

**RESEARCH ON THE
KNOWLEDGE FILTER:
STATUS AND
POTENTIAL USE FOR
POLICY ANALYSIS**

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Background

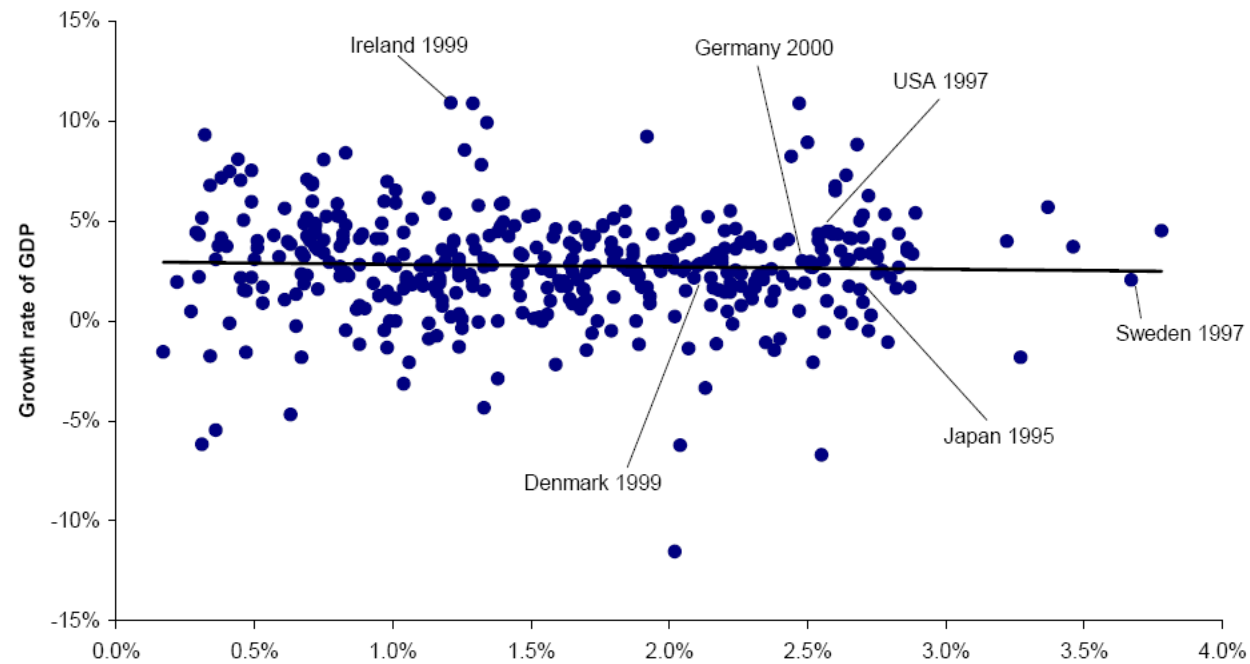
- > In January 2006, the International Consortium on Entrepreneurship (ICE) had several discussions concerning high-growth and the possible links between innovation and entrepreneurship policy. Based on these discussions ICE agreed to strengthen its understanding of these links, as the links might be crucial for the returns on public R&D spending and thereby future growth.
- > FORA initiated the work by reviewing the relevant literature and based on the review prepared this paper to be presented at the upcoming consortium meeting on 12-13 October 2006 in Copenhagen. The paper provides policy makers with an overview of the main research in the new emerging literature on knowledge filter and develops an analytical framework for possible future policy studies of this area. The framework will allow for detailed studies of the framework conditions for knowledge transfer from Universities to private firms or entrepreneurs.
- > In relation to this paper, consortium members should take note of the results from the literature and consider whether they would be interested in applying this framework in a joint ICE project.

Outline

- > Research on the knowledge filter: Status and potential use for policy
- > Why do we need a commercialization benchmark model?
- > Commercialization benchmarking model in 5 steps
- > Discussion: What is the next step in the consortium?

