International research links of EU13 countries and the consequences for EU research project participation

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*** The views expressed are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.**

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Joint Research Centre (JRC)
Directorate B – Growth and Innovation
Territorial Development Unit
https://ec.europa.eu/jrc/en/research-topic/smart-specialisation

Main activities of the S3 Platform

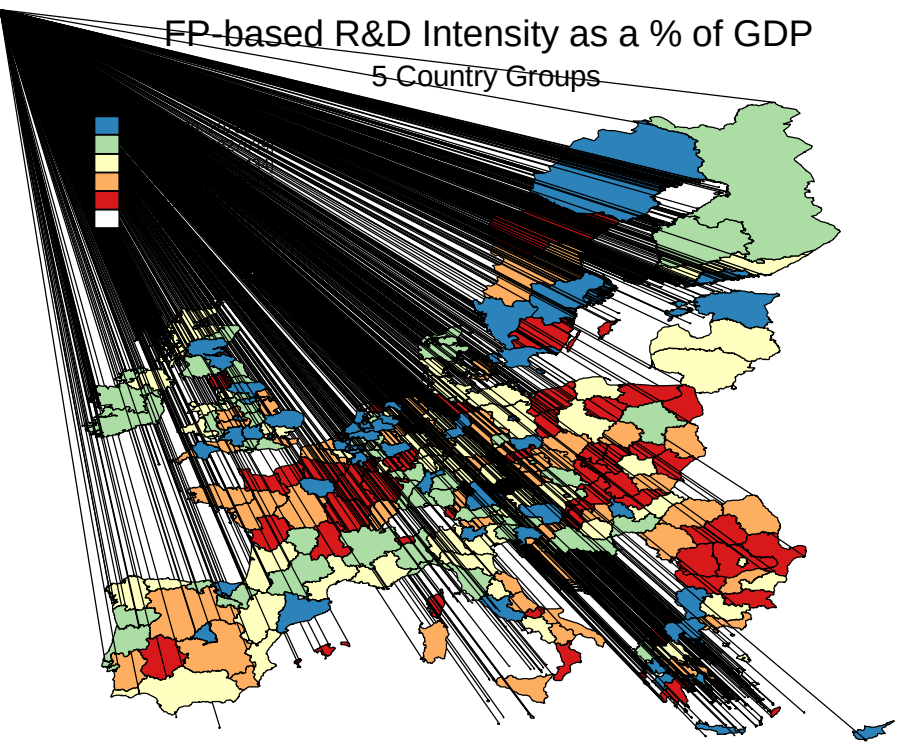
Support to RIS3 Implementation

	SSP	S2E	Lag Reg
	"Smart Specialization"	**"Stairway to excellence"**	**"Lagging Regions"**
Key Issues	Entrepreneurial discovery process Monitoring / evaluation	Efficiency/effectiveness of R&I ecosystem Synergies between R&I funding streams	Governance Support Catalysing EDP Translate priorities into projects
Territorial Coverage	EU28 MSs & Regions Macro-regional Initiatives Urban & Rural Initiatives	EU28 MSs & Regions	Selected MSs, Regions & Cities
Thematic Coverage	Thematic SSPs (digital/energy/ agro-food/industrial modernization)	Thematic R&I Support (some focus on H2020)	Regional thematic priorities (some focus on bio/agro-food, ICTs)

