Promoting Structural Change Through Cluster Policies? 
A Comparison of Experiences From U.S. and German “Rustbelts”

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Seoul, June 30th, 2011

Cluster Policy: Yet Another Missed Boat for EG?

“Over the years, geographers have developed a disturbing – even dysfunctional – habit of missing out on important intellectual and politically significant debates, even those in which geographers would seem to have a major role to play.” (Dicken 2004, p. 5)

- Economic Geography (EG)  
  - Clusters as core competence: theoretical explanation, methods for cluster identification and analysis, measurement of cluster effects  
  - “policy distance” (e.g. Markusen 1999) and “not in charge” of policy analysis  
    (⇒ Political Science)

http://www.csri.de/Products/Research/Cluster/Cluster_DR.html (accessed 7 June 2011)  
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Seoul, June 30th, 2011
Comparative Cluster Policy Research

- **Diffusion** of cluster policies across time and space
- Forces of policy **convergence**
  - globalization, locational competition, shift towards knowledge-based economy
  - Various channels of **policy transfer**
- Sources of **variety** and **divergence** necessitate **adaptation**
  - structural and institutional differences between nations and regions
  - path-dependent learning by doing in policy and practice

⇒ Scope for **policy learning and transfer**
- **Varieties of Capitalism** approach captures institutional differences at the national level
  - Combined with **multilevel governance** perspective to account for subnational variation (cf. Callaghan 2010)

Outline

1) Varieties of Capitalism and Cluster Policy

2) Methodology and Case Studies

3) North Rhine-Westphalia

4) Pennsylvania

5) Comparison and Conclusion
## Varieties of Capitalism

<table>
<thead>
<tr>
<th></th>
<th>Liberal Market Economy (LME)</th>
<th>Co-ordinated Market Economy (CME)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Examples</strong></td>
<td>USA, Canada, Great Britain, Ireland</td>
<td>Germany, Austria (Netherlands, Scandinavia)</td>
</tr>
<tr>
<td><strong>Coordination</strong></td>
<td>• markets &amp; competition</td>
<td>• negotiation, consensus</td>
</tr>
<tr>
<td></td>
<td>• individualistic</td>
<td>• long-term co-operations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• collective actors (chambers, associations, unions)</td>
</tr>
<tr>
<td><strong>Innovation system</strong></td>
<td>• fosters radical innovation</td>
<td>• fosters incremental innovation and diffusion</td>
</tr>
<tr>
<td></td>
<td>• cutting edge technologies</td>
<td>• advanced engineering</td>
</tr>
<tr>
<td><strong>Business system</strong></td>
<td>• entrepreneurial</td>
<td>• integration of ownership and management</td>
</tr>
<tr>
<td></td>
<td>• disconnection of ownership and management</td>
<td>• capital market loan based</td>
</tr>
<tr>
<td></td>
<td>• large, fluid capitals &amp; VC</td>
<td>• banking houses risk-averse</td>
</tr>
<tr>
<td><strong>Educational system</strong></td>
<td>• polarized</td>
<td>• relatively homogeneous</td>
</tr>
<tr>
<td></td>
<td>• Individual skills ⇒ high mobility</td>
<td>• knowledge specific to jobs and organizations ⇒ long-term employment</td>
</tr>
<tr>
<td><strong>Regional development</strong></td>
<td>• exogenous (attraction, export)</td>
<td>• endogenous (formation, growth, networking)</td>
</tr>
</tbody>
</table>


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## Clusters, Cluster Initiatives and Cluster Policy

- **Cluster** = geographical concentration of
  - interconnected companies
  - specialized suppliers
  - service providers
  - firms in related industries
  - associated institutions (e.g. universities, standard agencies, trade associations)
  in particular fields that compete but also cooperate (Porter 1998, p. 197 f.)

