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## Innovation subsidies in a federal system - Innovation policy at different political levels in Germany

Dipl. Volkswirt Lasse Becker  
Georg-August-University, Göttingen

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Innovation subsidies in a federal system

# INTRODUCTION



## Federalism & Innovation: Is support that homogenous?

- Innovation and R&D drive economic growth and welfare gains
- Governments support private innovative activities
- Most empirical studies on the impact of support consider innovation policy within a country to be homogenous
  
- But is homogeneity really the case in a federal country:

*Do the different governmental levels in the German federal system focus on companies with the same characteristics when they support innovation?*

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# LITERATURE REVIEW



## Public Innovation Support: Is it justifiable and why?

- Innovation owns at least some characteristics of a public good which causes a socially not optimal level of investment (Grossmann/Helpman 1991)
- Uncertainty about the success and external effects further influence the investment level (Brouwer 2000)

*„The social returns to private R&D are often higher than the private returns“ (Griliches 1992)*

- Therefore public support of innovative activities is justifiable



## Federalism: Is a federal structure favorable?

- Federalism reduces governmental spending, increases political accountability and influence of individual preferences

*„The optimal form of government: a federal system“ (Oates 1972)*

- Economies of scale which cannot be realized reduce the positive welfare effect of decentralized federal systems
- An in general federal structure is also favorable on the field of innovation policy as the focus on regional circumstances and necessities in a jurisdiction is theoretically preferable



## Innovation and federalism: Does public support help?

- Several studies show positive effects and no crowding-out of innovation support (Duguet 2004, Aerts/Czarnitzki 2004, Czarnitzki/Fier 2002)
- Some studies show positive effects but only partially or for some groups (Busom 2000, Görg/Strobl 2005, Lach 2002, Levy 1990)
- A study by Wallsten 2000 shows a crowding-out effect for private spending on R&D
- Fernández-Ribas 2009 shows for Spain that regional programs support smaller companies and companies with higher barriers to enter

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# DATA AND METHODS





## Data and Method: What is the basis of this study?

- Examining the situation in Germany, the Mannheim Innovation Panel (MIP) of the Centre for European Economic Research (ZEW) is used:
  - 6,000 companies participating
  - Every second year information regarding the reception of public innovation support at three levels (Regional/State, Federal/Nation, European Union)
  - Unbalanced panel
- Data base from 2007 (newest data set with information on innovation support)
- The dependent variables (*suppst*, *suppfe*, *suppeu*, binary coded) are used in a logistic regression (logit) in order to find influences and characteristics of companies publicly supported



## Variables: Which characteristics influence support?

- Structural characteristics of companies are used, like:
  - company size (*sme*)
  - share of employees with higher education degrees (*hiedu*)
  - continuity of innovative activities in a company (*regularly*)
- Additionally potential influences of the market position and markets are examined, like:
  - market share in the respective market (*mshare*)
  - degree of competition regarding quality (*qualcomp*)
  - market focus (*national, international*)
- Testing for regional effects, more variables are integrated, like:
  - company is from Eastern Germany (*east*)
  - company is from a state giving money to the fiscal transfer system (*donor*)

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# RESULTS



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Var	Logit Regressions		
	State Support (suppst)	Federal Support (supffe)	European Support (suppeu)
	Coef. (Std. Err)	Coef. (Std. Err)	Coef. (Std. Err)
<i>sme</i>	-.2531532 (.2586311)	-.4035993* (.2231604)	-.5890567* (.3563267)
<i>lnrdexp</i>	.2378961** (.0949518)	.2318617*** (.0845761)	.33473*** (.1200669)
<i>researchers</i>	.0091057 (.0649123)	.7286729*** (.1990071)	.0438744 (.0714693)
<i>hiedu</i>	.0170636*** (.0041522)	.0178736*** (.0037889)	.0257517*** (.0050794)
<i>training</i>	-1.170813 (2.737237)	-4.639773 (2.950451)	-1.581858 (3.965872)
<i>mshare</i>	.0003803 (.0040444)	.0032839 (.0034587)	.0105764** (.0048436)
<i>national</i>	.1419082 (.3923315)	.2143076 (.348516)	-1.081872** (.4518954)
<i>international</i>	1.119725** (.4974463)	.3548677 (.441562)	-1.141089* (.5988016)
<i>regularly</i>	.573882** (.2456834)	.6699302*** (.2130267)	.8669974** (.3480941)
<i>qualcomp</i>	.4400641* (.2642439)	.7120124*** (.2301267)	.1279662 (.3169499)
<i>foreign</i>	-.3525796 (.3357291)	-.3557543 (.2844083)	.0073006 (.3866677)
<i>east</i>	1.361785*** (.2897773)	1.128516*** (.2658909)	.15228 (3716318)
<i>donor</i>	-.7846031*** (.3017116)	-.1318884 (.2536621)	-.5864893* (.3523386)
<i>exs</i>	-.0083905 (.0054772)	.0013579 (.0048194)	.0107738 (.0068602)
<i>family</i>	-.3210388 (.2117635)	-.1498589 (.1851487)	-.0596757 (.2707851)
<i>_cons</i>	-2.273437*** (.6095343)	-2.498066*** (.550643)	-1.46647** (.6955769)
Observations	853	890	495
LR chi <sup>2</sup> (15)	165.23	194.11	79.15
Prob > chi <sup>2</sup>	0.0000	0.0000	0.0000
Pseudo R <sup>2</sup>	0.1999	0.1840	0.1598



## Results: Which influences have the variables?

- *sme* has a significantly negative influence at the federal and European level
- *researchers* influences the federal level positive
- *mshare* is only relevant at European level (positive)
- *national* and *international* influence negative (significant) at European level and positive (mostly insignificant) at other levels
- *qualcomp* influences mainly the federal but also the regional level (positive)
- *east* is only significant and regional at federal level (positive), while *donor* is only significant at regional and European level (negative)
- *Inrdexp*, *highedu* and *regularly* have a significantly positive influence at all three levels

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# CONCLUSION



## Conclusion: Do the programs reach the same goals?

- There tend to be different target groups at different political levels which support innovation
- Common characteristics for companies like more employees with higher education and regular work on R&D share the recipients of innovation support at all three levels
- Regional level programs are stronger influenced by local factors and do not focus on bigger companies but on companies which focus on national markets
- Federal level programs are influenced by the number of researchers and focus on quality competition and bigger companies
- European level programs are influenced by the market share and focus on bigger companies which focus on regional markets



## Conclusion: Does federalism foster innovation support?

- As the different levels reach different target groups federalism seems to foster innovation
- Federalism reaches the goal of a diversified access to innovation support at least in Germany
- Not all results are as expected and especially regarding the market focus of programs supporting innovation, further research is needed
- A closer look at existing innovation programs is necessary in order to complete the picture of federal innovation support in Germany
- An additional comparison of the differences between federal and centralist countries in Europe might also give additional information on the impact of federalism



**THANK YOU  
FOR YOUR ATTENTION!**