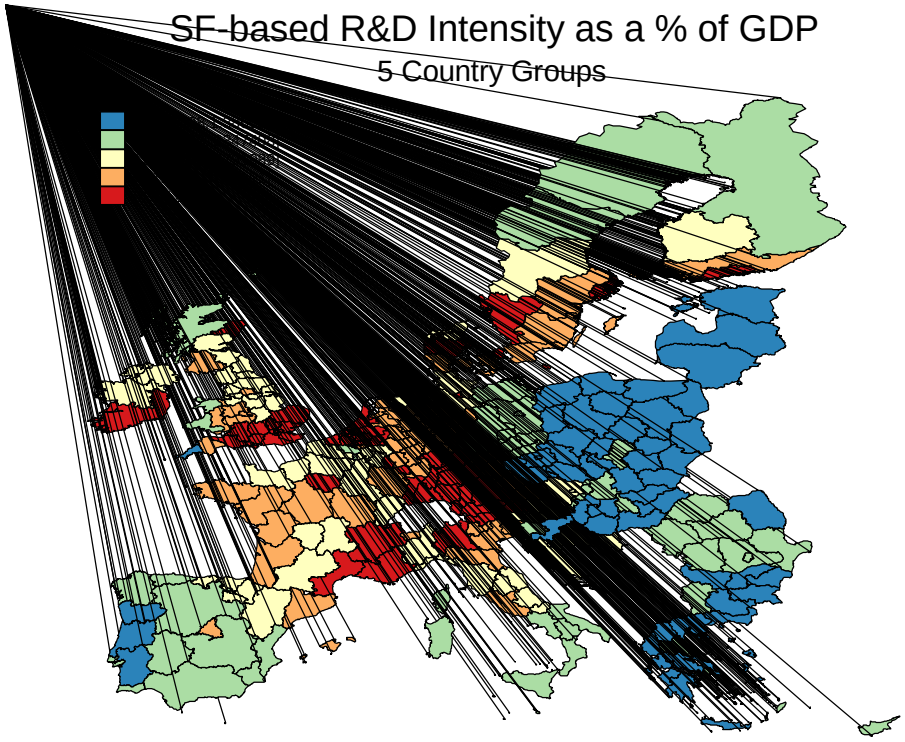
Targeted support to actors, processes and learning
Stimulating stakeholders' involvement
Interactive web tools
Analytical support

