



# **Impact evaluation of university grants**

***Maria Luisa Maitino,  
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# Background

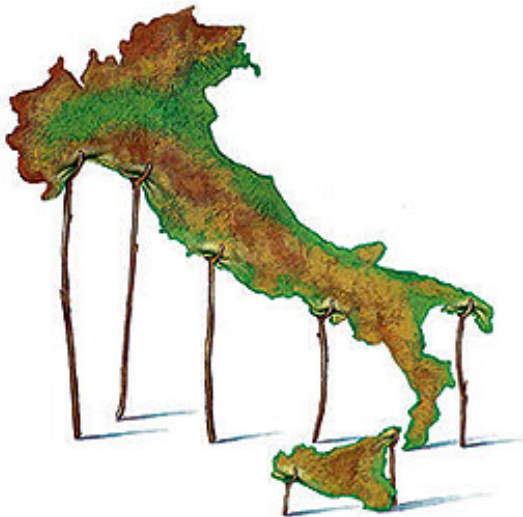
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- University courses
- Structure of education system
- The evaluation of the 3+2 system
- The evaluation of grants' effectiveness
- Graduates' job and wage outcome

## University: mirror of our country

### THE SICK MAN OF EUROPE



Low productivity, lateness  
syndrome, organization  
inefficiency, inequality, low  
incentives , reduced innovation:  
are we talking about university or  
our country?

# Focus: the impact of university grants

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## Questions

- Do grants reduce university drop outs (1<sup>o</sup> year)

## Methodology

- Descriptive analysis
- Regression discontinuity design
- Statistical Matching

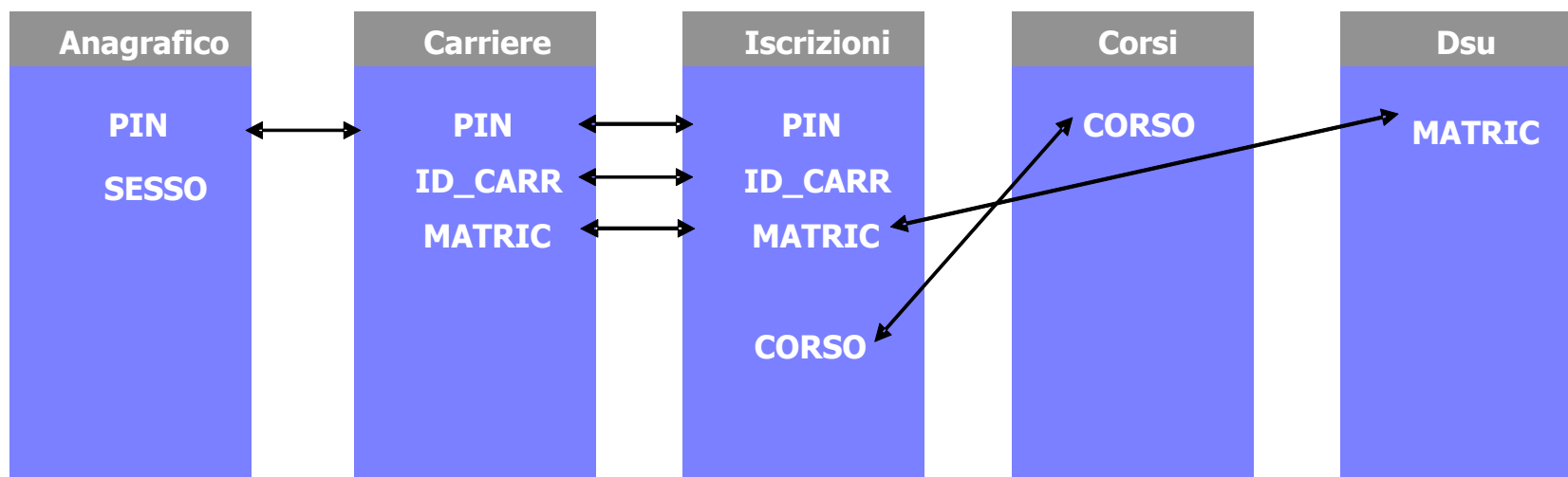
# Data base structure

**Personal data archives:** information (gender, age, high school diploma, citizenship, ecc.) that remains unchanged from matriculation

