BRINGING INDUSTRIAL DYNAMICS AT THE EUROPEAN LEVEL

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A NEW INDUSTRIAL POLICY FOR THE EUROPEAN UNION
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?
Productivity dynamics: the European and the German case

- Declining growth rates of labor productivity
- Potentials exploited?
- Declining growth rates of labor productivity
- Different EU areas
Innovation dynamics: the German case

- 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 %**

- **Research intensive industries**
- **Other industries**
- **Knowledge intensive services**
- **Other services**

- **1992**
- **1997**
- **2002**
- **2007**
- **2012**
What is / can be the role of policy?

Policy styles and their „times“

The new mission oriented policy
Policy styles and their „times“

- Changing styles, targets and means

Along Fier/Harhoff (2002)
The new mission oriented policy

- Changing styles, targets and means

Along Fier/Harhoff (2002)
• Theoretical foundations and viewpoints

• FAZ end of the 1980ies / early 1990ies
  o Weak innovation in the German economy! ➔ A problem of incentives or of competencies?
The new mission oriented policy

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)

Side effect: Industrial policy and (sustained) (international) competitiveness

<table>
<thead>
<tr>
<th>Date</th>
<th>Market Failure</th>
<th>System Failure</th>
<th>&quot;Long-Run&quot; Failure</th>
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<tbody>
<tr>
<td>1950</td>
<td>innovations as public and meritoric goods</td>
<td>incentive problem (knowledge as a public good)</td>
<td>lock-in problems</td>
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<td>1955</td>
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<td>private versus social returns</td>
<td>intergenerational problems</td>
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<td>1960</td>
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<td>uncertainty &amp; capital markets</td>
<td>aberrations</td>
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<td>1965</td>
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<td>large projects &amp; finances</td>
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<td>1970</td>
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<td>intermediation problems</td>
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<td>1975</td>
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<td>complementarity problems</td>
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<td>1980</td>
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<td>reciprocity problems</td>
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A new direction - how to get it right!

Germany’s High Tech Strategy

Catalytic policy

Two examples
Example for New Mission Policy: High Tech Strategy

- **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
The catalytic principle

- Costs per unit of $d$
- $d$ demand
- Old technology $t_1$
- New (expected) technology $t_2$
- Intervention

Diagram:
- Y-axis: Costs per unit of $d$
- X-axis: Usage of technology/$d$
- Points $t_1/d$ and $t_2/d$
From fossil to renewable energy technologies – a two-sided policy approach

Funding per year (in 1995 m)

<table>
<thead>
<tr>
<th>Year</th>
<th>Photovoltaic</th>
<th>Wind</th>
<th>Overall research funding</th>
<th>Individual research funding</th>
<th>Cooperative research funding</th>
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Case: Energy technologies
- Overcoming system lock-in
- Policy mix
- Transition to a new trajectory

Cantner/Graf/Hermann/Kalthaus (2015)
Entrepreneurial dimensions and the hint towards entrepreneurship policies

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)

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

Case: Alternative Technical Vehicles
- Policy focus on SME
- Transition to a new trajectory

Cantner/Dieckhoff (2015)
Conclusion
• Slow down of industrial dynamics & innovation activities in Europe

• Indicates exploited tech potentials, uncertainty and/or lock-in of potential innovators

• **New mission policy** ➔ flagging societal needs, inducing major technological changes

• *Germany’s High-Tech Strategy* as an example

• “Catalytic” policy ➔ enabling transition to a new trajectory

⇒ **Role model** for an European wide strategy
THANK YOU!