

# LOCAL POLICY EFFECTS AT A TIME OF ECONOMIC CRISIS

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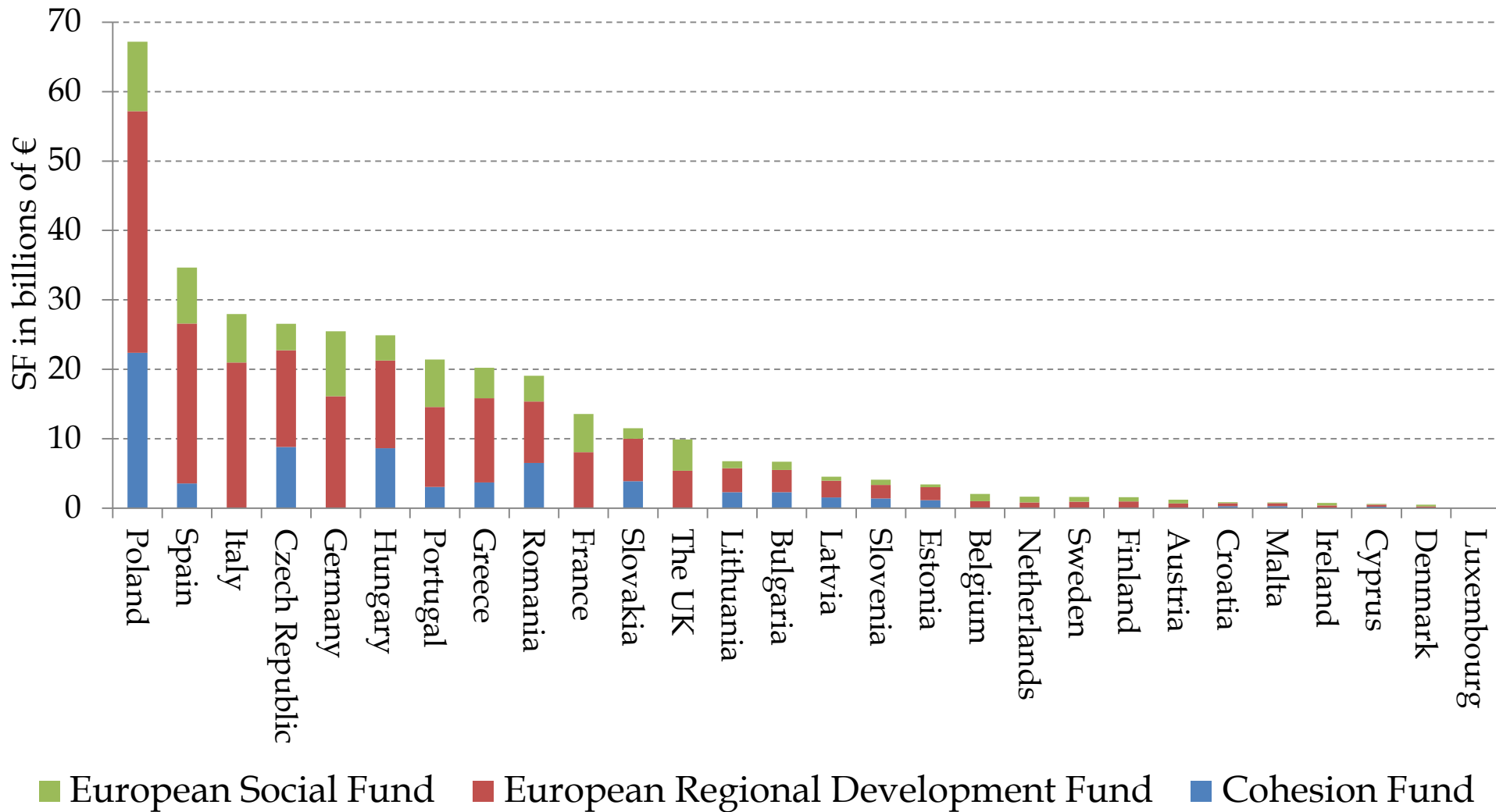
# Structural funds

- **Structural and Cohesion Funds (SF)** is the EU's flagship development programme to narrow the gap between the rich and poor regions of Europe and to contribute to European economic growth.
- The policy goals are to promote the economic, territorial and social cohesion, reduce the disparities in terms of development among regions and make the opportunities of citizens even. In Italy, the Cohesion Policy is financed by resources from the EU (Structural and Investment Funds with the principle of additionality) and the national budget (co-funding to the EU Structural Funds and national funds).

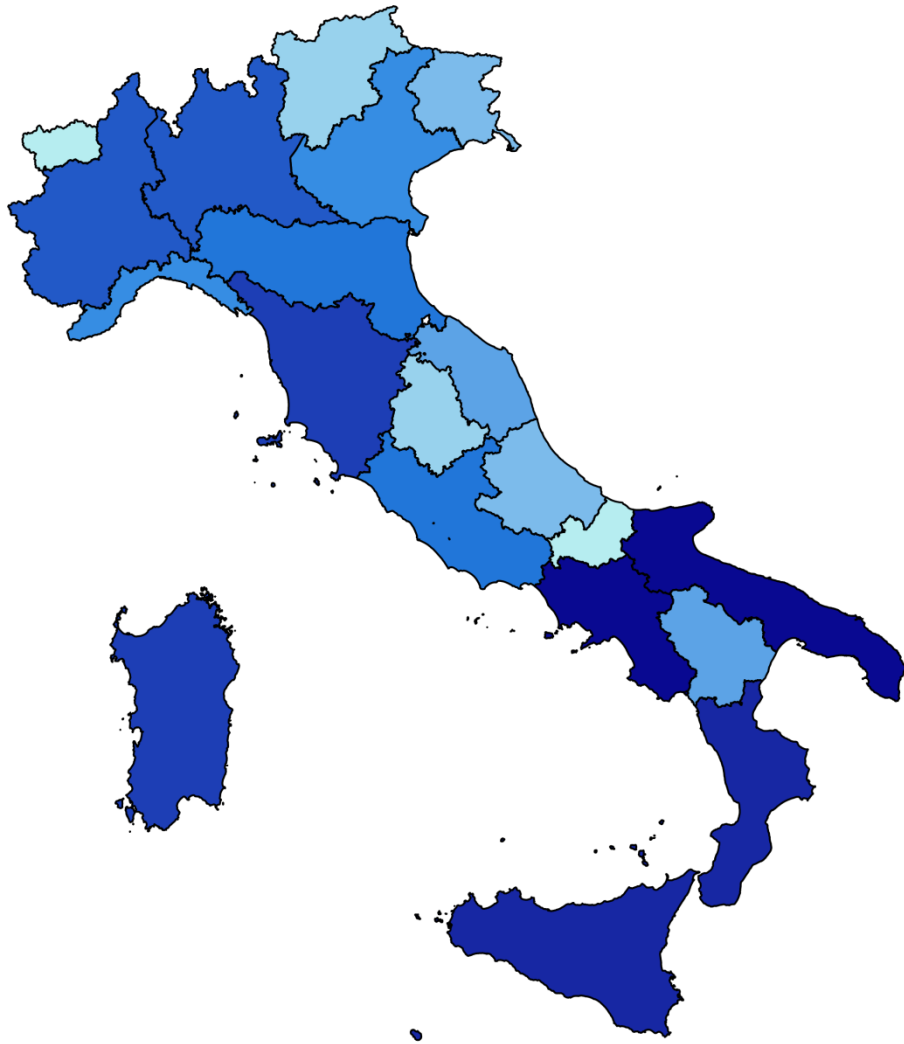
# Structural funds

- What is the assignment process of the SF?
- The policy bulk concerns the so-called Objective 1 (Convergence) regions, defined as regions, at NUTS 2 level, with per capita GDP in PPS below 75% of EU average. Despite the wide range of driving forces triggered by Regional Policy (e.g., population density, employment rate,...), per capita GDP growth in less developed regions represents a key measure to evaluate its impact. Indeed, the rule governing regional eligibility to EU transfers (the '75% rule') has not undergone changes over the different programming periods and regions complying with this rule have been eligible to receive more than two-thirds of Structural Funds appropriations (77% in the 2007-2013 programming period).