**Career archives:** information relative to university outcomes (drop outs, trasfers, shifts, degrees, ecc.)

**Enrolment Archive:** information relative to ..... (credit, ecc.) and to students economic condition

**DSU Archive:** information on performance (grants, accomodation, ecc.) of study rights



# Descriptive analysis: number of observations

- Longitudinal analysis
- Period observed: from 2000/01 to 2007/08

	Freshmen	Enrollments	Degree Courses	Grants
Firenze	147.423	517.922	2.433	53720.
Pisa	108.362	394.779	1.714	44.177
Siena	62.777	183.440	1.632	31.709
All	318.562	1.096.141	5.779	129.606

# Descriptive analysis: drop-outs

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	Students with grants	Other Students
Drop outs at 1° a.a		
<i>Cohort 2005/06</i>	10%	18%
<i>Cohort 2006/2007</i>	14%	19%
Drop outs at 2° a.a		
<i>Cohort 2004/05</i>	4%	8%
<i>Cohort 2005/06</i>	3%	9%

# Regression discontinuity design

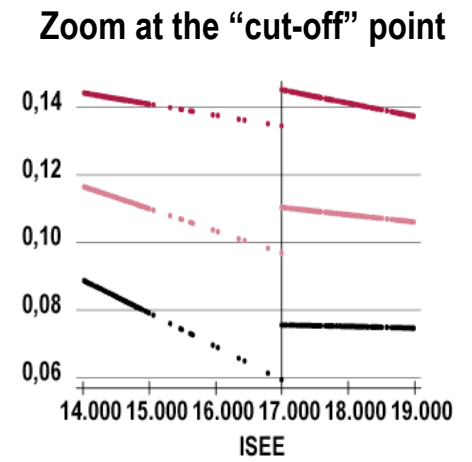
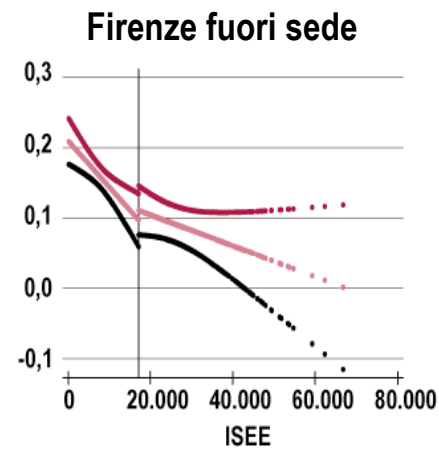
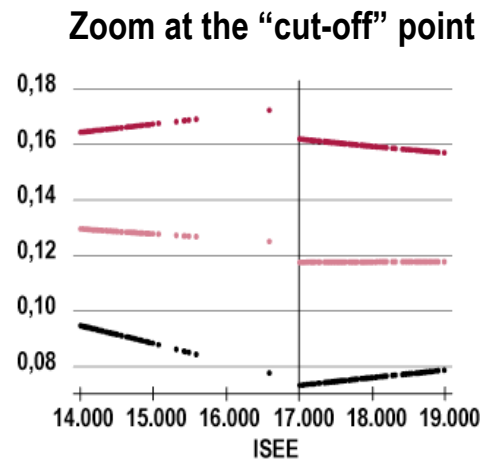
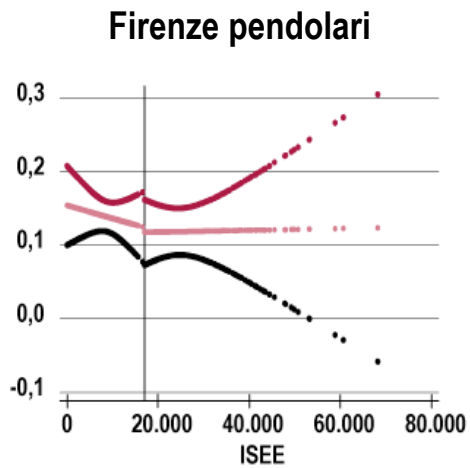
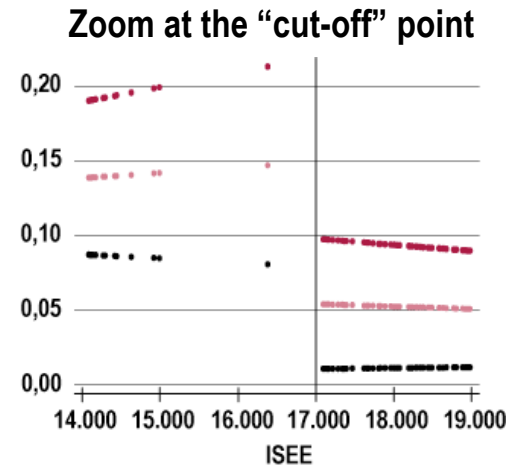
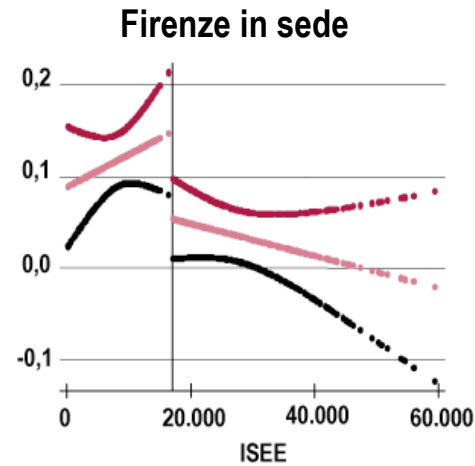
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- Thistlethwaite e Campbell (1960) Rubin (1977) Hahn, Todd e Van der Klaauw (2001)
- The RD design can be useful when there is a “cut-off” point in treatment assignment
- In regression discontinuity (RD) design for evaluating causal effects of interventions, assignment to a treatment is determined at least partly by the value of an observed covariate lying on either side of a fixed threshold
- Under weak smoothness conditions, the assignment near the cut-off behaves almost as if random



