

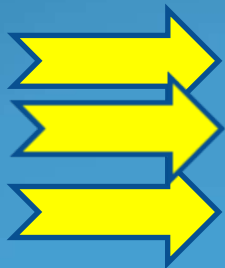
*Mutual learning exercise (MLE) on national practices in
widening participation and strengthening synergies
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Encouraging science-business cooperation (Topic 2 Widening)

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The topic

Structures, funding programmes, schemes, non-financial incentives that target either the science sector or the business sector, or both, and aim at facilitating the connection, the cooperation and the partnerships between actors from those two sectors.



A long-standing concern at the core of STI policies and S3

A focus of EU FP

From linear technology transfer to knowledge co-creation

Acting on three fronts

1. **The 'science' side:** HEIs-PROs work on technology diffusion, research commercialisation, working with outside partners
2. **The 'business' side:** skills and capacity to absorb and cooperate with HEIs/PROs. Innovation awareness of companies
3. **The 'interface':** space and incentives for co-creation of knowledge, and for joint development of research and technology. Mobility of people: circulation of embodied knowledge

Structures	Funding programmes	Non-financial incentives
INSTRUMENTS TARGETING THE PUBLIC RESEARCH SECTOR		
Research and Technology organisations	Change in funding rules for HEIs and PROs to take into account work with industry	Reorienting public research towards the needs of industry
Technology Transfer Offices	Incentive schemes for start-ups	Rewarding work with industry in academic career paths and salaries
	Proof-of-concept schemes for HEIs/PROs	Engagement strategies of HEIs/PROs (third mission, IPR rules, student placements and entrepreneurship, sabbaticals in industry, etc.)
INSTRUMENTS TARGETING THE BUSINESS SECTOR		
Business advisory services, innovation centres acting as bridges to HEIs/PROs, and as matchmakers	Innovation/knowledge/R&D voucher schemes for SMEs	
Innovation Clusters	Support schemes for hiring researchers in companies, placement schemes	
INSTRUMENTS TARGETING THE INTERFACE BETWEEN THE TWO SECTORS		
PPP complex programmes (centres or networks) and joint research units <i>(covered in another MLE)</i>	Funding programmes for collaborative research projects (generic, thematic)	Mechanisms and protocols for joint use of research infrastructure
Science and technology parks	Industrial PhD schemes	Involvement of businesses and HEIs/PROs in national/regional innovation strategies and platforms
	Sectoral mobility schemes for researchers	Engagement of industry in HEIs/PROs

Policy mixes for science-business cooperation

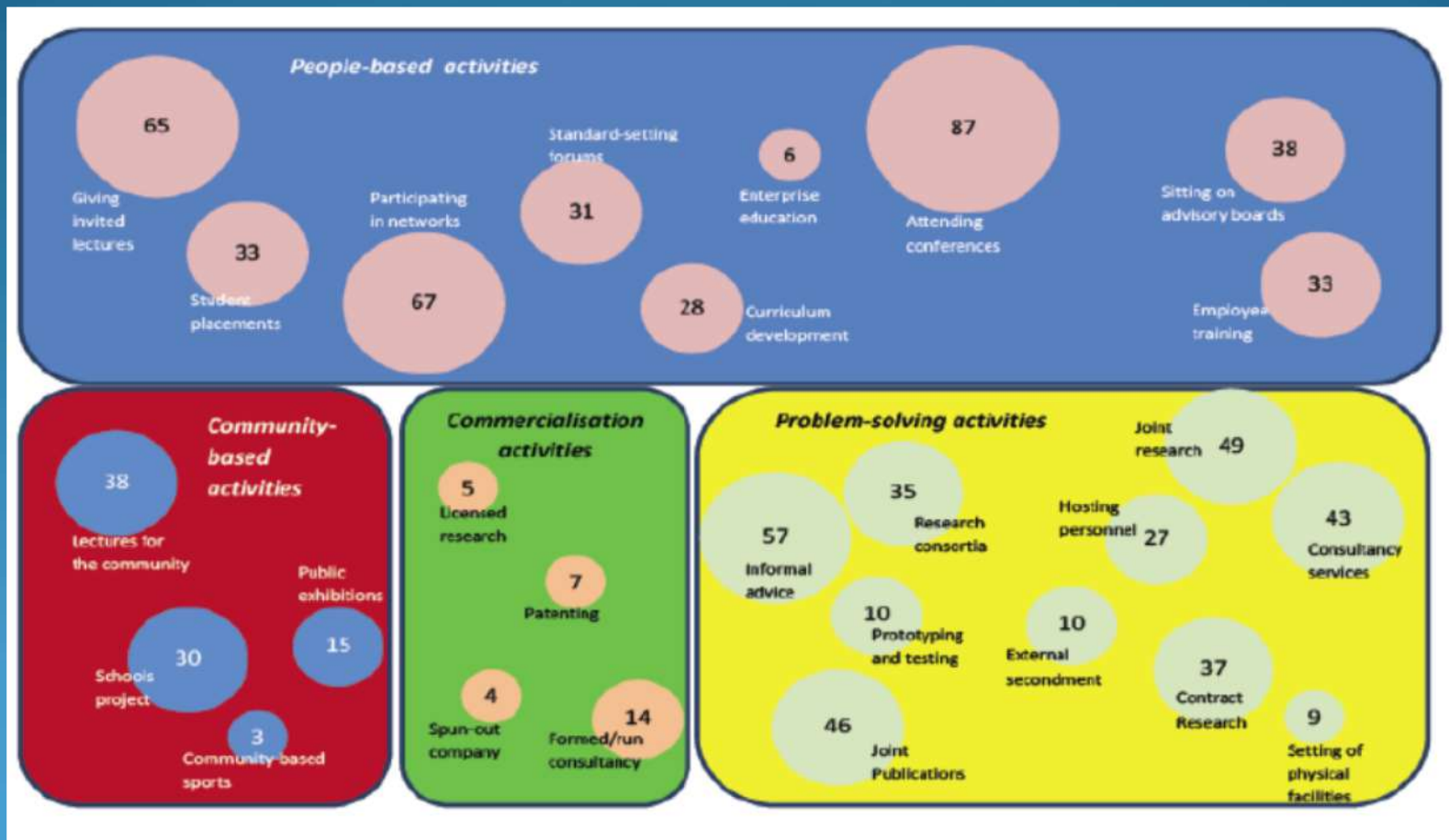
- Combination and interactions between instruments
- Devil lies in implementation details
- Framework conditions need to be right
- The range of instruments in a policy mix should be adapted to country conditions, notably the strength of science-business links
- Boomerang effect of excessive pressure on universities to cooperate with immature SMEs

Policy mixes for science-business cooperation

- Balance between instruments addressing:
 1. Weak orientation of the public research sector to the needs of industry and society
 2. Insufficient involvement of businesses in R&D and innovation activities
 3. Gap between the public research and business sectors

