

# Innovation Roads Ahead

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Sevilla, September 28, 2017

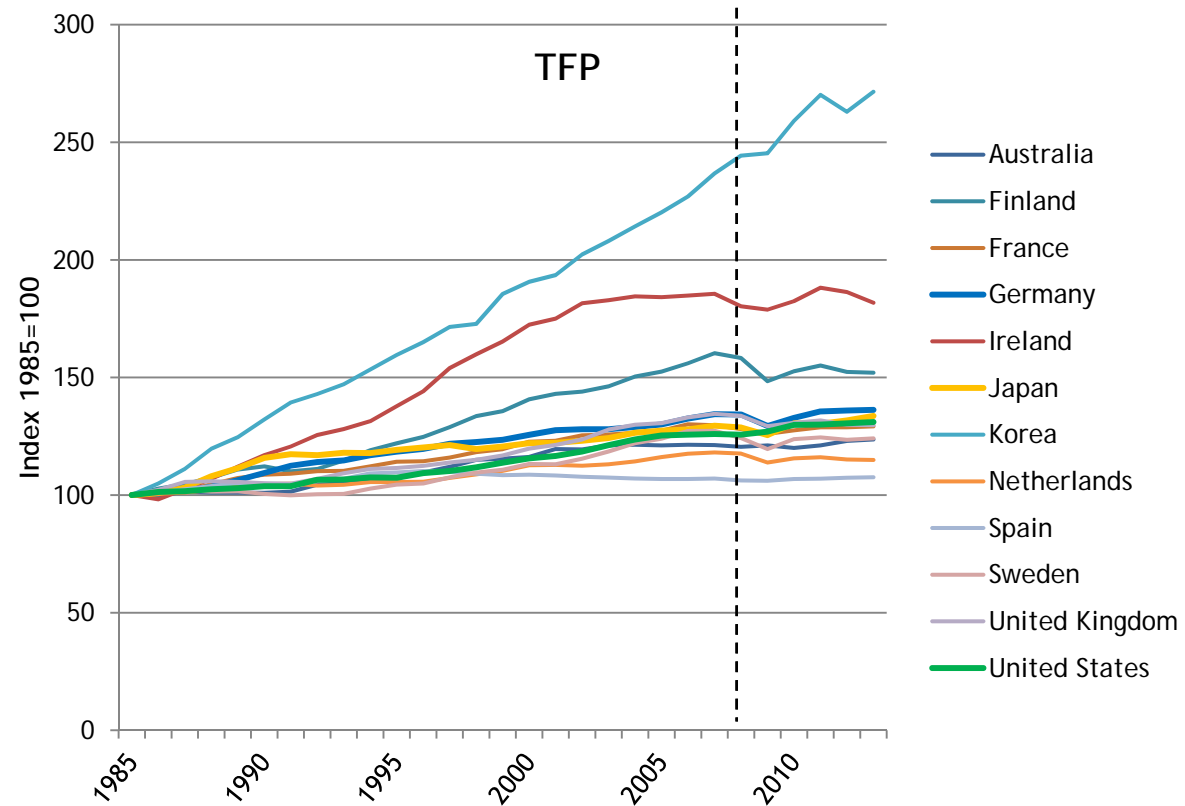


1. Where do we come from?
2. Where from do new innovation opportunities come?
3. What is / can be the role of state / policy herein?

# 1

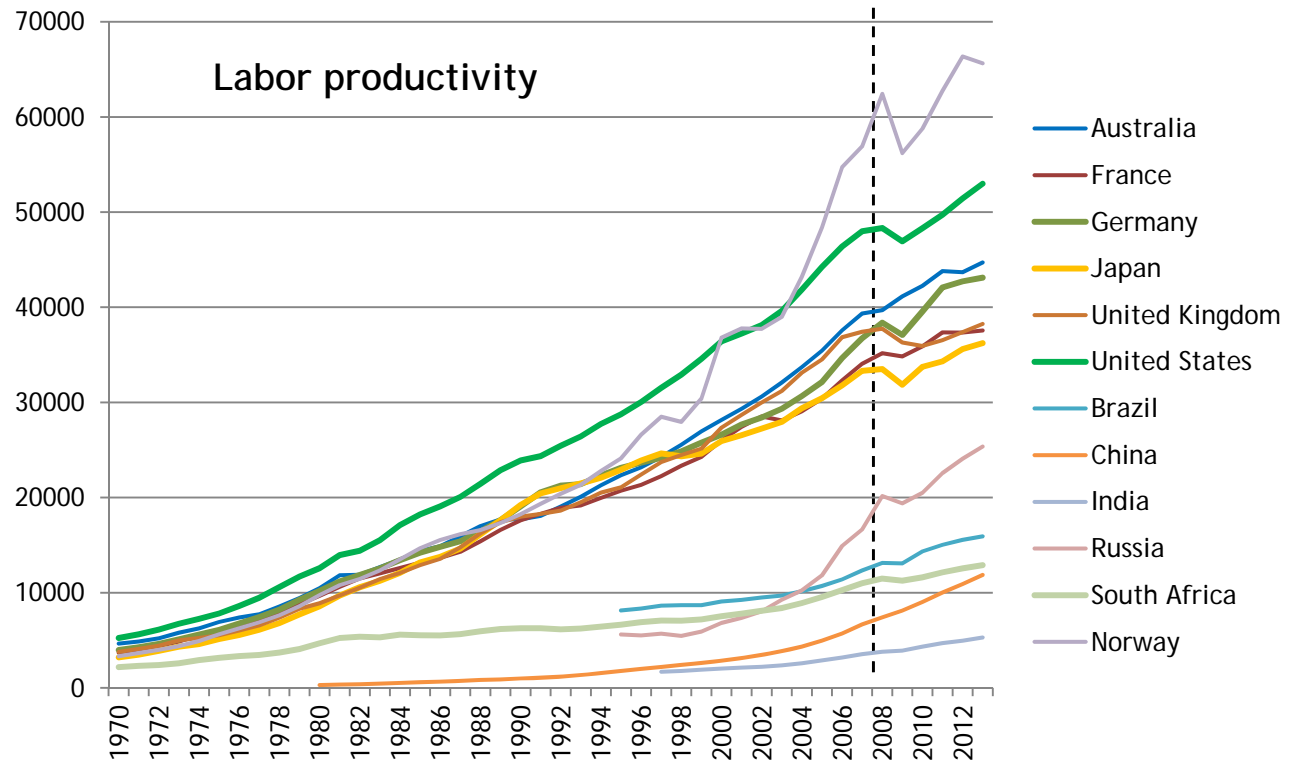
Where do we come from?

