

Challenges and Expectations for Today's Innovation Support

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Complex Innovation:

New Challenges, Requirements and Approaches for Research and Innovation Support Programmes







Challenge

Industrial dynamics and innovation: a slowdown

What is industrial dynamics?

Productivity and Innovation dynamics: the European and the German case







Innovation driven development of industries

Industrial dynamics is not an uniform process

From risk to uncertainty: Innovation and investment decisions

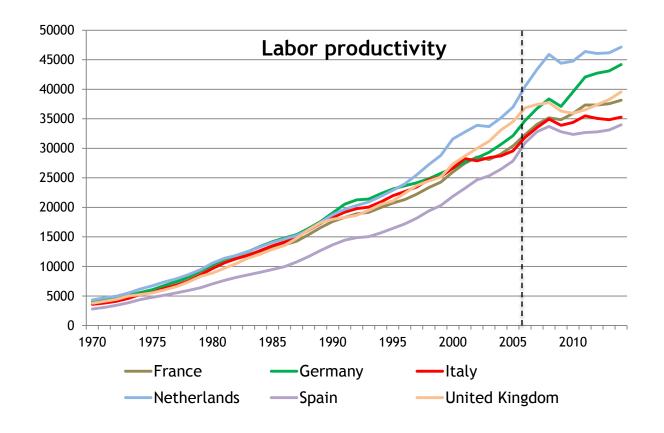
New directions in innovative activities







- Slowing down of labor productivity growth
- Especially after 2008
- Financial crisis ↔ technological exploitation?









- Declining growth rates of labor productivity
- Potentials exploited?

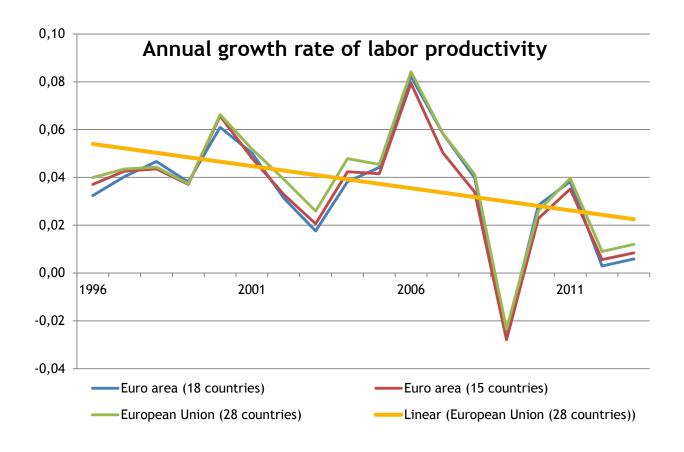








- Declining growth rates of labor productivity
- Different EU areas



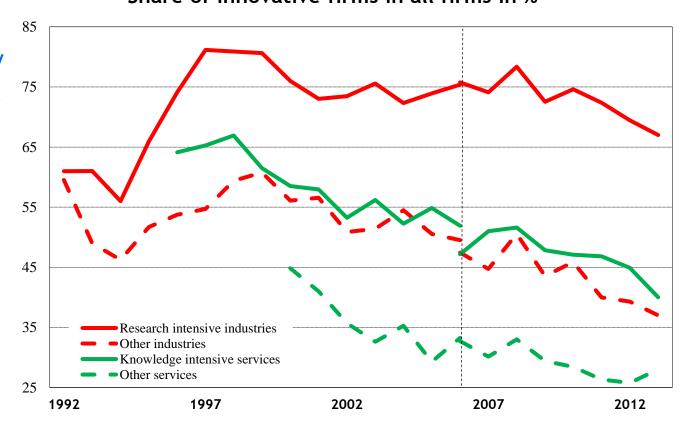






Share of innovative firms in all firms in %

- Declining innovation activities in Germany
- Clear decline already before 2008
- and also after 2008 despite
 - prosperouseconomicdevelopment
 - easy credit conditions









What is / can be the role of policy?

Policy styles and their "times"

The new mission oriented policy







												New mission	orientation
								Cluster &	network o	rientation	1		
				Key technologies and Diffusion orientation									
	Mission o	rientation											
1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	





												New mission ori	entation
							Clu	ıster	& network or				
				Key technolo ori	gies and D entation	iffusior	1						
	Mission ori	entation											
	Reconstruction	CONSTRUCTION		Dirigism / ternationalisatio	on	Modernisation /	Globalisatio	n	Sustainability				
1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010	

Changing styles, targets and means

Along Fier/Harhoff (2002)







												New mission orientation
								luster	& network o	rientation		
				Key technolo	gies and I entation	Diffusi	ion					
ı	Mission ori	entation										
												societal demands and topics 8 future technologies
								ne	tworks			intare teamoragies
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hasic re	large res	search		,								
	nstruction	Restructu Imitati		Catching-up / Innovation	Efficienc	у	Dirigism / Internationalisa	tion	Modernisation	/ Globalisation		Sustainability
1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010

