How does the net impact of the EU Regional Policy differ across countries?

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Introduction

Topic: Impact assessment of the European Regional Policy

- Regional Policy, funded by the Structural Funds and the EU Cohesion Fund
- General aim:
  offset detrimental effects of the integration process for disadvantaged areas
  reduce disparities in outcome and opportunities among European regions
- Objective 1-2-3-4-5a-5b (pre 2007)
  Convergence; Competitiveness; Territorial Cooperation (2007-13)
- Resources more than doubled since late 1980s
  2007-13: 347bn euro (of which 277bn ERDF+ESF) out of 864bn EU total budget

Approach: Treatment effect methods

originally developed for laboratory experiment
adapted to non randomized scenario (economics)

Introduction

Why: Controversial evidence

- Classical regression framework
  - almost no impact (Boldrin and Canova, 2001; Garcia-Mila' and McGuire, 2001; de Freitas et al., 2003; Dall'Erba and Le Gallo, 2007)
  - success (Cappelen et al., 2003)
  - limited/mixed (Bussoletti and Esposti, 2004; Bouvet, 2009; Puigcerver-Penalver, 2004)
  - dependent on policy/territory elements (Ederveen, Gorter Mooij and Nahuis, 2002; Rodriguez-Pose and Fratesi, 2004; Antunes and Soukiazis, 2005; Percoco, 2005; Mohl and Hagen, 2008; Mancha-Navarro and Garrido-Yserte, 2008)

- Treatment effect framework
  - success (Becker, Egger, von Ehrlich and Fenge, 2008; Pellegrini et al. 2013; Esposti, 2011)
  - conditioned (Becker et al., 2013; Percoco, 2012)
  - positive but not strongly significant (Hagen and Mohl, 2008)

All of them look at the whole EU, but few country specific studies (Mitze, Paloyo, and Alecke, 2012; Bondonio and Greenbaum, 2014)

Empirical analysis

RQ: Which is the exogenous impact of the policy in the different EU countries?

Relevance:

- During the 1994-99 a third of the total Community budget was addressed to **Objective 1 regions** (75% of EU average GDP) through different Policy tools (infrastructure, firms support, innovation, investment scheme for private sector). They were distributed (regional GDP lower than 75% of EU average GDP) across all the EU countries
- **Employment** variation: GDP and Employment were the Regional Policy intended outcomes (European Commission, 1993)
- Country-specific pieces of evidence in literature are endogenous and heterogeneous

How to answer to this Research Question?

- An RDD model uses the distance of the territorial units (LAU 2) from the *policy change boundary* as forcing variable for the treatment to estimate, at the cut-off of the distribution, the effect on employment variation of being an Objective 1 region.
- The polynomial specification allows us to control for the discontinuity constructing a control group balanced with respect to the treated one (Blundell and Costa Dias, 2009).

Literature on impact assessment

Limited attention to treatment effect evaluation in existing literature on EU regional Policy.
However, significant insights come from the literature on:

- RDD:

  Battistin and Rettore, 2008; Imbens and Lemieux 2008; Blundell and Costa-Dias, 2009; Lee and Lemieux, 2010; Bronzini and Iachini, 2011; de Blasio et al., 2011;
  - discontinuity: threshold value of a forcing variable
  - sub sample: observations at the cut off

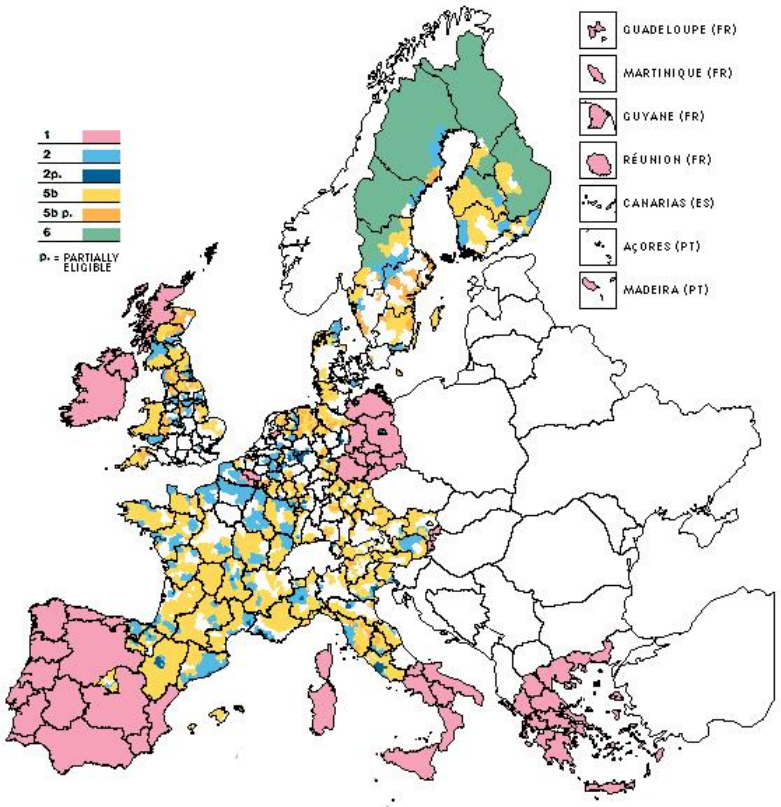
- 'SPATIAL' RDD:

  Holmes, 1998; Black, 1999; Gibbons, Machin and Silva, 2009; Dell, 2010; Duranton, Gobillon and Overman, 2011; Menon and Giacomelli, 2012; Einio and Overman, 2012; Jofre, 2012; Freedman, 2012; Papaioannu et al., 2012
  - discontinuity: administrative or geographical boundaries
  - sub sample: spatial units on the boundary

- identification assumption in both cases:
  within the subsample only the treatment changes sharply whereas everything else is smoothly distributed

Empirical analysis

The focus is on the EU countries hosting some of the most disadvantaged regions in Europe (Objective 1 regions in 1994-99) and offering a *policy change boundary* between treated and not treated regions:
Germany, Italy, Spain and United Kingdom.
They absorbed alone 70% of the Objective 1 population in Europe in 1994 (EU Commission, 1996) and in the 2014-20 period they will keep absorbing the 25% of Regional Policy resources.



England

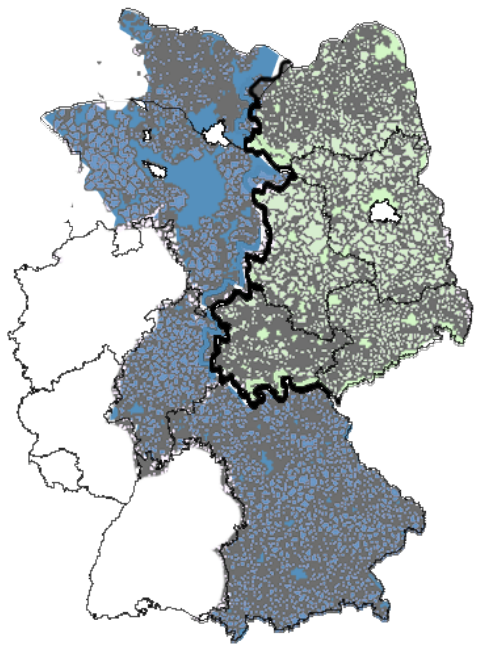
whole sample observations: 413 wards
Objective 1 regions: Merseyside
Non Objective 1 regions: Cheshire, Lancashire and Greater Manchester

	Diff. whole	Diff. closer
Employment rate	-3.10*	-1.80
Dependency ratio	4.90***	-0.43
Old Population ratio	1.60**	2.80*

Germany

whole sample observations: 8288 gemeinden
Objective 1 regions: Brandenburg, Mecklenburg-Vorpommern, Freistaat Sachsen, Sachsen-Anhalt and Freistaat Thringen
Non Objective 1 regions: Schleswig-Holstein, Niedersachsen, Hessen and Freistaat Bayern

	Diff. whole	Diff. closer
Employment rate	-2.45***	1.70*
Dependency ratio	0.32***	0.03***
Old Population ratio	0.25***	1.81



Italy

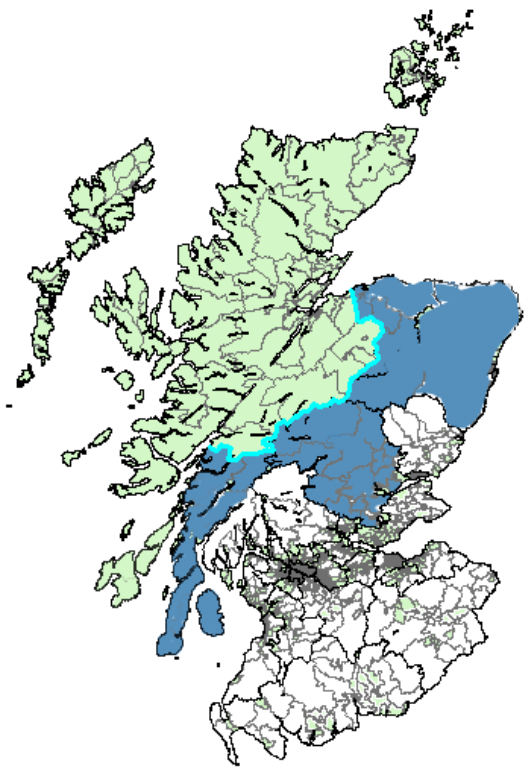
whole sample observations: 1566 comuni
Objective 1 regions: Abruzzo, Molise and Campania
Non Objective 1 regions Marche and Lazio