- TFP-Index: 1985=100
- TFP development is mainly positive
- Slight drop after the 2007/8 crisis



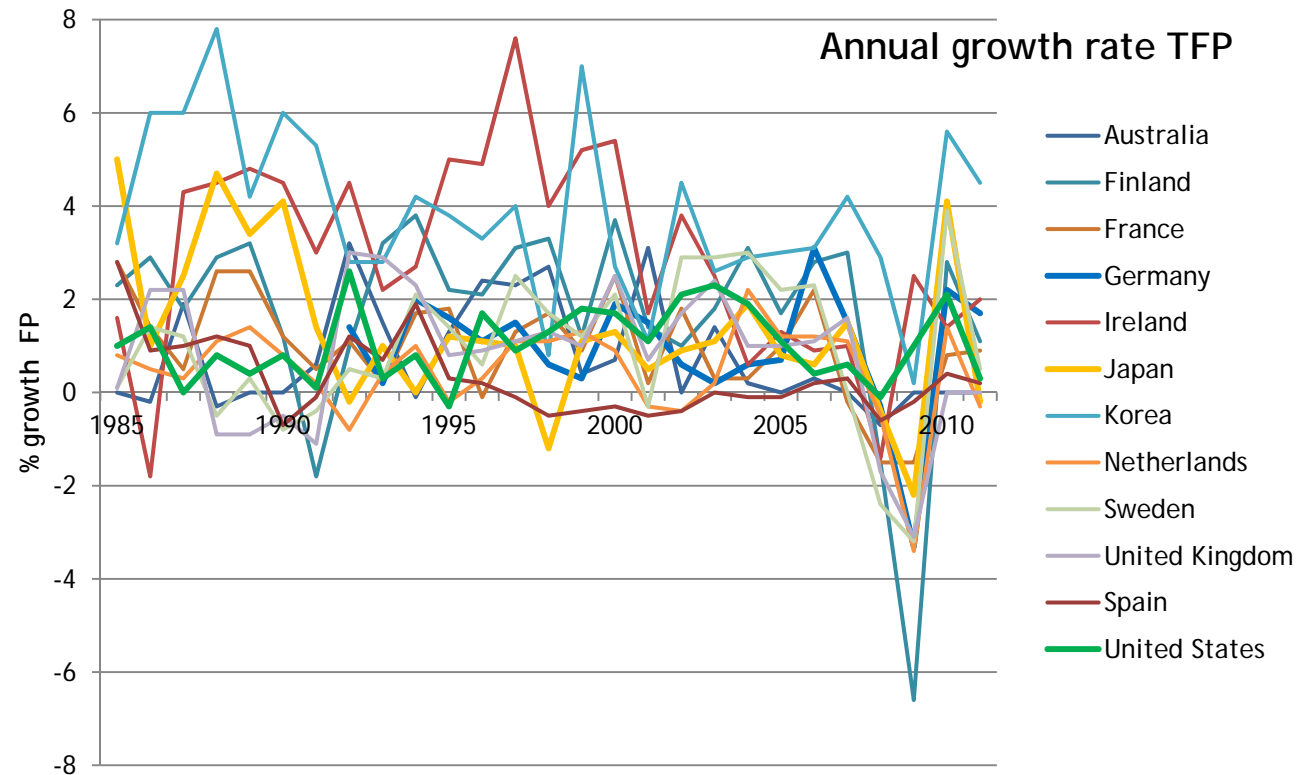
(OECD)

- Over time increasing levels
- 4 benchmarks among the technology leaders
- Slight drop in the aftermath of the 2007/8 crisis



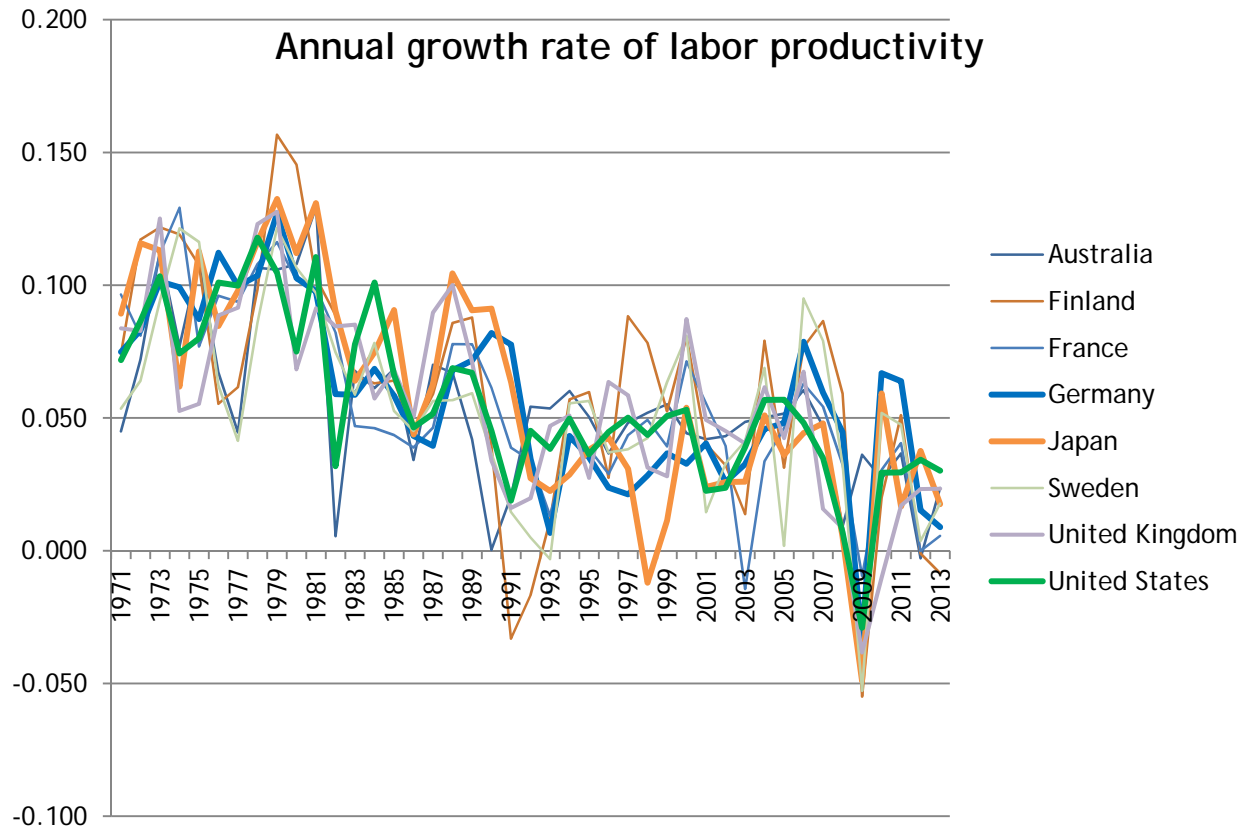
(OECD)