**Cluster Initiative** = an organised effort to increase the growth and competitiveness of a cluster within a region, involving cluster firms, government and/or the research community (Sölvell et al. 2003, p. 31)

**Regional Cluster Policy** = all efforts of government to develop and support clusters (in a particular region) (Hospers/Beugelsdijk 2002, p. 382)

- Industrial, structural, technology or innovation policy promoting regional specialisation
- Public efforts to develop concentrations of industry or network structures into clusters, or to promote existing clusters (cf. Bruch-Kriemlein/Hochmuth 2000, p. 69 f.)
Emergence of Cluster Policy

Cluster Policy and Varieties of Capitalism

Liberal Market Economies
- More CIs initiated by companies
- More focused on export growth

Coordinated Market Economies
- Stronger role of government in CIs
- More national cluster policies
- More focused on upgrading innovation
- More CI staff
- More trust across groups

Global Cluster Initiative Survey (GCIS II), Ketels et al. 2006, p. 22

1) Hall/Soskice 2001
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Urban and Regional Economics

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Case Study Regions: West Germany

- Three federal states in West Germany
  - North Rhine-Westphalia ~ mature industries facing structural change
  - Bavaria ~ late industrialisation, high-tech
  - Lower Saxony ~ ‘grey mass’ region

- Regional typology ⇒ structural, institutional & political variance

- Seven sub-regional cases

- 110 semi-structured face-to-face interviews with 134 practitioners, observers & consultants
  (2006/2007)
Basic Data: NRW and Dortmund vs. Germany

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Germany</th>
<th>NRW</th>
<th>Dortmund</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (m, 2007)</td>
<td>82.3</td>
<td>18.0</td>
<td>0.588</td>
</tr>
<tr>
<td>CAGR (1998-2007)</td>
<td>0.03%</td>
<td>0.03%</td>
<td>-0.14%</td>
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<tr>
<td>Employment (m, 2007)</td>
<td>21.74</td>
<td>5.67</td>
<td>0.189</td>
</tr>
<tr>
<td>change (1998-2007)</td>
<td>0.21%</td>
<td>-0.14%</td>
<td>-0.33%</td>
</tr>
<tr>
<td>mfg employment (share, 1996)</td>
<td>22%</td>
<td>24%</td>
<td>n.a.</td>
</tr>
<tr>
<td>mfg employment (share, 2005)</td>
<td>19%</td>
<td>19%</td>
<td>n.a.</td>
</tr>
<tr>
<td>Unemployment rate (2007)</td>
<td>10.1%</td>
<td>10.6%</td>
<td>15.8%</td>
</tr>
<tr>
<td>GDP per capita 2005 (€)</td>
<td>27,175</td>
<td>26,968</td>
<td>28,795</td>
</tr>
<tr>
<td>Nominal GDP change, 1995-2005</td>
<td>1.84%</td>
<td>1.41%</td>
<td>2.10%</td>
</tr>
<tr>
<td>GERD/GDP, 2005</td>
<td>2.49%</td>
<td>1.80%</td>
<td>n.a.</td>
</tr>
<tr>
<td>Patent applications per 10,000 inhabitants</td>
<td>58</td>
<td>45</td>
<td>n.a.</td>
</tr>
</tbody>
</table>

Data sources: see Kiese 2008, p. 80; NIW-Regionaldatenbank
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Case Study Regions in the U.S.

- 3 states + 2 sub-regional cases each
- 2007/2008: 87 interviews with practitioners, advisors and observers
- Comparison of high-tech states Bavaria & North Carolina (cf Sternberg et al. 2010)

Stockinger 2010, p. 66 (Cartography: Stephan Pohl)
Basic Data: Pennsylvania vs. USA