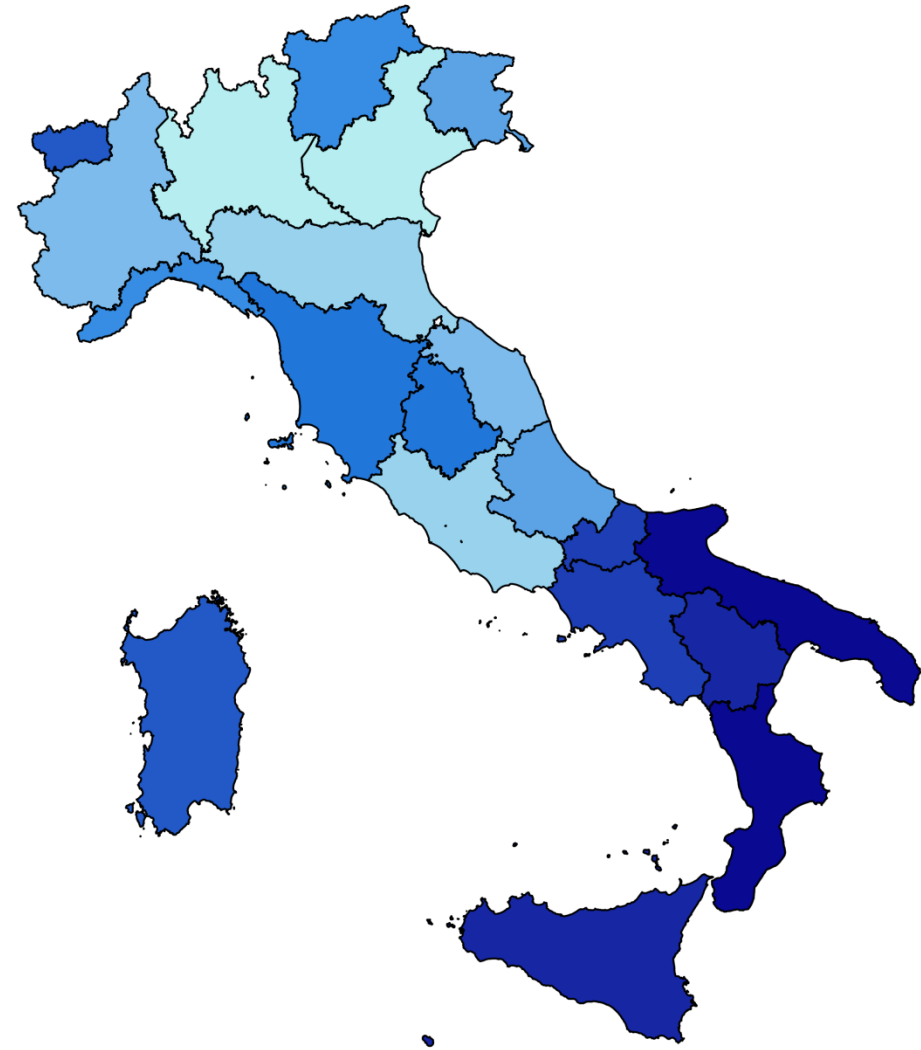
# 2007-2013 SF by Member State (EU-28)



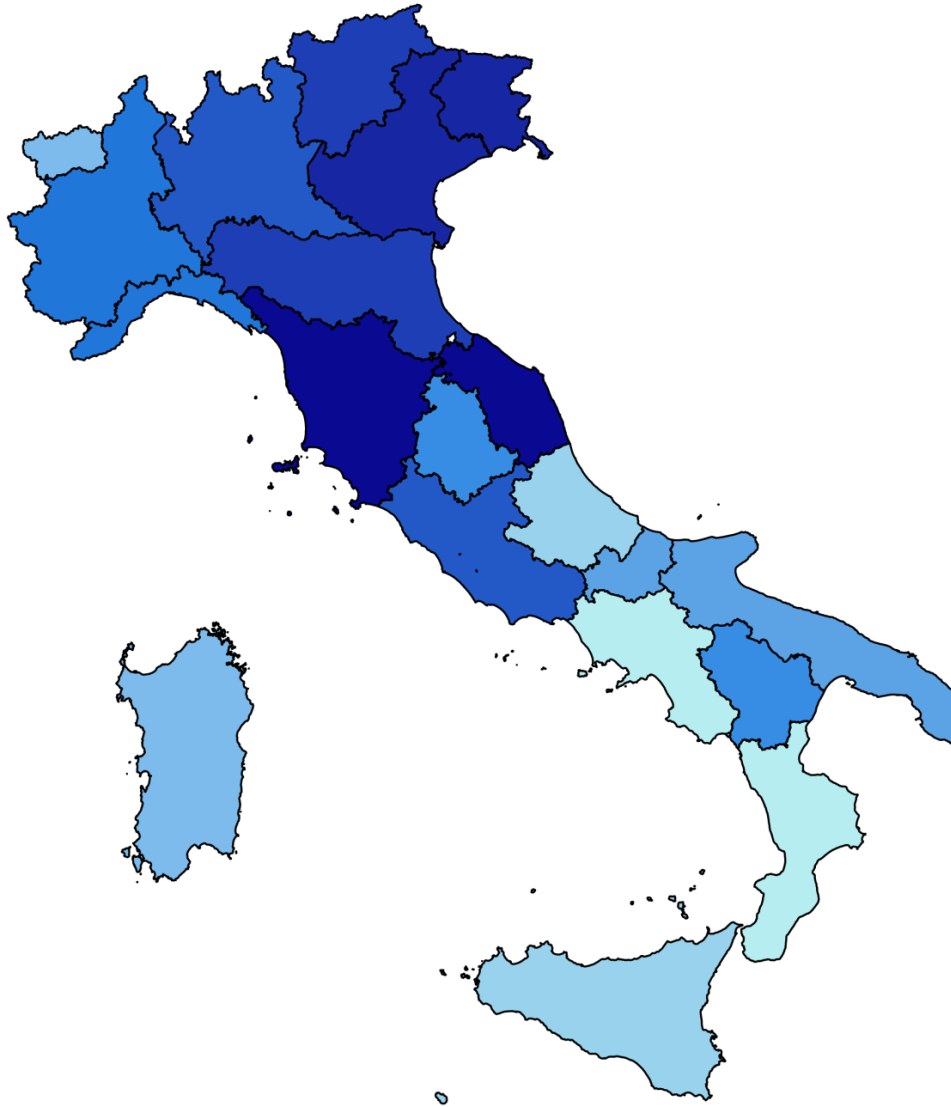
**Public funds (payments)  
2007-2014**



**Per capita public funds  
(payments) 2007-2014**



## “Absorptive capacity” 2007-2014



This index ranges  
from 39.5%  
(Campania), to  
79.1% (Marche).

# Literature review

- Given the increasing share of the EU budget devoted to Regional Policy, it is crucial to determine whether investment projects actually respond to local demand. A large and growing body of literature has investigated the policy's contribution to economic growth and convergence (*Dall'erba, 2005; Mohl and Hagen, 2010; Becker et al., 2010, 2012; Pellegrini et al., 2013; Rodriguez-Pose and Garcilazo, 2015; Ciani and de Blasio, 2015; Giua, 2016; Cerqua and Pellegrini, forthcoming*).
- However, after more than 30 years of policy intervention, so far no consensus has been reached: the empirical evidence has provided mixed, if not contradictory, results (Mohl and Hagen, 2010).

