



smartEIZ

**Orientation of research & innovation
policy in EU ‘super-periphery’:
stakeholders’ perspective**

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- Motivation
- Ideas
- Descriptive analysis of Innovation policy dimension;
- Econometric modelling
- Concluding remarks

- Like many EU economies in the post-2008 period SEE economies are shifting attention to industrial upgrading issues as a new component of supply side policies. They have increased their efforts to establish R&I policy as mechanism for technology and industrial upgrading.
- SEE 2020 Strategy ((i) integrated, (ii) smart, (iii) sustainable, and (iv) inclusive growth.
- Policy makers in these countries have been strongly **oriented on supply side innovation** policy instruments and **neglect downstream innovation activities** which focus on quality, vocational skills and productivity
- We argue that orientation of **R&I policy is the reflection of deeper beliefs and perceptions of stakeholders in super-periphery**

- We follow idea about non-linear innovation policy model grounded in Schumpeterian growth theory where R&D is not direct source of growth, but **it can lead indirectly to growth due to interaction effects between R&D and other factors;**
- We assess stakeholders' perception about various aspects of innovation policy in **Croatia vs. Western Balkans countries (WB 6)** and functioning of innovation policy instruments in these countries; stakeholders are identified with sectors in this analysis (private, public and research)
- We estimate perception about of R&I policy impact as well as we estimate perception of constraints about policy implementation;

- **The first hypothesis** states that perception of impact of innovation policy depends on sectoral affiliation. Regarding the hypothesis, we tested differences among the countries in the relationship between the sectors. We found that respondents from private sector in WB6, perceived innovation policy as significantly less effective compared to perceptions of respondents from all other sector-region combinations.
- **The second hypothesis** is that perception of implementation of innovation policy depends on the type of institutions. We found that there are differences in views among the sectors, in the way that respondents from the business sectors tend to view quality of implementation as a significantly more important weakness compared to respondents from academia and government. This result was mainly driven by the Croatian subsample.

- We follow logic where **distance from the technological frontier affect interaction among R&D activities, innovation activities and productivity** in national economies and their interactions with formal and informal institutions;
- **A country's or firm's progress differs according to how far it is from the frontier.** Countries or firms behind the frontier should grow faster and catch up to the global technological frontier because they benefit from knowledge spillovers from those on the frontier.
- **Non-linear model of innovation prevail linear model in practice** where Interactions between R&D, innovation and productivity are affected by institutional context (c.f. Estrin, et al., 2013)

APPROPRIATE INNOVATION POLICY AGENDA FOR SEE COUNTRIES



EU Agenda

- R&D and innovation channels for promotion of structural changes;
Researches based on Endogen Growth Model
Policy programmes relates in large extent on:
- Strengthening Research and Technological Infrastructure
- Promotion of New Technology Based Firms (NTBF)
- Strong emphasis on R&D intensive projects

The EU periphery economies i.e. CEE and South EU and all SEE countries are technology users and their enterprises operate behind the technology frontier.

- Their growth is based on non-R&D sources of productivity improvements and embodied knowledge diffusion as opposed to knowledge generation.
- In these countries innovation policy programmes should include following instruments
- Development of soft skills within firms,
 - Promotion of demand side of innovation policy instruments (e.g. Cluster programmes, innovation Public Procurement)
 - Enhancement of production capacity in innovative firms;
 - Quality upgrading programmes about IPR and the related rights (e.g. protection of trademarks);

.....UNDERLYING ORIENTATION OF R&I POLICY



- **We do recognize the importance of stakeholders in being part of the input process into innovation policy making**
- **We tested for this dimension of stakeholders' involvement.**

Possible policy implications (c.f. Koch, 2011) as result of the stakeholders' involvement:

- **Enhancement an opportunity of reciprocal learning between** policy makers, policy makers and researches as well as policy makers and society;
- **Promotion of new drivers** for policy learning (e.g. Staff with high level of professional expertise, Mobility of people among the sectors, NGO)
- **Increase of transparency** for innovation policy as policy process

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ABOUT THE SURVEY



- We conducted the survey about research and policy support needs for innovation in Croatia as well as the other six Western Balkan countries Albania, Bosnia and Herzegovina, Croatia, Kosovo, Montenegro and Serbia from June 2016 to December 2016.
- Based on perception of stakeholders. A half of the respondents were responsible for the implementation of the programmes related to the development of innovation policy and R&D policy;
- We used these results for design and implementation of SmartEIZ strategy,