<table>
<thead>
<tr>
<th>Indicator</th>
<th>USA</th>
<th>Pennsylvania</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (m, 2007)</td>
<td>301.3</td>
<td>12.4</td>
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<tr>
<td>change (2000-2007)</td>
<td>7.2%</td>
<td>1.2%</td>
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<tr>
<td>Workforce (m, 2007)</td>
<td>152.2</td>
<td>6.3</td>
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<tr>
<td>change (2000-2007)</td>
<td>9.6%</td>
<td>2.9%</td>
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<tr>
<td>Employment (m, 2007)</td>
<td>146.1</td>
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<td>change (2000-2007)</td>
<td>6.7%</td>
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<td>mfg employment (share, 2007)</td>
<td>15.2%</td>
<td>15.7%</td>
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<tr>
<td>mfg employment (change, 2000-2007)</td>
<td>-9.9%</td>
<td>-16.7%</td>
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<tr>
<td>Unemployment rate (2007)</td>
<td>4.6%</td>
<td>4.4%</td>
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<tr>
<td>Number of unemployed (change, 2000-2007)</td>
<td>24.5%</td>
<td>7.4%</td>
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<tr>
<td>GDP per capita 2007 (US$)</td>
<td>37,966</td>
<td>35,394</td>
</tr>
<tr>
<td>Real GDP change, 2000-2007</td>
<td>6.8%</td>
<td>11.2%</td>
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<tr>
<td>GERD/GDP, 2004</td>
<td>2.4%</td>
<td>2.3%</td>
</tr>
</tbody>
</table>

Data sources: see Stockinger 2010, p. 67

NRW vs. Pennsylvania: Research Methodology

- Review of literature and published/unpublished policy documents
- Semi-standardized interviews with 89 cluster policy experts

<table>
<thead>
<tr>
<th>Region</th>
<th>Consultants</th>
<th>Practitioners</th>
<th>Observers</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Level Germany</td>
<td>1</td>
<td>4</td>
<td>0</td>
<td>5</td>
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<tr>
<td>State Policy NRW</td>
<td>2</td>
<td>3</td>
<td>11</td>
<td>16</td>
</tr>
<tr>
<td>Dortmund</td>
<td>-</td>
<td>6</td>
<td>13</td>
<td>19</td>
</tr>
<tr>
<td>Wuppertal-Solingen-Remscheid</td>
<td>-</td>
<td>5</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>3</strong></td>
<td><strong>18</strong></td>
<td><strong>28</strong></td>
<td><strong>49</strong></td>
</tr>
<tr>
<td>U.S. Federal Government Policy</td>
<td>5</td>
<td>1</td>
<td>-</td>
<td>6</td>
</tr>
<tr>
<td>State Policy Pennsylvania</td>
<td>3</td>
<td>11</td>
<td>-</td>
<td>14</td>
</tr>
<tr>
<td>Pittsburgh</td>
<td>1</td>
<td>7</td>
<td>-</td>
<td>8</td>
</tr>
<tr>
<td>Philadelphia</td>
<td>0</td>
<td>12</td>
<td>-</td>
<td>12</td>
</tr>
<tr>
<td><strong>Subtotal</strong></td>
<td><strong>9</strong></td>
<td><strong>31</strong></td>
<td>-</td>
<td><strong>40</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>49</strong></td>
<td><strong>28</strong></td>
<td><strong>89</strong></td>
</tr>
</tbody>
</table>

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Supranational Level

European Union

- Fragmentation ⇒ too many clusters, lacking critical mass to be globally competitive
  ⇒ Cluster mapping, networking, dissemination of best practice
- **Cohesion Policy** (2007-2013 funding 1: 308 billion €)
  - Objective 1: Convergence through support for lagging regions (81.5%)
  - Objective 2: Regional competitiveness and employment in all other regions (16%)
  ⇒ Top-down diffusion of cluster policies

1) In 2004 prices; European Commission 2006, p. 3
National Level

German Federal Government

- Perceived weaknesses in breakthrough innovation and the commercialization of science
  - Regional networks of science and industry seen as solution ⇒ clusters
- Challenge to strengthen economic and innovative potential in the new Länder
- Federalism & subsidiarity ⇒ cluster contests as soft incentives
  - For new Länder: InnoRegio and spin-offs from 1999 (cf. Eickelpaas/Fritsch 2005)
  - Generic: Leading-edge cluster contest (Spitzencluster) from 2007