# Literature review

- Even if the overall results are mixed, there is “enough” evidence to highlight the following results **at the regional level**:
  - i. the impact of the regional transfers on GDP is positive, but with a limited magnitude;
  - ii. the positive impact of the SF intensity on the growth of the Ob. 1 regions is decreasing the higher are the regional transfers;
  - iii. there is a positive relationship between absorptive capacity (human capital + good institutions) and effectiveness of the SF.



# Literature review

- Recent studies use data **at a small geographical level**:
  - Ciani and de Blasio (2015) investigate the effectiveness of SF on employment, population and house prices in 325 LLS located in Southern Italy exploiting the variability in payments for the 2007-2013 PP. They find that these funds did not offset the negative consequences of the economic crisis.
  - Giua (2017) considers - in a spatial RDD setup - the differences in employment growth across municipalities on the two sides of the Objective 1 border and finds a positive impact on employment over the period 1991-2001.

# Novelties of the paper

This study investigates the effectiveness of SF during the period 2007-2014 using Italian municipalities as units of analysis. The contributions to the literature are:

- Use of a recent evaluation approach: the spatial RDD
- Use of recent and very detailed data
- Investigation of the heterogeneity of impact with respect to human capital indexes, quality of government indexes and different intensities of treatment.

# Evaluation strategy

- To estimate the effect of SF on growth, we run the following equation:

$$y_i = \alpha + f(\text{geog\_dist}_i) + \text{Conv}_i[\beta + f(\text{geog\_dist}_i)] + X_i'\gamma + \varepsilon_i$$

where  $y_i$  is the outcome variable of the  $i^{\text{th}}$  municipality,  $\text{Conv}_i$  is the binary indicator variable for treatment which is unity in case municipality  $i$  belongs to a Convergence region zero else,  $X_i'$  is a vector of covariates and  $\varepsilon_i$  is the error term.  $f(\text{geog\_dist}_i)$  is the RDD polynomial, which controls for smooth functions of geographic location. We use 2 different forms of  $f$ : i) the perpendicular (Euclidean) distance to the boundary; ii) a two-dimensional RDD in latitude-longitude space.

# Evaluation strategy

- Main assumptions invoked:
  - (Conditional Local Geographic Treatment Ignorability). When treated and non-treated areas are adjacent, the potential outcomes are independent of treatment assignment only for units that are close to the boundary that separates the 2 areas, conditional on pre-treatment characteristics  $X$ . That is,

$$y_{i1}, y_{i0} \perp \text{Conv}_i \mid X_i, \text{geog\_dist}_i < D$$

- (Compound Treatment Irrelevance assumption). When the boundary of interest is simultaneously the boundary of multiple institutional, administrative or political units, we need an assumption that allows us to isolate the treatment of interest from all other treatments that occur simultaneously.

# Evaluation strategy

- Besides, the availability of detailed data on the allocation of public funds and absorptive capacity indexes allows investigating whether the impact of the policy is heterogeneous at the border.
- We use the Heterogeneous LATE approach proposed by Becker at al. (2013) and then adapted to the case of continuous treatment by Cerqua and Pellegrini (forthcoming).

$$y_i = \alpha + f(\text{geog\_dist}_i) + h_0(\bar{z}) + \text{Conv}_i[\beta + f(\text{geog\_dist}_i) + h_1(\bar{z})] + X_i'\gamma + \varepsilon_i$$

Where  $z$  can be interpreted either as a relative measure of absorptive capacity or as measure of intensity of treatment.

# OpenCoesione

- The OpenCoesione project is Italy's national web portal on the implementation of investments programmed in the 2007-2013 programming cycle by Regions and State Central Administrations via cohesion policy resources. The aim of this initiative is to enable those citizens who are interested (students, journalists, researchers, etc.) to get data and information regarding the use of public resources and to assess their effectiveness and coherence.
- The web portal contains information about any single project carried out to implement cohesion policy, and more specifically: funds used, places and categories, subjects involved and implementation timeframes.

# OpenCoesione

- Sources of data published are: with regards to EU Structural Funds, central monitoring systems provided by the beneficiaries of funds; with regards to the National Fund for Development and Cohesion, the Resolutions of the Interministerial Committee for Economic Planning which assign resources to single interventions.
- The OpenCoesione project is an institutional initiative of the Italian Department for Development and Economic Cohesion.

# OpenCoesione

## OPENCOESIONE

Verso un migliore uso delle risorse: scopri, segui, sollecita.

Progetti ▾

Soggetti ▾

Risorse ▾

Progetti ▾

Cerca tra i progetti



### VERSO LA PROGRAMMAZIONE 2014-2020

 **RISORSE**

 **PROGRAMMI**

 **BANDI**

 **PROGETTI**

FINANZIAMENTI  
MONITORATI  
(INCLUDE RISORSE  
ATTRATTE)

**102,1  
MILIARDI  
DI EURO**

PAGAMENTI  
MONITORATI  
(INCLUDE RISORSE  
ATTRATTE)

**54,1  
MILIARDI  
DI EURO**

PROGETTI  
MONITORATI

**960.548**

OpenCoesione è il portale sull'attuazione dei progetti finanziati dalle politiche di coesione in Italia. Sono navigabili dati su risorse assegnate e spese, localizzazioni, ambiti tematici, soggetti programmatori e attuatori, tempi di realizzazione e pagamenti dei singoli progetti. Tutti possono così valutare come le risorse vengono utilizzate rispetto ai bisogni dei territori. I dati pubblicati sono aggiornati al **30/04/2016** e riguardano **103.617 soggetti**

**RISORSE TOTALI 2007-2013**

**99,286  
MILIARDI  
DI EURO**



# Data

- **Dependent variables**
  - i. Log changes of the number of employees per 1,000 residents over the period 07/14;
  - ii. Log changes of the number of plants per 1,000 residents over the period 07/14;

We use the **Istat's ASIA-UL** (Statistical Register of Active Enterprises – Local Units) archive, which is a statistical register of firms' plants (local units) and workforces. A plant is defined as an enterprise or part thereof (e.g. a workshop, factory, warehouse, office, mine or depot) situated in a geographically identified place. It contains information, at municipal level, on the number of plants, economical activity and the number of employees.

# Data

- **Dependent variables**

iii. Log changes in income (2010 constant prices) over the period 07/14;

The Ministry of Economy and Finance (MEF) collects data on the individual income tax return and make them freely available to the public (aggregated at the municipality level).