- Growth rate of TFP as indicator of technological change
- A slightly negative development (less for US and D)
- Drop in the aftermath of the 2008 financial crisis
- Slowdown of technological change?



(OECD)

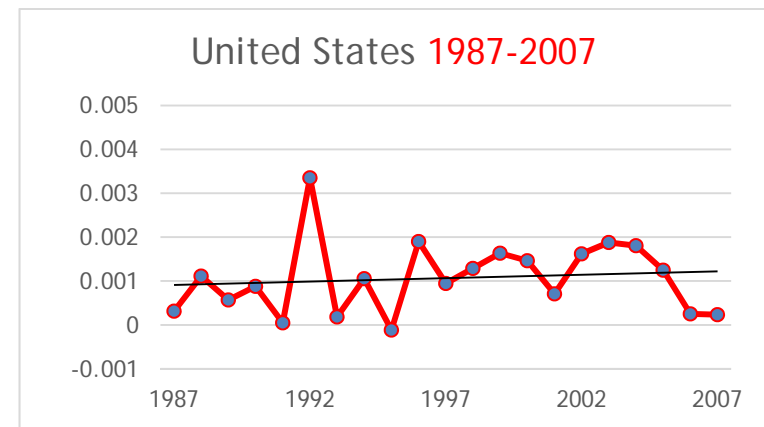
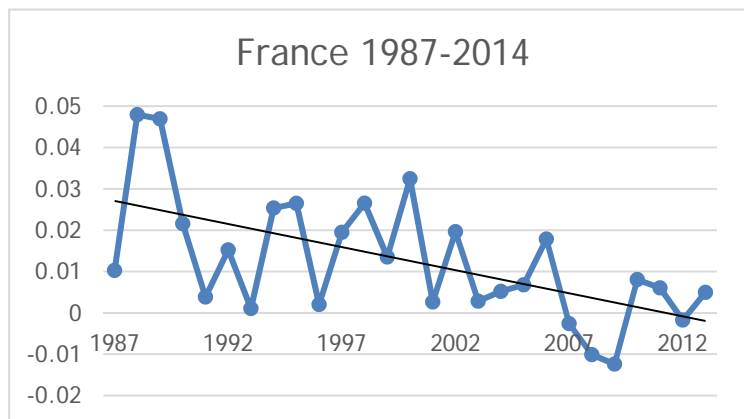
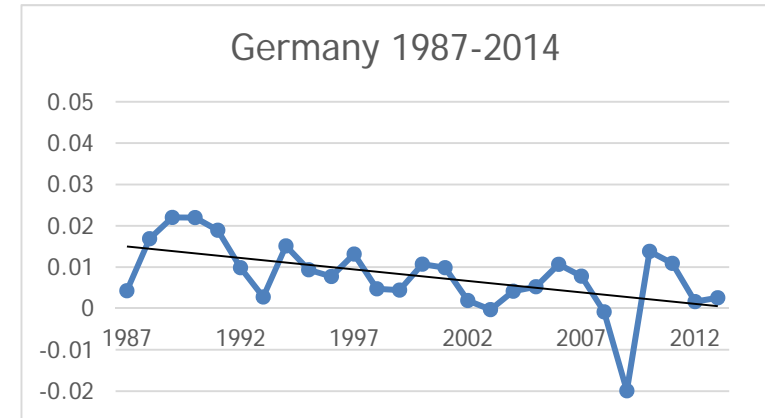
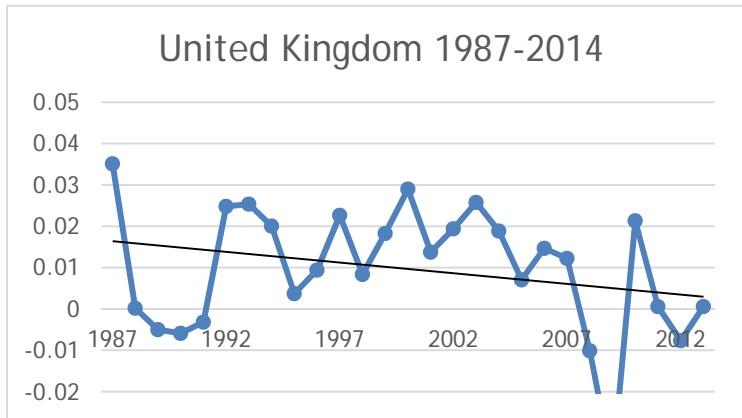
- Growth rate of LP as indicator of technological change
- A negative development
- Drastic drop in the aftermath of the 2008 financial crisis
- Slowdown of technological change?
- Potentials exploited?