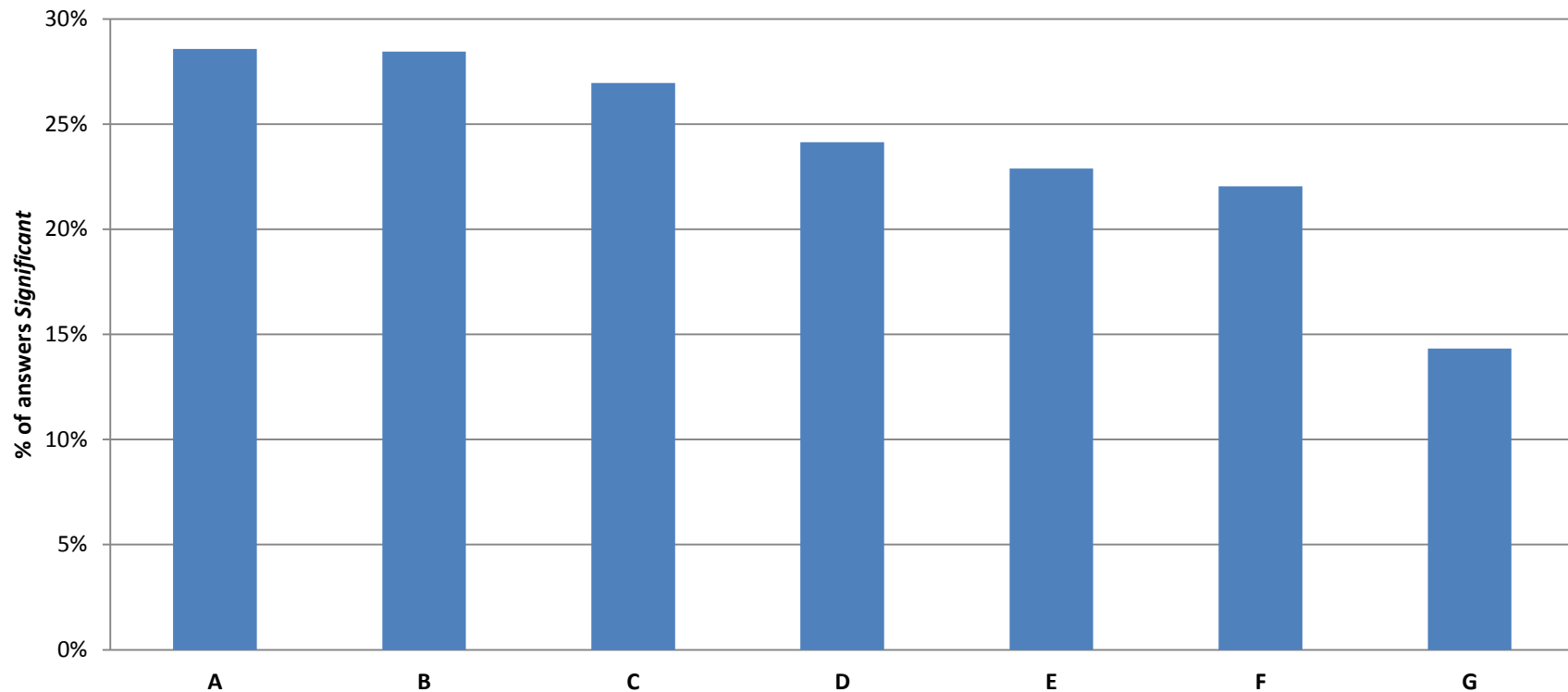
SAMPLE BREAKDOWN



	Sector		
	Public (n=24)	Private (n=11)	Research (n=28)
<i>Croatia</i>			
Proportion responsible for implementation	0.71	0.18	0.29
	Public (n=11)	Private (n=8)	Research (n=33)
<i>Western Balkans 6</i>			
Proportion responsible for implementation	0.82	0.75	0.48

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Assessment of existing innovation and R&D policy instruments



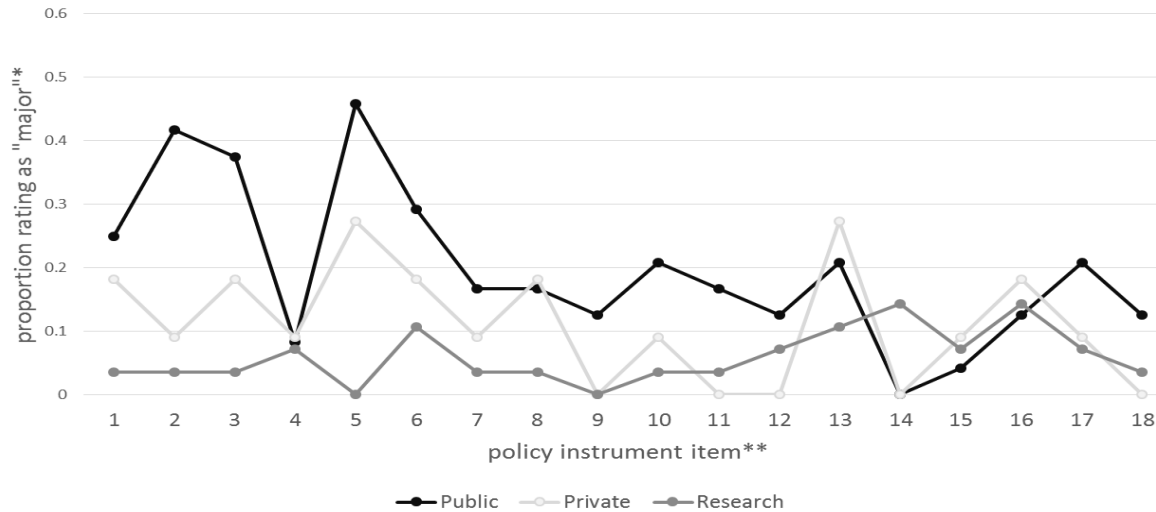
- A Support to the development of national research infrastructures
- B Incentives for links between science and industry (including grants for collaborative R&D)
- C Competitive funding of R&D (applied/industrial or fundamental research)
- D Support to specific organizations like Centers of Excellence or Centers of Competences
- E Support for human resources for R&D such as doctoral grants, supports to researchers' mobility, etc.
- F Awareness-raising activities aimed at promoting innovation and entrepreneurship
- G Other

