

The effectiveness of regional, national and EU support for innovation in the UK and Spain

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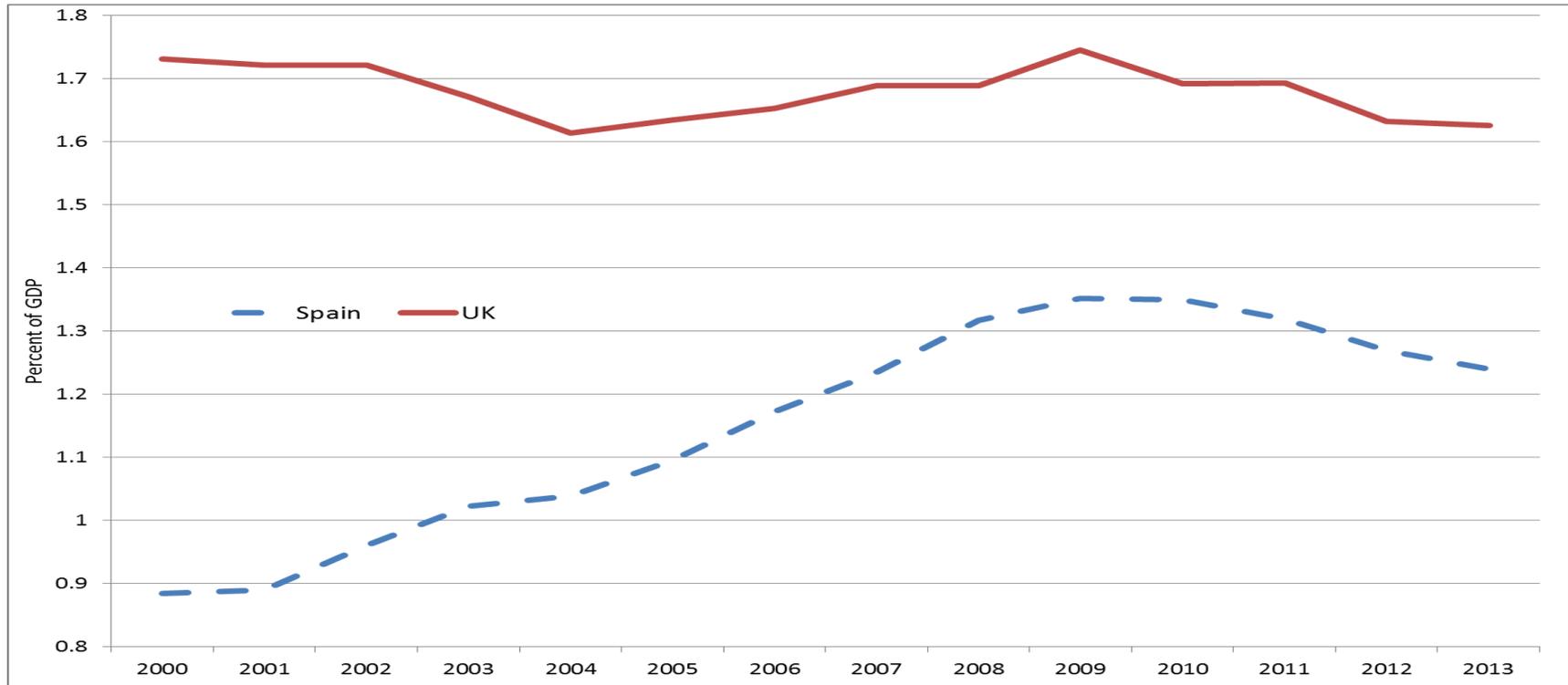
Aims of analysis

- Our aim here is to explore the effectiveness of regional, national and EU innovation support in promoting the extent of innovation activity, its novelty, and market success.
- We use data from the national innovation panel surveys in the UK and Spain over the 2004 to 2012 period
- The comparison of the UK and Spain is particularly interesting given:
 - The very different levels of engagement of the public sector in the innovation system in the two countries,
 - The greater regionalisation of innovation support in Spain (Mate-Sanchez-Val and Harris 2014),
 - Other differences in the business environment in the two countries such as regulation (Capelleras et al. 2008).

What's new?