(OECD)

$$\frac{\Delta TFP_t / TFP_t}{R_t}$$

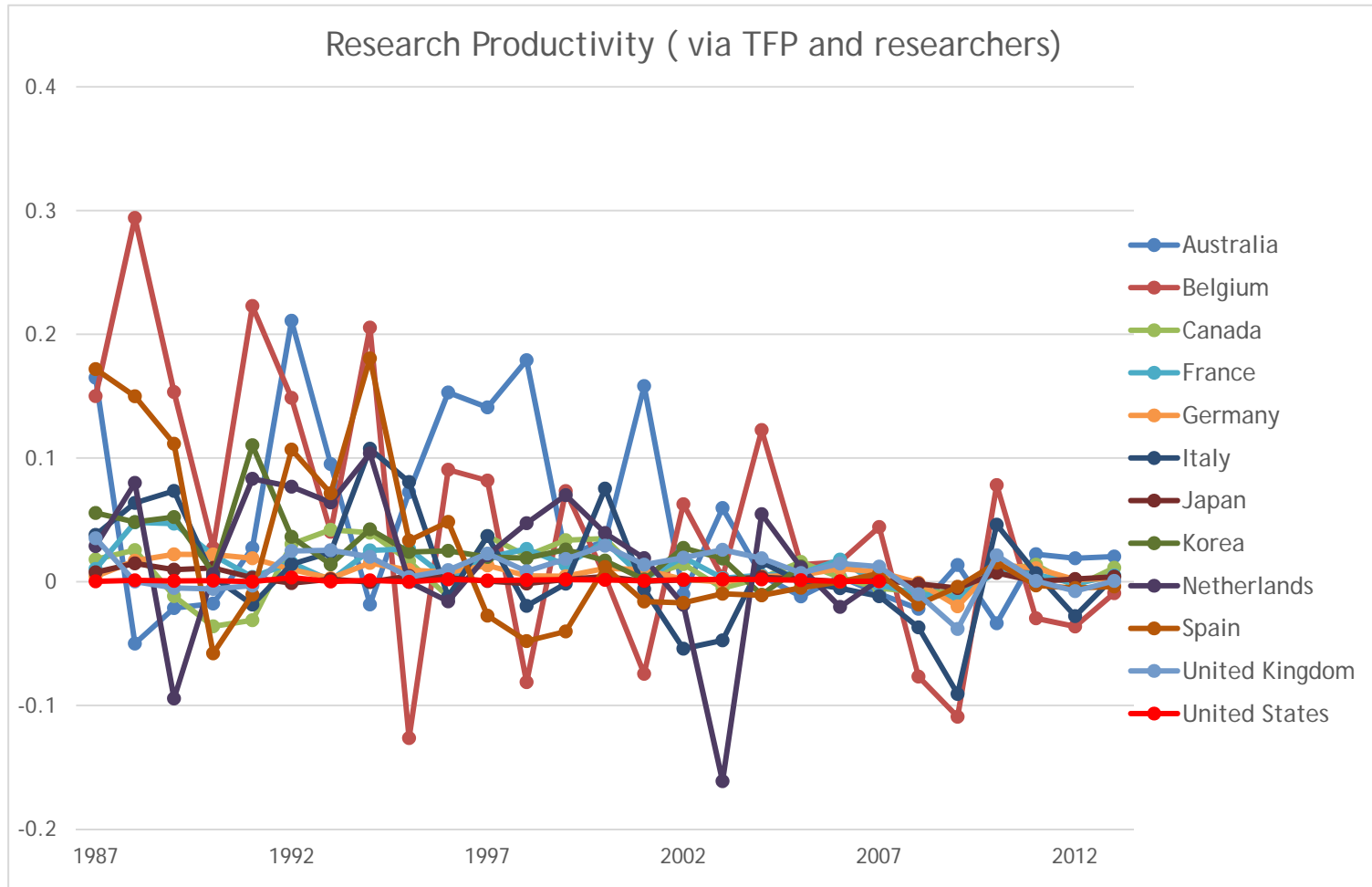
- Bloom et al 2017
- International
- Declining research productivity
- US rather constant



(Cantner, Prytkova, Vannuccini 2017)

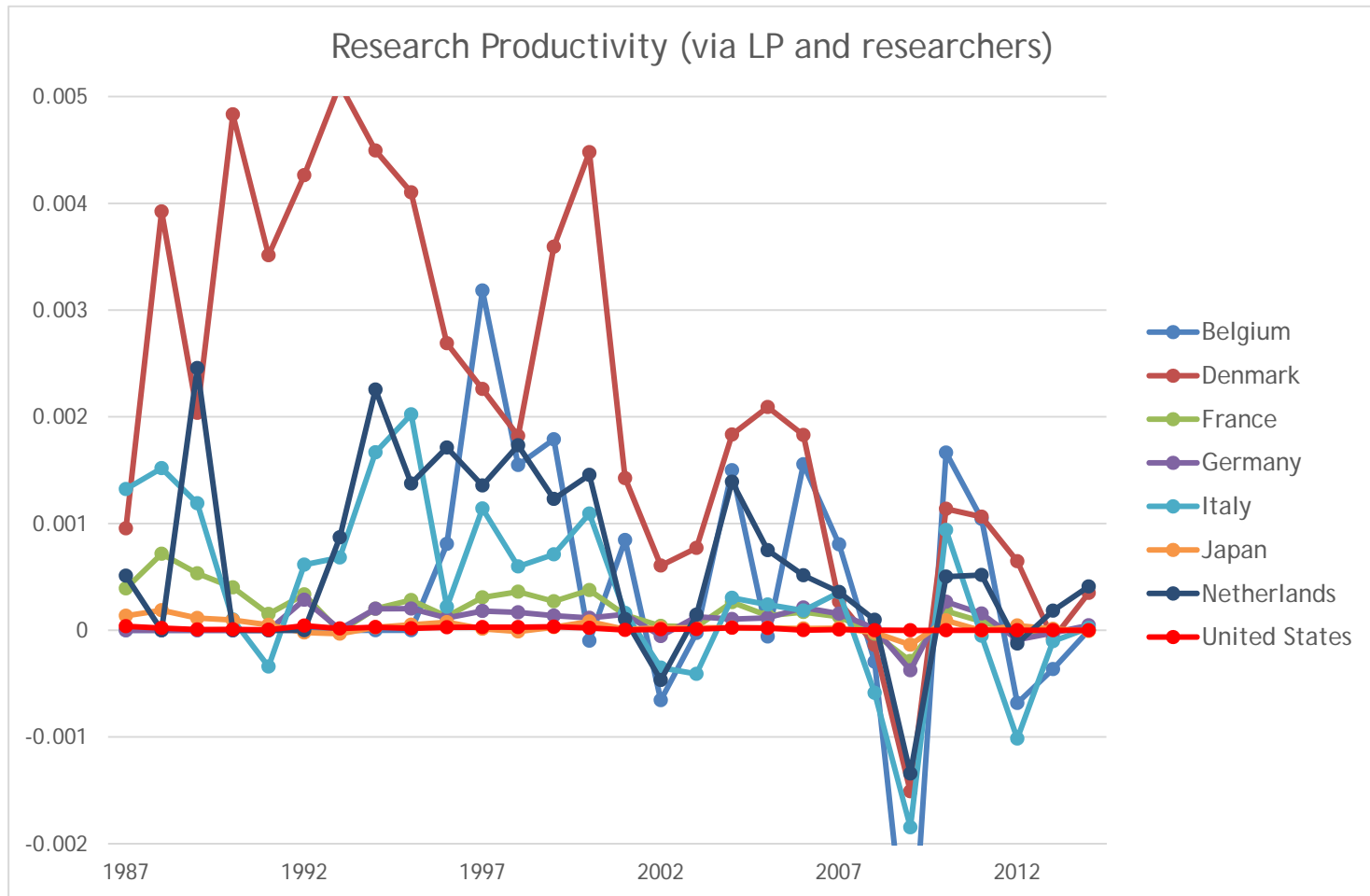


- International
- Declining research productivity
- US rather constant



(Cantner, Prytkova, Vannuccini 2017)