State Level: North Rhine-Westphalia

- 1958 Coal mining crisis
- 1961 First university established at Bochum
- 1968-73 Entwicklungsprogramm Ruhr (infrastructure development)
- 1970 Nordrhein-Westfalen-Programm (until 1975)
- 1974 Crisis of iron and steel industry
- 1980-84 Aktionsprogramm Ruhr (infrastructure, technology transfer)
- 1987-91 Establishment of regionalised structural policy
- 1993 Pilot network programme PROFIS combining structural policy for industries and regions ⇒ 35 projects until 2000
- 1996 Definition of target industries for the Ruhr Area
- 2000-02 Clement elected as Minister President: Ruhr Pact defining twelve fields of competence for Ruhr Area
- 2004 Transfer of fields of competence policy to strategic fields of action for NRW as a whole
- 2005 Change in government, evaluation and concentration on fewer clusters announced
- 2006 Interministerial innovation strategy
- 2007 Objective-2 contests for 16 pre-defined NRW Clusters + open RegioCluster contest

New institutions: metropol ruhr GmbH (municipalities), Initiative Zukunft Ruhr (business-led)

Cluster Policy in NRW

2000-2005: 12 fields of competence for the Ruhr Area
- Inflated from 6 to 12 in political bargaining process
- Used for the allocation of EU structural funds
- Diffuse and often exaggerated expectations
- Most fields lacking critical mass, some based on wishful thinking (cf. Enright 2003, p. 104)

⇒ Failed to develop a new profile for the Ruhr Area

Cluster Policy since 2005
- New government aimed at focusing their predecessors’ policy
- 16 NRW Clusters defined top-down as state-wide networks of firms and research organizations
- Open RegioCluster contest to discover and support promising cluster potential outside the mainstream industries and regions
- 2007-2013: 635.5 million € of EU Objective 2 funding + same amount in co-funding by the Land
- Competitive selection of projects for funding
- Shift in emphasis from structural policy to innovation policy

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16 NRW Clusters

- Competition between ministries led to duplication of clusters
  - Health services vs. medical research
  - Energy supply vs. energy research
- 16 cluster managers, supported by a central cluster office for research, training and communication
- 52 Objective 2 funding contests in three rounds, including 32 within the NRW clusters
- 1st round led to 1,514 applications and 422 funding awards (2007-2008)
- Monitoring: All clusters established a management structure and developed strategies & instruments to improve triple-helix co-operation
- State government demands cross-cluster innovation, e.g. for resource and energy efficiency

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RegioCluster

• More localized and **smaller clusters** outside the 16 NRW clusters
• Support for network formation, management, events & initiatives; concept development etc.

⇒ **Bottom-up**, continues **structural policy** tradition

• 2007-2010: 21 projects awarded in two rounds, mainly traditional industries outside the core regions

<table>
<thead>
<tr>
<th>Round Project</th>
<th>Industry</th>
<th>Region</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 MUST Cluster Luft und Raumfahrt</td>
<td>Aerospace</td>
<td>Cologne/Bonn</td>
</tr>
<tr>
<td>1 Kompetenzzentrum GebäudeTechnik Südwestfalen</td>
<td>Building services engineering</td>
<td>Southern Westphalia</td>
</tr>
<tr>
<td>1 Regio-Cluster für Luft und Raumfahrt</td>
<td>Environmental technologies</td>
<td>Eastern Westphalia-Lippe</td>
</tr>
<tr>
<td>1 Landesinitiative NRW</td>
<td>Food processing</td>
<td>Lower Rhine</td>
</tr>
<tr>
<td>1 Zukunft Hochschule - Zukunftstechnologien</td>
<td>Furniture</td>
<td>Eastern Westphalia-Lippe</td>
</tr>
<tr>
<td>1 InvestFokus - Regionale Forchungs- und Innovationszentren</td>
<td>Knowledge management, e-learning</td>
<td>Southern Westphalia</td>
</tr>
<tr>
<td>1 Innovationstechnologie</td>
<td>Logistics</td>
<td>Wuppertal-Solingen-Remscheid</td>
</tr>
<tr>
<td>1 Innovationstechnologie</td>
<td>Metal processing</td>
<td>Wuppertal-Solingen-Remscheid</td>
</tr>
<tr>
<td>1 Innovationscluster Innovativ</td>
<td>Textiles &amp; Apparel</td>
<td>Aachen/Lower Rhine/Münsterland</td>
</tr>
<tr>
<td>1 GreenIT NRW</td>
<td>Wood processing</td>
<td>Southern Westphalia</td>
</tr>
<tr>
<td>2 Cluster „Kraftwerk &amp; Brücken“</td>
<td>Paper processing</td>
<td>Aachen</td>
</tr>
<tr>
<td>2 Cluster „Clusters, Sichten &amp; Brücken“</td>
<td>Paper processing</td>
<td>Southern Westphalia</td>
</tr>
<tr>
<td>2 Cluster „Hochschule und Technologiepark”</td>
<td>Process engineering</td>
<td>Hauzenberg-Woerthepark</td>
</tr>
<tr>
<td>2 Cluster „Kraftwerk &amp; Brücken“</td>
<td>Wood processing</td>
<td>Southern Westphalia</td>
</tr>
<tr>
<td>2 Cluster „Kraftwerk &amp; Brücken“</td>
<td>Wood processing</td>
<td>Southern Westphalia</td>
</tr>
</tbody>
</table>