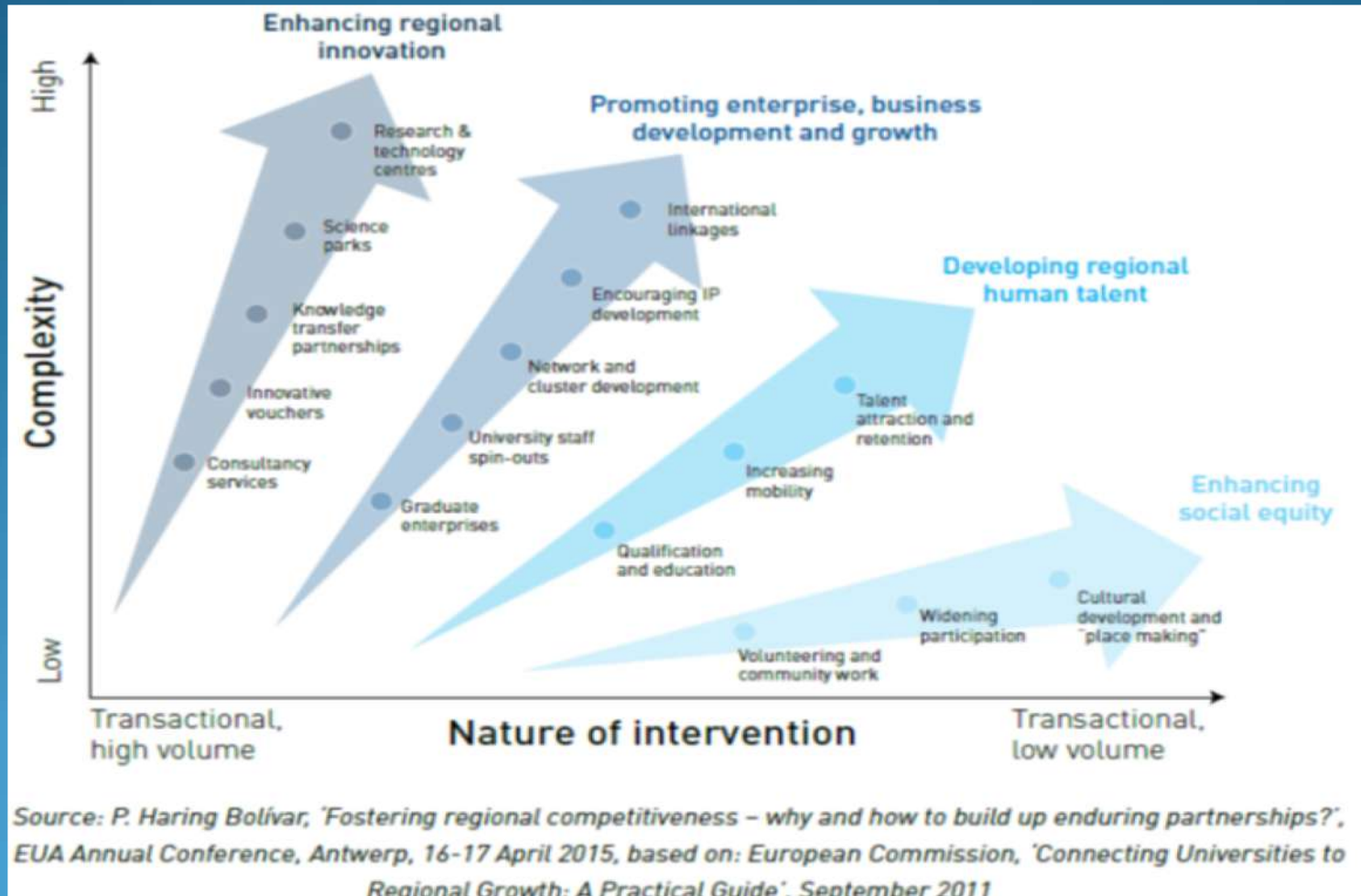
The policy mix has to embrace the variety of types of science-business interactions

Impact Pathways of UK Academics
 (% of academics reporting the interaction with an external organisation)



The policy mix has to embrace the variety of types of science-business interactions

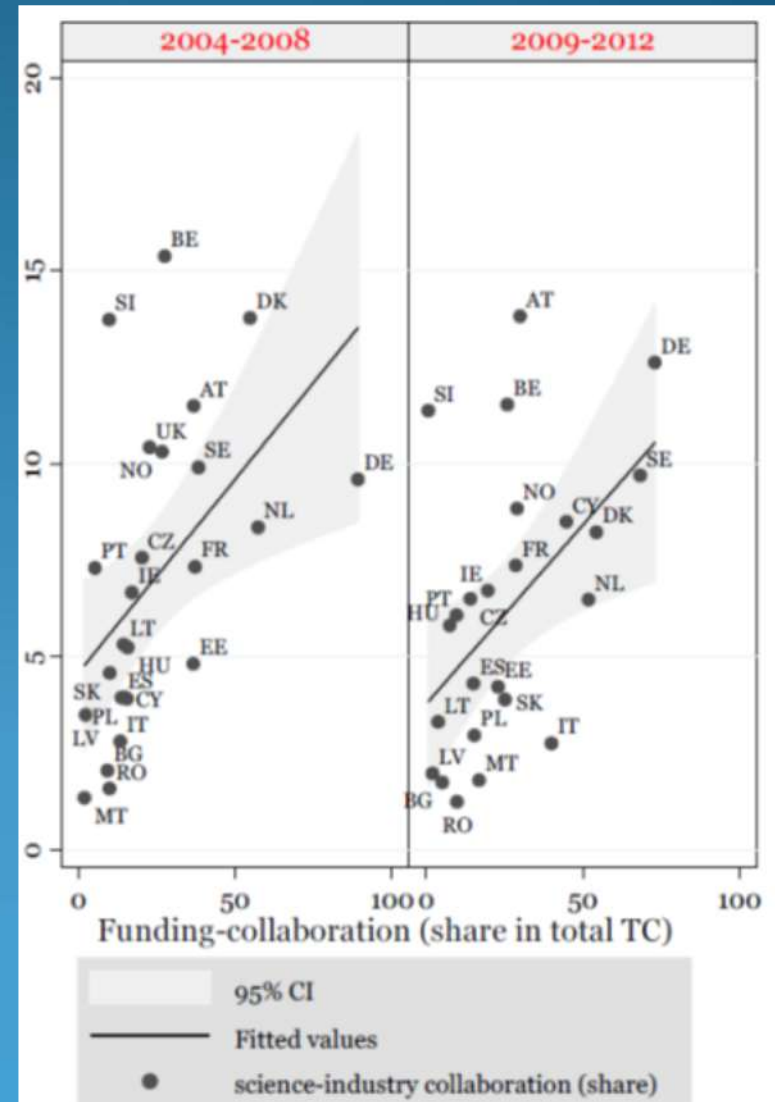
The variety of interactions between HEIs and innovation ecosystems