Changing styles, targets and means

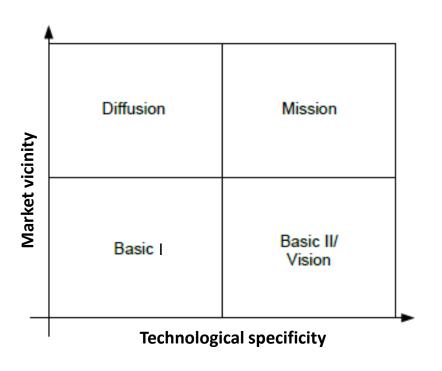
Along Fier/Harhoff (2002)





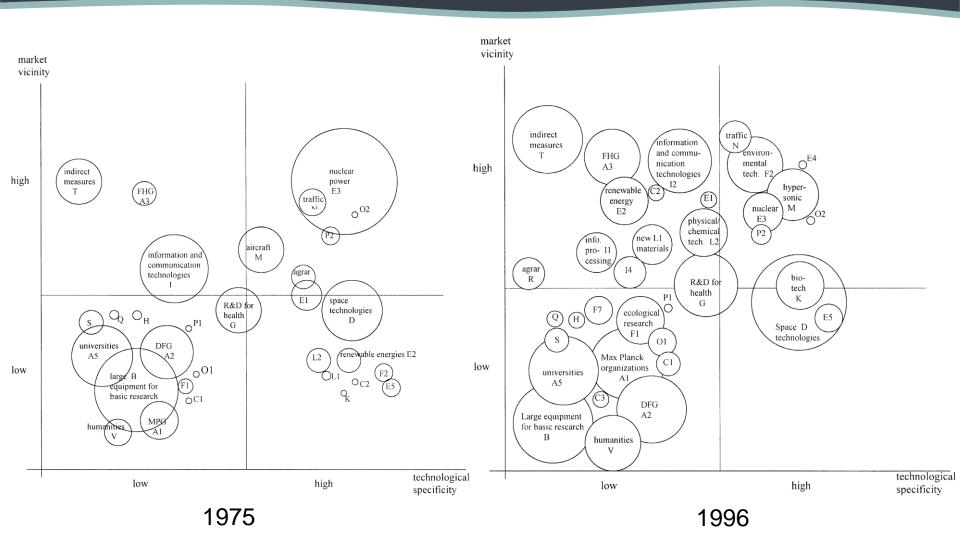


- Diffusion: low technological specificity, high market vicinity
- Mission: high technological specificity and clear idea of economic application
- Basic I: basic research in a narrow sense; no market relevance
- Basic II: technologically specific, but far away from economic relevance



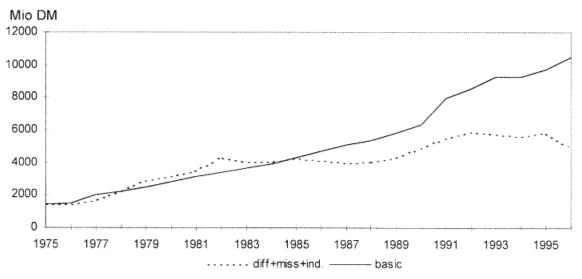


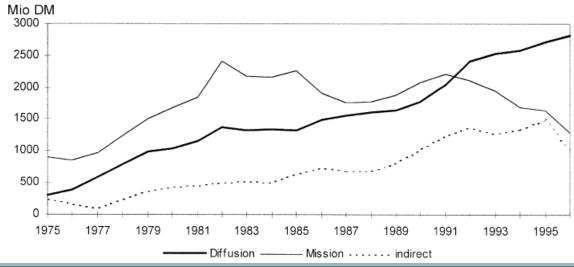






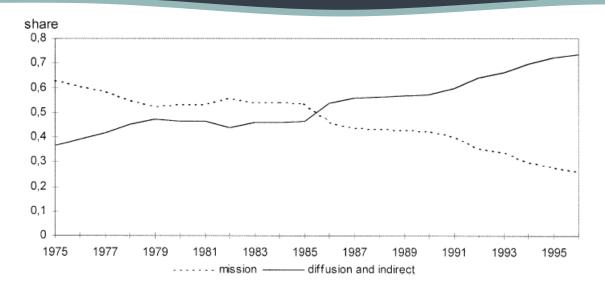












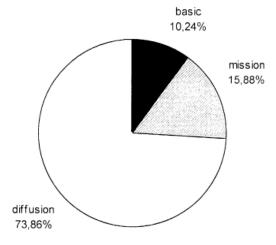


Fig. 6. Shares of co-operative measures 1996.







											New mission orientation
							Cluster & n	etwork o			
-			Key technologies and Diffusion orientation								
N	Mission orie	ntation									
			linear	linear innovation model				ven innova		innovation sequences	
			 Innovation intensity Industrial Organization New Industrial Economics 				ovation intensity Innovation Syste Industrial Dynar	ems			 Competitive diffusion Technological dynamics Reg./indus. dynamics
1950	1955	1960	1970	1975	1980	1985	1990	1995	2000	2005	2010

- Theoretical foundations and viewpoints
- FAZ end of the 1980ies / early 1990ies
 - Weak innovation in the German economy! → A problem of incentives or of competencies?