The missing link between R&D and economic growth

Figure 1: Expenditures on R&D and economic growth in 29 OECD countries 1981-2000

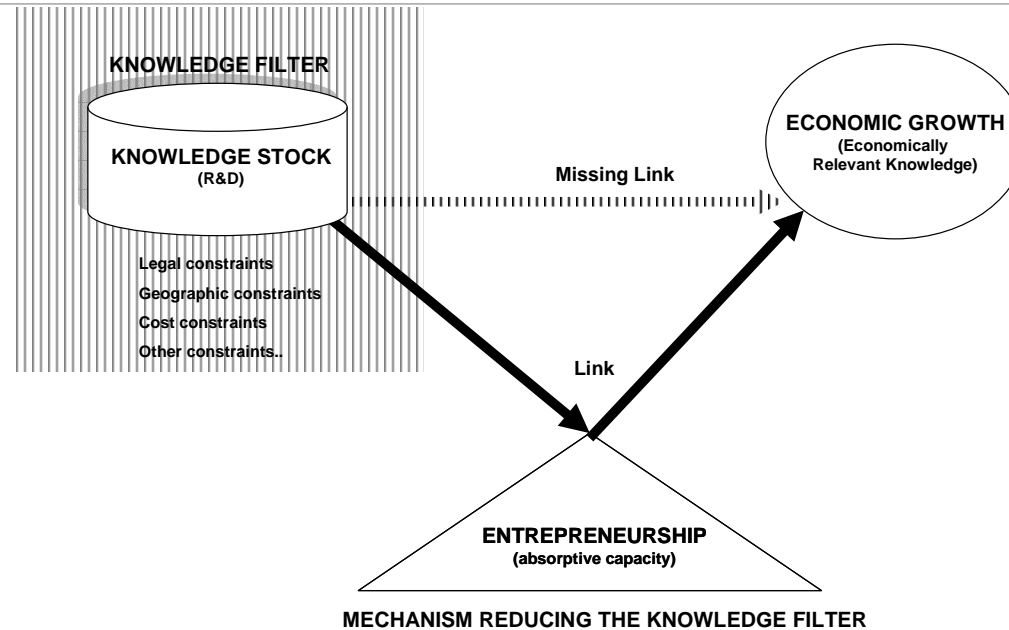


Source: OECD Statistical Compendium on CD, 2002:2/Acs, Audretsch, Braunerhjelm and Carlsson (2003).

The importance of knowledge transfer is not a new policy insight

- > Many countries provide support for commercialization of R&D
- > Current policy efforts are biased towards filling for patent protection and licensing and do not cover all modes of transfer
- > Commercialization today does not always go through the TTO
- > Universities and research institutions plays a litter role among the types of information considered highly important for firm's innovation. This is biased in favour of large firms.

