Looking for the ex post impact of the ongoing S3

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S3 economic impacts: some of the questions

Do S3 measures improve the economic performance of beneficiary firms?

Does S3 work in most disadvantaged areas of the European Union?

What is the impact and value added of the new features introduced into regional innovation strategies by S3?

How important is total funding for S3 measures effectiveness?

Profoundly linked with questions on the practical impact of innovation policies
How to measure the economic impact of a policy

The Question:

What would have happened in absence of the policy (treatment) i.e. What would have been the outcome variable if the policy would have been not adopted

The Goal:

To isolate the effect of the policy from the effects of all other co-existing factors (other ‘things going on’)

The Requirement:

Differences in the outcome variable of two groups (treated and not treated) can be attributable only to the treatment
How to measure the economic impact of a policy - empirically

\[ Y_i = \alpha + \beta T_i + \gamma X_i + \varepsilon_i \]

i = unit (region - firm)
Y = outcome variable (gdp growth, employment, value added, investments, sales)
X = controls (initial level of gdp, observable characteristics of the firms)
T = Treatment (dummy) = 1 (if region i is disadvantaged, if firm i is financed) and 0 otherwise
\varepsilon = error term

\[ \beta = \text{effect of the policy } T \text{ on the outcome variable } Y \]
How to measure the economic impact of a policy - empirically

\[ Y_i = \alpha + \beta T_i + \gamma X_i + \epsilon_i \]

\( \beta \) must capture the difference between what we observe with the policy and what we would have observed without the policy.

But:
We do not observe what would have happened with the policy for those units that have been not treated.
We do not observe what would have happened without the policy for those units that have been treated.
Treated and untreated regions are different not only for the treatment that they received but also on many observable and unobservable aspects \((X)\): we cannot account for all of them.
The as good as random scenario

We need to:
- reproduce a as good as random scenario where treated and untreated units are similar in everything except for being treated or not
- compare performances of similar units within this scenario

This is feasible by leveraging on Counterfactual methods (EU Commission)
Counterfactual methods – an example
How to use counterfactual methods to evaluate S3 impacts allowing the policy finetuning

**Difficulties:**

1. They imply an ex post application

   Too early for rigorous evaluation of actual 2014-2020 S3

   Open data on the 2014-2020 expenditure available only at the Programme level. Only recently and in virtuos cases (OpenCoesione) the information on the Programmes’ beneficiaries

   More time is needed to capture (at least) medium-run effects

2. Often they are only capable of binary answers on the policy effects
How to use counterfactual methods to evaluate S3 impacts allowing the policy finetuning – cont.

Opportunities:

1. Focus on *Forerunner Programmes*, anticipating key features of the S3 approach
   - concentration of resources on pre-selected priorities
   - public-private and inter-firm collaboration
   - specialization clusters
   - technologically advanced activities
   - project selection processes and transparency

2. Focus on *effect heterogeneity*
   What is the impact of the different features introduced into regional innovation strategies by S3?
The case of a Smart Specialisation Forerunner Programme: Collaborative Industrial Research (CIR) in Italy

Cohesion Policy incentives for collaborative industrial research: evaluation of a Smart Specialisation forerunner programme

Riccardo Crescenzi, Guido de Blasio & Mara Giua
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Crescenzi, de Blasio and Giua (2018):
evaluate the ex-post impact of a scheme supporting innovative activities of firms located in less developed regions in Italy with a total budget of 1 billion euros co-financed by the EU Cohesion Policy in 2007-13
identify impacts by applying counterfactual methods at the micro level (applicant firms)
focus on both ‘does it work?’ and ‘what works?’ research questions (average and heterogeneous impacts) --> cfr. also Workshop 5: Cohesion policy: what works well and what does not?
Why the CIR is a forerunner programme for the S3

✓ They address the same categories of beneficiaries (firms, universities, research centres)

✓ They both promote partnerships among firms, and collaboration with Universities and Public Research Centres

✓ They concentrate the financial support in specific pre-selected sectors. The 12 areas of interventions identified by applying the S3 entrepreneurial discovery process are almost exactly overlapping with the 9 sectors targeted by the CIR in the previous programming period
Why the CIR is a forerunner programme for the S3 (cont.)

- They are carried out under the responsibility of the same Managing Authority: Ministry of Economic Development together to the Ministry of Education, Universities and Research.
- The magnitude of their financial endowment and the financing funds are fully comparable.
- The territorial coverage (‘Mezzogiorno’ Regions) remains unchanged.
- The selection procedures, based on panels of external evaluators, follow a perfectly corresponding timeline. Even the submission platform (SIRIO) is the same.
Questions on S3 answered by looking at the forerunner programme

What is the impact of CIR on the economic performance of the beneficiary firms?

Do CIR-treated firms experience better performance than corresponding non-treated firms in terms of investments, value added and employment?

What features of S3 Programmes work best in the most disadvantaged areas of the EU?

How does the impact of CIR depend on specific aspects of the program matching current S3 features?

does the impact of CIR incentives change if the financed project/firm:
collaborates with public research centres?
collaborates other partners?
targets specific -innovative -activities?
operates in low tech industrial sectors?
has a consolidated innovative capacity?
is a multinational?

To what extent the impact of CIR depends on budget availability?

what would have happened with a more generous funding of the scheme (i.e. with a less selective funding threshold)?
Questions on S3 answered by looking at the forerunner programme - results

What is the impact of CIR on the economic performance of the beneficiary firms?

Do CIR-treated firms experience better performance than corresponding non-treated firms in terms of investments, value added and employment? NO

What features of S3 Programmes work best in the most disadvantaged areas of the EU?

How does the impact of CIR depend on specific aspects of the program matching current S3 features?

- does the impact of CIR incentives change if the financed project/firm:
  - collaborates with public research centres? NO
  - collaborates other partners? NO
  - targets specific -innovative -activities? NO
  - operates in low tech industrial sectors? YES
  - has a consolidated innovative capacity? NO
  - is a multinational? NO

To what extent the impact of CIR depends on budget availability?

- would the CIR have had a different impact with a more generous funding of the scheme (i.e. with a less selective funding threshold)? NO
Questions on S3 answered by looking at the forerunner programme – for the discussion

• When collaborations are not the result of an open and unconstrained search for the best possible partners but on the contrary - are induced by public policy incentives, they fail to generate positive impacts

• Low tech sectors might be a less flashy but more rewarding target for public resources in less developed regions

• The mobilization of larger firms and multinationals remains a challenge for current and future S3 strategies that should be carefully considered
What we needed to have to evaluate the CIR with counterfactual – for the discussion

What we needed to have to evaluate the CIR with counterfactual

Data (cfr. also Workshop 4: Impact evaluation and the data revolution)
- micro level on beneficiaries and applicants
  (Sirio - CERVED – INPS – ORBIS – PATSTAT - OpenCoesione)
- interoperability
- updated

Threshold discriminating the assignment (selective measure)

Time span of the measure (temporal window of project implementation well defined)
Entrepreneurial discovery process – for the discussion

12 sectors identified by the national coordination from the regional strategies are coincident with the CIR 9 sectors...

... but there may be a discontinuity at the regional level:
From another perspective... – for the discussion

The impact of a policy also depends on how effective it is in selecting its targets. Predicting which target is associated with larger returns is crucial, especially with limited budgets.

The use of Machine Learning Algorithm in Policy Evaluation:

