EU research and innovation policies as factors of convergence or divergence after the crisis

Prof Slavo Radošević
Workshop 'Innovation Investment and Economic Recovery'
Birbeck College, 23 February 2017
Motivation

Whether crisis has had an impact on public funding for R&I, whether it has changed policy priorities and if yes, in which direction?

• H1: R&I policies would have remained government priorities (cf. knowledge based growth)
• H2: Countries less pressurised by crisis to have less adjustments compared to countries with stronger budgetary pressures
• H3: Different evolution patterns in R&D&I policy mixes across countries and country groups
Background papers


Outline

• EU North-West and South-East gap
• RDI & Crisis
• Methodology
• Analysis: funds, policy measures
• Conclusions
The EU28 is composed of ‘North’, ‘South’ and ‘CEE’: groupings based on their R&D and innovation capacity, not geography
GERD in ppp per inhabitant 2013
Transnational patents per inhabitant 2012
Science and Technology articles per million population 2013

- Denmark
- Sweden
- Netherlands
- Finland
- United Kingdom
- Ireland
- Belgium
- Austria
- Germany
- France
- Luxembourg
- Croatia
- Hungary
- Slovakia
- Lithuania
- Latvia
- Malta
- Slovenia
- Czech Republic
- Spain
- Portugal
- Greece

Country Group:
- CEEC
- South
- North
Gross expenditures on R&D, transnational patents and S&T articles per inhabitant in three EU28 ‘mega-regions’

<table>
<thead>
<tr>
<th>Regional averages</th>
<th>2013</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>GERD PPP per inhabitant</td>
<td>723</td>
<td>228</td>
<td>727</td>
</tr>
<tr>
<td>Transnational Patents</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sci_Tech_Articles_per_mln_population</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>North</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>South</td>
<td>203</td>
<td>36</td>
<td>356</td>
</tr>
<tr>
<td>CEEC</td>
<td>197</td>
<td>13</td>
<td>249</td>
</tr>
</tbody>
</table>
Shares in R&D employment by sectors (2013 or nearest year) in three EU regions: North, South, CEE

EU R&D: two (three) structurally distinct R&D systems
Structure of innovation expenditures 2010-2012 in EU28 regions

- Eastern Europe:
  - Other expenditures: 0.55
  - Expenditures on R&D: 0.39
  - Expenditures in acquisition of machinery, equipment and software: 0.06

- South:
  - Other expenditures: 0.50
  - Expenditures on R&D: 0.39
  - Expenditures in acquisition of machinery, equipment and software: 0.11

- North:
  - Other expenditures: 0.73
  - Expenditures on R&D: 0.63
  - Expenditures in acquisition of machinery, equipment and software: 0.19

- EU28:
  - Other expenditures: 0.63
  - Expenditures on R&D: 0.26
  - Expenditures in acquisition of machinery, equipment and software: 0.08
RDI in a period of economic crisis

• Externalities intrinsic to R&D result in a pro-cyclical response (Barlevy, 2007, AER)
• In crisis firms tend to reduce their innovation activities (OECD, 2009)
• Firms maintain their innovation activities but R&D responses diverge (Filipetti and Archibugi, 2009)
• Innovation firms’ expenditures decreased following the crisis (Kanerva and Holander, 2009)
• Polarisation of innovation activities in EU28 on North-West and South-East (Filipetti and Archibugi, 2011)
• Makonnen (2013) similar conclusion as F&A for 2010 data
Methodology

• EW-TC Inventory database of policy measures based on reports (2006-2012)
• Policy measures = any instrument that mobilise resources, funds R&I activities, promotes institutional process to influence R&I and is implemented on an ongoing basis
• Groups:
  – Governance and horizontal R&I policies
  – R&D organisations; R&D cooperation and knowledge transfer
  – Support for business R&D
  – Human resource development
  – Enterprise support to innovation
  – Market and innovation culture
• Number of policy measures and allocated budget; comparisons 2006-08 with 2011-13
• North – West (D, DK, S); Southern EU (EL, PT, ES); Central East EU (PL, CR, HU)
• Weaknesses (not institutional funding, only allocations) but … ‘cleaned’ inventory is the most comprehensive and reliable source of data on R&I policies in the EU until 2013
R&I funding: differentiated responses to crisis