Local Level: Dortmund

• 1970-2000 complete erosion of coalmining, steel and breweries ⇒ 70,000 jobs lost
• Structural decline fostered coalition-building ("Dortmund consensus") and swift reactions, e.g.
  • Technical University (*1968*)
  • Innovation Center and Technology Park (*1985*)
• 1997: Steelmaker ThyssenKrupp announced closure of its steel mill and faced pressure to create alternative employment ⇒ funded cluster concept by McKinsey & Co.
• 2000: **dortmund-project** started with a vision to create 70,000 jobs within 10 years through **focus industries**
  • Software development and electronic commerce
  • Microsystems technology
  • Logistics
  • Later: Biomedical industry added
  • Activities: Industries, human capital, site development & revitalization ⇒ strategic urban planning (Ziesemer 2004)
Phoenix West: Cluster Policy for Urban Revitalization

- New 100 hectare technology park on former steel mill site
- € 50 m MST.factory provides start-up infrastructure with cleanrooms

Photos: dortmund-project 2007, S. 26; Kiese et al. 2007

Start-up Contests Improved Entrepreneurial Climate

- “start2grow” start-up contests yielded the formation of 515 new firms
- 235 located in Dortmund (45.6%)
- 229 in focus industries IT & MST (44.5%)

1) Newly formed firms, relocations and affiliates per 10,000 inhabitants
Stadt Dortmund 2009, S. 5
dortmund-project: Assessment

Achievements

- **Employment** in focus industries increased by 6,640 until 2004
- **Catalyst** in long-term and radical structural change, building on previous achievements (University, technology park, consensus)
- **Marketing** efforts helped raise Dortmund’s profile
- **LED professionalisation** (esp. strategy & specialist know-how in incubators and start-up contests) ⇒ attraction of EU and NRW funding, e.g. MST.factory
  ⇒ **Organizational capacity**
  ⇒ Inspiration for other regions and NRW government

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National Level: USA

- **Liberal market economy** based on individualism and competition
  - Skepticism against state interventions
  - Trust in markets
  - State focusing on conducive macroeconomic conditions
- **Rationale**
  - Strengths in High-tech industries and breakthrough innovation
  - High level of venture capital to support the commercialization of new knowledge
  - High spatial & sectoral mobility of labor
  - Economic development activities focus on **location marketing** and **investment attraction**
  - Cluster concept = response to locational competition

**National Level: USA**

- **Public cluster policy?**
  - EDA, NSF and NIST grants can exert **indirect influence** on regional cluster policies
  - **No** strategy for **direct support** or regional cluster initiatives (Porter 2008, p. 41)
- **Direct influence of workforce development**
  - **Skills** shortages and mismatches hamper the **diffusion** of innovation
  - Focus on demand-driven workforce development
  - E.g. U.S. Department of Labor ⇒ WIRED (Workforce Innovation in Regional Economic Development)
  - Cluster concept improved ties between economic development and workforce development
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Pennsylvania