Question: Indicate whether the existing policy instruments have significant, some or negligible impact on R&D and innovation activities

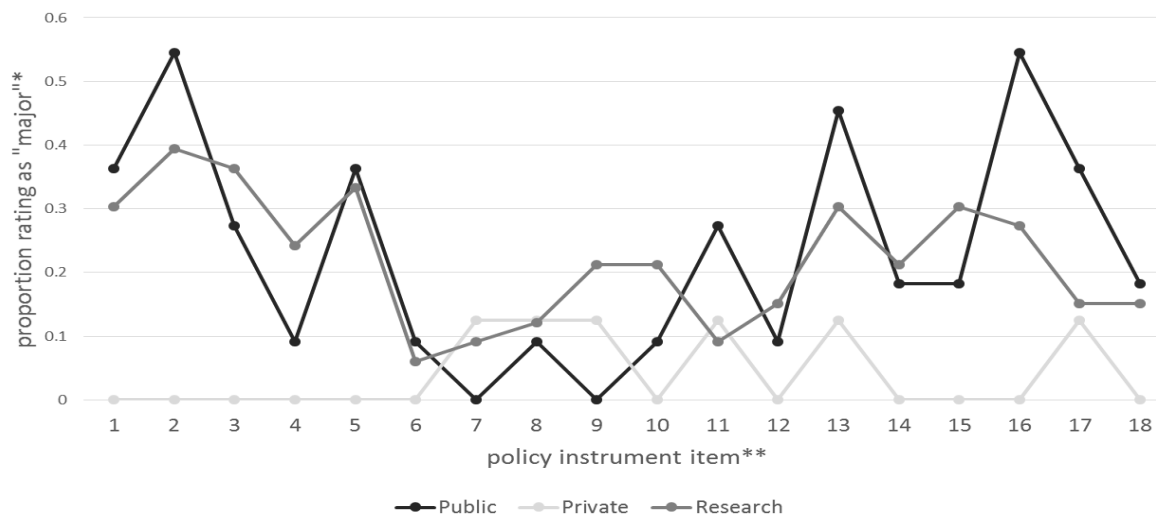
Source: Authors, 2017

(1) Assessing of importance of various instruments of innovation policies

"Major" R&D policy impact by sector : Croatia



"Major" R&D policy impact by sector : Western Balkans 6



Legend:

*ratings of policy instrument impact:

- 0 = instrument not available
- 1 = negligible
- 2 = some
- 3 = major

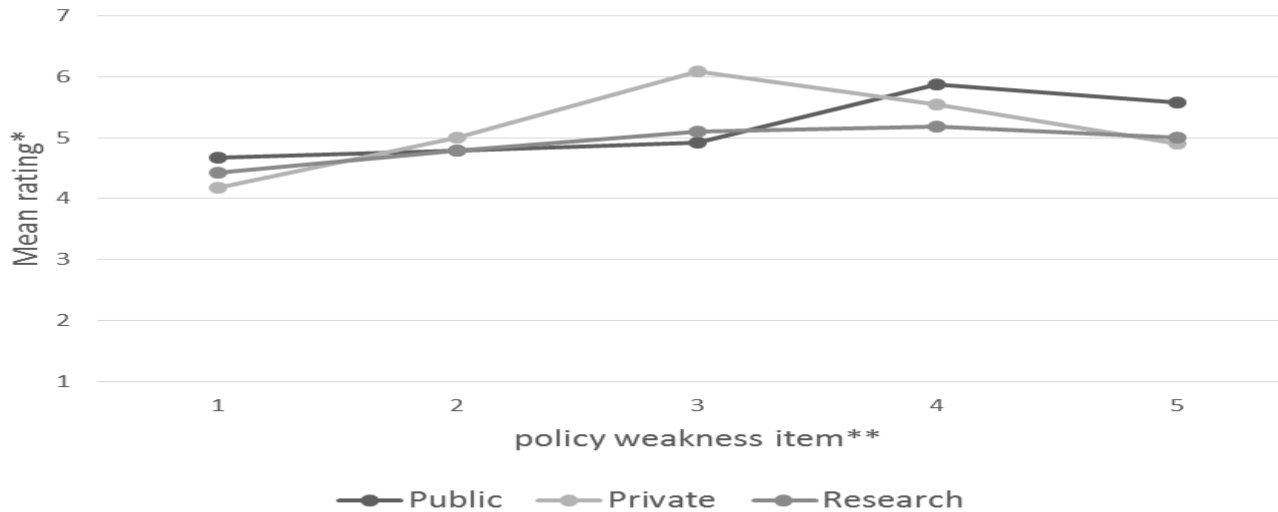
**policy instrument items:

1. Support for human resources for R&D such as doctoral grants supports to researchers' mobility, etc.
2. Support to the development of national research infrastructures
3. Support to specific organisations like Centres of Excellence or Centres of Competences
4. Non-competitive institutional funding of R&D organisations and universities (block grants)
5. Competitive funding of R&D (applied/industrial or fundamental research)
6. R&D and innovation related tax incentives for firms
7. Innovation vouchers
8. Support for venture and seed capital
9. Public procurement of innovative solutions and products
10. Networks (clusters, cooperative R&D)
11. Cluster policies
12. Technology platforms and innovation networks
13. Incentives for links between science and industry (including grants for collaborative R&D)
14. Support for participation in H2020 programs
15. Support for participation in other EU funded programs
16. Awareness raising activities aimed at promoting innovation and entrepreneurship
17. E-society activities like the ICT skills development of citizens, e-governance solutions
18. Support to Intellectual Property Rights (IPRs) (promotion of IPR through open days, exhibitions, information centres, etc.)

Perceptions of R&D policy weaknesses by sector in Croatia and in WB6



perception of R&D policy weakness: Croatia



Legend:

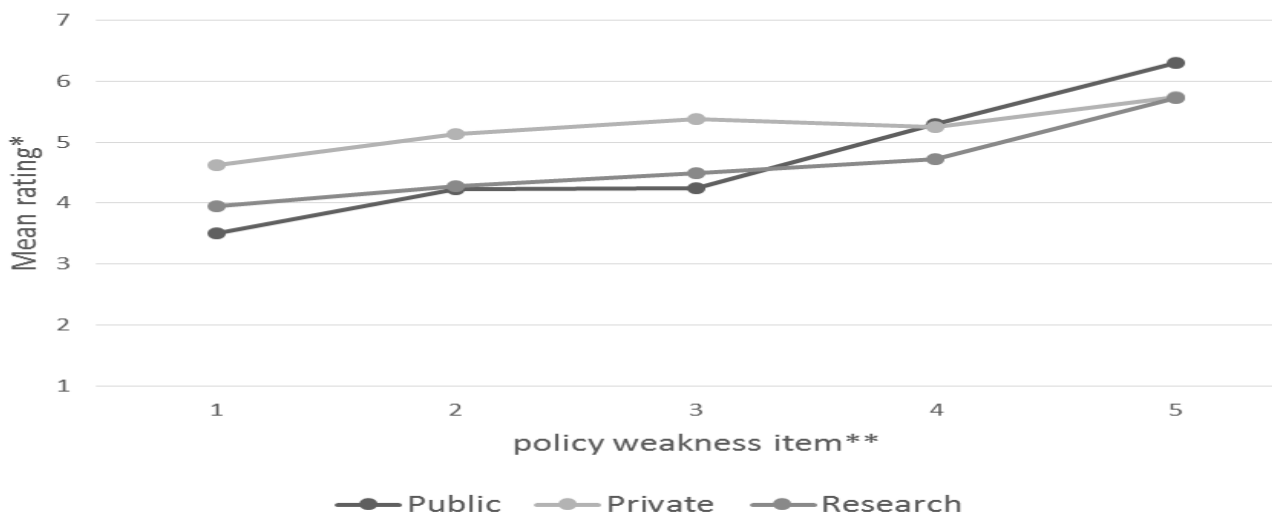
*Ratings of policy weaknesses:

- 1 = Not important weakness [...]
- 7 = Very important weakness

**Policy weakness item:

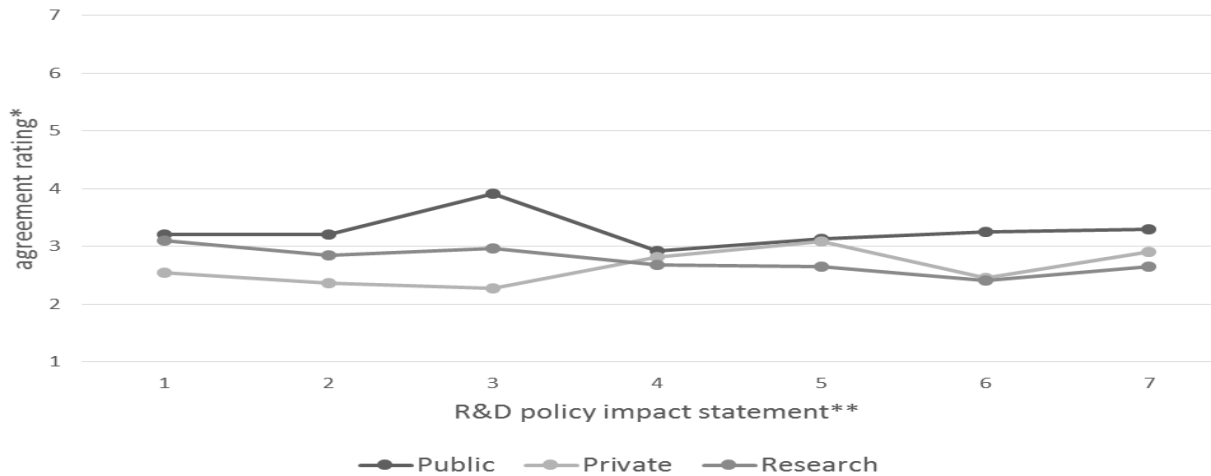
1. Instruments are not relevant to the local environment
2. Poorly designed incentives (instruments)
3. Poor management (implementation)
4. A lacking evaluation and feedback
5. Limited funding