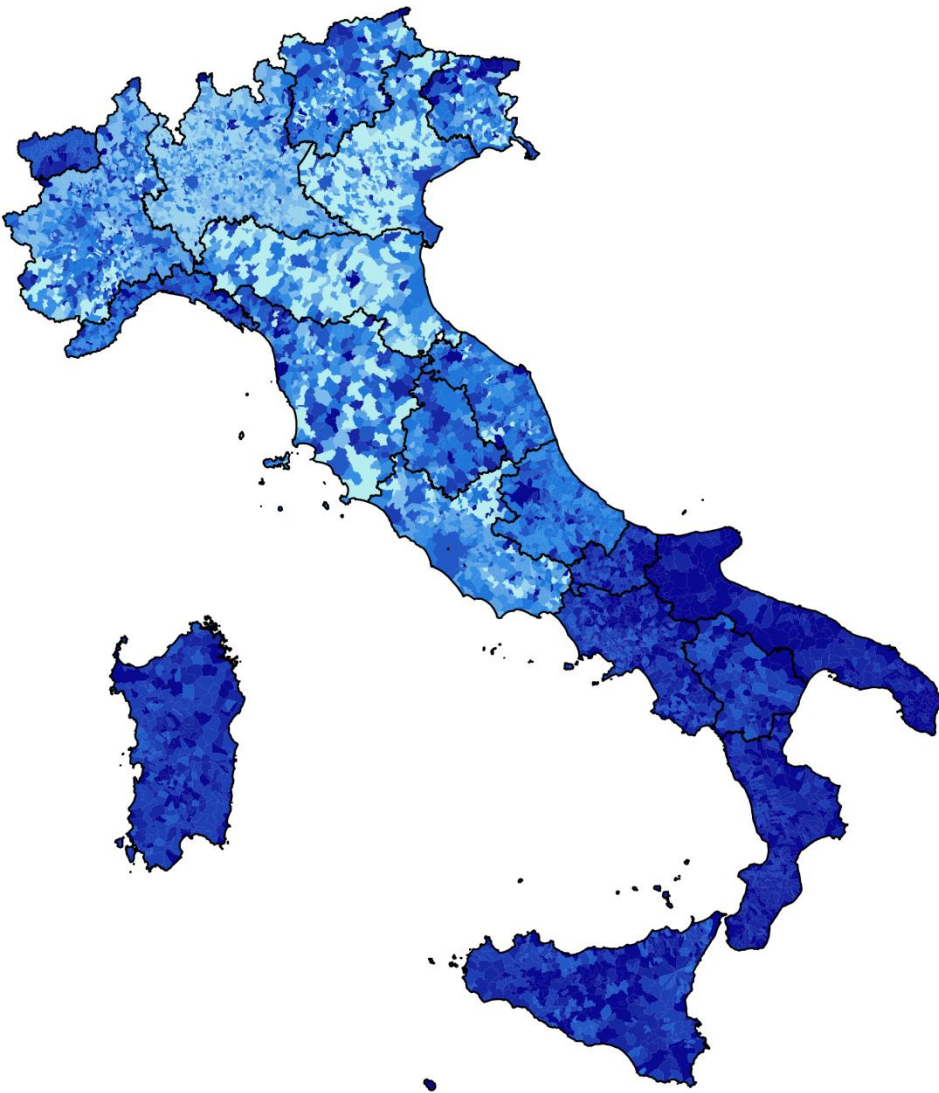
# Data

- **Treatment variables**
  - Dummy variable: look at “significant” average differences across the regional borders;
  - Intensity variable: Per-capita values are calculated taking into account the total payment 2007-2014 of all projects associated to a municipality, province or region divided by the resident population of the same municipality, province or region in 2007.
- Sensitivity/alternative intensity variables: i) consider only projects concluded by the end of 2014; ii) consider only projects at the municipality level; iii) consider only projects directly affecting the competitiveness of the firms (expenditure category: i) competitiveness; ii) R&D).

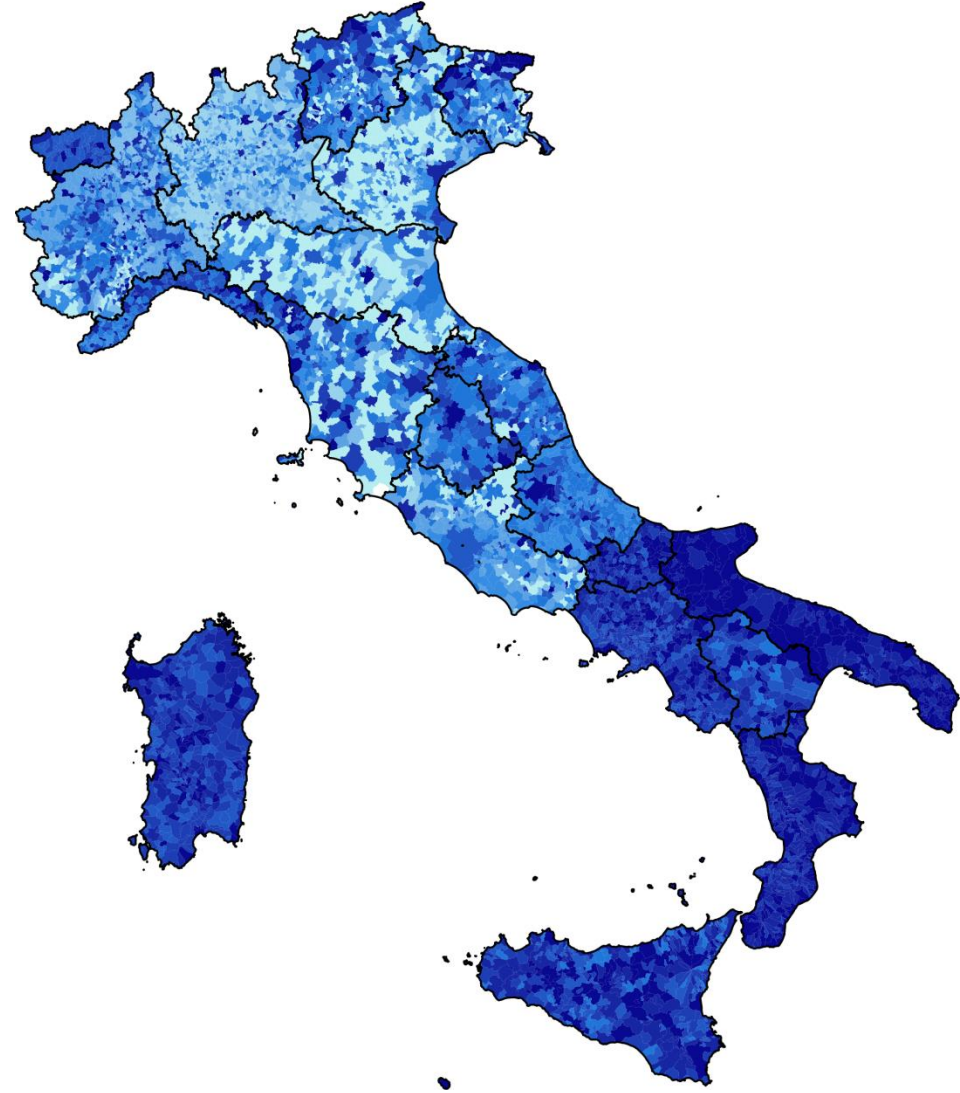
# Data

- Human capital indexes: i) proportion of individuals with at least high-school diploma aged 19+ or 19-34; ii) proportion of graduates.
- Quality of institutions indexes: i) OpenCivitas 2010 index (*This index reflects the municipality's ability to meet the citizens' demand for services, taking into account the financial needs of the local authority according to its territorial characteristics and socio-demographic aspects of the population*); ii) Proportion of graduates working in the municipality.