Background

Funding Distribution of 7th FP and SFs



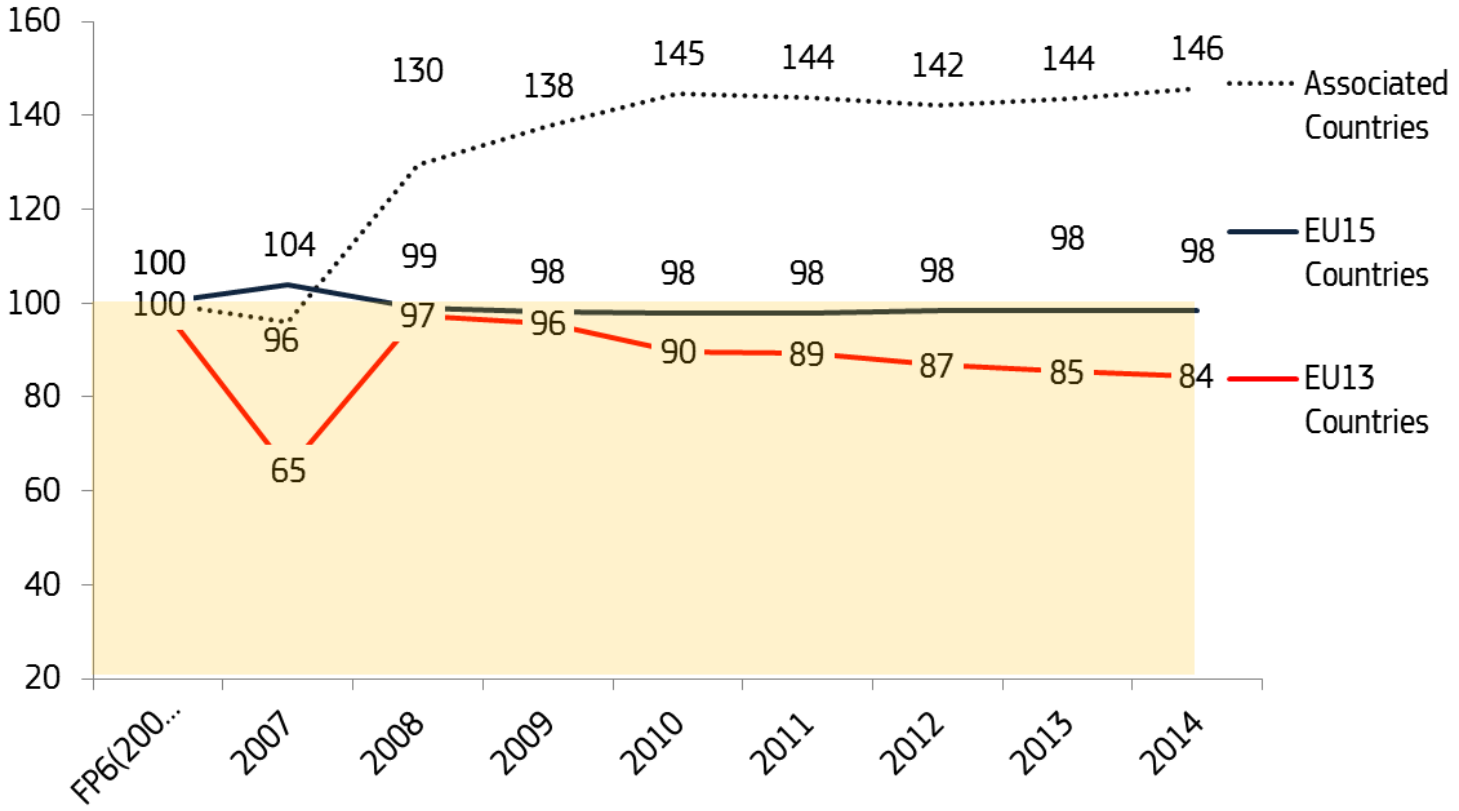
Source: JRC/IPTS



Source: JRC/IPTS

Background

Share of EC FP7 contribution received between 2007 and 2014 (starting from FP6)



Background

- ✓ *National policy events in each of the EU13 to:*
  - ➢ Raise awareness of actions needed to enable synergies
  - ➢ Share experiences in combining funding from Structural Funds and Framework Programme
- ✓ *National and Regional Fact & Figures: statistical indicators on the deployment of FP/ H2020 and Structural Fund/ ESIF for each of the EU13*
- ✓ *S2E Country Reports on the national innovation ecosystem & synergy opportunities*

FP related issues

- The career system does not motivate researchers to participate in FP/H2020 – international collaboration is not rewarded
- Career track is too rigid
- Lack of experience and support in proposal preparation and project implementation
- H2020 salary rules are a disincentive to participation for some countries
- **EU13 researchers complain that it is difficult to enter the "club" of successful applicants**

Literature – evidence of "clubs"

- *There has also been a significant tendency for the same institutions to participate in consecutive FPs with recurring collaboration between the same organisations within the FPs (Roediger-Schluga & Barber, 2006)*
- *Domination by a core of actors (Breschi and Cusmano, 2004) to the detriment of those outside the core.*
- *Firms not already connected struggle to have a central position in a FP network (Autant-Bernard et al., 2007)*

Literature – evidence against

- *Shown that in 5th and 6th FPs regions that co-publish frequently do not receive a disproportionate share of funding*
- *Effect of funding on co-publication activity is especially significant for regional pairs that did not intensively co-publish before participation (Hoekman et al., 2013)*
- *FP participation has less to do with network effects and more to do with institutional characteristics such as size and reputation (Lepori et al., 2015)*

Research questions

Focussed on EU13

- *What are the strongest links for each country in each domain: FP7 and co-author?*
- *What network characteristics are apparent for each domain: certain countries in small world networks/clusters?*
- *How are the collaboration and network characteristics for the countries different or similar within each domain?*