perception of R&D policy weakness: Western Balkans 6

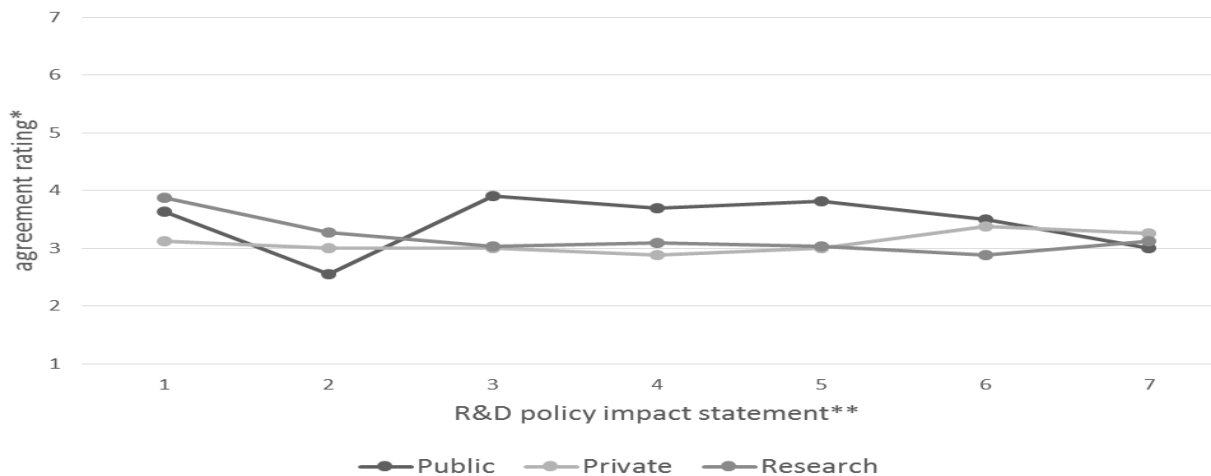


Perception of R&D policy impact in Croatia and in WB6

Perception of R&D policy impact: Croatia



Perception of R&D policy impact: Western Balkans 6



Legend:

*rating of agreement:

1 = Not true at all

[...]

7 = Very true

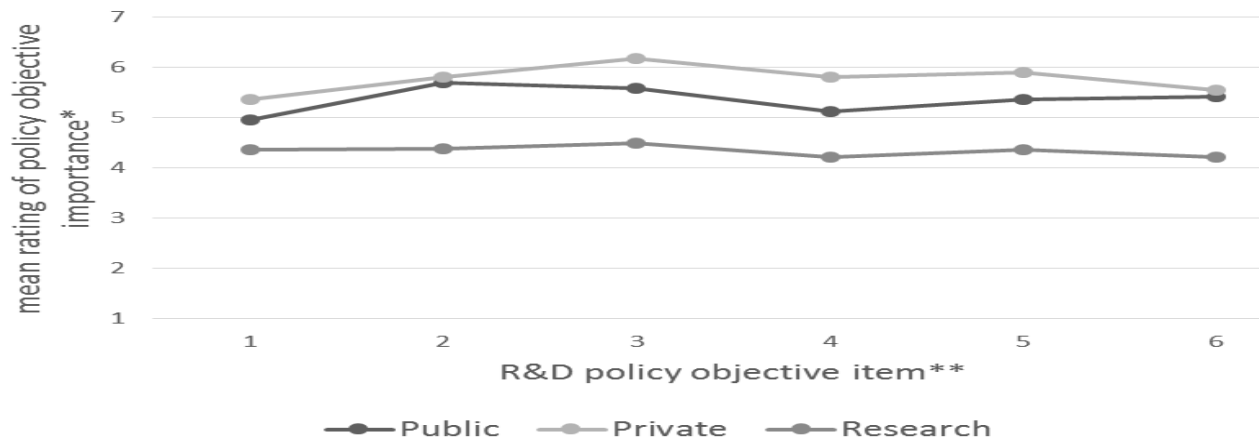
** R&D policy impact statement:

1. Formal evaluations procedures do exist, and they are useful
2. Substantial evaluations do exist, and their results are transparent and publicly available
3. Identification of R&I priorities is well organised public consultation process involving a range of stakeholders
4. Governance structures for R&I policy are developed and appropriate
5. Overall set of support measures is appropriate given financial and political constraints
6. Measures and forms of support reflect well needs of business sector
7. Measures and forms of support reflect well needs of scientific sector