Overall per capita payments 07-14

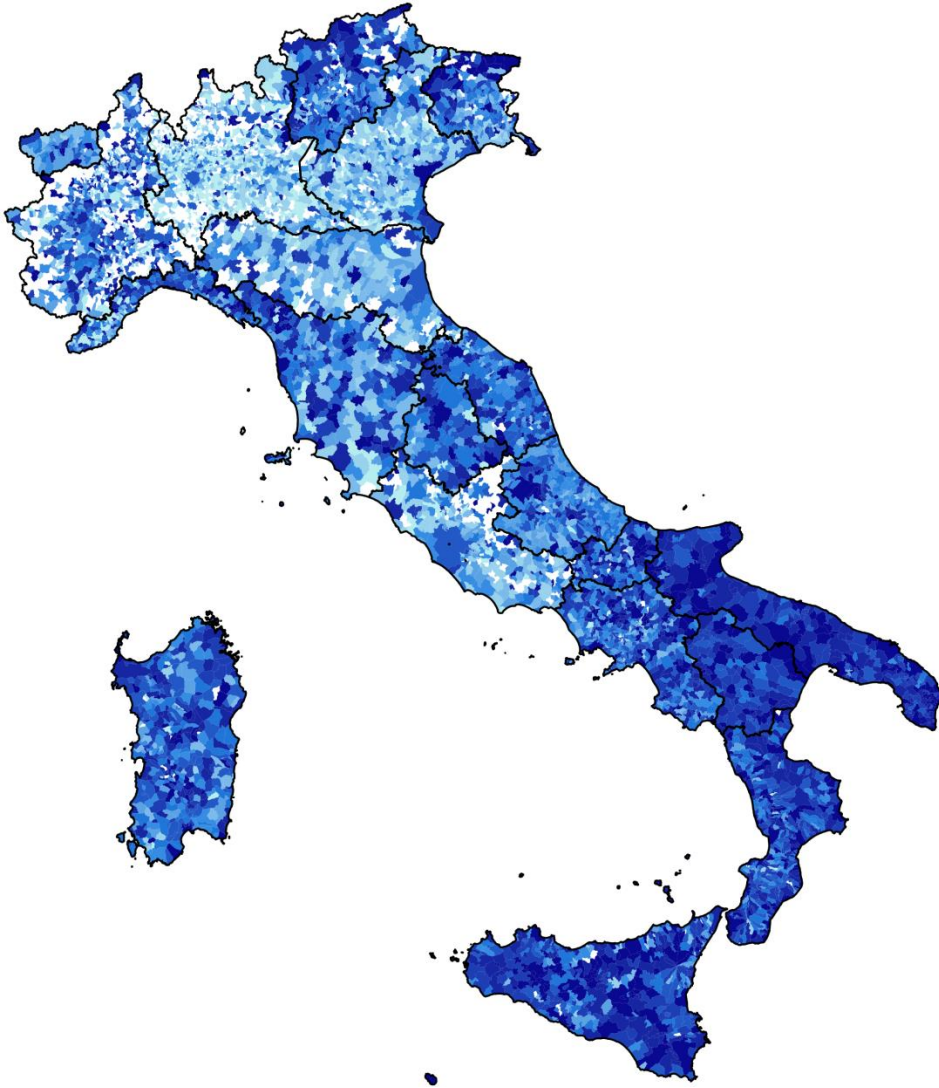


Overall per capita payments 07-14  
(only completed projects)

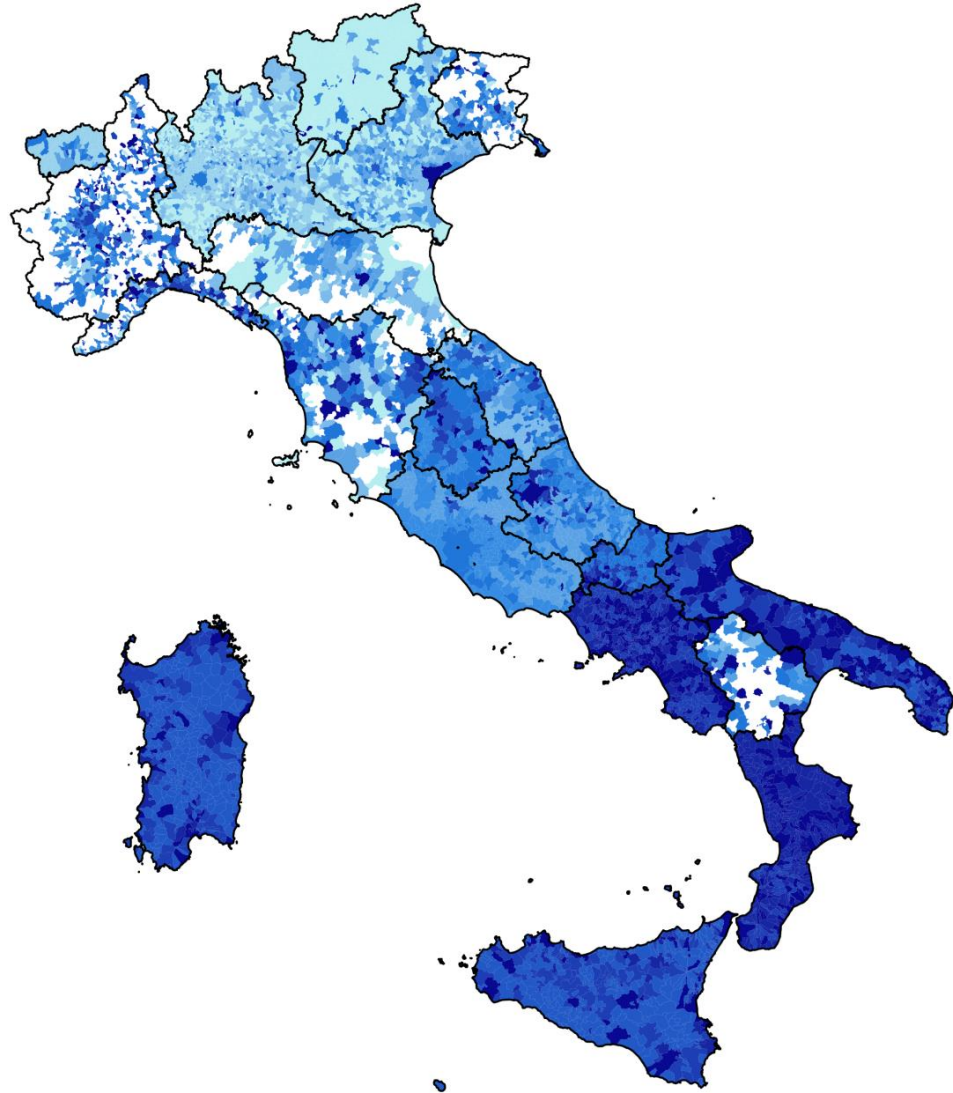




Overall per capita payments 07-14  
*(only completed municipality projects)*



Overall per capita payments 07-14  
*(only firms related projects)*

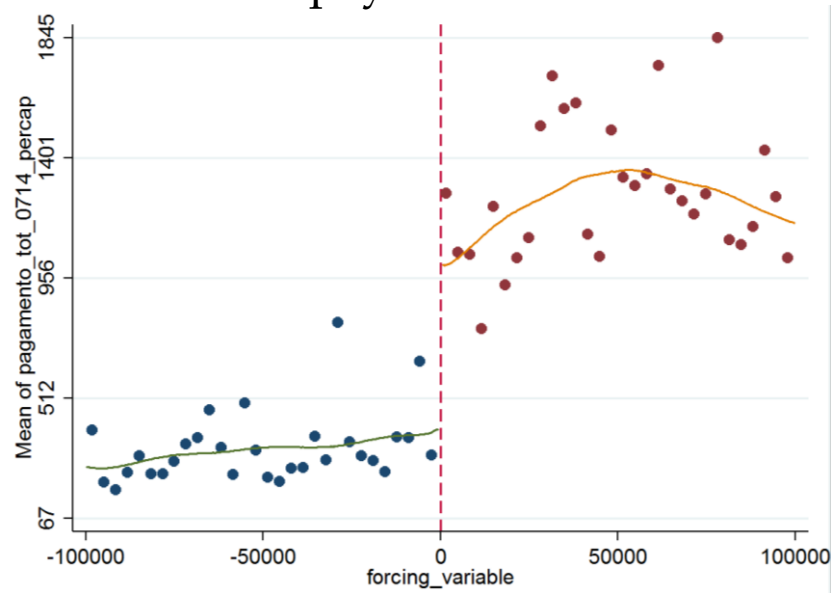


# Descriptive statistics

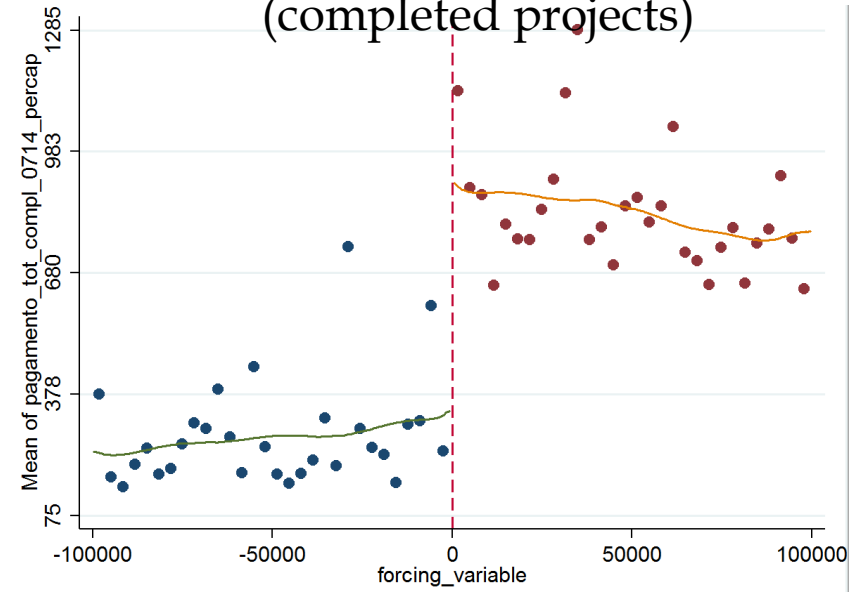
Region	Per capita payments 07/14		Per capita payments 07/14 (only completed projects)		Per capita payments 07/14 (only municipality projects)		Per capita payments 07/14 (only municipality completed projects)	
	€		€		€		€	
Abruzzo	€	504.1	€	432.4	€	399.7	€	356.3
Basilicata	€	1,193.5	€	702.4	€	1,079.4	€	619.7
Calabria	€	1,296.4	€	956.1	€	638.3	€	495.9
Campania	€	1,145.7	€	696.3	€	692.2	€	344.7
Emilia Romagna	€	116.6	€	103.4	€	98.8	€	86.9
Friuli Venezia Giulia	€	440.7	€	425.3	€	411.4	€	401.3
Lazio	€	208.8	€	182.1	€	149.1	€	128.4
Liguria	€	529.3	€	451.1	€	337.6	€	280.3
Lombardia	€	114.7	€	105.0	€	60.8	€	56.5
Marche	€	364.7	€	309.0	€	332.5	€	280.0
Molise	€	1,291.8	€	960.1	€	835.4	€	556.0
Piemonte	€	280.1	€	234.4	€	221.5	€	176.0
Puglia	€	1,816.0	€	1,209.9	€	1,113.1	€	712.6
Sardegna	€	1,124.4	€	724.4	€	669.6	€	383.4
Sicilia	€	1,087.2	€	711.0	€	816.7	€	506.1
Toscana	€	365.4	€	297.7	€	365.4	€	297.7
Trentino – Alto Adige	€	346.0	€	327.0	€	328.4	€	313.6
Umbria	€	357.6	€	304.1	€	295.7	€	250.2
Valle d'Aosta	€	1,645.4	€	510.9	€	1,259.6	€	196.8
Veneto	€	102.5	€	90.0	€	80.7	€	69.5

# Spatial discontinuity: Abruzzo + Lazio V Molise + Campania + Puglia

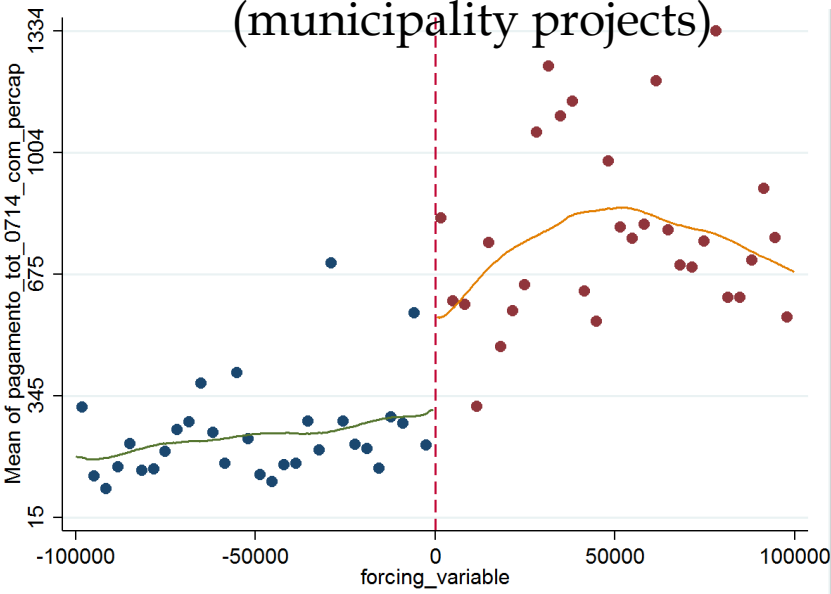
All payments 07-14



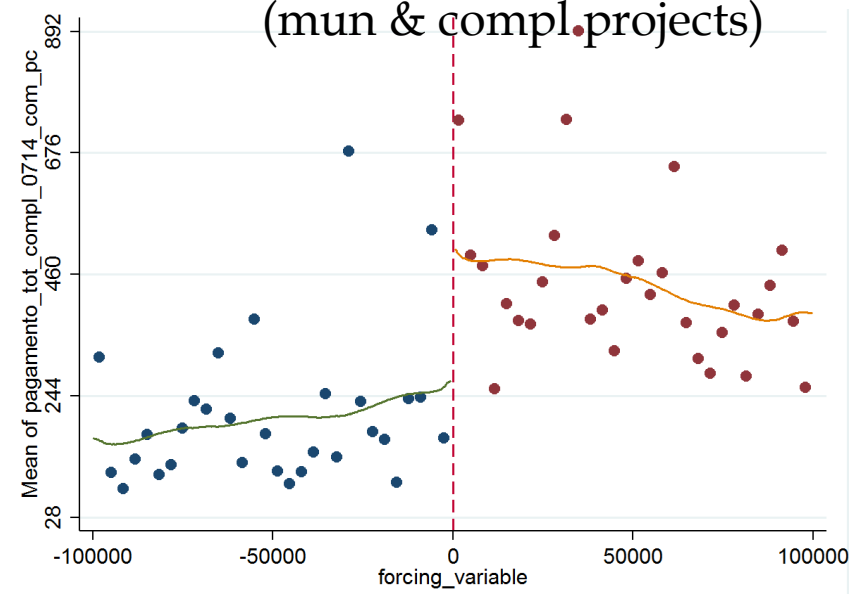
All payments 07-14  
(completed projects)



All payments 07-14  
(municipality projects)



All payments 07-14  
(mun & compl.projects)