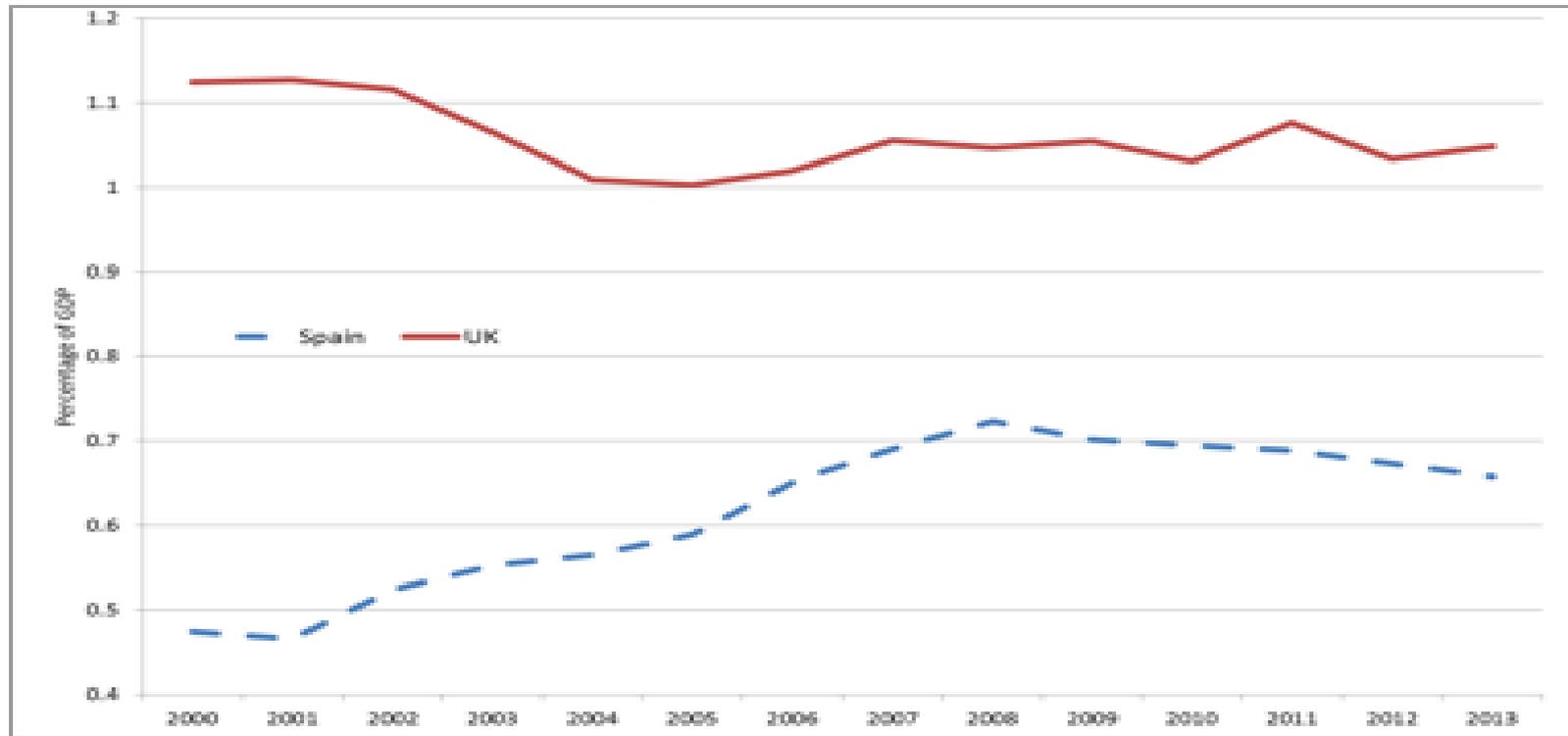
- Key innovation policy instruments are grants or subsidies in most countries
- One recent review: 'approximately 60 per cent of the studies find that public subsidies are complementary and thus add to private R&D investment' (Zuniga-Vicente et al. 2014, p.38). See also (Szczygielskia, Grabowskib et al. 2017).
- Our contributions:
 - (1) We examine simultaneously the effects of policy support from different sources (i.e. region, nation and EU) and identify the relative effectiveness of each type of support.
 - (2) We consider which types of support impact most strongly on different innovation outcomes. (i.e. the percentage of innovating firms and the percentage of innovative sales)
 - (3) Our comparative panel data analysis provides insights into the relative effectiveness of two very different innovation support regimes, and a robustness check on the effectiveness of each type of innovation support.