R&D policy objectives' importance Science vs. Business orientation



Importance of R&D policy objectives: Croatia

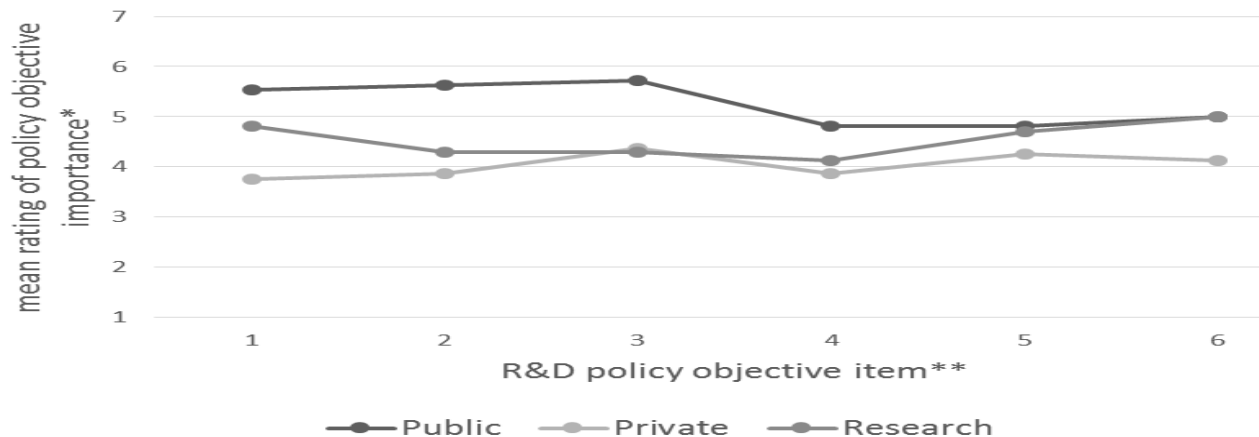


Legend:

*Ratings of policy objectives' importance:
1 = Not important
[...]
7 = Very important

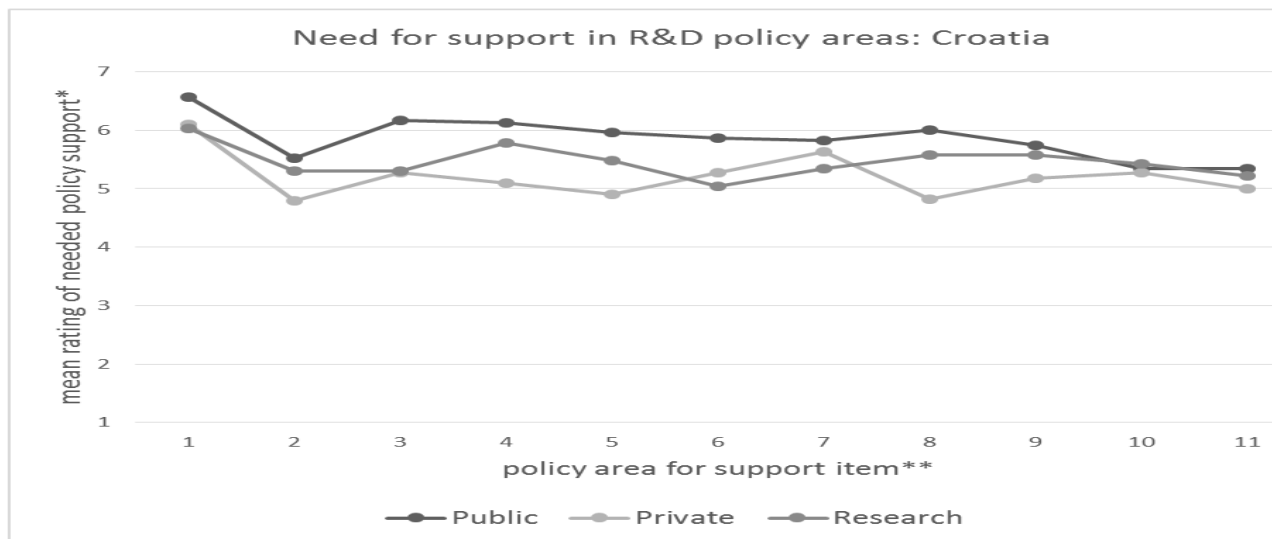
**R&D policy objective items:
1. Support for public R&D
2. Support for R&D and innovation in firms
3. Support for formation of new technology-based firms (start-ups)
4. Support to commercialization of public research
5. Support of university (research institutes) links with industry
6. Improve framework conditions (environment) for innovation

Importance of R&D policy objectives: Western Balkans 6



Question: Evaluate the relative importance of the following policy objectives in your country.