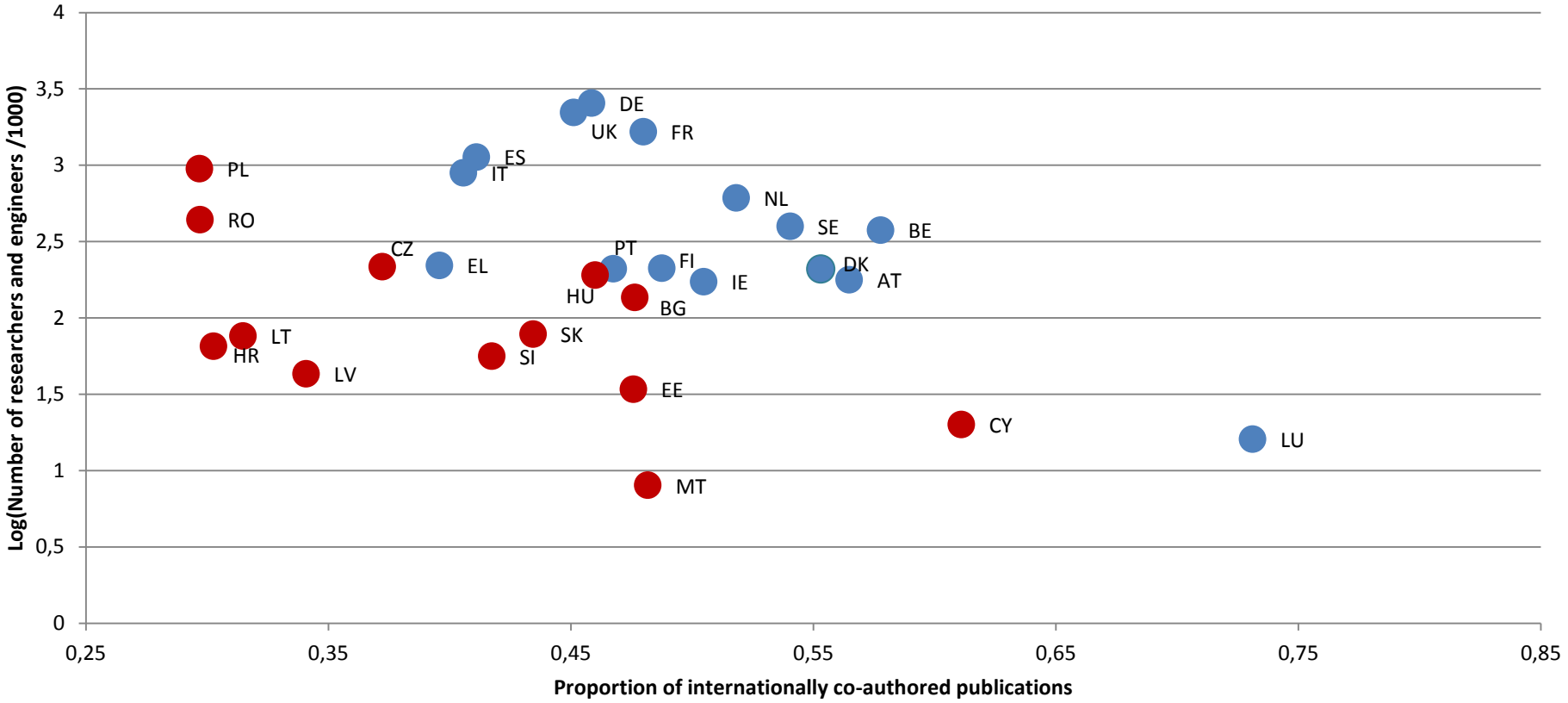
Methodological approach

- *The FP7 contracts and proposals database 2007-2013 is used in order to compare collaboration patterns with Bibliometric indicators (Scopus database of research output).*