Commercialization matters

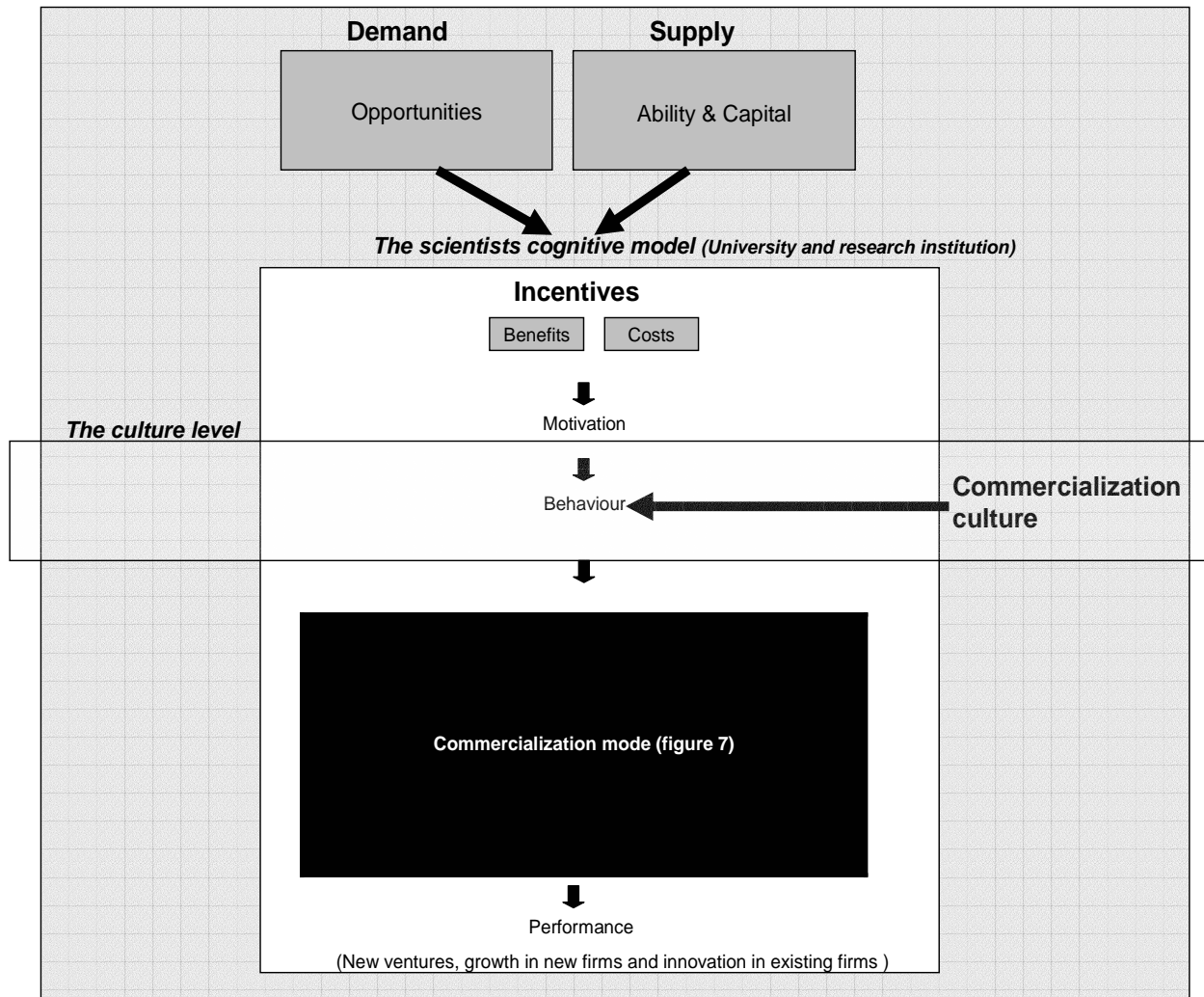


- > **A knowledge filter** stands between investments in R&D on the one hand, and its commercialization through innovation, leading ultimately to economic growth, on the other.
- > **Entrepreneurship** reduces the “knowledge filter” by being the missing link that transfers knowledge into new products, processes and services”

Commercialization matters

- > In the knowledge-based economy the focus on the universities and research institutions are intensifying
- > Commercialization policy can improve commercialization performance
- > But how to formulate the right commercialization policy?

The policy framework of growth drivers for commercialization of public knowledge (R&D)



The modes of commercialization and involvement of public research and development

Independent individual University member Firm member

Independent individual	Independent Start-up	University Spin-off	Firm Spin-off
University member	Acquisition/ Licensing/ Trademarking	University venture	Acquisition/ Licensing/ Trademarking
Firm member	Acquisition/ Licensing/ Trademarking	Acquisition/ Licensing/ Trademarking	Corporate venture

Policy areas affecting commercialization of public knowledge (R&D)