R&D investment as % of GDP



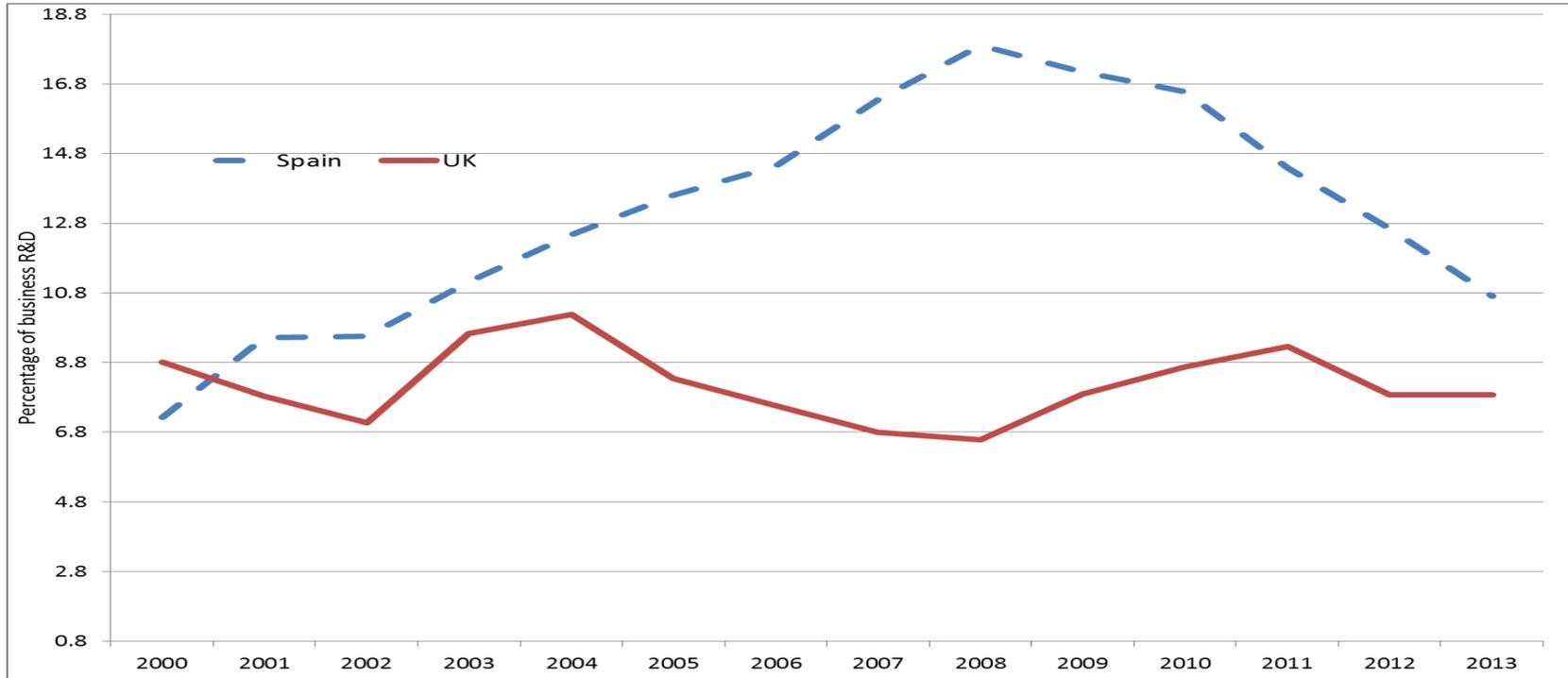
.. the UK is a 'liberal market economy' with innovation driven by market mechanisms and innovation policy is either corrective or creative. Spain is a 'mixed market economy' or 'Mediterranean' economy where policy is also compensatory (offsetting shocks or weaknesses)