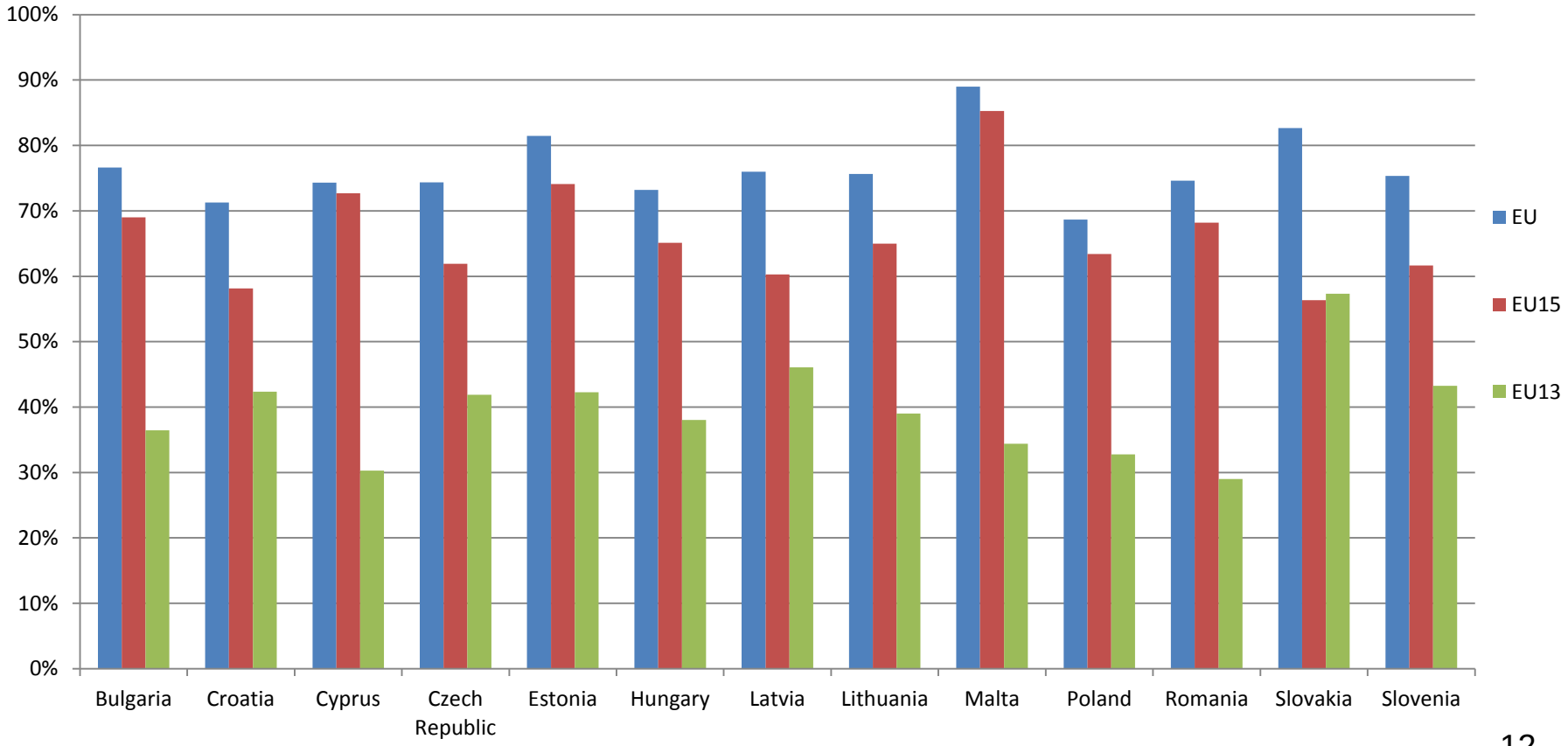
- *Salton's index is used to characterize the link between partners in research projects and co-authors in publications (Lampert, 2015; Elsevier Report for BIS, 2013)*