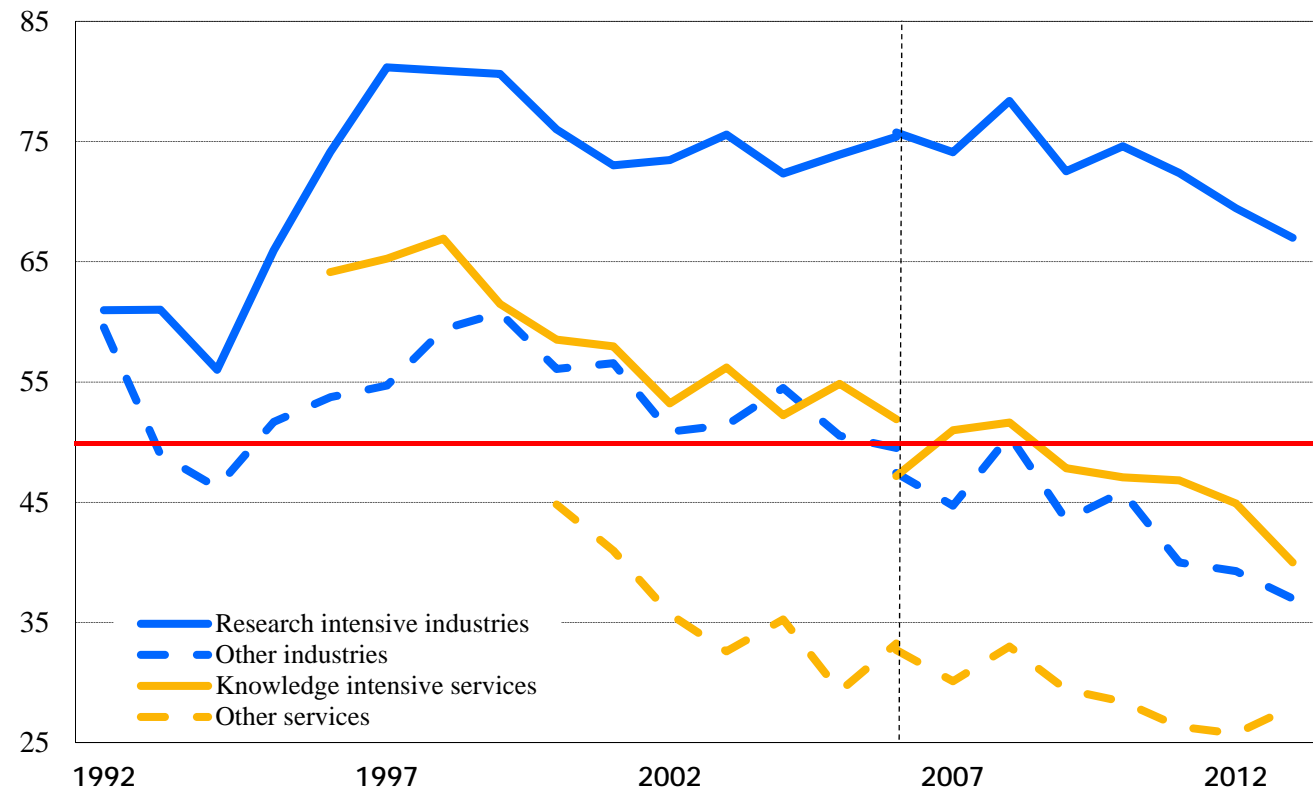
- International
- Declining LP idea productivity
- US rather constant



(Cantner, Prytkova, Vannuccini 2017)

- **Germany**
- Declining innovation activities in Germany
- Clear decline already before 2008
- and also after 2008 despite
  - prosperous economic development
  - easy credit conditions

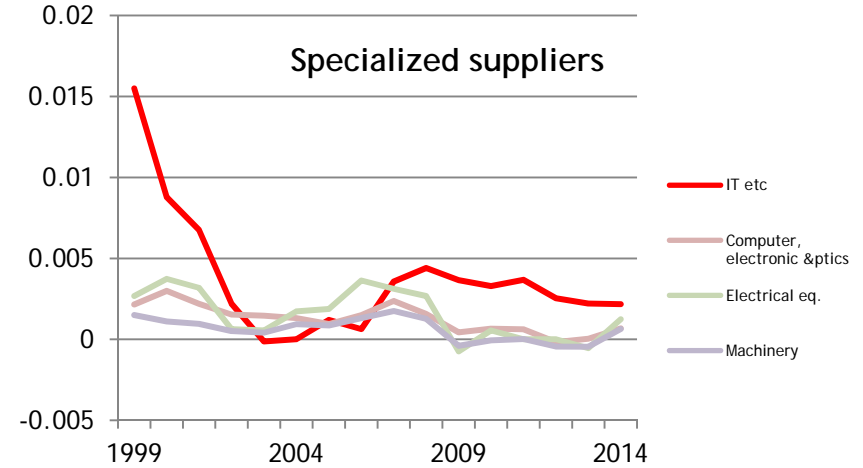
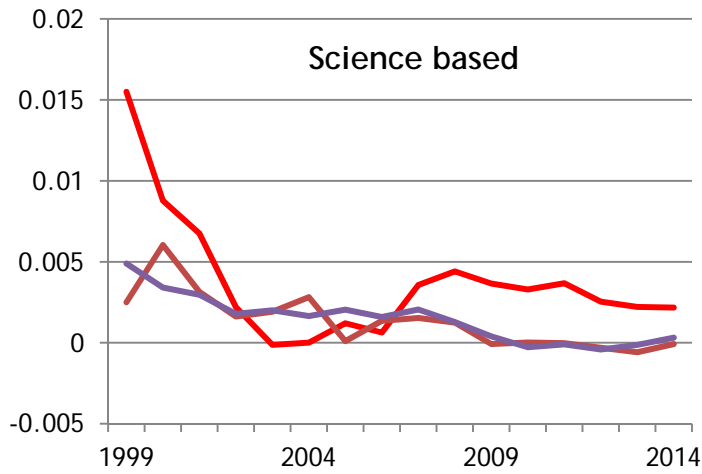
Share of innovative firms in all firms in %