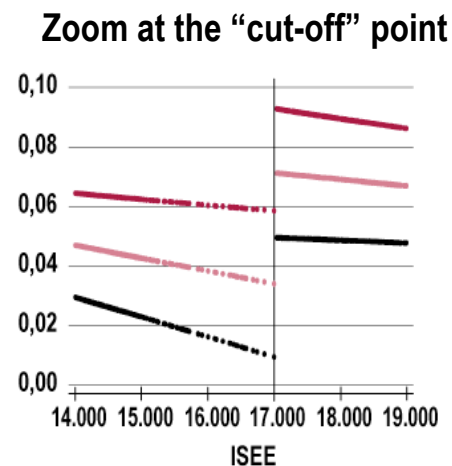
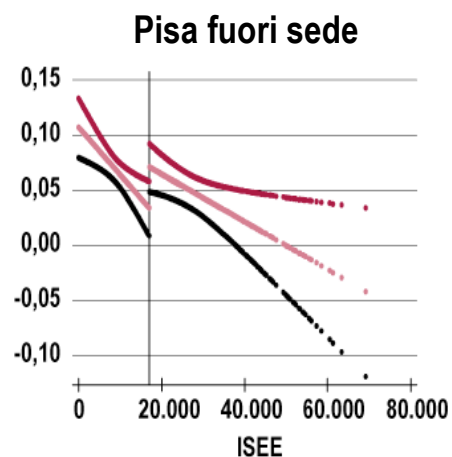
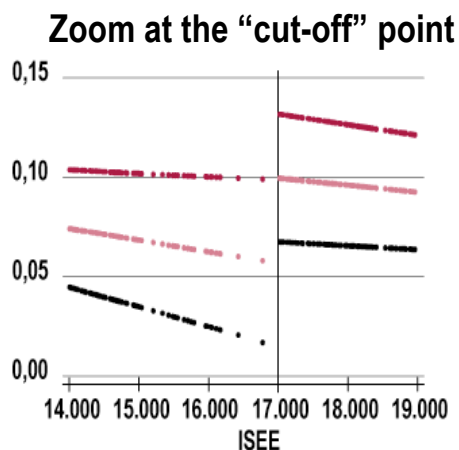
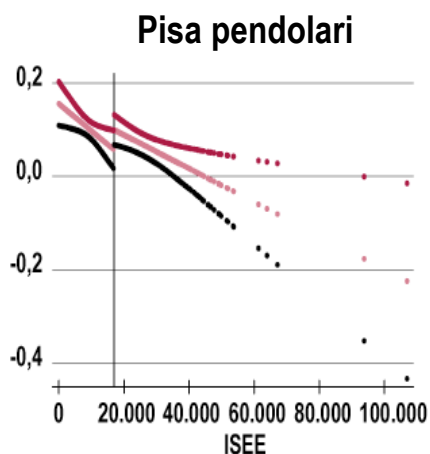
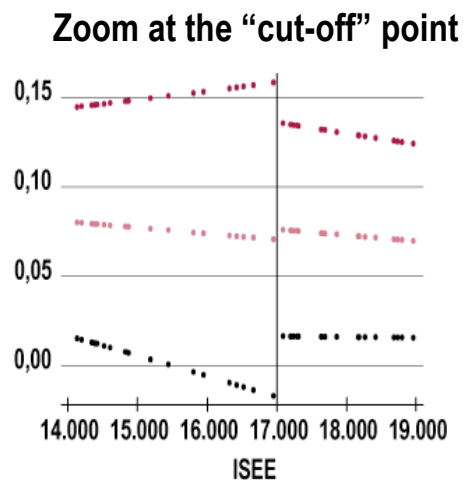
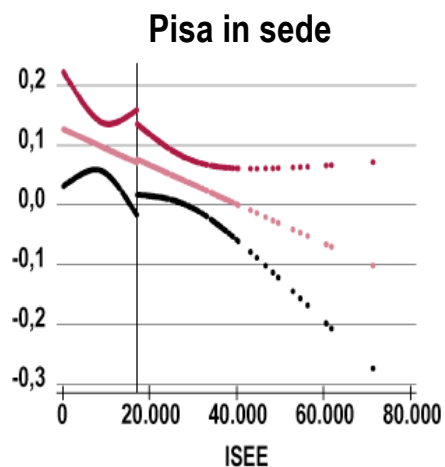
# The impact evaluation of university grants on drop-outs