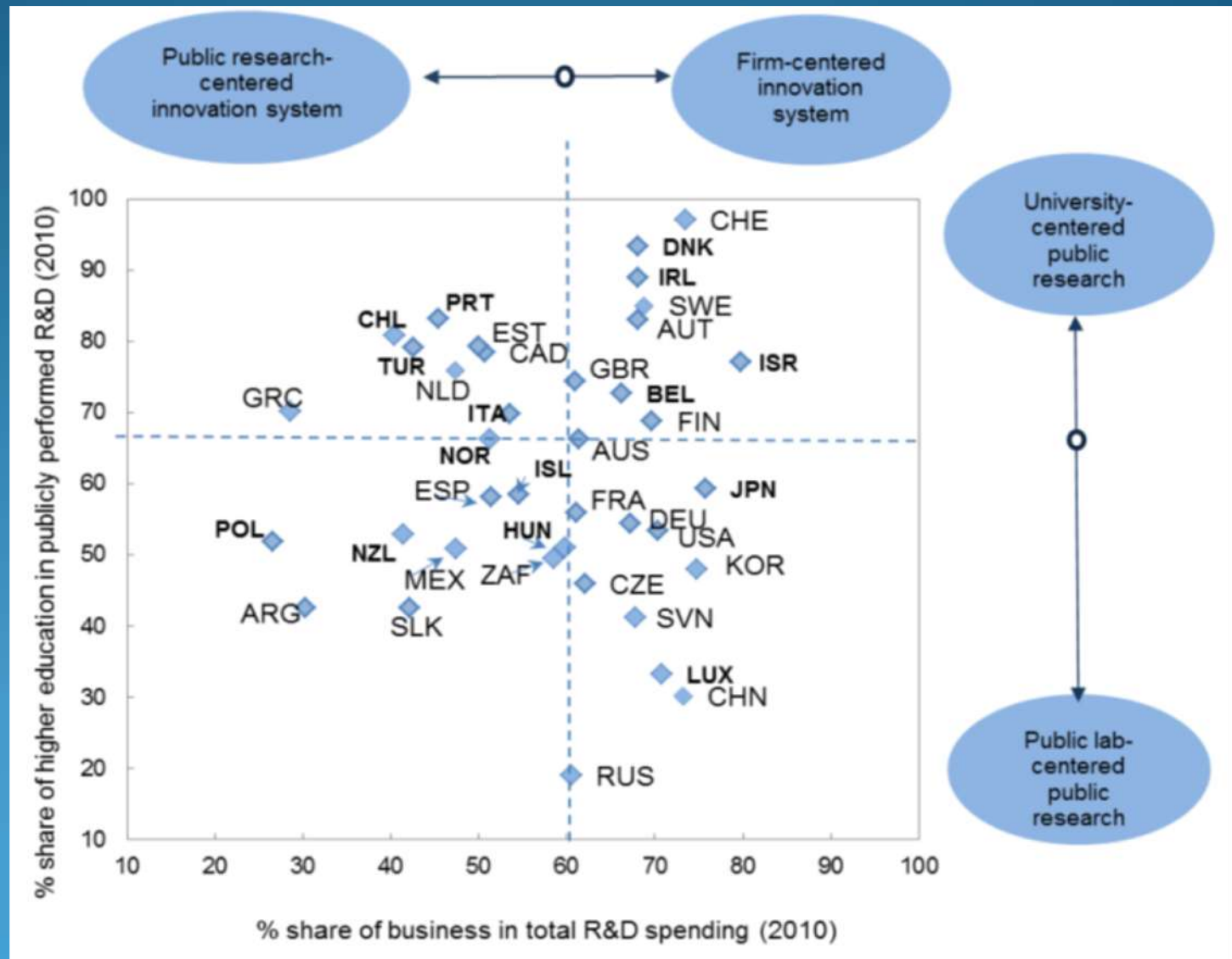
Innovation policy trends 1999-2012

- Increase in importance of dedicated programmes compared to institutional funding
- Shift towards collaborative schemes at the expense of support for individual organisations
- Growing importance of thematic funding programmes
- Complementarity to internationalisation strategies
- Positive relationship between funding allocated to science-industry collaboration and share of firms collaborating with science
- Implementing reforms in PROs & reinforcing business capacities too

Source: Kincsö et al. (2013)



Public versus private research and share of HEIs in public research in OECD countries



Lessons for TTOs 1

➤ Barriers

- lack of general management training and IP management training and skills
- poor research quality at the PRO, leading to low opportunity of creating IP
- lack of incentive programmes implemented through TTO to engage researchers in technology transfer

➤ Way forward

- prioritise technology transfer in academia
- investment in capacity building and professionalisation of academic TTO services (knowledge on markets and needs and priorities of industry and investors)
- funding for feasibility/proof of concept work

Lessons for TTOs 2

- Revenues generated from patents and licenses at HEIs by universities often overstated
- Activity of TTOs highly skewed
- Diversification beyond IP management stricto sensu
 - scouting for research results with commercial potential
 - support activities for collaborative research
 - administration of proof-of-concept and seed capital
- Fragmentation of TTOs activities
 - Networks for synergies
 - Comprehensive or specialised?
 - Exclusive or shared between various PROs/HEIs

Lessons for Industrial PhDs 1

➤ Results

- Increased employability of researchers in the private sector thanks to the acquisition of new and complementary skills
- Upgrading firms' research and innovation capabilities
- Improving university-business relationships and cooperation

➤ Success factors

- User-driven scheme tailored to company's needs and fitting with both academic and company strategies
- University provides research education at very high level as well as full support to the PhD candidate
- Equal weight of academic and industrial supervision
- Quick and non-bureaucratic application and decision processes
- During implementation, regular contact and flexibility

Lessons for Industrial PhDs 2