- Legacy of coalmining and steel industry
- Crisis of steel industry since early 1970s
- Policies for high-tech reindustrialisation since the 1980s
  - Electronics
  - Biotechnology
  - Aerospace
- Lack of adequately skilled workers ⇒ workforce development as key challenge
  - Paradigm shift from social policy to economic development
  - Coinciding with 1990s’ cluster fashion

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Pennsylvania Workforce Investment Board

- Reporting directly to the Governor
- 22 regional WIBs covering the state
- Lancaster WIB pioneered clusters
  - as an analytical device to match skills development and company needs
  - As a device for focused policy delivery
⇒ Adoption at state level

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>DLI Report “Pennsylvania’s Targeted Industry Clusters” identifies 9 clusters</td>
</tr>
<tr>
<td>2008</td>
<td>DLI revises cluster mapping ⇒ 11 clusters</td>
</tr>
</tbody>
</table>
Department of Labor and Industry (DLI)

• Center for Workforce Information and Analysis (CWIA)
  • Data collection & analysis
    • Labor market data (job growth, wages)
    • Location quotients
    • Qualitative feedback from regional stakeholders
  • Report on “Pennsylvania’s Targeted Industry Cluster” (DLI 2004)
  • Cluster defined as “a group of industries that are closely linked by common product markets, labor pools, similar technologies, supplier chains, and/or other economic ties”
  • Reference to spillover effects
• Revision of cluster report in 2008: 9 ⇒ 11 clusters (DLI 2008)

Pennsylvania Cluster Portfolios

<table>
<thead>
<tr>
<th></th>
<th>DLI 2004</th>
<th>DLI 2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Advanced Materials and Diversified Manufacturing</td>
<td>Advanced Materials and Diversified Manufacturing</td>
<td>Advanced Materials and Diversified Manufacturing</td>
</tr>
<tr>
<td>Agriculture and Food Production</td>
<td>Agriculture and Food Production</td>
<td>Agriculture and Food Production</td>
</tr>
<tr>
<td>Building and Construction</td>
<td>Building and Construction</td>
<td>Building and Construction</td>
</tr>
<tr>
<td>Business and Financial Services</td>
<td>Business and Financial Services</td>
<td>Business and Financial Services</td>
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<tr>
<td>Education</td>
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<tr>
<td>Information and Communication Services</td>
<td>Information and Communication Services</td>
<td>Information and Communication Services</td>
</tr>
<tr>
<td>Logistics and Transportation</td>
<td>Logistics and Transportation</td>
<td>Logistics and Transportation</td>
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<tr>
<td>Life Sciences</td>
<td>Bio-Medical</td>
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<td></td>
<td>Renewable &amp; Alternative Energy</td>
<td>Renewable &amp; Alternative Energy</td>
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</table>
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Urban and Regional Economics

DLI: Industry Partnerships

- **Public-private partnerships** of employers and employees centered around focal firms
- Lack of skilled labor ⇒ focused and demand-driven education and training for workforce development
- Activities
  - Identifying skills requirement of firms and gaps in skills and training provision
  - Awareness campaigns and communication
  - Identifying common organizational and HR management challenges between firms
  - Development and optimization of career ladder and training programs
- 2008: 76 Industry Partnerships in 20 clusters and sub-clusters
- Ca. 6,200 firms participating

Department of Community & Economic Development (DCED)

- Investment promotion & growth of existing firms
- Programs linked to cluster development
  - Ben Franklin Technology Partners
  - Keystone Innovation Zone
  - Life Science Greenhouse
- Four-year project **analyzing** the state’s competitiveness
  - Global industry trends & positioning of the state economy
  - Identifying competitive firms
  - Mapping: 4 broad clusters with 22 sub-clusters
    - Life sciences
    - High-tech business
    - Business services
    - Advanced manufacturing and materials
  - Skilled labor identified as key challenge
- No concrete action beyond support of Industry Partnerships
- Clusters used for **location marketing / investment promotion**
Pennsylvania: Assessment