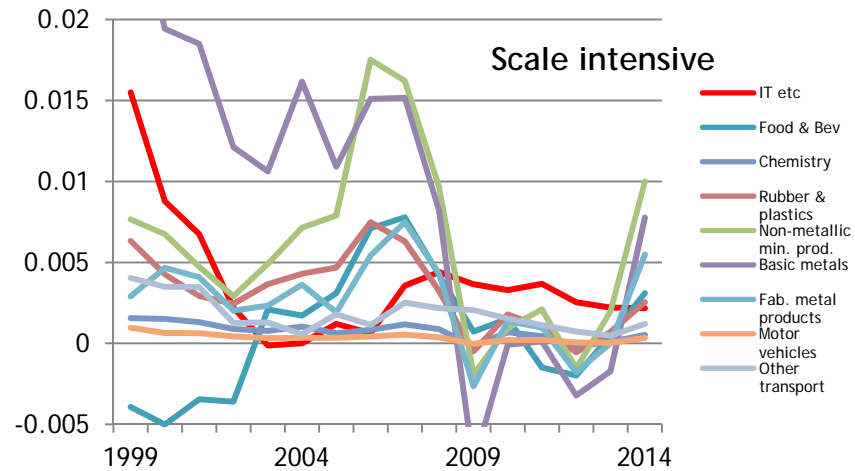
(MIP various years)

# 2

Where from do new innovation opportunities come?



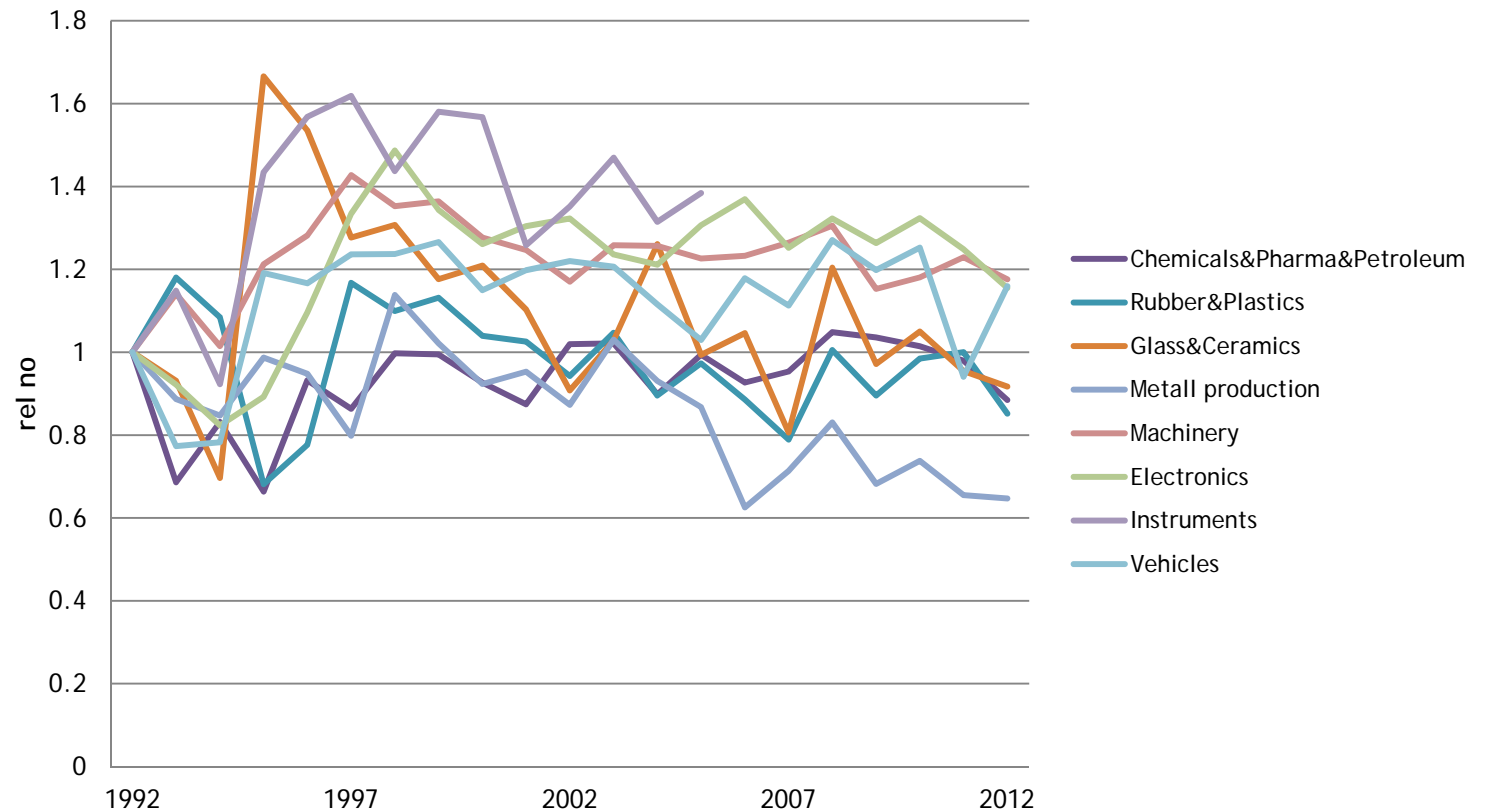
- Germany
- Declining innovation activities in Germany's manufacturing industries
- Exception IT



(Cantner, Prytkova, Vannuccini 2017)

No of innovative firm in manufacturing wrt base year

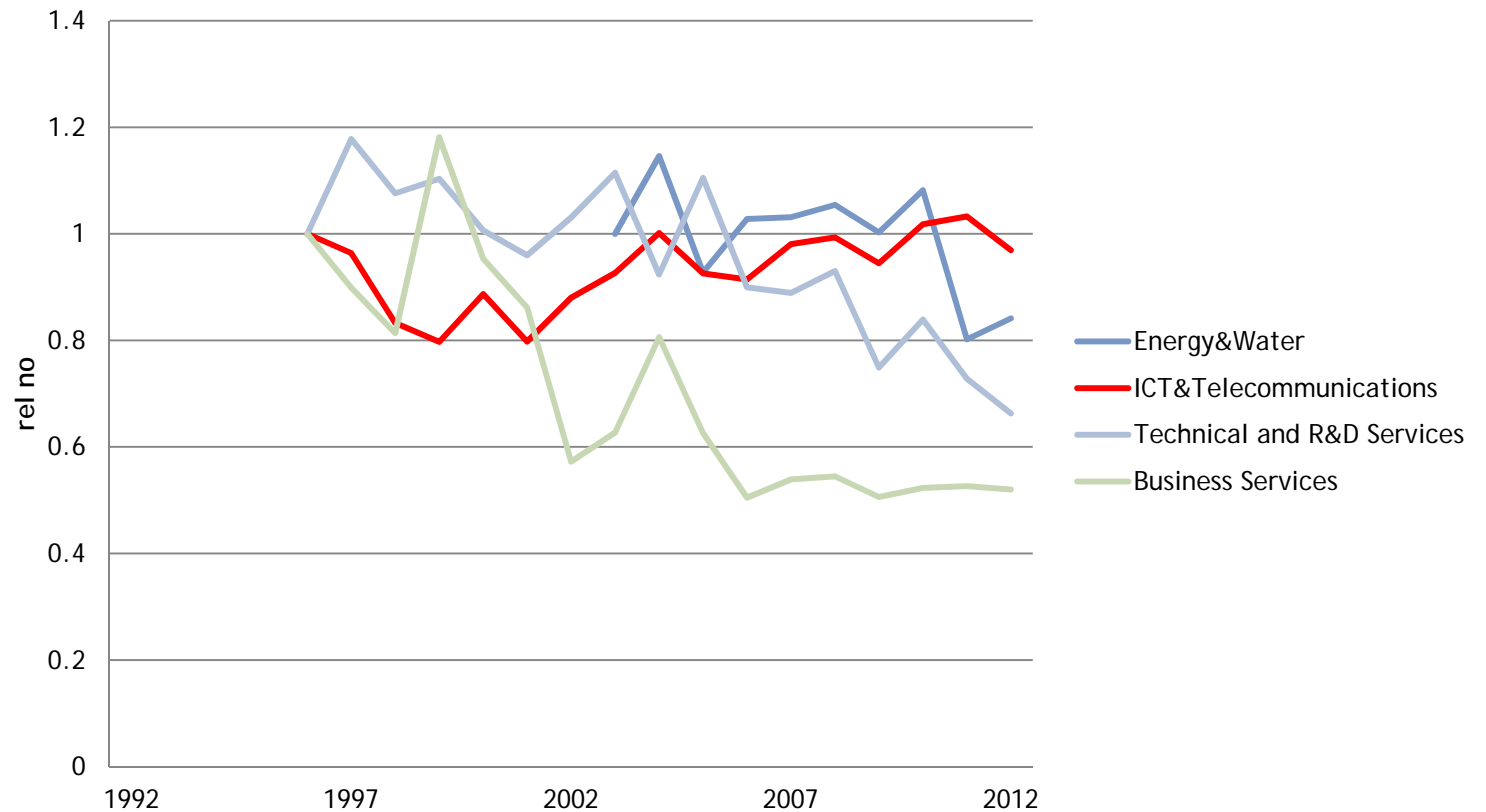
- Germany
- Declining innovator shares in Germany's manufacturing industries



(MIP various years)

No of innovative firm in services wrt base year

- **Germany**
- Declining innovation activities in Germany's service industries
- Exception: ICT and Telecommunications



(MIP various years)

## Grand Societal Challenges:

e.g. climate change, energy and environment, demography, inequality, health

### • EU

- Health, demographic change and wellbeing;
- Food security, sustainable agriculture and forestry, marine and maritime and inland water research, and the Bioeconomy;
- Secure, clean and efficient energy;
- Smart, green and integrated transport;
- Climate action, environment, resource efficiency and raw materials;
- Europe in a changing world - inclusive, innovative and reflective societies;
- Secure societies - protecting freedom and security of Europe and its citizens.

### • Policy Programs

- Germany: *High-Tech Strategy*
- USA: *Strategy for American Innovation*
- Japan: *The 5th Science and Technology Basic Plan 2016-2020*
- Korea: *Creative Economy*
- Sweden: *Smart Industry*
- UK: *Our plan for growth: science and innovation*
- France: *France Europe 2020*
- Canada: *Inclusive Innovation Agenda*



# 3

What is / can be the role of state / policy herein?