- *Network analysis used to identify the types of networks within the two domains*

International collaboration



International co-author EU partners



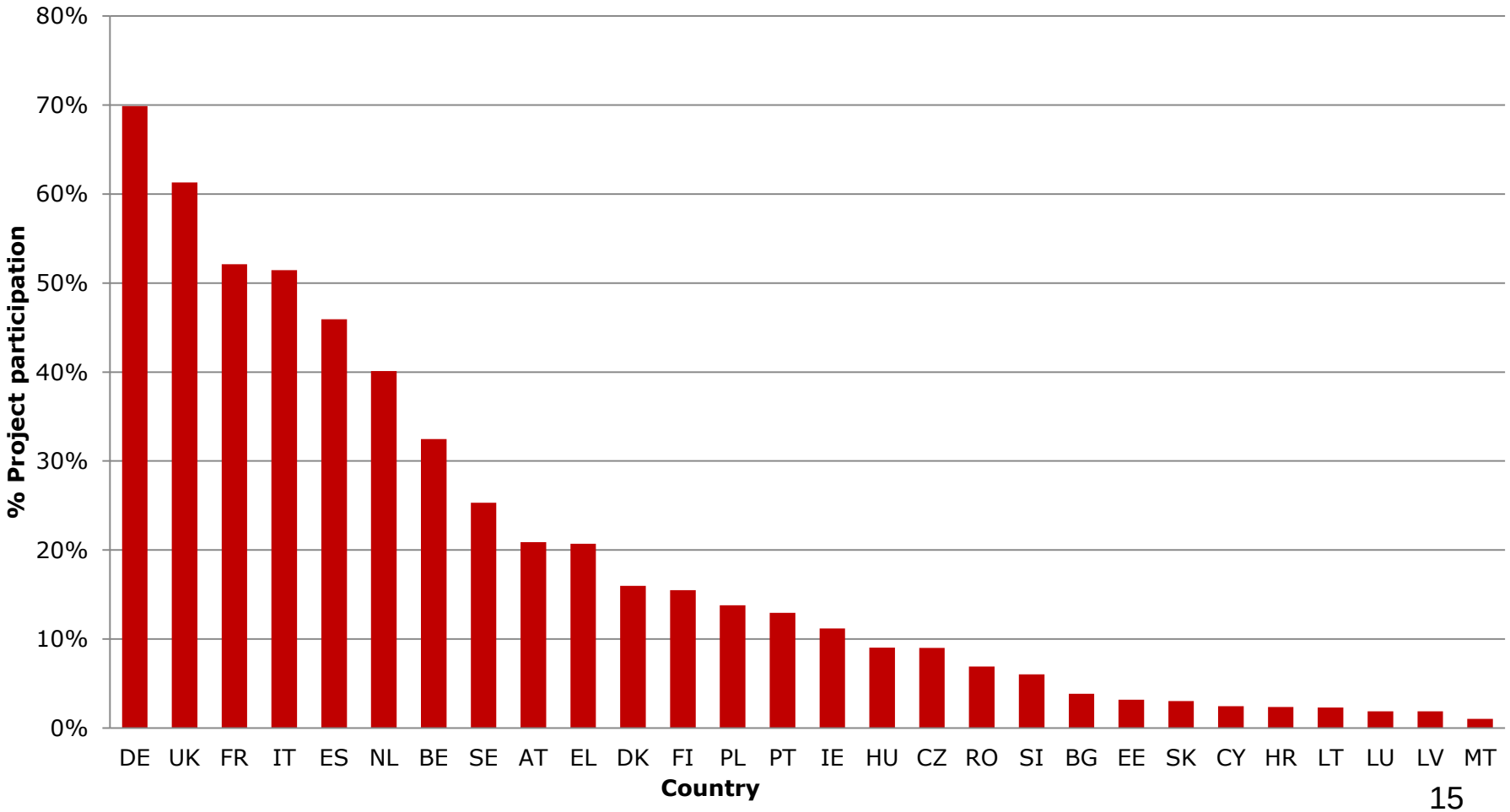
Main partner country – whole counts

	Country A (EU13)	Country B	Joint Co-pub	Salton	% A of total co-pub.	% B of total co-pub.
1	Poland	Germany	14205	0.09198	24.2%	3.5%
2	Czech Republic	Germany	9156	0.07258	23.4%	2.3%
3	Hungary	Germany	6714	0.06415	24.9%	1.7%
4	Romania	France	5260	0.06241	22.9%	1.7%
5	Slovakia	Czech Republic	4655	0.19403	31.7%	11.9%
6	Bulgaria	Germany	3236	0.04700	27.7%	0.8%
7	Croatia	Germany	2408	0.03674	22.8%	0.6%
8	Slovenia	Italy	2374	0.04484	17.8%	1.1%
9	Cyprus	Greece	2058	0.13291	36.0%	4.9%
10	Estonia	Finland	1617	0.08887	24.6%	3.2%
11	Lithuania	Germany	1335	0.02716	22.4%	0.3%
12	Latvia	Germany	606	0.01828	22.4%	0.1%
13	Malta	United Kingdom	488	0.02331	48.0%	0.1%

Main partner country – normalised

	Country A (EU13)	Country B	Joint Co-pub	Salton	% A of total co-pub.	% B of total co-pub.
1	*Czech Republic*	*Slovakia*	*4655*	*0.19403*	*11.9%*	*31.7%*
2	*Slovakia*	*Czech Republic*	*4655*	*0.19403*	*31.7%*	*11.9%*
3	Cyprus	Greece	2058	0.13291	36.0%	4.9%
4	Slovenia	Croatia	1475	0.12398	11.0%	13.9%
5	Poland	Germany	14205	0.09198	24.2%	3.5%
6	*Estonia*	*Lithuania*	*552*	*0.08827*	*8.4%*	*9.3%*
7	*Lithuania*	*Estonia*	*552*	*0.08827*	*9.3%*	*8.4%*
8	Latvia	Lithuania	354	0.08818	13.1%	5.9%
9	*Hungary*	*Romania*	*1745*	*0.07003*	*6.5%*	*7.6%*
10	*Romania*	*Hungary*	*1745*	*0.07003*	*7.6%*	*6.5%*
11	Bulgaria	Poland	1294	0.04940	11.1%	2.2%
12	Croatia	Hungary	807	0.04775	7.6%	3.0%
13	Malta	United Kingdom	488	0.02331	48.0%	0.1%

