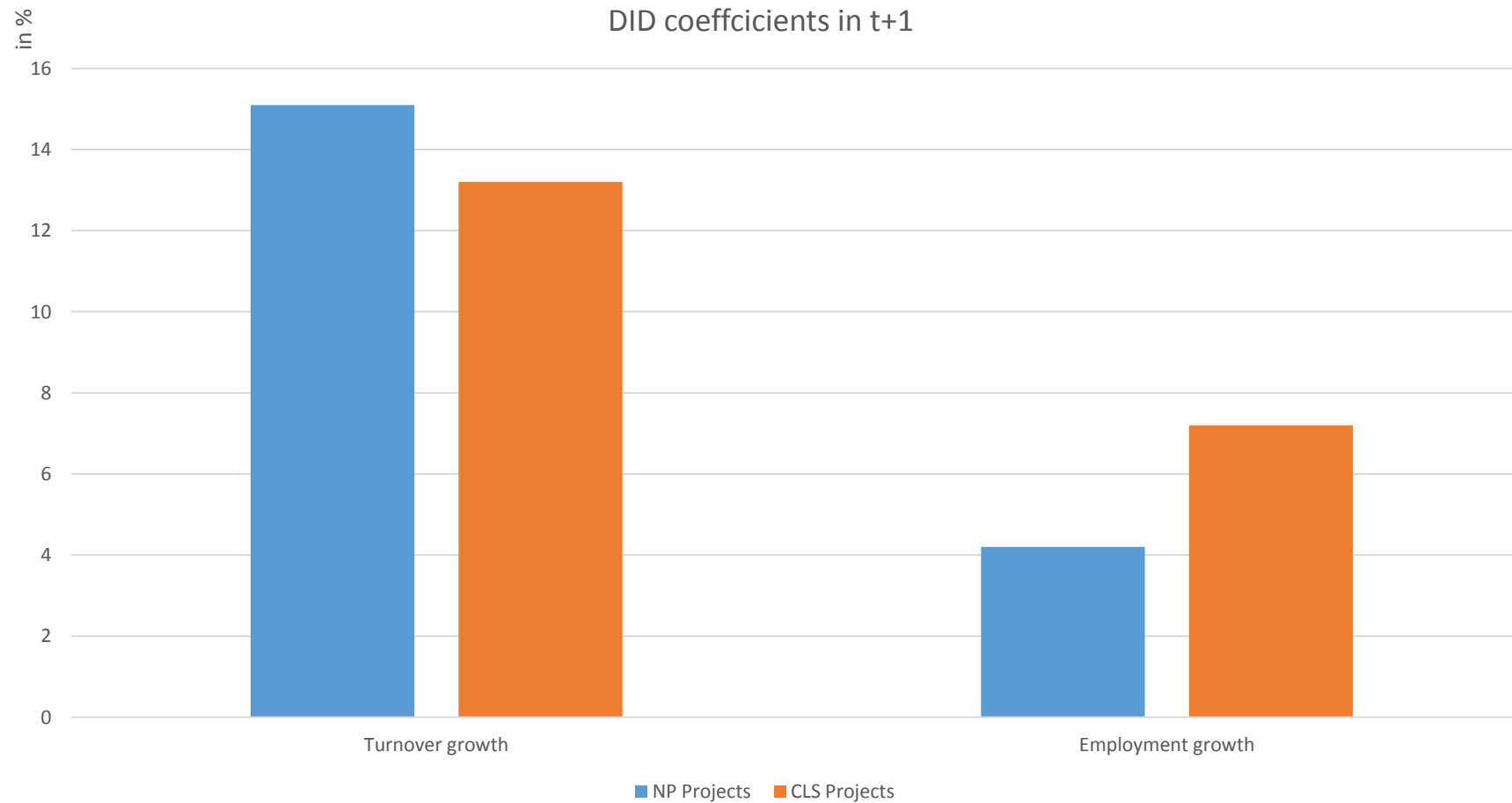
IMPACT OF NETWORK PROJECT

VARIABLES	Very small firms	Small firms	Medium firms
EU_15	-0.0337*** (1.16e-05)	-0.0223 (0.0258)	0.00837 (0.0724)
Less_KIS	-0.0413 (0.00857)	0.0176* (0.00215)	0.0383* (0.00336)
KIS	-0.0983 (0.0160)	0.0214 (0.0174)	-0.00161 (0.0185)
Manuf_MT	-0.00531** (0.000137)	0.0233 (0.0168)	-0.00929 (0.0165)
Manuf_HT	0.0167 (0.0352)	0.0494 (0.0420)	0.0542** (0.00380)
Treatment	0.132*** (0.00119)	0.434*** (0.00109)	0.501** (0.00985)
t+1	0.0136 (0.00233)	0.0281 (0.00804)	0.0355*** (0.000375)
DID_t+1	0.00255** (0.000125)	-0.0446* (0.00558)	-0.0438* (0.00535)
Constant	0.233*** (0.00172)	0.372* (0.0361)	0.570* (0.0700)
Observations	1,645	1,898	2,495
R-squared	0.316	0.670	0.712

