Bocconi

COMPARATIVE CASE STUDIES AND THE TRANSPORTABILITY OF POLICY OUTCOMES ACROSS THE SPACE

Università Bocconi
GREEN
Centre for Geography, Resources, Environment, Energy and Networks

Marco Percoco
Department of Social and Political Sciences and GREEN

(Policy) Background

- Cohesion policy is the largest development program in the world. One third of the EU budget allocated to urban and regional development adn to promote socio-economic convergence
- Evaluation and monitoring activities have been important since the early stages of «structural funds»
- Recent (2012) call for **Counterfactual Impact Evaluation**
- Substantial body of literature on ex post counterfactual evaluation
- **The aim**: the fundamental issue of **Prospective Evaluation** is discused.

Università Bocconi
GREEN
Centre for Geography, Resources, Environment, Energy and Networks

OUTLINE

1. **The role of evaluation**
2. **Ex post counterfactual evaluation**
3. **Prospective evaluation and transportability of policy outcomes**
4. **(Some) Conclusions**

Università Bocconi
GREEN
Centre for Geography, Resources, Environment, Energy and Networks

Evaluation in EU policy

- From «descriptive evaluation» to «counterfactual evaluation»
- An evaluation comparing (potential) Outcome B and (observed) Outcome A is a *counterfactual evaluation;*
- The evaluation process should evaluate the “success” of a given policy (in a certain sense it is the performance measurement of public policies)
- In causal inference, researcher wants to know whether one factor or a set of factors leads to (or causes) some outcome.
- In general, causal inference is the difference between two descriptive inferences. «Progress, don’t regress»

Literature (Counterfactual)

- Hagen and Mohl (2008): SF payments with a generalized propensity score and estimating a dose response function. Positive, but not statistically significant impact on regional growth.
- Becker *et al.* (2010) adopt a regression discontinuity design (RDD) around the threshold of 75% of the EU per capita GDP. Positive and statistically significant effect of Objective 1 transfers
- Heterogeneity in terms of absorptive capacity (Becker et al., 2011)

Literature (heterogeneity)

- Becker et al. (2012) and Percoco (2017) hypothesize that the impact of cohesion policy depends on some characteristics (institutions, education, economic structure)
- They make use of the fuzzy Heterogeneous Regression Discontinuity Design (HRDD) approach
- Evidence of absorbtive capacity as the impact of the quality of institutions and of education are positive and significant; no clear role of economic structure. Possible decreasing returns in the service sector.

Prospective evaluation

- The «Barca report» pointed, among other things, two needs for regional policy making:
  - The need of an extensive use of data to distinguish the effect of the policy from those of the environment (close to counterfactual evaluation)
  - The need to predict the effect of policy across the space (e.g. «what will happen in Andalusia had been implemented the same policy as in Campania?»)
- The political and policy rationale of ex post counterfactual evaluation is «from there to here», that is spatial extrapolation (prediction)
- Issue of knowledge:
  - Assumption of ignorability of place-specific covariates (this contradicts place-based policies)