<table>
<thead>
<tr>
<th></th>
<th>GERD by business enterprise sector (euro per habitant) 2007</th>
<th>GERD by business enterprise sector (euro per habitant) 2012</th>
<th>GERD by government sector (euro per habitant) 2007</th>
<th>GERD by government sector (euro per habitant) 2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>CEE</td>
<td>47.1</td>
<td>62.6</td>
<td>49.6</td>
<td>64.4</td>
</tr>
<tr>
<td>SEU</td>
<td>88.5</td>
<td>89.7</td>
<td>100.9</td>
<td>93</td>
</tr>
<tr>
<td>NWEU</td>
<td>655.4</td>
<td>749.4</td>
<td>266.2</td>
<td>353.8</td>
</tr>
</tbody>
</table>
Anti-cyclical responses only in EU North-West and CZR

Changes in relative weight of government over business sector
R&D funding per capita (in percentage points)
Trends in national public funding to research and innovation 2008-2009/2010 and 2011-2013
- austerity started in 2010 (after two years of ‘buffering’)

Source: Izsak K. and Radosevic S. 2016,
Seeking other sources to counteract decline in public support

Sources of co-financing of support measures in EU27 in 2009 and in 2013 (as a percentage of the total number of measures).
A reduction in the number of R&I policy measures (-167 in 2009-13)
NW - consolidation, CEE: - maintenance; SE-reduction

<table>
<thead>
<tr>
<th>Country</th>
<th>Average number of measures (2006–8)</th>
<th>Average number of measures (2011–13)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>38</td>
<td>26</td>
</tr>
<tr>
<td>Germany</td>
<td>43</td>
<td>28</td>
</tr>
<tr>
<td>Sweden</td>
<td>37</td>
<td>37</td>
</tr>
<tr>
<td>NWE total</td>
<td>118</td>
<td>91</td>
</tr>
<tr>
<td>Czech Republic</td>
<td>26</td>
<td>25</td>
</tr>
<tr>
<td>Hungary</td>
<td>31</td>
<td>23</td>
</tr>
<tr>
<td>Poland</td>
<td>33</td>
<td>44</td>
</tr>
<tr>
<td>CEE total</td>
<td>90</td>
<td>92</td>
</tr>
<tr>
<td>Greece</td>
<td>17</td>
<td>12</td>
</tr>
<tr>
<td>Portugal</td>
<td>23</td>
<td>20</td>
</tr>
<tr>
<td>Spain</td>
<td>52</td>
<td>19</td>
</tr>
<tr>
<td>SE total</td>
<td>92</td>
<td>51</td>
</tr>
</tbody>
</table>

*Source: Authors own calculations based on the Erawatch-TrendChart Inventory.*
SE: decrease except R&D coop. & enterprise support; CE: Not change except increase for enterprise support, NWE: increase in all groups except R&D cooperation
Inter-regional patterns dominate
Shifts in funding allocated to specific types of policy measures in CEE, North West Europe and South EU in between 2011-13 and 2006-2008

<table>
<thead>
<tr>
<th>Main Policy Priorities</th>
<th>SEU</th>
<th>CEE</th>
<th>NWE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Cluster framework policies</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>2. Horizontal measures in support of financing</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>3. Other horizontal policies (ex. society-driven innovation)</td>
<td>=</td>
<td>=</td>
<td>+</td>
</tr>
<tr>
<td>4. Policy measures concerning excellence, relevance and management of research in universities</td>
<td>+</td>
<td>=</td>
<td>+</td>
</tr>
<tr>
<td>5. Public Research Organizations</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>6. Research and Technology Organization (private non-profit)</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>7. Research Infrastructures</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>8. Support infrastructure (transfer offices, training of support staff)</td>
<td>-</td>
<td>-</td>
<td>=</td>
</tr>
<tr>
<td>9. Knowledge Transfer (contract research, licenses)</td>
<td>-</td>
<td>-</td>
<td>=</td>
</tr>
<tr>
<td>10. R&amp;D cooperation (joint projects, PPP with research institutes)</td>
<td>+</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>11. Direct support of business R&amp;D (grants and loans)</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>12. Stimulation of PhDs</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>13. Recruitment of researchers (e.g. fiscal incentives)</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>14. Career development (e.g. long-term contracts for university researchers)</td>
<td>-</td>
<td>-</td>
<td>=</td>
</tr>
<tr>
<td>15. Mobility of researchers (e.g. brain-gain, transferability of rights)</td>
<td>-</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>16. Job training (LLL) of researchers and other personnel involved in innovation</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>17. Recruitment of skilled personnel in enterprises</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>18. Support for sectoral innovation in manufacturing</td>
<td>+</td>
<td>+</td>
<td>+</td>
</tr>
<tr>
<td>19. Support for innovation in services</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>20. Support for innovation management and advisory services</td>
<td>-</td>
<td>-</td>
<td>=</td>
</tr>
<tr>
<td>21. Support for organizational innovation incl. e-business, new forms of work organizations, etc</td>
<td>-</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>22. Support for technology transfer between firms</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>23. Support for innovative start-ups incl. gazelles</td>
<td>+</td>
<td>+</td>
<td>=</td>
</tr>
<tr>
<td>24. Support for risk capital</td>
<td>-</td>
<td>-</td>
<td>+</td>
</tr>
<tr>
<td>25. Support for the creation of favourable innovation climate (ex. roadshows, awareness)</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>26. Innovation prizes incl. design prizes</td>
<td>=</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>27. Consultancy and financial incentives to the use of IPR</td>
<td>=</td>
<td>=</td>
<td>+</td>
</tr>
</tbody>
</table>

Overall pattern | Decline | Stable | Growth/ Stable |
Number of categories for which funding has declined/remained stable/ increased | 15/8/4/ | 2/21/4 | 1/10/15 |

Source: Izsak K. and S. Radošević, 2016,
### Hidden role of Structural Funds in post-2008: Buffering decline of public RDI investments

Share of Structural Funds’ annual estimates in total GBAORD (2013).

<table>
<thead>
<tr>
<th>Country</th>
<th>Percentage of Structural Funds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Czech Republic</td>
<td>48%</td>
</tr>
<tr>
<td>Hungary</td>
<td>33%</td>
</tr>
<tr>
<td>Poland</td>
<td>43%</td>
</tr>
<tr>
<td>Greece</td>
<td>13%</td>
</tr>
<tr>
<td>Portugal</td>
<td>18%</td>
</tr>
<tr>
<td>Spain</td>
<td>12%</td>
</tr>
<tr>
<td>Denmark</td>
<td>1%</td>
</tr>
<tr>
<td>Germany</td>
<td>2%</td>
</tr>
<tr>
<td>Sweden</td>
<td>1%</td>
</tr>
</tbody>
</table>

*Source: Authors own calculations based on data from the European Commission, DG Regio, and Eurostat GBAORD 2013 figures.*
Conclusion: RDI policies are unable to contribute to convergence across the EU but will be factor of further divergence

- Three different responses: North: further support to innovation activities. South: collapse of national public support and its substitution only to some extent by the EU structural Funds. East: the strong compensatory effect of SF
- CEE responses are divergent: Czech R and Poland use RDI policies as countercyclical mechanism for improved competitiveness while in the rest of the CEE this effect is most likely to be insufficient.
- EU responses should be much more country specific and should recognise differences in the compensatory effects of EU Structural Funds.
- Also, this would require much better understanding of different roles of RDI in different regions.
Are current innovation policies in CEE appropriate to their income levels and distance to technological frontier?
Criteria for clustering policy mixes

1) Share of competitive R&D such as universities and public research organisations in the total funding;
2) Share of collaborative R&D programmes in the total funding;
3) Share of technology transfer mechanisms and spin-off support in the total funding;
4) Share of direct business R&D and business innovation support in the total funding;
5) Use of R&D tax incentives;
6) Support to venture capital funds.