- DLI leadership led to state-wide cluster approach to workforce development
- Consensus through transparent analysis
- Interpretation and usage of clusters varies between organizations
- Inter-organizational co-ordination remains key challenge for further policy improvement

Pittsburgh

- Steel City: 60% of U.S. steel production in the 1950s
- Decline of steel industry since early 1970s
- 1979-1987 loss of 160,000 manufacturing jobs
- Unemployment peaked at 13% in 1983
- Structural change: In 1985, there were already more jobs in high-tech manufacturing and services than in steelmaking.
- Pittsburgh’s economy now based on
  - Life sciences
  - Electronics industry
  - Solar and wind energy
  - Modern manufacturing
  - Business services

Cf. Porter 2002
Pittsburgh: Assets and Challenges

<table>
<thead>
<tr>
<th>Assets</th>
<th>Challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>• High quality of life for families</td>
<td>• Difficulties in workforce recruitment and retention (cf. Hansen et al. 2003)</td>
</tr>
<tr>
<td>• Competitive cost position, esp. relative to other tech centers</td>
<td>• Low levels of innovation incl. tech transfer and commercialization from universities</td>
</tr>
<tr>
<td>• Experienced manufacturing workforce</td>
<td>• Challenging environment for start-ups and growth firms (VC, networking, specialized support)</td>
</tr>
<tr>
<td>• Good workforce training infrastructure</td>
<td>• Underdeveloped clusters (local supplier base, customers)</td>
</tr>
<tr>
<td>• Broad-based economy with strong manufacturing positions</td>
<td>• Weak collaboration and coordination (fragmented and regionally divided local government, lack of shared vision and coordinated leadership)</td>
</tr>
<tr>
<td>• Many specialized research centers</td>
<td>• Aging physical infrastructure and shrinking tax base</td>
</tr>
<tr>
<td>• High levels of federal R&amp;D investment at universities</td>
<td></td>
</tr>
<tr>
<td>• Positions in fast-growing industry clusters</td>
<td></td>
</tr>
<tr>
<td>• Broad array of economic development organizations</td>
<td></td>
</tr>
</tbody>
</table>


Pittsburgh: Cluster Mappings

• Center for Economic Development at Carnegie Mellon University (1999)
  • IT
  • Environmental Technology

• Southwestern Pennsylvania Industry Cluster Analysis (Paytas 2001)
  • Manufacturing
  • IT
  • Life Sciences/Biotechnology

• Clusters of Innovation Initiative (Porter 2002)
  • Biotechnology/Pharmaceutical
  • IT
  • Production technology

⇒ **Analyses inconsistent** concerning cluster portfolio and recommended action ⇒ weak basis for consistent **strategy**
Pittsburgh: Organizations

<table>
<thead>
<tr>
<th>Organization</th>
<th>Activities</th>
<th>PA*</th>
<th>Cluster portfolio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Innovation Works</td>
<td>VC, start-ups, commercialization</td>
<td>DCED</td>
<td>Life sciences (healthcare, medical devices, biotechnology), software, robotics, nanotechnology, new materials</td>
</tr>
<tr>
<td>Technology Collaborative (*1999)</td>
<td>start-ups &amp; attraction, commercialization, workforce development, recruitment</td>
<td>DCED</td>
<td>Robotics, internet security, digital technologies</td>
</tr>
<tr>
<td>Pittsburgh Life Sciences Greenhouse (*2001)</td>
<td>VC, start-ups, commercialization, consultancy, networking, marketing</td>
<td>DCED</td>
<td>Life Sciences</td>
</tr>
<tr>
<td>Three Rivers Workforce Investment Board (TRWIB)</td>
<td>Industry Partnerships (*2005) = workforce development</td>
<td>DLI</td>
<td>ICT, Life Sciences, modern manufacturing, tourism &amp; hospitality, financial services</td>
</tr>
<tr>
<td>Pittsburgh Regional Alliance (*2000)</td>
<td>Location marketing, investment attraction</td>
<td>-</td>
<td>5 Target sectors (Advanced Manufacturing, Energy, Financial &amp; Business Services, Healthcare &amp; Life Sciences, Information &amp; Communications Technology) 5 other key industries (Defense &amp; Security, Distribution &amp; Logistics, Health Care Support, Medical Devices, Robotics)</td>
</tr>
</tbody>
</table>