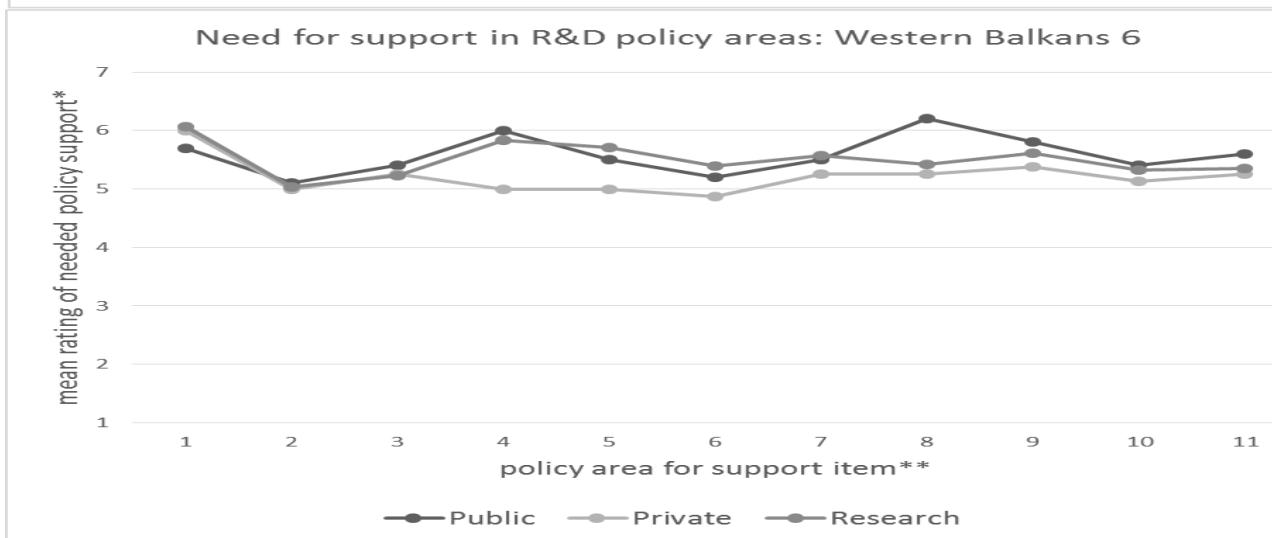
Need for support in particular R&D policy areas



Legend:

*Ratings of needed policy support:
 1 = Not important
 [...]
 7 = Very important

**policy area for support items:
 1. Science – industry links
 2. Clusters
 3. Tax incentives for R&D
 4. Evaluation of R&D programs
 5. Evaluation of R&D organisations (e.g. Centres of Excellence)
 6. S&T foresight
 7. Skills and technical change: policy issues (SMART skills)
 8. Assessing innovation policy
 9. International (global/regional) value chains
 10. Creative and cultural industries – contribution to economic transformation
 11. Social innovations (for example, innovative community projects)

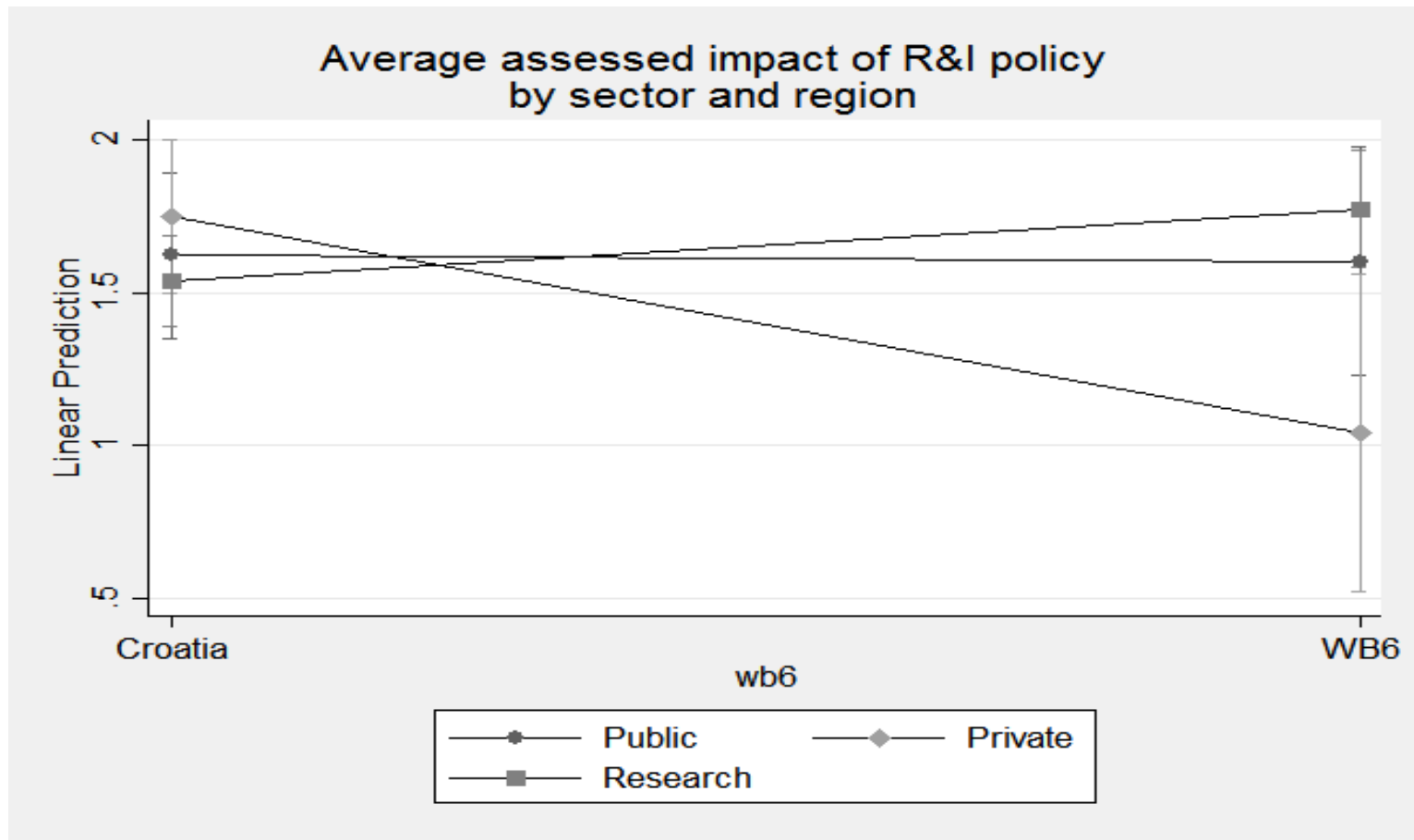


OLS regression of average perceived impact of R&I policy on sector, region, experience with program implementation and interactions including those variables