➤ Difficulties

- Unbalanced focus on either the academic or the non-academic activities
- Limitations on freedom of researcher to introduce breakthrough ideas
- Tensions with respect to IPR issues
- Difficulties with respect to joint supervisory work, differences in views and communication flaws

➤ Key challenge

- Achieving good articulation between the different views and prospects on the academic side, the company side and expectations of the candidate

Lessons for Collaborative programmes

➤ Success factors

- Long-term and stable commitment of government funding and support for collaborative schemes
- Clarity of the rationale and objectives initially set for programmes and introduction of changes in programme definition according to the evolution of needs and modes of cooperation by beneficiaries
- Flexibility in implementation at project level
- Equity in sharing workloads and benefits
- Minimal bureaucracy
- Strong and positive brand image
- Good articulation with other programmes that aim to exploit the results of collaborative research

Questions for discussion

1: How can a good balance be struck between the three broad pillars of **the policy mix**: reinforcing HEIs/PROs' orientation towards business needs; strengthening the absorptive capacity of businesses for research results; and providing 'co-creation spaces'?

2: What place for competence centres and other '**complex PPPs**' in the policy mix?

3: What can be done if the '**demand-side**' for research cooperation is weak (i.e. if companies are either unwilling or unable to cooperate)?

Questions for discussion

4: TTOs: what are the impacts of the new 'co-creation' paradigm (beyond simple technology transfer) on the definition of missions, models and mode of operation of TTOs?

5: TTOs: what are the right metrics to measure the different impacts of TTOs and the quality of their contribution to the overall goal of supporting science-business cooperation?

6: TTOs: how to decide between comprehensive and specialised models?
Between exclusive and shared models?

Questions for discussion

7: Industrial PhDs: are these a silver bullet? Is this scheme appropriate for all research and innovation ecosystems? What complementary measures are needed to ensure effective benefits from these schemes?

8: Collaborative research programmes: what balance is needed between concentration on the strong 'regular clients' of such programmes and openness to newcomers?