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# INNOVATION-BASED REGIONAL STRUCTURAL CHANGE - A NEW REGIONAL POLICY PARADIGM IN GERMANY

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# Political background

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- **Regional structural funding** (ERDF, complementary national measures) so far mainly directed towards **regions in the eastern federal states**
- Coalition agreement and new Hightech-Strategy 2025 (both published 2018): **Enlargement of structural funding** to all "structurally weak" regions in Germany from 2020 onwards
- **Two approaches:** (1) Reorientation of the funding mechanism "Improvement of the regional economic structure, (2) Implementation of a new framework concept "Innovation and structural change" (new societal challenge "Town and Country" in Hightech-Strategy 2025)
- **Guiding funding principles:** reduction of structural deficits in terms of knowledge base, corporate structure and economic performance
- **Indicators** to identify "structurally weak regions" so far solely oriented towards economic development
- **Consequences:** Reorientation of concept of "structurally weak region" and reorientation in appropriate measures are necessary

# Aim of the paper and research questions

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- **Aim of the paper** is to reflect recent changes in regional policy in Germany
- **Focus of the presentation** is the development of a regional typology that takes the innovation dimension into account

## Research questions:

- How can innovation-based regional structural change be theoretically explained, defined and measured?
- How can regions with relevant structural deficits be identified in the German context?
- What has to be changed in structural funding in order to strengthen the innovation focus?

# Theories: Important aspects to look at

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- **Neoclassical theory:** employment, income, free movement of production factors
- **Post-Keynesian growth theory:** capital intensity
- **Endogenous growth theory:** R&D expenditures, innovativeness (patents), education, knowledge (e.g. skilled labour)
- **New economic geography:** labour force skills, R&D, agglomeration economies, regional interaction
- **Evolutionary growth theory:** specialisation, path dependence, path creation

## Theories tell us

- that innovation-based development is also possible in structurally weak regions and
  - what are the most important aspects to look at (indicators)
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# Indicators

Possible analytical perspectives		Used indicators
Employment	Skills / Knowledge	Unemployment rate
Mobility / Interaction	Agglomeration economies	Commuters per inhabitant
Income	(Capital intensity)	Gross domestic product per person employed
R&D expenditures	(Innovativeness)	Private / public R&D expenditures
Specialisation		Share of industrial gross value added in GDP
(Path dependence)	(Path creation)	

# Indicators

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## Indicators

- Focus on few number of indicators (4 – 5)
- Innovation as output indicator (new products, new processes...) not available at regional level
- Substitutes: R&D expenditures as possible innovation input, patents as possible innovation output
- **But:** Some indicators do not make sense at a small regional scale / in structurally weak regions (e.g. patents: small number, inventor or applicant, distortion due to commuter linkages)
- R&D indicators at county level had to be estimated → only available for one year = static indicators
- Path dependence, path creation difficult to measure, especially within a small period of time

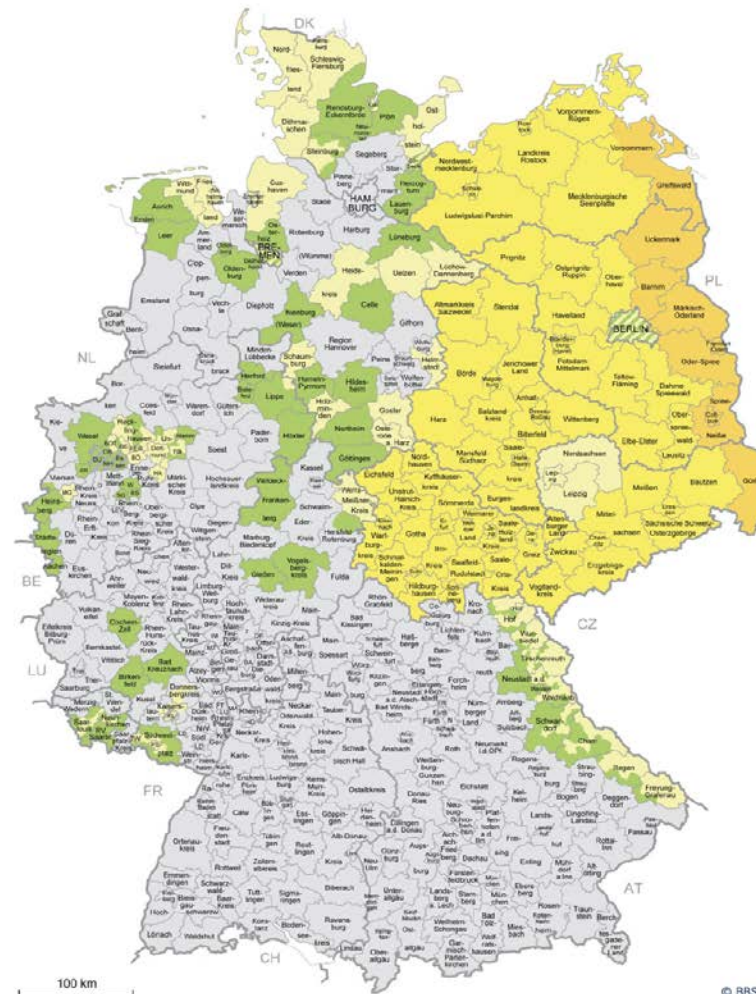
## Spatial units

- For political and data reasons, focus on county level ("Kreise")

# Regional setting in 'classical' structural funding 2014 - 2020

## Indicators

- Average unemployment rate in 2009 – 2012 (weight 45 %)
- Gross annual income per employee contributing to social insurance in 2010 (weight 40 %)
- Employment forecast 2011 – 2018 (weight 7,5 %)
- Infrastructure indicator 2012 (weight 7,5 %)



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# Method of classification






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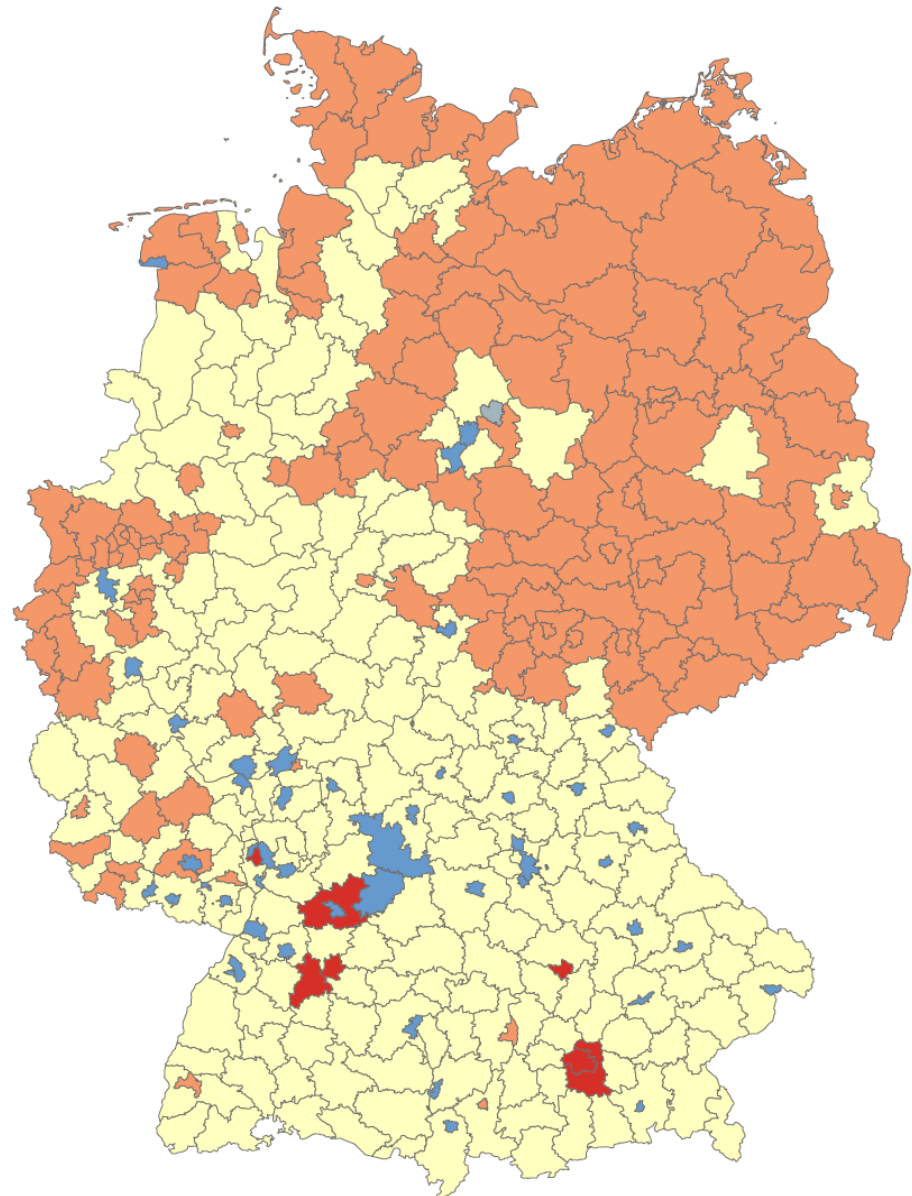
- Cluster centre analysis (→ structure data into a predefined number of groups, groups and boundaries between them are determined mathematically on the basis of the data = uninformed procedure)
- Use of equally weighted groups of indicators
- Use of standardized data (z-standardization → data do not differ in variance and mean value)



# Regional typology

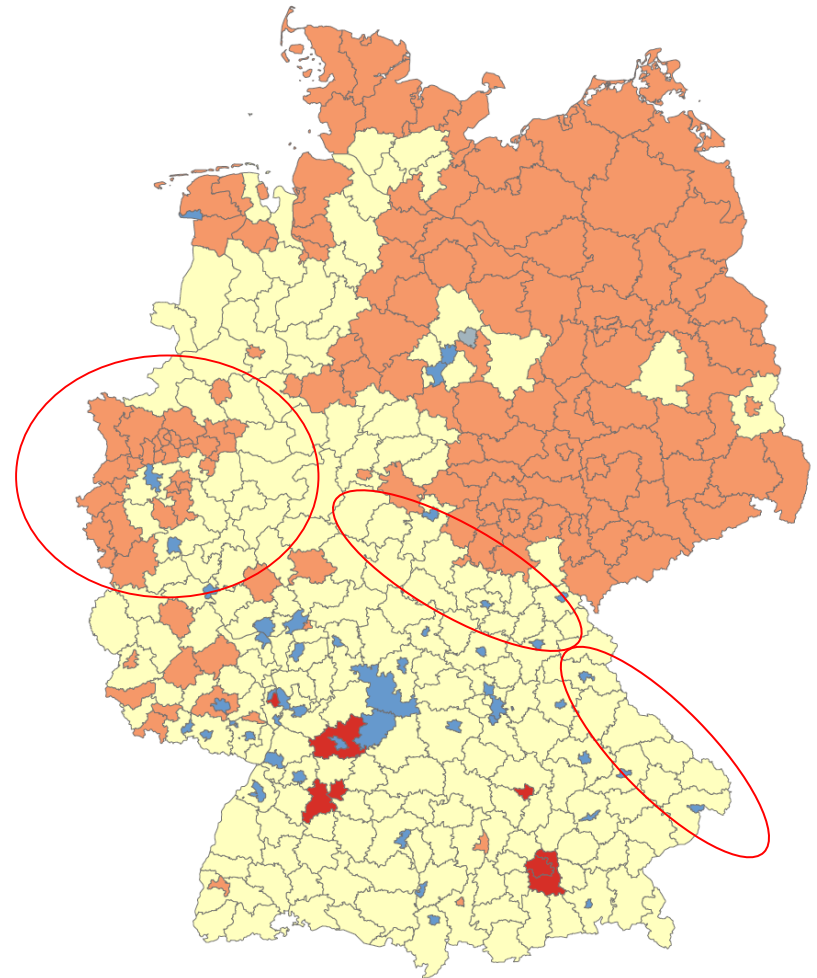
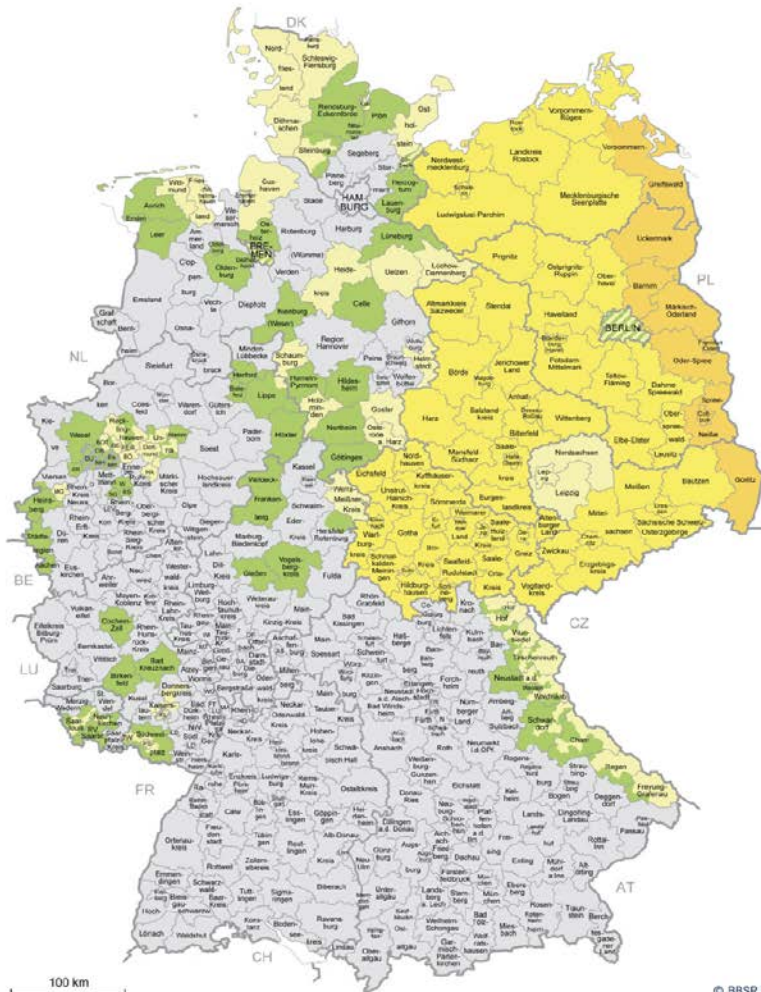
## Types of regions

-  Urban region with public R&D
-  Wolfsburg, industrial research centre
-  Commuter region with medium economic strength
-  Structurally weak region
-  Economically leading region



Source: own calculations; map made by ESRI ArcGIS

# Comparison regarding structurally weak regions



# Results

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- Attempt to classify "structurally weak regions" with another indicator set as used so far
- The spatial distribution of structurally weak regions between the 'classical' and the 'innovation-oriented' typology differs, but not to a great extent
- Results nearly "as expected"
- Focus not on single regions, but on groups of neighbouring regions
- Regions with similar characteristics as eastern German structurally weak regions can also be found in western Germany (mainly in northern, northwestern and western parts of Germany)
- The distance (kilometer, time) to economically stronger regions is shorter in western than in eastern Germany
- Proximity effects (commuting) can be observed in south western parts of East Germany and around Wolfsburg

# Funding implications

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- Regional expansion of funding seems justifiable
- In contrast to eastern Germany, western Germany does not require a nationwide funding programme
- In eastern Germany, regional structural funding should be continued for all regions, but with closer integration of regional structural policy measures and regional innovation policy measures
- In western Germany, "clusters" of regions (e.g. coastal areas, Ruhr area) should be the target group for funding
- Regional interaction should be supported in all structurally weak regions (innovation interaction), especially in those regions bordering or being close by economically stronger regions
- S3 activities ('Länder') should be closer linked to programmes/measures at the federal level ('Bund')
- Following the paradigm of openness and societal participation, place-based initiatives "from below" should be a guiding funding principle
- Locally oriented projects, but involvement of external knowledge

# Thank you for your attention

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# Structural weakness and change

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## Structural weakness

- Relative attribute, depending on benchmark, level and range of (national) development niveau

## Regional (structural) change

- Shift in the industry structure of a region (or nation), resulting in the change of spatial structure
- Processes changing potentials, competencies and skills as well as interrelations and infrastructures within a region
- Policy concept: regaining, maintaining or upgrading location advantages with the aim of economic efficiency, innovation, employment, income and social cohesion

## Sectoral change

- Shift of the sectoral structure of a region caused by different growth of single industries

## Measuring structural change

- Change in shares of industries/sectors, GDP growth, (un-)employment, R&D and innovation expenditures
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# Why "innovation" in supporting structurally weak regions?

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## Cons

- Waste of public money
- Innovation = technology → resources, knowledge-base, networks, research potential do not exist; innovation promotion is ineffective and does not make sense

## Pros

- Every region has chances for development
  - New ideas, business models and products (in a broader understanding of innovation) can be developed in every region
  - Capacity building, upgrading of competences, specialisation are especially important in so far structurally weak regions to improve their situation
  - Policy objective: Structurally weak regions must play a more active role in the national innovation system (loss of development potentials)
  - Additionality effects of innovation funding (e.g. behavioural additionality) can also be observed in structurally weak regions
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# Example: Change through innovation in the region WIR!

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- **Pilot programme** (2018) as start for further funding activities
- So far only **eastern Germany** (partners can come from other places)
- WIR! supports development of regional innovation concepts
- Initiatives will be promoted which **cross disciplinary, sectoral, institutional and administrative boundaries** and also include civic involvement
- Programme explicitly includes **regions beyond the existing innovation centres** as well as actors with no experience of innovation
- **Broad understanding of innovation** (technological, social and non-technological)
- **32 initiatives** selected by a jury to develop regional innovation strategy (concept phase)
- End of 2018 further selection decision for implementation phase starting in 2019 (around 10 – 15 initiatives)
- Maximum of 5 to 8 million euros will be available in each selected initiative for the first two years



# Example: Change through innovation in the region WIR!



## Regional distribution of WIR! initiatives



Source: BMBF 2018

# Conclusions

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- Active support of innovation-based regional structural change is a new objective in national innovation policy (Hightech Strategy 2025)
- Up to now, classical structural funding and region-related innovation funding exist side by side
- Proposals to integrate and coordinate different regional funding programmes
- Responsible ministries (Economic Affairs, Education and Research) follow own interests with different programmes regarding "regional structural funding"
- Smart specialisation strategies could be a good starting point, but are so far not well linked to the new regional focus at the federal (national) level
- Pilot programmes (like WIR!) exist and could act as basis for the enlargement of structural funding to all "structurally weak" regions in Germany from 2020 onwards
- Scientific expertise is included in this process