



# SPARD

## SPATIAL ANALYSIS OF RURAL DEVELOPMENT MEASURES Are spatial econometrics a necessary and feasible tool to support better policy targeting? (pb #1)

## Achievements of SPARD

The application of spatial econometric in the assessment of the effectiveness of RDP spending and its possible spillovers has been successful, despite the fact that some of the results were not convincing in showing effectiveness or spillovers. With the impact assessment models, we were able to test 1) the effect of RDP spending on impact indicators, and 2) the presence of spillovers.

The explanatory spatial data analysis (ESDA) of the impact indicators and RDP spending showed that spatial dependence is present. In the data, which makes it inevitable to use spatial econometrics in the assessment of RDP spending.

- SPARD analysed the CMEF data situation for the EU-27 from 2007 on, across indicators, administrative units and measures and linked them with implementation data.
- SPARD constructed a tool for comprehensive data storage, data retrieval and information on SPARD results according to user demands of EC in-house services.
- SPARD compared and discussed targeting strategies of RDPs in six case study areas.
- SPARD delivered new insights into the spatial context of RDP implementation by considering neighbourhood patterns of baseline indicators, what supports identification of spatial spillovers of RD measures.
- SPARD provided new evidence how to incorporate regional diversity and new knowledge on mechanisms of RDP uptake and impact.

## What are the advantages of using spatial econometrics and spatial analyses?

• Unbiased results: in the presence of spatial dependencies, estimates ignoring spatial

dependencies were biased.

- Spatial econometrics dealt with omitted variables, identified cluster effects and improved reliability of statistical analysis.
- Spatial econometrics can be used to test whether incentive-based targeting works
- It allowed for easily perceivable visualisation of spatial information by mapping interrelations between entities in their spatial dimension.

## What has the assessment of impact indicators from the CMEF framework taught us?

- CMEF provided opportunities for spatial econometric analysis of impact analysis.
- The use of spatial econometrics was limited to the data availability.
- Spatial dependencies were present in impact indicators and RDP expenditures at NUTS2 level.
- Impact indicators available at NUTS2 level are not necessarily available at lower aggregation level, which limits cross scale applications.
- For case studies, result and outcome indicators were available.

## What are the considerations of using spatial econometrics in RDP impact assessment?

General data availalability

- The level of the impact assessment should correspond to the sphere of influence of RDP measures. For area-related measures, for instance, impact (and other relevant) indicators are preferably measured within geophysically determined boundaries rather than administrative borders.
- The use of farm level data often prefered is hardly feasible due to strict privacy policies.
- Spatial econometric analyses requires a coherent dataset on regions or areas. Exclusion of neigh-



bouring regions or areas might produce misleading results.

#### Scaling issues

- The methodology developed for NUTS2 level analyses allows for up- and downscaling, impact indicators are incidentally available at lower aggregation levels, which limits cross scale applications.
- At lower aggregation level, result and outcome indicators are available, but these indicators were more likely to be censored, and alternative spatial econometric specification were adopted.

### Methodological issues

- The use of spatial econometrics in impact assessment requires well-educated evaluators.
- With spatial econometrics, spurious effects of coefficients were identified. For instance, coefficients that were significant in non-spatial models were insignificant in spatial models.
- Outliers often found in the original EUROSTAT and EC - were treated more carefully, because exclusion of outliers would have affected the spatial structure.
- There are no clear guidelines to choose the best weight matrix for the spatial structure.

### Pitfalls in interpreting spillover effects

Key messages for

policy-makers,

businesses,

trade unions and

civil society actors

• Differences in institutional settings do not necessarily show up at municipality level but at higher aggregation levels. These effects depend on the type of contract that is involved.

- Spillover effects might also indicate to substitution effects from a spatial and temporal perspective. For instance, i) investments in tourism capacity in one region might lead to less tourists in neighbouring regions. ii) RDP might have feedback effects in the long run. Current investments might imply lower future investments.
- If the RDP programme is designed with low specific targeting strategies, participation reflects individual decisions, and consequently, there is little connectivity between result and impact indicators expected.

## How can the use of spatial econometrics be improved?

- The level of analyses (NUTSO-2) for the EU analyses was too broad. The scope and level of the impact assessment should correspond to the sphere of influence of RDP measures, i.e. analyses at the level of agensts or areas, and accordingly an appropriate scope.
- For area-related measures, sector spillovers or market chain spillovers have to be measured at areas, In many cases, the appropriate level is not the administrative level as used in SPARD as in the case area
- Coherent data bases at appropriate levels would be recommend to improve the usefulness of spatial econometrics in impact assessment.
- The application of spatial econometrics in the assessment of the effectiveness of RDP spending and its possible spillovers has been successful, but can be improved.
  The availability of data for CMEE impact and baseline indicators and other
  - The **availability of data** for CMEF impact and baseline indicators and other relevant trends is crucial to explore spatial econometrics.

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- Spatial econometrics applied in impact assessment takes five steps: Given data availability, 1| choose weight appropriate matrix, 2| explore the data on spatial dependence (ESDA), 3| explore econometric models including spatial variables, 4| run tests to for the presence and type of spatial dependence, 5| based on the type of spatial dependence explore spatial econometric models and test for the effectiveness of RDP spending and for spillovers.
- Read more on www.spard.eu