											New mission orientation
							Cluster & ı	network o	١		
,			-	ologies an orientatio	d Diffusion n						
	Mission orientation										
			market failure			system failure					"long-run" failure
	innovations as public and meritoric goods		 incentive propublic good) private versu uncertainty & large projects 	is social retu & capital ma	urns arkets	•	intermediation complementari reciprocity prob	ty problems			 lock-in problems intergenerational problems aberrations
1950	1960	1965	1970	1975	1980	1985	1990	1995	2000	2005	2010

- Not intensity but direction of innovation as a policy relevant problem
- From explicitly emphasizing the technological solution (mission) toward emphasizing the problem solution (new mission policy)







Expectations

A new direction - how to get it right!

New Mission Orientation: Germany's High Tech Strategy

Schumpeterian Catalytic Policy I: Policy Mix

Schumpeterian Catalytic Policy II: Entrepreneurial power







High Tech Strategy in Germany

- prioritising future challenges relative to prosperity and quality of life
- strengthening the dynamism of innovation in industry
- consolidating resources and promoting transfer
- creating favourable conditions for innovation
- strengthening dialogue and participation

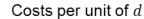


- Digital economy and society:
 - Industrie 4.0 // Internet of Things
- Sustainable economy and energy
 - Energiewende
- Innovative workplace
- Healthy living
- Intelligent mobility
- Civil security







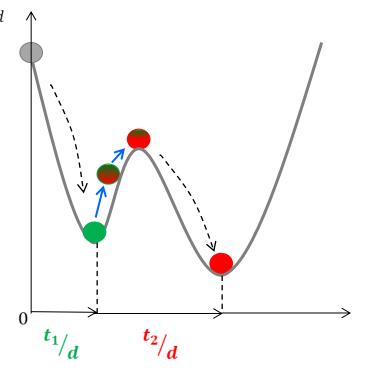


d demand

Old technology t_1

New (expected) technology t_2

intervention

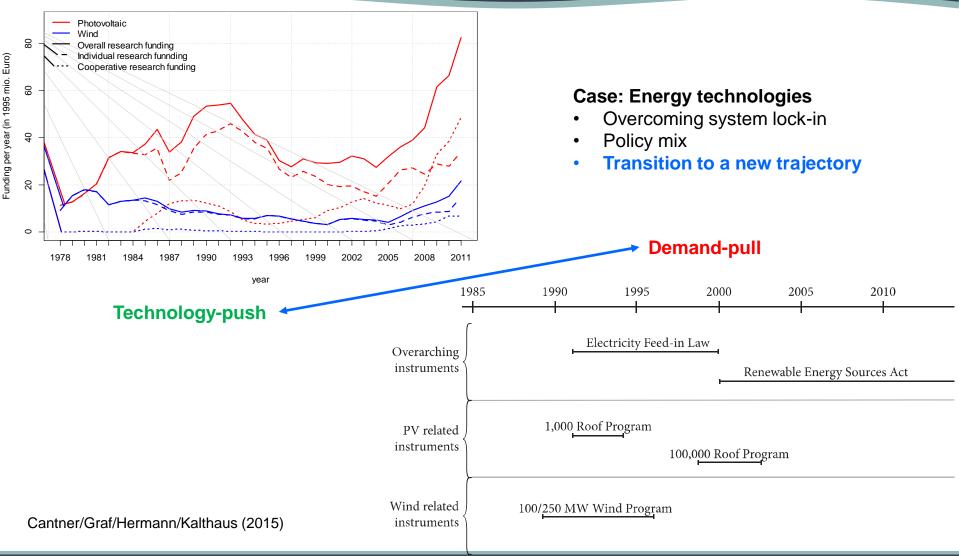


Usage of technology/d















- The initial problem: Incumbents
 - in favor of dominant design
 - once motivated, power to achieve mass market adoption
 - strong influential power, financial resources, cost reductions (incremental innovation & economies of scale)

Case: Alternative Technical Vehicles

- Policy focus on SME
- Transition to a new trajectory



- The solution: Entrants
 - stimulate incumbents' R&D
 - (1) direct: competitive & complementary forces
 - (2) indirect: stimulate demand, enlarge scope of niche markets, master new technologies
 - entry barriers, liability of newness,
 fail to reach mass market penetration

Cantner/Dieckhoff (2015)







Conclusion







- Slow down of industrial dynamics & innovation activities in Europe
- Indicates exploited technological potentials, uncertainty and/or lock-in of potential innovators
- New mission policy → flagging societal needs, inducing major technological changes
- Focus on the direction of change instead on its intensity
- Schumpeterian "Catalytic" policy
 - → enabling transition to a new trajectory
 - → policy mixes and entrepreneurial power







THANK YOU!