IMPACT OF CLUSTER PROJECTS

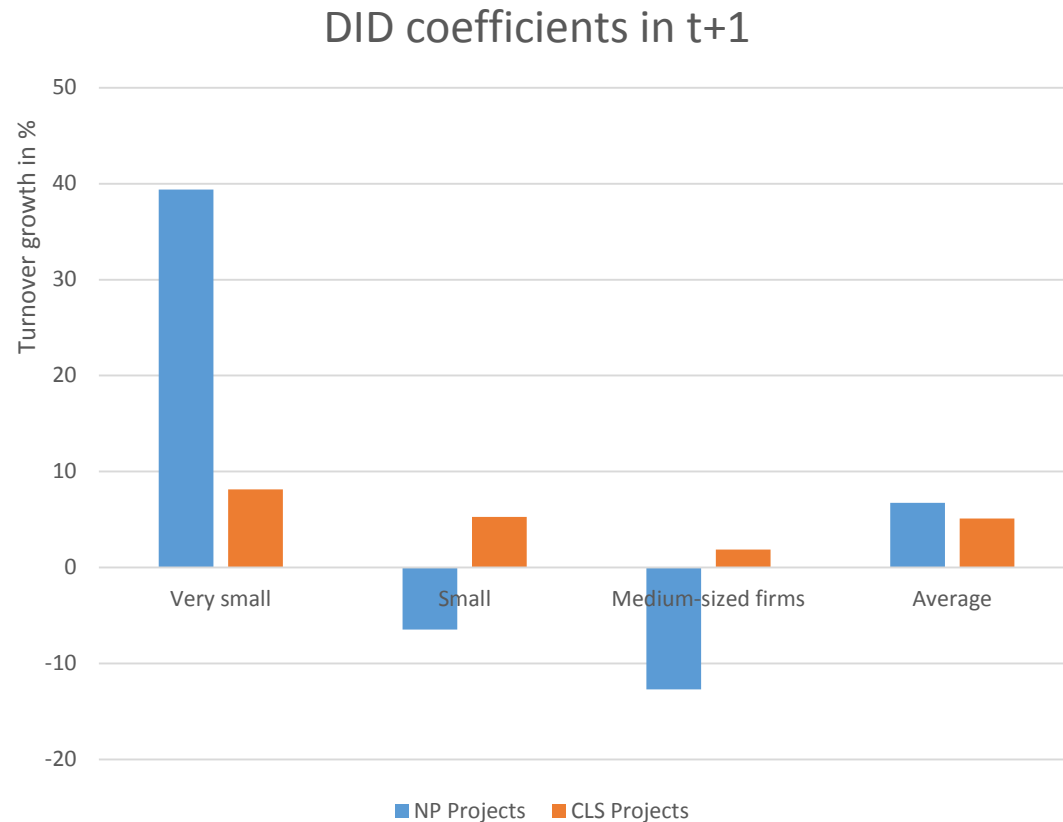
VARIABLES	Very small firms	Small firms	Medium firms
EU_15	0.0185 (0.0147)	0.000619 (0.0154)	-0.0124 (0.00500)
Less_KIS	0.0112 (0.00186)	-0.0195 (0.0378)	-0.0174 (0.0270)
KIS	-0.0167 (0.0246)	-0.0405 (0.0407)	-0.0420 (0.0463)
Manuf_MT	0.0454 (0.0671)	-0.0139 (0.0249)	-0.0240 (0.0407)
Manuf_HT	0.0288 (0.0286)	-0.0152 (0.0696)	-0.0259 (0.0110)
Treatment	0.133*** (0.00160)	0.256*** (0.000752)	0.515*** (0.00616)
t+1	-0.0281** (0.000511)	-0.0130** (0.000750)	0.000785 (0.00212)
DID_t+1	0.0559** (0.000965)	0.0162 (0.00356)	0.0167* (0.00166)
Constant	0.185** (0.00590)	0.483** (0.0221)	0.709** (0.0337)
Observations	885	1,298	1,302
R-squared	0.139	0.361	0.577