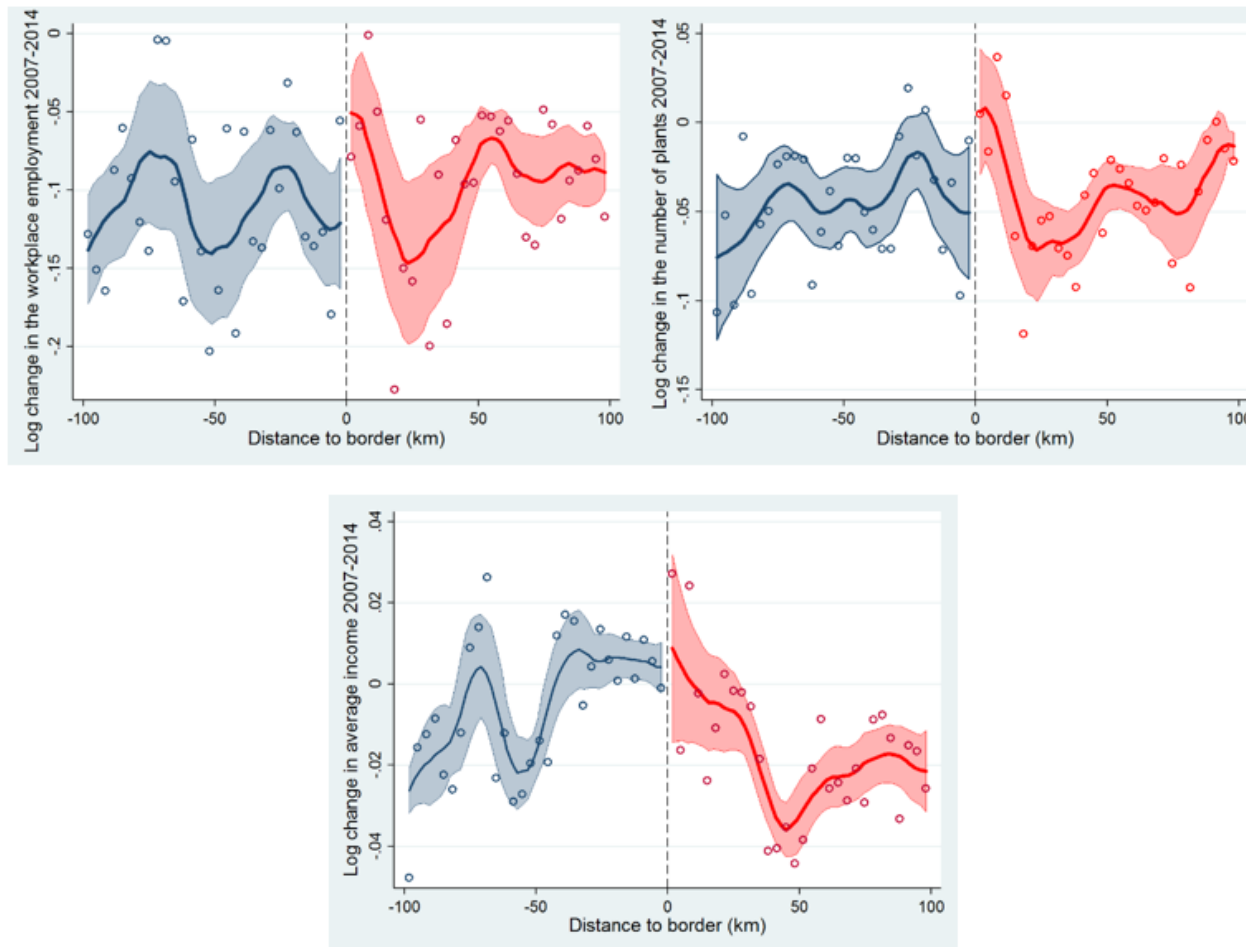


# Data

- **Control variables (2007 values):**
  - Population density
  - Growth rate in the number of employees in the period 01/07;
  - The number of employees per 1,000 residents
  - Proportion of workers employed in the industrial or construction sectors (B,C,D,E,F in the NACE classification);
  - Income growth rate over the period 01/07;
  - Average income (2010 constant prices)

# Graphical evidence

Log change in workplace employment, number of plants, and income at the border between highly subsidized and moderately subsidized municipalities



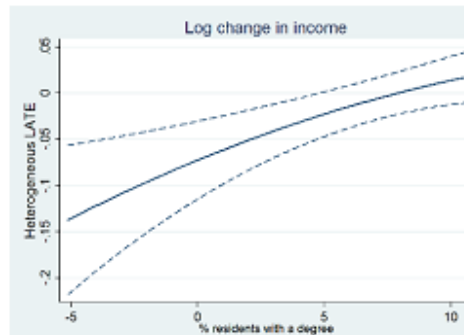
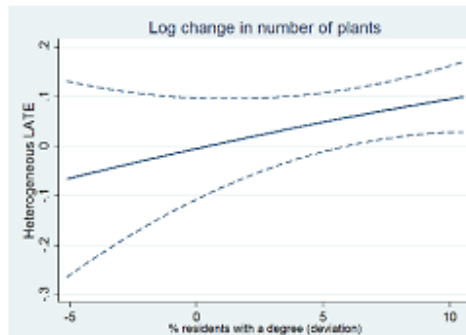
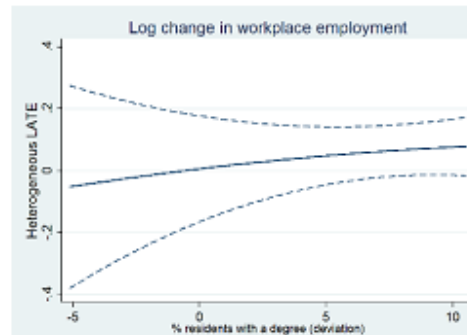
# Regression results

Table. Binary impact

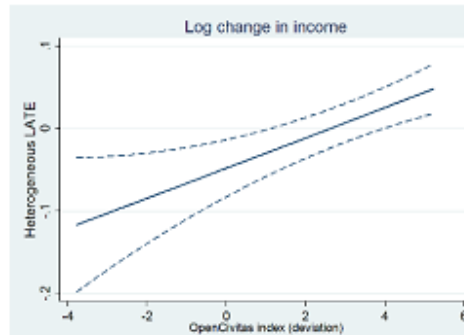
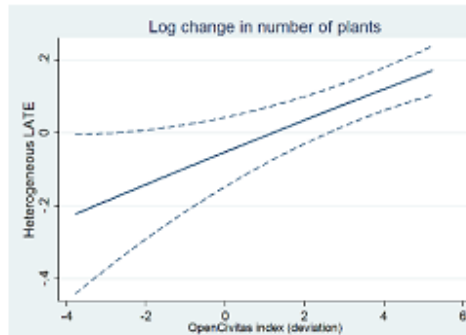
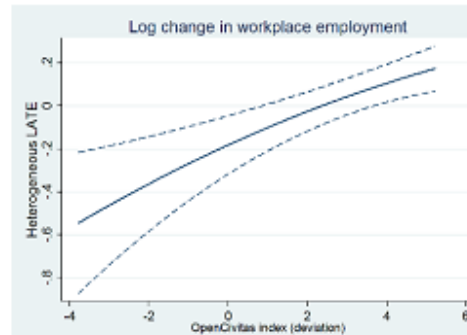
	Control variables	Employees (1)		Local Units (2)		Average Income (3)	
		Coef./Std.err.	Obs.	Coef./Std.err.	Obs.	Coef./Std.err.	Obs.
Non-Parametric estimate	No	11.23 (9.95)	638	11.95 (6.91)*	609	1.61 (2.84)	683
	Yes	4.41 (8.11)	684	12.05 (6.76)*	563	0.44 (2.11)	483
Parametric estimate	No	6.28 (4.86)	1,055	5.63 (3.18)*	1,055	0.88 (1.50)	1,055
	Yes	3.06 (4.44)	1,055	5.85 (3.13)*	1,055	-0.61 (1.22)	1,055
Parametric estimate (lat-long)	No	5.74 (3.09)*	1,055	-1.03 (2.07)	1,055	-2.09 (0.81)**	1,055
	Yes	3.43 (3.10)	1,055	-0.84 (2.12)	1,055	-2.04 (0.80)**	1,055