1) Pennsylvania state programs

Pittsburgh: Assessment

- Local initiatives driven by **state programs**, little independent effort
  - Funded by DLI/DCED and PPP, not local authorities
- **Fragmented governance** structure
  - different administrative levels
  - Different organisations promoting cluster development
- Lack of leadership, consensus and co-operation ⇒ **low organizing capacity**
  ⇒ Cluster policy lacking **coherence and consistency**

Cf. Porter 2002
1) Varieties of Capitalism and Cluster Policy

2) Methodology and Case Studies

3) North Rhine-Westphalia

4) Pennsylvania

5) Comparison and Conclusion

<table>
<thead>
<tr>
<th>Attribute</th>
<th>USA / Pennsylvania</th>
<th>Germany / NRW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Varieties of Capitalism</td>
<td>• LME ⇒ competition-driven, <strong>hands-off</strong> role of the state, arm’s length relationship with business sector</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• CME ⇒ consensus-driven, collective action through <strong>corporatist</strong> alliances with state, associations/chambers &amp; unions</td>
<td></td>
</tr>
<tr>
<td>Innovation system</td>
<td>• Strengths in <strong>radical innovation</strong> &amp; high-tech industries, <strong>venture capital</strong>-based model of high-tech commercialization</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Focus on <strong>incremental innovation</strong>, commercialization of new knowledge lags behind</td>
<td></td>
</tr>
<tr>
<td>Human capital</td>
<td>• Problems with <strong>diffusion</strong> and absorptive capacity of the workforce ⇒ concern with skills development</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Dual system of vocational training, workforce skills not top policy priority</td>
<td></td>
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</tbody>
</table>
Comparison (2/3)

<table>
<thead>
<tr>
<th>Attribute</th>
<th>USA / Pennsylvania</th>
<th>Germany / NRW</th>
</tr>
</thead>
</table>
| Field of policy | • Focus from cluster policy on *workforce development* and distressed regions  
• Location marketing / investment attraction | • NRW: structural ⇒ *innovation policy*  
• Transfer between research and business (*triple helix alliances*)  
• Cluster-based LED in response to *structural change* |
| Institutionalization | • Flexible framework on the federal state and regional level for cluster policy – but **lack of strategic coherence** | • Proceeding mostly **institutionalized** ⇒ cluster policy devised and implemented by government, organized **top-down**  
• EU structural funds ⇒ high levels of public funding |
| Stakeholder | • Implementation depends on individual leadership and involvement from the business sector | • Incentives for business engagement limited through formalized framework |

Comparison (3/3)

<table>
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</tr>
</thead>
<tbody>
<tr>
<td>Cluster identification</td>
<td>• Cluster as an <em>analytical device</em> to inform policy decisions ⇒ subsequent action is often missing</td>
<td>• Identification often through <strong>top-down</strong> political decisions, bargaining or negotiation with stakeholders</td>
</tr>
</tbody>
</table>
| Governance by level | • Federal government does not intervene  
• *State programs* as incentives, but co-ordination problems  
• Taken up at local level, but lack of coherence due to fragmentation | • Dominant role of **EU cohesion policy**  
• Top-down, *bureaucratic* approach  
• DO: consensus, vision, *organizing capacity* |
Conclusion & Outlook

Conclusion

• Cluster policy as multi-level governance
• Varieties of Capitalism as a useful framework for comparative cluster policy research
• Varieties of Cluster Policy: National institutional framework effects heterogeneous implementation of cluster concept ⇒ limited for policy transfer, but not for learning

Outlook

• Horizontal expansion to other types of countries and regions
• Idiographic case studies ⇒ systematic & interdisciplinary approach to comparative cluster policy research
• Systematic evidence on impact of cluster policies ⇒ independent evaluation needed

References (1/4)


References (2/4)


References (3/4)


References (4/4)