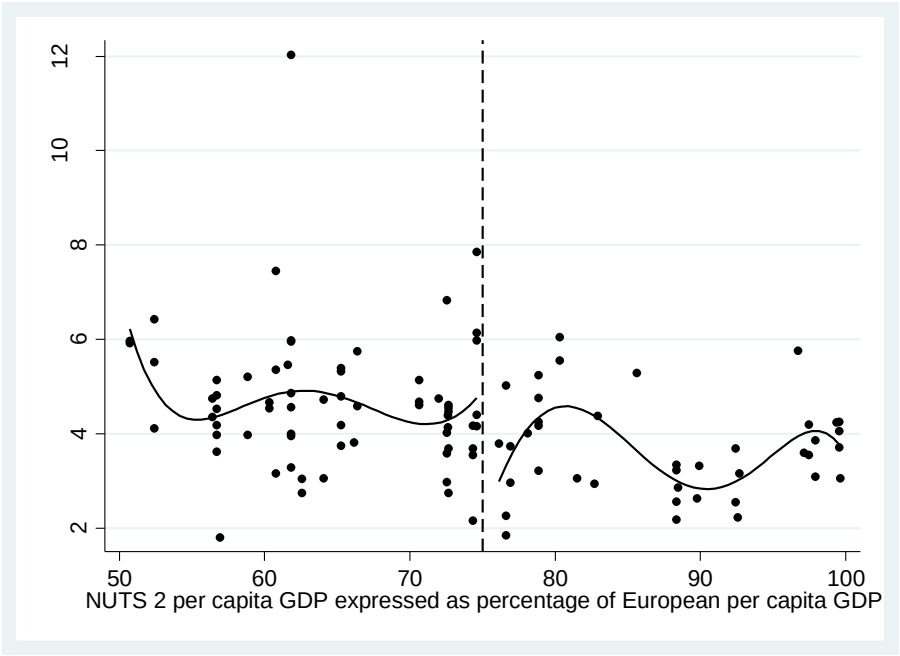
A sympathetic critique of Counterfactual Evaluation

- Often, a **Local Average Treatment Effect (LATE)** is estimated and used

- **Local**: local explanatory power of policy effect estimators

- **Average**: ignoring the full distribution implies ignoring heterogeneity

Case 1: Regression Discontinuity



- Reliability ontly in a narrow interval around the threshold
- The spatial version of RDD poses more serious issues in terms of:
  - Spatial spillovers related to sorting
  - Sorting of firms and households
  - MAUP
- Is the LATE relevant for ALL regions (hence for policy makers of all regions)?

Università Bocconi
GREEN
Centre for Geography, Resources, Environment, Energy and Networks

Prospective evaluation and counterfactual evaluation

- Prospect as prediction: predicting the effect on Andalusia of the policy implemented in Campania

- Two types of **predictions:**

  a) **On the support**: use of the same information set
  b) **Out of the support (extrapolation)**: use of information not used in the counterfactual evaluation

Prediction on the support – Case 2

- Problem of non-overlapping between treated and control regions ➔ Application of the Angrist and Raikkonen (2013).

$$y = \alpha + \beta x + \gamma T + \delta z + \varepsilon$$

- Covariates z t mimic (or are correlated with) the forcing variable (trend).
- The condition β =0 can be tested on given intervals.

<u>The Procedure</u>

- ***Step 1:*** Indentify a window in which the forcing variable is correlated with the set of covariates.
- ***Step 2:*** Covariates are used to predict the treatment status far from the threshold and hence to match units on the basis of similar covariates (

Application in Crescenzi et al. (2018) and Percoco (2016; 2018)

Prediction out of the support (Pearl, 2011)

Transportability : Given two populations denoted π and π*, characterized by probability distributions P and P*, and causal diagrams G and G*, respectively, a causal relation R is said to be transportable from π to π* if R(π) is estimable from the set I of interventional studies on π, and R(π*) is identified from I, P, P*,G, and G*.

Direct transportability: A causal relation R is said to be direct transportable from π to π* if R(π)=R(π*)

Conditional transportability: A causal relation R is said to be trivially transportable from π to π*, if R(π*) is identifiable from (G*, P*).

Case 3: Meta-analysis

- Meta-analysis is the statistical analysis of literature or of case studies

$$ES_i = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + e_i$$

- The (spatial) prediction of ES, conditional on local characteristics in X gives a conditional transportability of the pollicy

- More reliable than direct transportability

- Holtz et al. (2005) as an alternative by using micro data

Conclusions

- Better LATE than nothing, but dangerous from a policy making perspective
- Ex post counterfactual evaluation may be trivial prospective evaluation
- Non-trivial (i.e. Adjusting for local characteristics) prospective evaluation can account also for spatial heterogeneity

THANK YOU FOR YOUR ATTENTION

MARCO.PERCOCO@UNIBOCCONI.IT

Università
Bocconi
GREEN
Centre for Geography,
Resources, Environment,
Energy and Networks