# Heterogeneity of the impact (one index at a time)

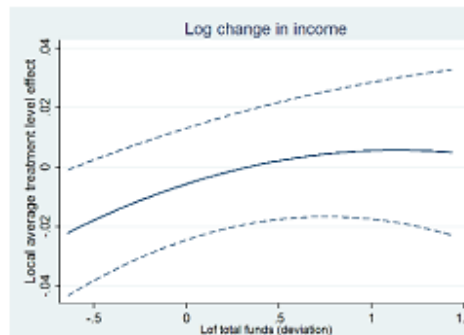
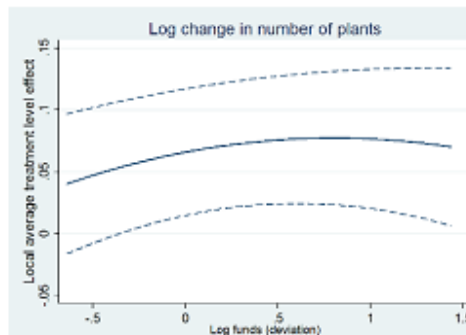
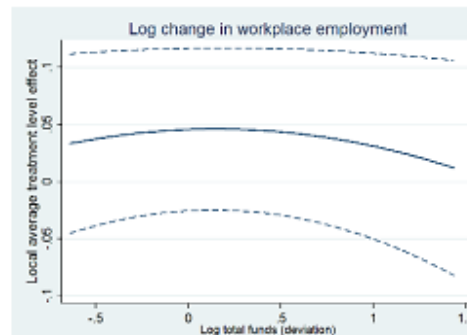
## Human capital index



## Quality of government index

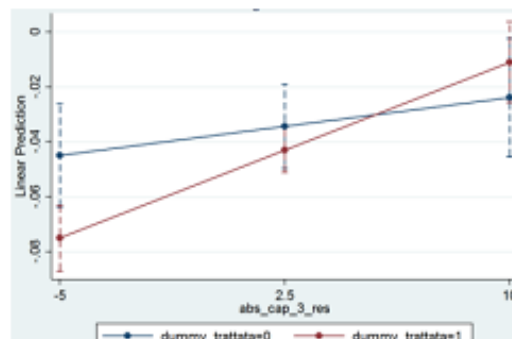
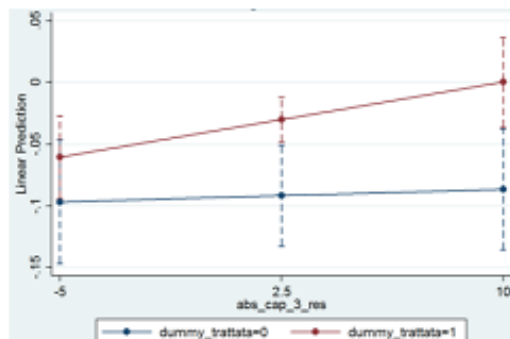
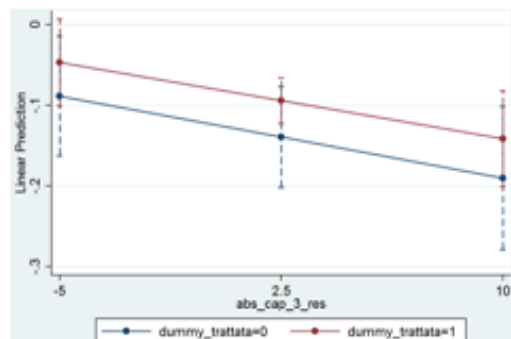


## Intensity of treatment

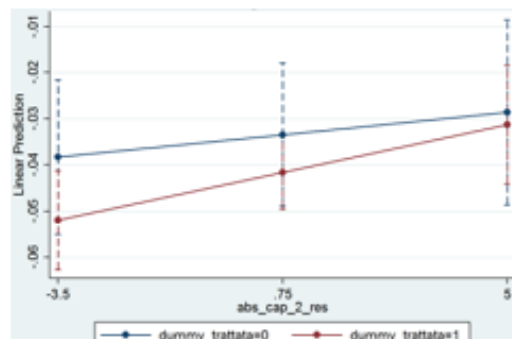
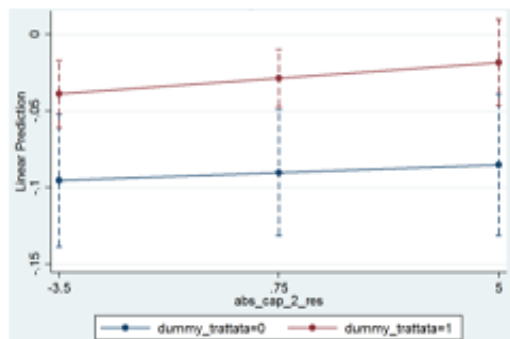
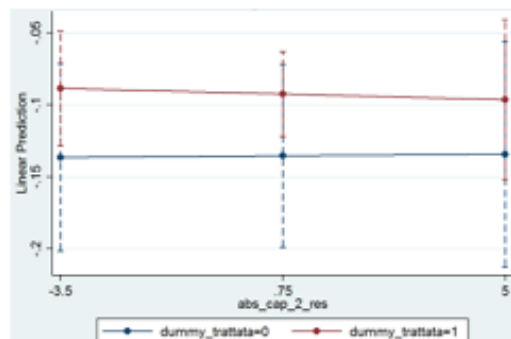


# Heterogeneity of the impact (one index at a time keeping fixed the other))

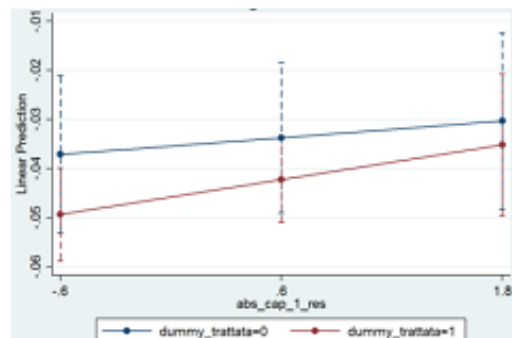
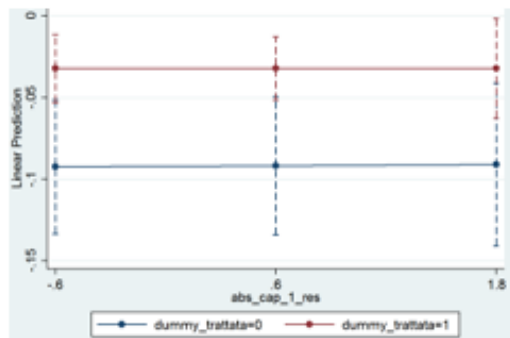
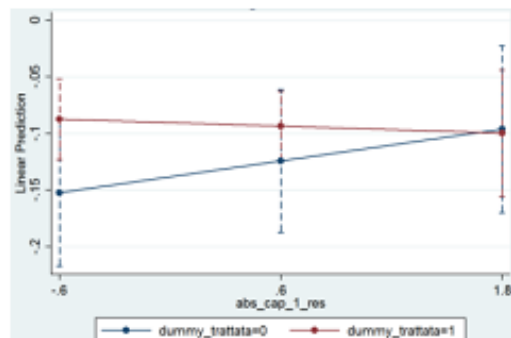
## Human capital index



## Quality of government index



## Intensity of treatment



# Future developments

- **HETEROGENEITY OF THE IMPACT:** combining all the potential sources of heterogeneity to isolate the impact of each one of them.
- **ROBUSTNESS CHECKS:** i) different definitions of treatment intensity and absorptive capacity indexes; ii) aggregation of municipalities at the LLS level
- **ADDITIONAL ANALYSES:** i) look at additional dependent variables; ii) analysis by sectors (manufacturing,...); iii) split the projects by type (e.g., R&D); iv) look at the impact through time
- **SPATIAL SORTING:** Test for the possible presence of a displacement effect of economic activities from the low-subsidized to the high-subsidized regions