VARIABLES	(1)	(2)	(3)	(4)
		b / (SE)		
Responsible for implementation = YES (Ref. NO)	0.147 (0.120)	0.196* (0.115)	0.243* (0.130)	0.148 (0.142)
Sector (Ref. Research)				
Public	-0.028 (0.136)	0.085 (0.161)	-0.101 (0.276)	-0.028 (0.136)
Private	-0.212 (0.168)	0.213 (0.143)	0.081 (0.162)	-0.212 (0.165)
Western Balkans 6 (Ref. Croatia)	0.018 (0.109)	0.238* (0.123)	0.0593 (0.106)	0.019 (0.160)
Public sector # WB6		-0.257 (0.252)		
Private sector # WB6		-0.949*** (0.313)		
Responsible for implementation # Public sector			0.066 (0.311)	
Responsible for implementation # Private sector			-0.689** (0.334)	
Responsible for implementation of programmes # WB6				-0.002 (0.210)
Constant	1.577*** (0.087)	1.439*** (0.081)	1.517*** (0.087)	1.577*** (0.095)
Observations	115	115	115	115
R-squared	0.037	0.121	0.088	0.037
Robust standard errors in parentheses				
*** p<0.01, ** p<0.05, * p<0.1				

Predictions of R&I policy impact mean impact by sector and region



Logistic regression of perceiving 'poor' implementation (management) of R&D policy instruments as a weakness



VARIABLES	(1)	(2)	(3)	(4)
		b / (SE)		
Responsible for implementation = YES (Ref. NO)	0.736 (0.485)	0.850* (0.469)	1.075* (0.570)	1.265** (0.592)
Sector (Ref. Research)				
Public	-0.499 (0.564)	-0.748 (0.593)	-0.0198 (0.918)	-0.639 (0.587)
Private	1.768*** (0.620)	2.574** (1.116)	2.201*** (0.854)	1.878*** (0.636)
Western Balkans 6 (Ref. Croatia)	-0.844* (0.490)	-0.894 (0.558)	-0.844* (0.484)	-0.275 (0.661)
Public sector # WB6		0.860 (1.077)		
Private sector # WB6		-1.407 (1.404)		
Responsible for implementation # Public sector			-0.787 (1.051)	
Responsible for implementation # Private sector			-1.001 (1.244)	
Responsible for implementation of programmes # WB6				-1.157 (0.870)
Constant	-0.363 (0.362)	-0.387 (0.400)	-0.509 (0.407)	-0.559 (0.404)
Observations	112	112	112	112
Wald χ^2	12.8*	12.8*	14.5*	15.4**
Robust standard errors in parentheses				

*** p < 0.01 ** p < 0.05 * p < 0.1

Sum up – Science – Business profile of Innovation Policy



- Respondents perceive that there is lack of R&I policy, **which strives towards fulfilment of science sector needs and/or the business sector needs**, in question relates to R&I policy impact;
- **Supply side innovation policy instruments** are more recognised among the analysed countries (Q= **Assessment of Existing Innovation Policy Instruments**);
- **Private and public sector in Croatia is more closer in terms of statements about innovation policy objectives, distant to the statements of the research sector**, whereas policy priorities in the eyes of WB6 research sector were generally aligned with the views of the private sector in these countries;
- In the all selected countries this is parallel with perception of weak management of innovation policy, among the, especially from the private sectors.

- **When we regressed average impact of R&I policy**, all three functional forms (OLS, binomial and multinomial logistic regressions) yielded a significant interaction of private sector with WB6 indicator. This was also corroborated by regressions estimated separately by two regions (private sector's main effect was significant in the WB6 subsample, but it was not significant in the Croatian subsample)
- **Private sector representatives from Western Balkans 6 region exhibited a significantly less perceived impact of R&I policy compared to all other sector-region combinations.** Experience of being responsible for implementation did not differentiate the perceived R&D policy impact, but those involved in implementation of R&I policy programmes from the private sector seemed to perceive the impact of R&I policy as lower compared to all other respondents.

- Logistic regression of perceiving poor implementation (management) as a weakness (where the predicted outcome is above median result in this item) yielded **significant estimates of main effects of the private sector and personal experience with implementation of policy instruments which were both associated with a larger propensity to consider poor implementation as a weakness of R&D policy. Respondents from Western Balkans 6, regardless of the sector, were less likely to deem poor implementation as a weakness.**
- However, **the positive association of implementation experience and belonging to private sector with the likelihood of perceiving poor implementation of R&D policy as a weakness was mainly driven by the Croatian subsample.**