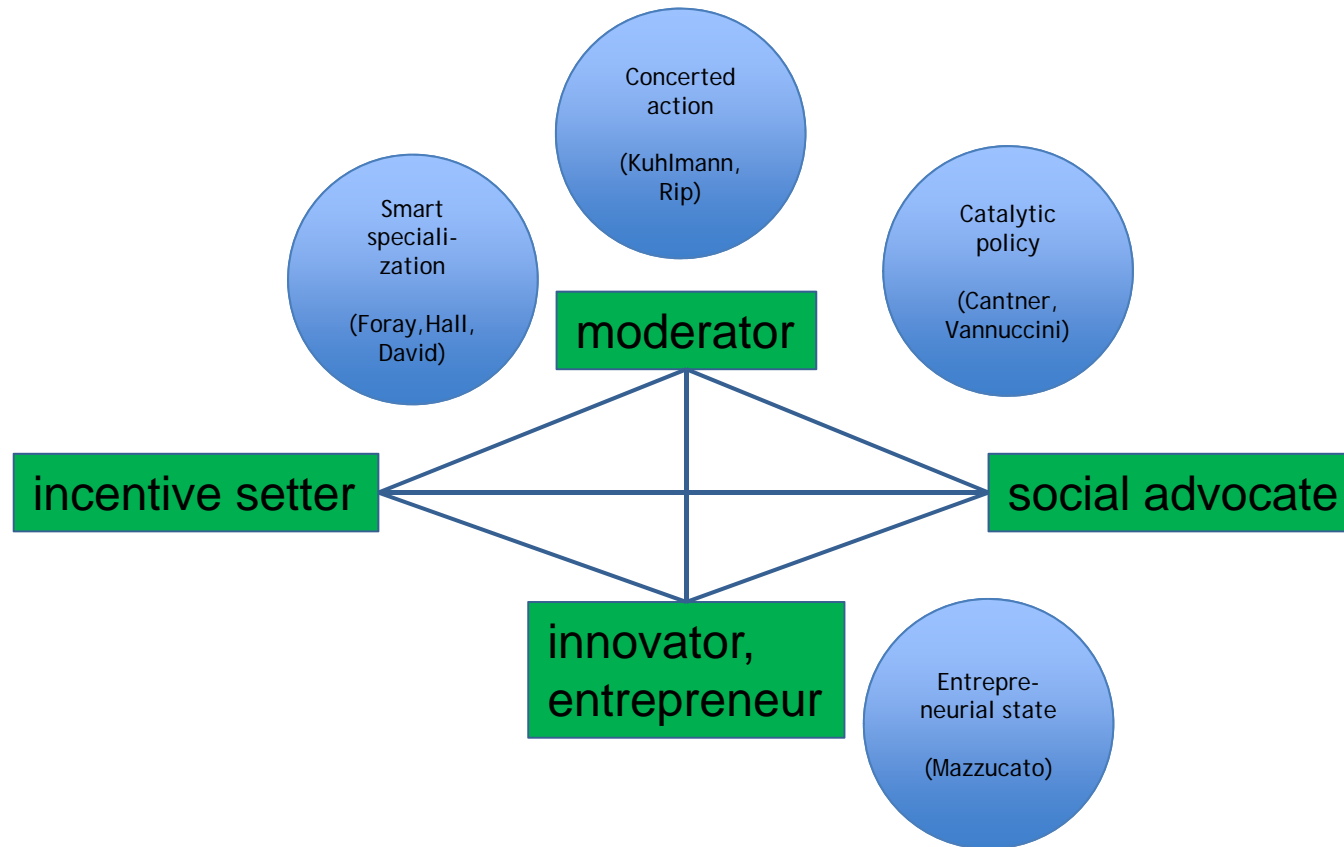


- Intervention in view of long-run failures such as
  - system lock-in and
  - intergenerational problems
  - and related Grand Societal Challenges
- When designing proper policy designs for redirecting innovation activities

Can we rely on the “repair-shop function” of the state?

or

Do we need a „New Role of State in Innovation“ ?

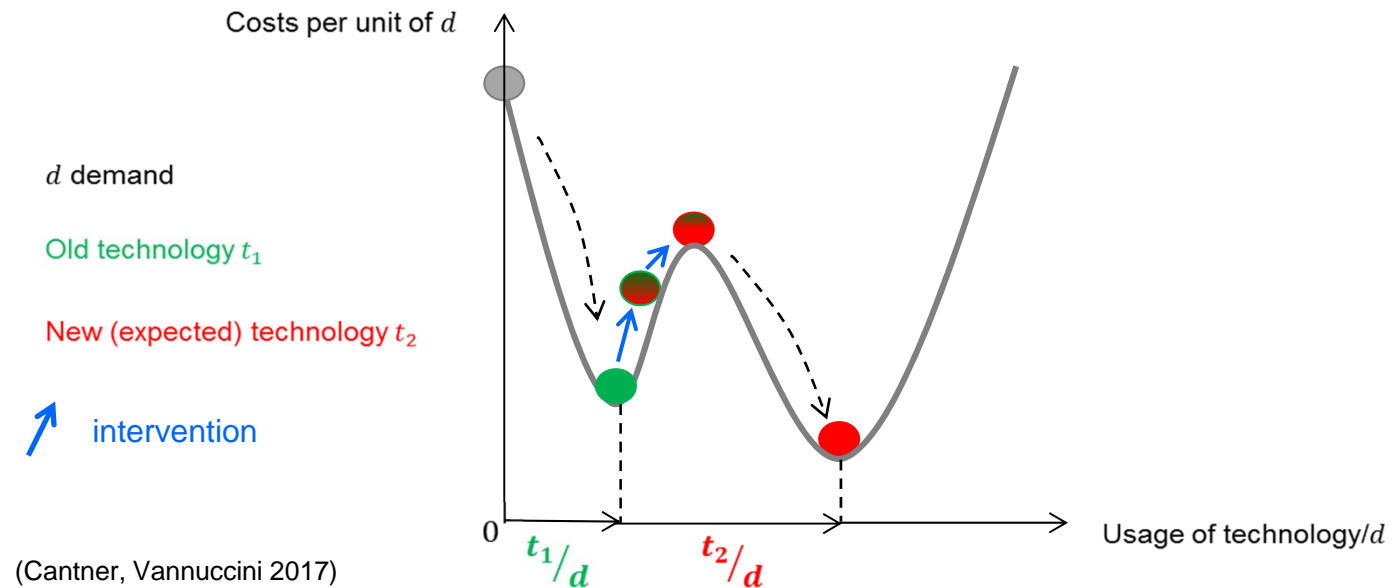


(Cantner, Fornahl, Kuhlmann 2017)

- **Obstacles to (redirect) innovation activities (in Germany)**
  - Innovation obstacles (German CIS 2014)
    1. High costs of investment
    2. **Uncertainty**
    3. Lack of human capital
    4. Lack of own financial resources
  - Diffusion obstacles (VDIVDE 2016)
    1. High costs of investment
    2. Lack of human capital
    3. Lack of own financial resources

- **Intervention wrt redirecting innovation activities**
  - Market/system **mechanism**:  
Correction of market/system failures
  - **Missing** Markets: State takes over production
  - **Not acceptable** market **outcomes**:  
*shut down* a *detrimental market* and *create* conditions for a *beneficial (market) solution* (justification from outside economics)

- Schumpeterian Catalytic Policy in opening new corridors is
  - Schumpeterian
  - Situation sensitive
  - Catalytic
  - Experimental
  - Wary
- Accommodated and finally substituted by traditional measures
  - direct and indirect
  - public procurement



## Conclusions for *Innovation Roads Ahead*

•  
More theory on the direction of innovative activities

•  
More empirics on the direction of innovative activities

•  
Carefully designed policy concepts on directed innovation for a highly interdependent world in transformation