	Diff. whole	Diff. closer
Employment rate	4.70***	-2.70
Dependency ratio	-0.83*	1.21
Old Population ratio	0.64*	0.80

Scotland

whole sample observations: 251 wards
Objective 1 regions: Highlands and Islands
Non Objective 1 regions: Argyll and Bute, Aberdeen, Perth and Kinross and Moray

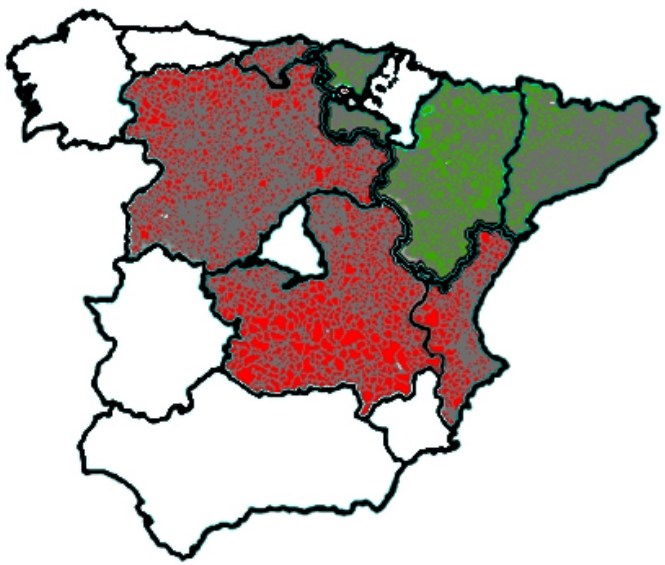
	Diff. whole	Diff. closer
Employment rate	1.5**	0.34
Dependency ratio	0.01	-0.03
Old Population ratio	0.01	-0.01



Spain

whole sample observations: 5892 municipios
Objective 1 regions: Cantabria, Castilla y Len, Castilla-La Mancha and Comunidad Valenciana
Non Objective 1 regions: Pays-Basco, la Rioja, Aragon and Catalonia

	Diff. whole	Diff. closer
Employment rate	6.39***	1.02*
Dependency ratio	-6.30***	-4.20*
Old Population ratio	-3.14***	-2.30*



Results

$$\Delta_{Y\,it} = \beta_0 + \beta_1 Y_{it-1} + \beta_2 Policy_{it-1} + Policy_{it-1} \sum_{p=1}^{2} \gamma dist_i + \epsilon_{it} \quad (1)$$

	Polynomial degree		
	0	1	2
England Objective 1 status	6.56	0.05	7.37
	(5.56)	(8.55)	(12.39)
Germany Objective 1 status	-12.83***	-14.26***	-13.24***
	(1.11)	(1.76)	(2.53)
Italy Objective 1 status	-1.71	10.47***	11.95***
	(1.66)	(2.90)	(4.25)
Scotland Objective 1 status	-3.84	-4.49	4.80
	(2.67)	(4.65)	(5.68)
Spain Objective 1 status	-13.06***	10.63***	6.52**
	(2.35)	(2.32)	(2.73)

Robust and clustered standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

CONCERNS

- SORTING: No Displacement effect by looking at different sample of control units
- CONFOUNDING FACTORS: No significant impact of the treatment on *space-invariant* observables

$$X_{it} = \beta_0 + \beta_1 Policy_{it} + \epsilon_{it} \tag{2}$$

	Employment rate	Dependency ratio	Old Population ratio
England Objective 1 status	-0.00	-0.00	-0.00
Germany Objective 1 status	-0.01**	-0.36***	-0.00**
Italy Objective 1 status	-0.00	-0.00	-0.00
Scotland Objective 1 status	0.40	0.06	-0.00
Spain Objective 1 status	-0.00	-0.00	-0.00

Robust and clustered standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1.

- POLICY VARIABLE DISCRETE NATURE: ITT lower bound for ATT
- EXTERNAL VALIDITY: EU wide analysis

Preliminary Conclusions

- Lack of consensus on Regional Policy impact partly due to the difficulties of most of the existing literature (classical regression framework) in dealing with endogeneity (linked to the Policy's nature)
- Randomized experiment properties help:
  - RDD cut-off: *policy change boundary*
  - RDD forcing variable: distance from the boundary
- The RDD exogenous estimation of the country-specific impact achieved by Regional Policy contributes to explain the ambiguous picture in the existing literature. In particular:
  - During 90s, EU Regional Policy was supporting employment in the most disadvantaged regions of almost all European countries
  - In Germany unification dynamics might be playing a crucial role e.g., outflow migration to west Landers (Becker et al., 2013)

Thank you!