### Clusters of EU27 policy mixes groups

<table>
<thead>
<tr>
<th>Group</th>
<th>Shorthand label and members</th>
<th>Brief description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group 1</td>
<td><strong>Science - competitive R&amp;D focused</strong>&lt;br&gt;Ireland, Malta, <strong>Poland, Slovenia</strong></td>
<td>Structural Funds-driven; Dual orientation on science and business R&amp;D but with stronger focus on science (competitive R&amp;D) orientation</td>
</tr>
<tr>
<td>Group 2</td>
<td><strong>Science - collaborative R&amp;D focused</strong>&lt;br&gt;Estonia, Finland, Germany, Greece Latvia, Sweden, Switzerland</td>
<td>Science and collaborative R&amp;D oriented policy</td>
</tr>
<tr>
<td>Group 3</td>
<td><strong>Commercialisation driven</strong>&lt;br&gt;France, Italy, Netherlands, United Kingdom</td>
<td>Orientation towards commercialisation of public R&amp;D coupled with support to framework conditions (fiscal incentives)</td>
</tr>
<tr>
<td>Group 4</td>
<td><strong>Business R&amp;D and innovation oriented</strong>&lt;br&gt;Austria, Belgium, <strong>Czech Republic</strong>, Denmark, <strong>Hungary</strong>, Norway, Portugal, Spain</td>
<td>Business R&amp;D and innovation focused policy coupled with support to competitive R&amp;D</td>
</tr>
<tr>
<td>Group 5</td>
<td><strong>Science and business R&amp;D focused</strong>&lt;br&gt;Bulgaria, Cyprus, <strong>Lithuania</strong>, Luxembourg, <strong>Romania, Slovakia</strong></td>
<td>Structural funds driven; Dual orientation on science and business R&amp;D but with stronger focus on business R&amp;D orientation</td>
</tr>
</tbody>
</table>
CEEC innovation policies reflect much more ‘the best practice’, not their specific technological positions and constraints

• The ‘science – collaboration’ policy mix model can be found in all four groups > it is the most common model followed by countries of very different technological levels.

• The unexpectedly high homogeneity of policy mixes despite the relatively big differences between countries in technological and economic development and the differences with respect to the role of knowledge generation vs. knowledge absorption in their growth.

• The exclusive focus on policy transfer and the diffusion of ‘best practice’ de facto precludes a critical understanding of the factors that influence a country’s technology upgrading.
THANK YOU
How to overcome structural defects of Eurozone and the role of GVC oriented industrial innovation policy?

Contribution to Green paper on *Innovation Investment and Economic Recovery*  
(based on work in progress Izsak K. and S. Radošević)

Slavo Radošević
Central Europe 4 vs. EU South: in and out of GVCs
Foreign value added share of gross exports

Source: OECD/TWO TIVA Database
Similar GVC propensity of different sectors but at very different levels: computers & electronics and automotives > GVC intensive

Foreign value added share of gross exports by selected sectors

EU Central Europe 4

Source: OECD/TWO TIVA Database
Divergent integration of the EU countries in GVC
Increased integration of CE-4 into EU industrial networks

Foreign VA share of gross exports 1995-2011
....led to increased polarisation between Central – East (Germany led cluster) and North – West and South

Changes in contributions to intra-EU trade, in pp of trade flows (2000-2014)

Source: based on WIIW study (2016) The Evolving Composition Of Intra-EU Trade, WIIW Research Reports, No. 414, November 2016
Diversity or gap between EU regional eco-systems?
North-West vs. South-East divide
Regional ecosystems: poorer regions/countries have lower knowledge inflows - both upstream and downstream

Upstream and downstream knowledge inflows
(based on regional averages)

Upstream inflows (FP7 leverage per capita, SMEs participation in private sector in FP7),
Downstream inflows (foreign nationals in skilled occupations, FDI and technology transfer)
EU28: diversity of industrial / regional ecosystems

- **Rich and diverse**: German, Austria, Sweden etc.
  - Germany has rich industrial ecosystem with diverse set of complementary capabilities suppliers, trade associations, industrial collective research consortia, industrial research centres (See Berger, MIT 2014)

- **Depleted**: EU South
  - Almost 2mn jobs loss in manufacturing since 2008

- **Narrowly integrated or depleted**: CEE
  - Dual innovation systems
  - > When production moves out, the terrain for future learning shrinks (Berger, 2013)
    - The loss of companies that can make things will end up in the loss of research that can invent them
    - No ‘industrial commons’ + (i)rrelevant public infrastructure
• In austerity context the only tangible response have been Structural Funds based on the logic of place based policies

• Place based policies alone are insufficient response to this structural issue including conventional cluster policies !!!!
Policy imperative: nurture complementarities between GVCs and clusters

• Examples in emerging sectors show largely disconnected and fragmented value chains in Europe due to fragmented efforts in technology deployment and a lack of connection between technology suppliers and potential lead-users.

• The importance of co-location synergies as part of a growth strategy that maximizes domestic value added.

• Solution: connecting and up scaling regional efforts in technology deployment (cf. Vanguard).

• The set-up and support of large scale demonstrators at European level to accelerate market uptake - through interregional collaboration.
Why we need European GVC oriented cluster Strategy?

• Macroeconomic solutions do not suffice
  – Neither an increase in domestic demand in the North nor the decrease of it in the West and South can reduce the existing imbalances entirely. Domestic production still contributes the lion’s share to a country’s final demand (WIFO study)
• Inward orientation of clusters without levers and linkages will fail
• North - West and South countries would need financial means to support their industrial sectors so as to reposition themselves in the value chains. How?
  • By supporting companies that can play role of integrators
  • Assistance to supply chain integration coupled with the cluster support to reach standards of GVC (EU Integrator)
  • Vanguard is about creation of new value chains but we need also support to upgrading within and access to the existing VCs
Building and integrating clusters via GVCs

• The aim should be to enhance the innovation capabilities of SMEs in order to prepare them to establish long-term supplier relationships with medium-sized or large enterprises (cf. integrators).

• The main tool to promote these strategic partnerships is co-operation in innovation projects in selected sectors/technology areas.

• The overall aims should be to:
  – increase the share of indigenous suppliers in the supplier networks of medium-sized and large enterprises;
  – decrease the dependence of indigenous suppliers;
  – provide motivation for the "integrator" companies to increase the number of indigenous suppliers;
  – improve co-operation between integrators and suppliers in the field of technological innovation;
  – promote the growth of SMEs
The emerging vision: Inter-regional ‘industry commons’

- **From pilots to inter-regional industry ecosystems**: individual projects are insufficient basis for further technology upgrading without some durable joint infrastructure (‘industry commons’)

- **Creation of new VC**: pilot plants should act as the framework where new value chains are created (cf. the emerging Vanguard model).

- **Expanding access to the existing VC**: twinning projects to develop networks of local suppliers (in cooperation with the lead firms)

- **Stimulating upgrading within the existing VCs**: joint public – private programs to assist local firms climbing the VC ladder in the specific technology areas (in cooperation with the lead firms)
What funding mix.....

• The existing sources
  – Combined regional funding (Structural funds > increase from the current max of 15% for inter-regional SS related projects) ??? How to realize and increase this %??
  – H2020 (covering demonstration activities to a much larger extent than FP7) ???
  – The broader scope support towards demonstration activities of EIB ???
  – The Juncker plan:???

• New national funds would be essential … but unlikely in the current institutional context
  – A very limited scope to increase government investments in Europe without violating or further deviating from the targets of the SGP.

• It is important to consider alternatives .....
…. unlikely unless we see modifications to the Stability and Growth Pact: some of floating proposals

**Alternative 1: a modified “Fiscal Compact”**

- A differentiated treatment of government spending depending on whether the public expenditures are made for investment purposes or for government consumption.

- A revised calculations of budget deficits and public debt levels: Only the yearly depreciation rate of public investments rather than the gross expenditures should be taken into account for calculating the yearly budget deficit.

- As a consequence the EU-28 could have conducted additional public investments of approximately €400-450 billion in 2015 without violating the budget deficit limit of 3 percent of GDP, if only depreciation had been taken into account.

