Economic Impact Estimation of Smart Specialization Policy

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Motivation

• Smart specialization policy targets industrial restructuring and economic growth
• Therefore understanding the economic impacts of S3 is crucial for policy design and evaluation
• Despite its key importance economic impact estimation is not yet part of the S3 policy framework
Challenges in S3 economic impact estimation

1. How to estimate the economic impacts of a new activity in prioritization?

2. How to estimate the economic impacts of two of the policies supporting the new activity?
   - Entrepreneurship development
   - Innovation network development

➤ This presentation offers solutions to these challenges
Outline

• Economic impact estimation: why and how?
• The areas of S3 economic impact estimation:
  – Ex-ante impact assessment in prioritization
  – Monitoring and ex-post evaluation of the impacts of S3-specific interventions
• Summary
Economic impact estimation: why and how?

- Economic impact estimation: the estimation of the impacts of policy interventions (e.g., infrastructure investments) on economic variables like GDP or employment

- Therefore economic impact estimation targets impacts beyond the single project level

- Consideration of input-output linkages, income multipliers, technological spillovers, etc.

- Geographical levels: regional, national, EU levels

- Types of economic impact estimation: ex-ante impact assessment and ex-post impact evaluation
Economic impact estimation: why and how?

• Impact estimation with economic models:
  – Baseline results (no intervention)
  – Policy scenario results (with policy intervention)
  – Comparison of the baseline and scenario results (in relative terms)
Economic models in S3 impact estimation

• Traditional policies: sector neutral but smart specialization is technology/industry specific:
  – the industrial dimension becomes crucial in S3 economic impact models

• Traditional impact studies: at the national level but S3 is a regional policy
  – the regional dimension becomes crucial in S3 impact estimation
Ex-ante economic impact assessment in prioritization
Key issues in prioritization

• In prioritization: the government selects from alternative domains (activities) for policy support

• Key issues in the selection process (Foray 2015):
  1. Which activity to support?
  2. What are the policy instruments to be applied to support the activity?
  3. How much public money to spend for the support of each activity’s introduction?
1. Which activity to support?

• Foray (2015) highlights three dimensions in the selection:
  – the activity’s individual features (degree of novelty, the extent to which it targets new regional opportunities, availability of regional supply factors)
  – its regional spillover capacity to generate firm concentration
  – economic significance of the new activity
**Estimating economic significance**

- The introduction of a new activity will result in various, mutually interconnected changes in the economy of the region as well as the economies of other regions:
  - additional employment, investments
  - production of intermediate goods
  - income multipliers
  - labor and capital migration

➤ **Economic impact models should be applied to estimate these effects**
2. What policy instruments to apply?

• To support the development of the new activities various interventions are suggested:
  – R&D subsidies
  – Human capital development support (education)
  – Investment support
  – Infrastructure investments
  – Entrepreneurship development
  – Innovation network development
Estimating the economic impacts of supporting policy instruments

– Techniques for the estimation of the impacts of the policy support to R&D, human capital, investment, and infrastructure investment have been established.

– Techniques for the estimation of the impacts of entrepreneurship and innovation network development are recently offered in

➢ Comparative estimation of the effects of potential combinations of instruments
3. How much public money to spend to support the activity?

➢ The costs associated with the selected instrument combination provides the answer
Economic impact assessment in the prioritization process

- Costs and economic impacts of supporting policies are estimated for each individual activity.

- Comparative information on costs and impacts of each of the activities is a crucial input in prioritization.
Illustrative economic impact assessment of the introduction of a new activity

- The invention is developed at the University of Pécs
- 3D Bioprinting of cartilage for sport injuries
- Fat cells of the patients are used to grow the personally customized cartilage
- High value added compared to traditional treatments by full costumization and relatively short period of recovery
- Expertise in research and surgery are present at the University of Pécs
- Potential spillovers into other sectors (tourism, insurance, transportation services etc.)
Policy shocks associated with the new activity

• Scenario: 1000 patients per year (full capacity utilization)
• Labor shock
  – 15 new employees (252 thousand EUR annually)
• **Investment support** in the new sector in 2018 (equipment, construction): 2.6 million EUR
  – Source: foreign grant (e.g. EU funds)
• **Investment support** in a new hotel and a restaurant in 2018: 4.4 million EUR
  – Source: foreign grant (e.g. EU funds)
• Consumption shock (of the new sector) between 2019-2029: 4.9 million EUR (annually)
  – Source: foreign patients (1000 patients per a year)
• Tourism shock between 2019-2029: 1.7 million EUR (annually)
  – Source: foreign patients (1000 people – staying for 4-13 days per visit)
The model applied in assessment: The GMR-Hungary model

- **GMR**: Geographic Macro and Regional policy impact models
- GMR models estimate the impacts of policies at the regional, national and EU levels
- GMR-models:
  - EcoRET model (Varga, Schalk 2004)
  - GMR-Hungary (Varga 2007)
  - GMR-Europe (Varga, Sebestyén, Szabó, Szeb 2018)
  - GMR-Turkey (Varga, Baypinar 2016)
- Selected applications:
  - Cohesion Policy impact estimations for the Hungarian government (since 2004 continuously)
  - Cohesion Policy impact assessment for the European Commission (DG Regio, 2011)
  - FP6 impact evaluation (2010)
  - Policy impact estimation for Turkish regions (2014)
Challenges in modeling the likely economic impacts of a new activity

• **How to involve a new activity** in an economic model?
  – The solution we followed: *we added a new sector* which produces this output in an existing model (since the new activity results in new output)

• **How to get the data** to model the new sector?
  – In the case of existing sectors data from statistical offices (SAM) provide the basis to model the sectors’ production, its interrelations with other sectors, labor, capital income, etc.
  – **In the case of the new sector** the necessary information is collected via *interviews*

• **Additional technical issue:** The structure of the existing economic model should be changed
Impacts on output

The impact on regional gross output (M EUR)

The impact on national gross output (M EUR)
Impacts on employment and wages

The impact on regional employment (employees)

The impact on regional labour income (M EUR)
Monitoring and ex-post evaluation of the impacts of S3-specific interventions
Monitoring and ex-post evaluation of the impacts of S3-specific interventions

- Economic impact models estimate the impacts of policies targeting
  - R&D supports
  - human capital supports
  - investment supports
  - infrastructure investment supports
  - entrepreneurship development
  - innovation network development
Summary

• The challenges in S3 impact modeling were highlighted in the presentation
• Solutions to these challenges were offered
• Results of a concrete S3 impact assessment were presented
Thank you for your attention!

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