4. Results – Summary overall results in t+1

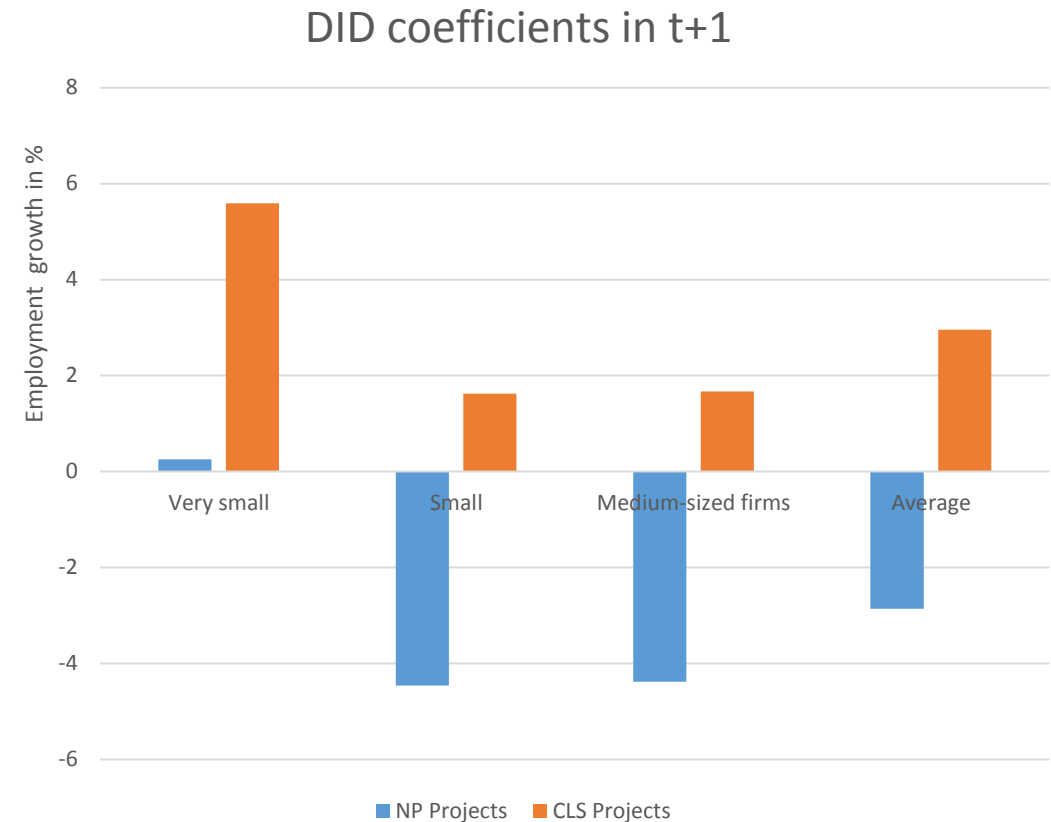


4. Results – Summary specific projects in t+1

IMPACT ON TURNOVER GROWTH

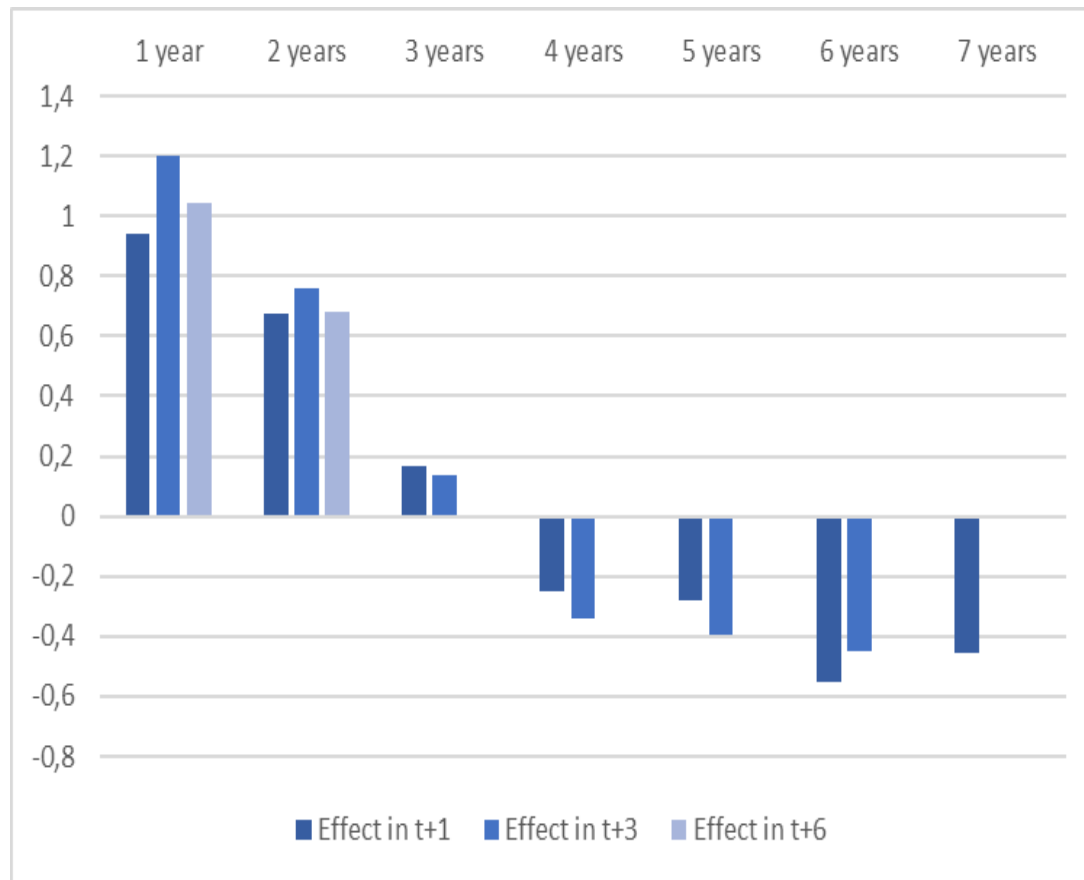


IMPACT ON EMPLOYMENT GROWTH

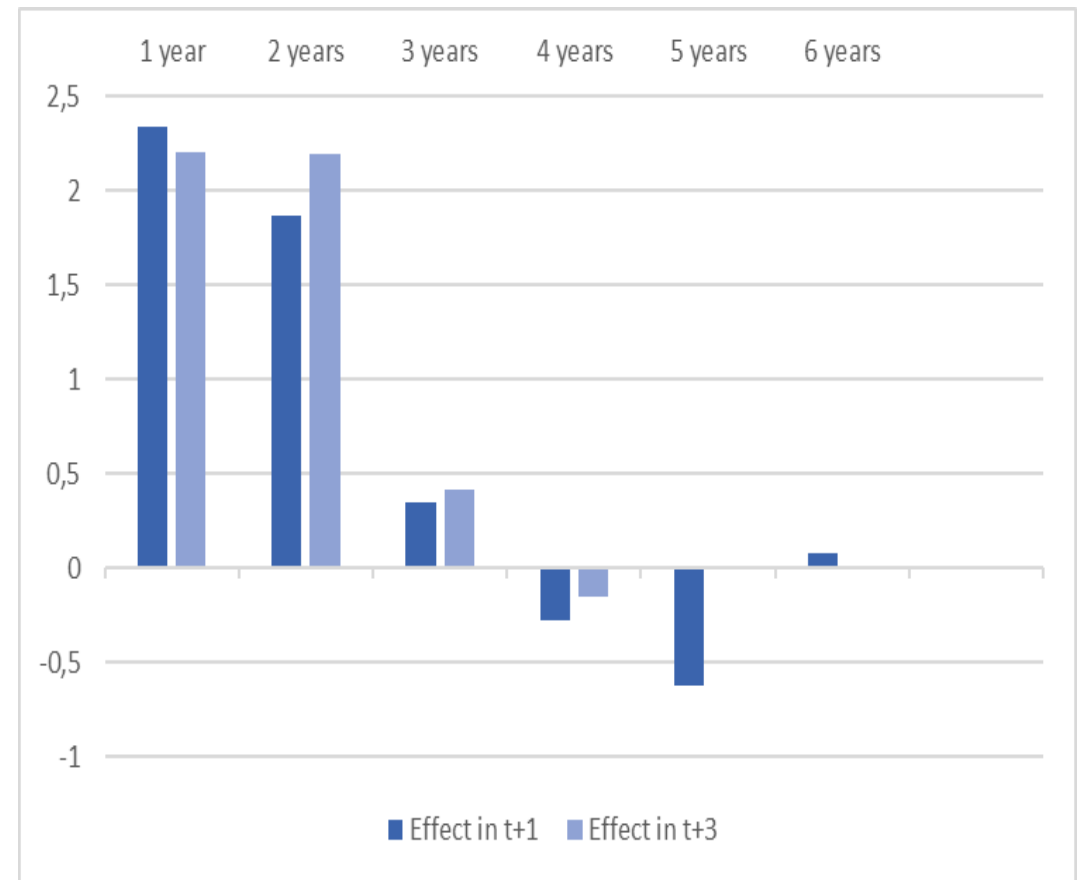


4. Results – Effect of project duration on turnover growth (Summary)

NP PROJECTS



CLS PROJECTS



5. Conclusion

Overall positive impact of Network and Cluster projects over the period of study

In t+1, greater impact in terms of commercialisation for smaller R&D consortia (i.e. network projects) and greater impact in terms of employment for larger R&D consortia (i.e. cluster projects)

> H1 partially confirmed

Shorter-duration projects (i.e. from one to two years) are those showing the best outcomes compared to longer-duration projects (i.e. from three to seven years)

> H2 not confirmed

5. Conclusion

Policy recommendations:

Priority should be given to Network (resp. Cluster) projects if the focus is on turnover (resp. Employment) growth. > Further backing of the One-size-does-not-fit all- assumption

Priority should be given to shorter-duration projects (1 to 3 years), to achieve better outcomes in terms of commercialisation.

Future studies:

Why are shorter-duration projects better? Assessment with other performance indicators (e.g. R&D investments, number of patents, productivity growth, etc.)

Analysis of other indirect factors (being part of a group, market trends, tax incentives, etc.)

Thank you for your kind attention

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