FP7 participation



Main FP7 partner –whole counts

	Country A (EU13)	Country B	Joint Co-participation	Salton	% A of total co-particip.	% B of total co-particip.
1	Poland	Germany	829	0.34322	77.3%	15.2%
2	Hungary	Germany	561	0.28715	79.9%	10.3%
3	Czech Republic	Germany	555	0.28469	79.4%	10.2%
4	Romania	Germany	399	0.23329	74.2%	7.3%
5	Slovenia	Germany	357	0.22380	76.3%	6.6%
6	Bulgaria	Germany	229	0.17961	76.6%	4.2%
7	Estonia	Germany	197	0.17000	79.8%	3.6%
8	Slovakia	Germany	186	0.16455	79.1%	3.4%
9	Croatia	Germany	140	0.14035	76.5%	2.6%
10	Lithuania	Germany	138	0.13989	77.1%	2.5%
11	Cyprus	United Kingdom	131	0.13727	68.6%	2.7%
12	Latvia	Germany	109	0.12276	75.2%	2.0%
13	Malta	Italy	60	0.10605	75.0%	1.5%

Main partner country – normalised

	Country A (EU13)	Country B	Joint Co-participation	Salton (Co-pub based)	% A of total co-particip	% B of total co-particip
1	Poland	Germany	829	0.34322	77.3%	15.2%
2	Hungary	Germany	561	0.28715	79.9%	10.3%
3	Czech Republic	Germany	555	0.28469	79.4%	10.2%
4	Romania	Italy	361	0.24605	67.1%	9.0%
5	Slovenia	Germany	357	0.22380	76.3%	6.6%
6	Bulgaria	Romania	89	0.22190	29.8%	16.5%
7	Malta	Bulgaria	33	0.21337	41.3%	11.0%
8	*Latvia*	*Lithuania*	*33*	*0.20483*	*22.8%*	*18.4%*
9	*Lithuania*	*Latvia*	*33*	*0.20483*	*18.4%*	*22.8%*
10	Cyprus	Greece	110	0.19836	57.6%	6.8%
11	Estonia	Latvia	37	0.19551	15.0%	25.5%
12	Croatia	Slovenia	49	0.16744	26.8%	10.5%
13	Slovakia	Romania	59	0.16593	25.1%	11.0%

Co-author network communities

Network modularity – whole counts			
Austria	Belgium	Bulgaria	Latvia
Denmark	France	Croatia	Lithuania
Finland	Italy	Cyprus	Malta
Germany	Luxembourg	Czech Republic	Poland
Ireland	Portugal	Estonia	Romania
Netherlands	Spain	Greece	Slovakia
Sweden		Hungary	Slovenia
United Kingdom			

Network modularity - normalised				
Denmark	Belgium	Austria	Croatia	Bulgaria
Finland	France	Germany	Czech	Cyprus
Sweden	Ireland		Republic	Estonia
	Italy		Hungary	Greece
	Luxembourg		Poland	Latvia
	Malta		Romania	Lithuania
	Netherlands		Slovakia	
	Portugal		Slovenia	
	Spain			
	United Kingdom			

FP7 network communities

Network modularity - whole counts				
France	Belgium	Greece	Austria	Latvia
Germany	Denmark	Ireland	Bulgaria	Lithuania
Italy	Netherlands	Portugal	Croatia	Luxembourg
United	Sweden	Spain	Cyprus	Malta
Kingdom			Czech Republic	Poland
			Estonia	Romania
			Finland	Slovakia
			Hungary	Slovenia

Network modularity - normalised					
Belgium	Denmark	Greece	Austria	Bulgaria	Malta
France	Finland	Ireland	Czech	Croatia	Romania
Germany	Sweden	Portugal	Republic	Cyprus	Slovakia
Italy			Hungary	Estonia	Slovenia
Netherlands			Poland	Latvia	
Spain				Lithuania	
United				Luxembourg	
Kingdom					

Summary

More analysis required

- **Betweenness centrality – to determine influential nodes**
- **Lower levels of aggregation – rather than a country are there specific regions and institutions that account high connectivity and success in FP**
- **Qualitative analysis to understand consortium selection decisions**

While there are countries that appear to be in tighter networks and are more successful it may not be that these are "clubs" rather a reflection of the situation in wider international R&I system

Policy issues

Other factors important regarding lack of success of EU13 in FPs

- **Structural reform – governance**
- **Programme complexity and support mechanisms**
- **Attractiveness of the system foreign researchers**
- ….

Difficulty accessing international networks one factor

- **Perhaps requires policy action to increase international R&I**
- **Role for ESIF as there is a lot of funding available**
- **But only 15% can be spent outside OP territory**

Thank you

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