A total measure of the framework conditions relating to commercialization of public research				
Opportunities	Capital	Ability	Incentives	Culture
Commercialization Regulation	R&D support	Research on universities/ research institutions (stock & flow)	University strategy (research, Education & commercialization)	Social desirability of commercialization
Procurement regulation	Commercialization support	Researcher relations	Credits towards tenure and promotion	Special cultural beliefs (university/ research institution)
Relations with Government	Risk capital	Commercialization education of researchers	IPR (Organisation-researcher)	Communication about heroes, rolemodels/awards
Relations with industry		Commercialization Experience	Knowledge transfer office (compensation practice/ royalty shares)	Introduction of enterprising universities
Test Facilities (proof of concept)		Knowledge transfer office (design, information flows, staffing)	Administrative Burdens Commercialization (pre-start-growth)	
Incubators		Relations with research spin-offs		
Science parks				
Absorptive capacity in firms (stock & flow)				
Special cultural Beliefs demand side				



Research on the knowledge filter: Status and Potential use for policy

> Observation One: Policy Matters!



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> Observation Two: All Five Drivers of Commercialization Matters!



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> Observation Three: Implicit Acceptance of a Technology Focus



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> Observation Four: Optimal Composition of Absorptive Capacity?



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> Observation Five: Composition of Performance?



Research on the knowledge filter: Status and Potential use for policy

> Observation Six: The Links between Performance and Framework Conditions?

Research on the knowledge filter: Status and Potential use for policy

Table 2: A review of the empirical research on commercialization of public research.

Factors	Policy areas	Finding	Study	Sample frame
Opportunity	Commercialization regulation	There are clearly defined institutional factors to be considered when trying to understand why technology transfer works or does not work	Phan & Siegel (2006)	Litterature review
		The legal environment of German universities does not give them sufficient incentives to exploit the potential of academic-industry technology transfer	Gill, Minshall and Rigby (2003)	Germany. 40 interviews (August 2002 – January 2003) A range of research-intensive locations across Germany with a cross section of individuals active in the commercialisation of Germany's science base
		The institutional framework for knowledge transfer favours organisations outside the university context.		
		Key Determinants of Start-up Formation: the Ability of the University and Inventor(s) to Take Equity in a Start-up, in Lieu of Licensing Royalty Fees; A Royalty Distribution Formula that is More Favorable to Faculty Members Reduces Start-up Formation.	Di Gregorio and Shane (2003)	U.S. 101 universities out of 116. (1994-1998)
	Procurement regulation	N/A		
	Government relations	N/A		
	Industry relations	This paper provides strong evidence that, after controlling for firm size and other factors, the openness of firms to the external environment (and therefore their willingness to interact with it in different ways) is very important in explaining their patterns of collaboration With public research organizations. Larger firms are much more likely to collaborate. They also find that the chances of firms with intense R&D activities to cooperate	Fontana, Geuna and Matt (2006)	Seven EU countries: Denmark, France, Germany, Greece, Italy, the Netherlands and the UK. Focus is on 558 innovator firms.

Discussion: What is the next step in the consortium?

- > *What is the next step in the consortium? Should we continue the work? Yes? Maybe?, Or definitely not?*
- > *If we decide to continue we need to decide on the extent of the analysis. The extent will determine the possible benefits and cost..*