Business investment in R&D % of GDP



... the business environment is less restrictive in the UK. All factors hampering innovation are more commonly cited by Spanish than UK firms (Mate-Sanchez-Val and Harris, 2014). Regulation is a particularly strong influence (Roper et al. 2016)

Govt. funding of business R&D (%)



... 'in Spain, public support is more important in promoting innovation activities; whereas linkages with international markets are more important for companies in the UK' (Mate-Sanchez-Val and Harris, 2014, p. 452)

Data

- Data from five waves of the UK Innovation Survey and PITEC. Both based on Oslo Manual
- For each firm we know about their innovation activity, other controls and whether they received innovation support:
 - From local or regional agencies
 - National bodies
 - EU (Spain), EU and international organisations (UK)
- But note these are only binary measures not amounts so we have no idea (here) of the scale of support

Percentage of firms receiving innovation support : 2004-12		
	UK	Spain
Regional	5.9	19.4
National	5.0	18.3
EU	1.7	5.1

Modelling approach

- Two-stage, recursive approach
 - Stage 1 – model probability of receiving regional, national or EU support
 - Stage 2 – innovation equation including three binary treatment terms (regarded as endogenous)
- Estimated using CMP estimator as allows us to use multiple treatments and also various dependent variables depending on innovation indicator (probit, tobit)

The probability of support: Spain

	Regional	National	EU
Log (employment)	0.008***	0.020***	0.006***
Superior education graduates (%)	0.001***	0.002***	0.001***
Exporting firm (0/1)	0.054***	0.086***	0.014***
Innovation cost barrier	0.019***		
Cost of finance barrier	0.044***	0.061***	0.016***
Availability of finance barrier	0.027***	0.013***	0.005**
Uncertain demand barrier	0.027***	0.030***	0.006***
Penetration rate – regional support	0.801***		
Penetration rate – national support		0.661***	
Penetration rate – EU support			0.290***
N	52576	52576	52576

Note: Penetration rates indicate the availability of support within the industry/region at the time of the survey – an indication of policy commitment to supporting innovation

From support to innovation: novelty and sales, Spain

	Novelty	Innovative sales
Regional or local support (0/1)	-0.287**	-0.009
National innovation support (0/1)	0.261**	0.270***
EU innovation support (0/1)	0.372***	0.281***
Log (employment)	0.002	-0.002
Design spend (0/1)	0.118***	0.099***
Superior education graduates (%)	0.003***	0.002***
Exporting firm (0/1)	0.086***	0.112***
Number of innovation partners (0-7)	0.071***	0.102***
In house R&D (0/1)	0.313***	0.406***
External R&D (0/1)	0.051***	0.048***
Training spend (0/1)	0.059***	0.083***
Acquisition of external knowledge (0/1)	0.037	0.078**
Acquisition of market intelligence (0/1)	0.160***	0.567***
Machinery spend (0/1)	-0.018	-0.050***
N	52576	52576

Key findings

	UK			Spain		
	Regional	National	EU	Regional	National	EU
Probability of innovation						
Product/service		+		+	+	
Process	+		-			
Organisational	+			+		
Strategic	+				+	+
Managerial	+			+		+
Marketing	+			+		
Novelty of innovation		+		-	+	+
Innovation sales	+				+	+

Key findings...

1. Regional support seems most influential in both the UK and Spain in increasing the probability of process and organisational innovation – productivity enhancing innovation
2. For both the UK and Spain - and by contrast with other types of innovation – national innovation support is associated with a higher probability of product or service innovation – growth enhancing innovation
3. Only national (and in Spain EU support) prove important in positively shaping the novelty of product or service innovations.
4. In the UK only regional support is associated with increased innovative sales; while, in Spain, innovative sales are influenced by both regional, national and EU support measures.

So what?

- Innovation support 'works' to support diverse innovation, novelty and innovative sales
- Regional measures support broadly-based innovation (process, organisational) which may be productivity enhancing
- National measures support novelty and (in Spain) innovative sales which may be growth enhancing
- **For Spain:** A positive story: different levels of policy having complementary effects. Regional -> productivity enhancing; national -> growth enhancing
- **For the UK:** A more mixed picture. Centralisation of policy since 2012 may have reduced support for productivity and growth enhancing innovation. An unintended consequence? Notable too that EU support not important in the UK.