- For further details see: Volker Brühl, Three Cornerstones of a European Growth Initiative “EU 2025” – National Growth and Investment Programs (NGIP), a European Cluster Strategy and a modified “Fiscal Compact”, Co-winner of the 2016 MGI “Opportunity For Europe” Essay Contest
Alternative 2: a decentralised fiscal stimulus

- To allow individual member states to pursue much more expansionary fiscal policies until private sector balance sheets are repaired.
- In 2015, private-sector savings were 10.8% of GDP in Ireland, 7% in Spain, 6.8% in Portugal and 6.3% in Italy.
- There are sufficient levels of excess (i.e., unborrowed) savings to support a fiscal expansion in the order of 6-8 per cent of GDP in most periphery countries.
- … but, the EMU’s current budgetary rules – prohibit governments from running sustained deficits of more than 3 per cent of GDP regardless of the size of private-sector savings.
- For further details see Tomaso Fazi and Guido Iodice (2016) Why further integration is the wrong answer to the EMU’s problems: the case for a decentralised fiscal stimulus, Paper prepared to the Progressive economy call for papers. Winner of the ‘Reforming the EMU’ category.
Conclusions I: EU post-2008 crisis, clusters and globalisation

• Globalisation has led to major relocations > positive: efficiency gains; challenges: limits of separation of RD and production > lesson: the importance of co-location synergies
• Clusters in a globalised context need much more to embrace GVCs as levers of place based growth >
• Policy should recognize tradeoffs of GVC integration
• Diversity of EU regional ecosystems not turned into advantages except in the case of Central Europe
• Challenge of GVC globalisation: how to link clusters internationally/inter-regionally both upstream and downstream
Conclusions II: Policy challenges

- The breakdown of the EU as convergence machine. How to repair it and stay within the current rules? Options: demand stimulus? Infrastructure? Our alternative: GVC oriented cluster innovation policy

- EU is appropriate context for VC oriented industrial innovation policy: how to strengthen the export and technological position of regions/countries/clusters by sourcing inputs from regional neighbours

- The existing funding mixes are inadequate > we need aggressive opening of Smart Specialization related programs to inter-regional collaboration (cf. not easy)

- New national sources needed but unlikely unless we change the current fiscal framework > modified fiscal framework
ADVANCES IN THE THEORY AND PRACTICE OF SMART SPECIALIZATION, Elsevier Science Publishers (forthcoming)

Editors: Slavo Radošević, Adran Curaj, Liviu Andreescu, Radu Gheorgiu and Imogen Wade.
Content

Foreword (Peter Berkowitz)
- An overview and conclusions (Slavo Radosevic)
- EU Smart Specialization Policy in Comparative Perspective: The Emerging Issues (Slavo Radosevic)

Policy rationales
- The economic fundamentals of smart specialisation strategies (Dominique Foray)
- Managing Self-Discovery: Diagnostic Monitoring of Portfolio of Projects and Programs (Yevgeny Kuznetsov and Charles Sabel)

Smart specialization in different EU contexts
- An innovation driven strategy for economic diversification: Examples from Scandinavian region: (Bjoern Asheim, Markus Grillitsch, Michaela Trippl)
- Smart Specialisation Policy in an Economically Well-Developed, Multi-Level Governance System (Henning Kroll)
- Innovation Policy in Southern Europe: smart specialisation versus path dependence (Lena Tsipouri)

Industrial and technology policies in non-EU context
- Smart Specialization in the U.S. Context: Lessons from the Growth of the Albany, New York Nanotechnology Cluster (Charles Wessner)
- New Structural Economics and Industrial Policies for Catching-up Economies (Justin Yifu Lin)
- Smart Specialization with Short-Cycle Technologies and Implementation Strategies to avoid both target and design failures (Keun Lee)
- Real-life Self Discovery as Phased Bootstrapping: Lessons for a Policy Maker (Ksenia Gonchar, Yevgeny Kuznetsov and Imogen Wade)
Content (cont.)

Smart specialization and global value chains
• Transnationalizing smart specialization (Paul Brenan and Ruslan Rakhmatulin)

Institutional environment and implementation issues for smart specialization
• Can smart specialization and entrepreneurial discovery be organized by government? Lessons from Central and Eastern Europe (Erkki Karo, Rainer Kattel & Aleksandrs Cepilovs)
• Smart specialization and implementation issues (Nikos Maroulis and Alasdair Reid)
• Entrepreneurial discovery as a foresight for smart specialization: Trade-offs of inclusive and evidence-based consensus (R. Gheorghiu, L. Andreeescu, M. Zulean, A. Curaj)