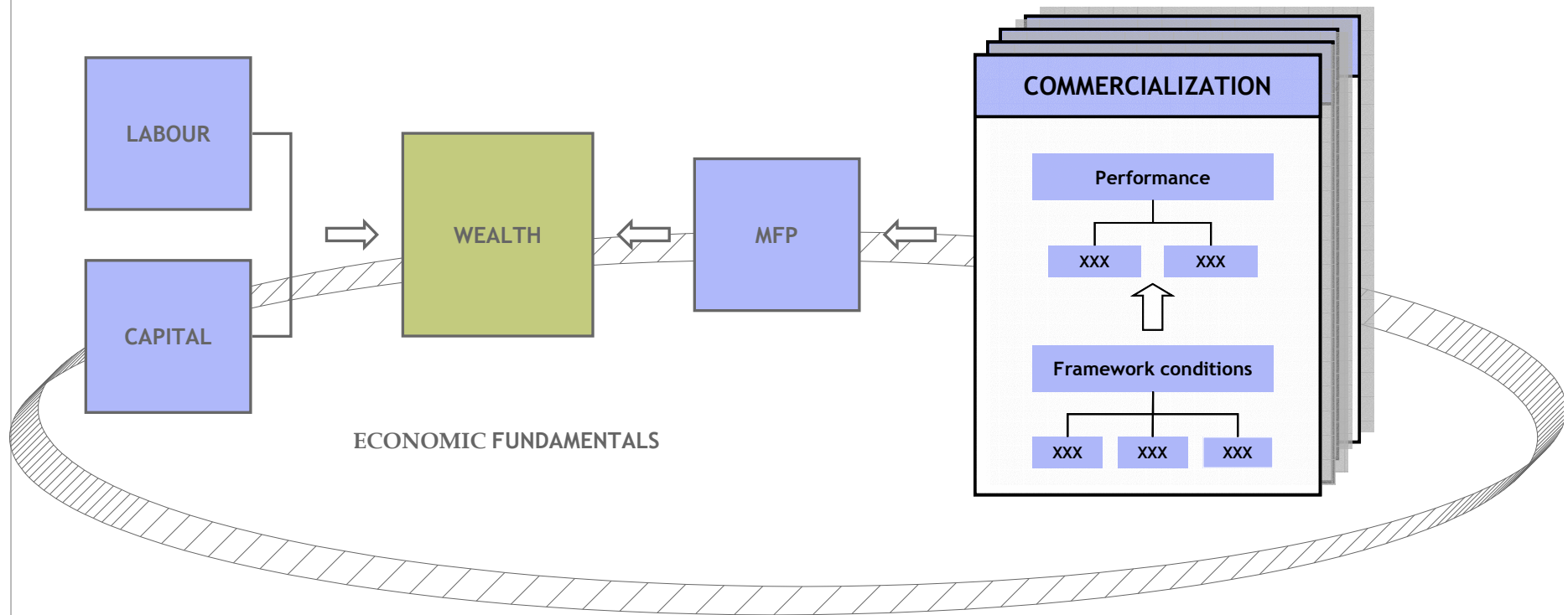
Why do we need a commercialization benchmark model?

- > Without realistic facts of commercialization performance, there is a risk of painting too bright a picture. Benchmarking can provide a reality check.
- > With benchmarking, one can formulate ambitious but realistic visions by comparing with best performers
- > Benchmarking also enables learning from the business conditions of best performing countries.

Commercialization benchmarking model in 5 steps:

- > Define and quantify economic outcome and the commercialization performance
- > Define relevant policy areas and select indicators on commercialization framework conditions
- > Identify critical policy areas for seizing the benefits of commercialization
- > Prioritizing between the policy areas – Identify weak policy areas by comparing policies in individual countries with best performers
- > Improve the business environment in weak policy areas by using peer reviews to learn from best performers

"FORA Benchmarking model perspective"



Discussion: What is the next step in the consortium?

- > **FORA could initiate the work by:**
 - > Identifying whether policy areas are covered by existing data or not?
 - > Developing surveys for collecting the areas not covered.
 - > Match the analysis design for collecting the areas not covered to the perceptions of carefully selected stakeholders (researchers, incubators, science parks and researchers with previous experience on this topic).

- > **We estimate that this will require:**
 - > one research analyst working full time for two months and a project leader working full time for one month.
 - > This will require **25.000 Euros**. 17000 for working hours and 8000 for travel expenses, external experts, and stay connected with interviewing stakeholders.

Discussion: What is the next step in the consortium?

> **What is the next step** in the consortium? Should we continue the work? Yes? Maybe?, Or definitely not?

> Thank you for listening..