Drop-outs 1° year. Enrollment cohorts A.A. 2002/03, 2003/04 and 2004/05  
(with Regression Discontinuity Design)



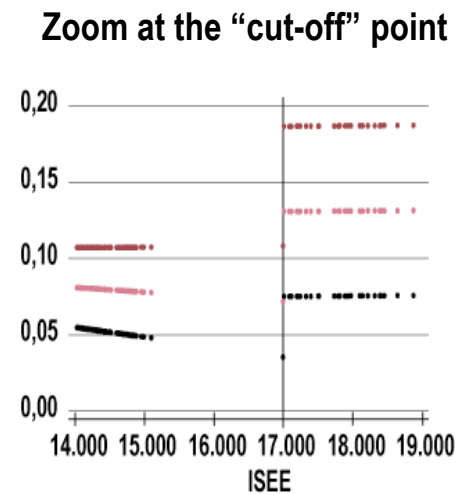
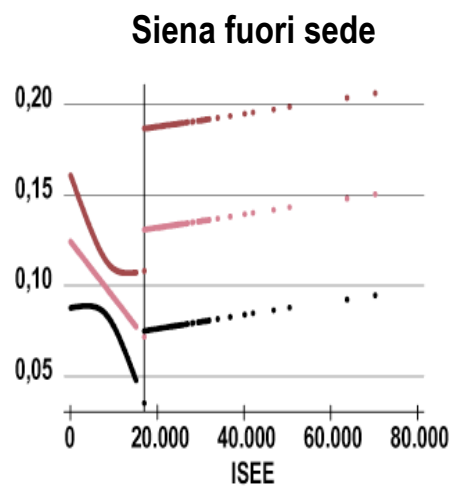
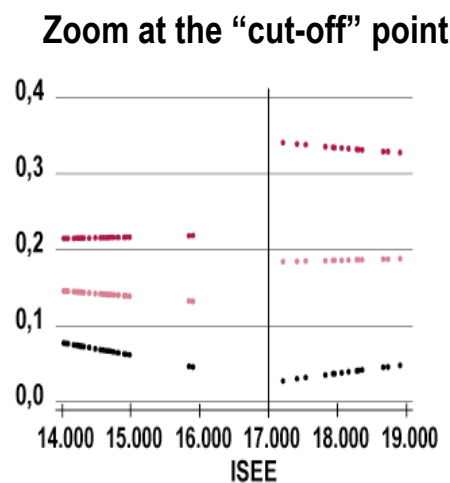
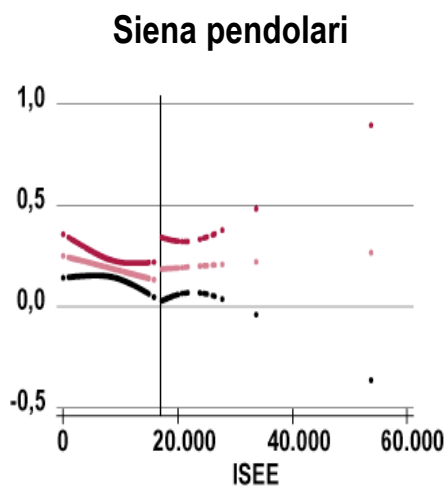
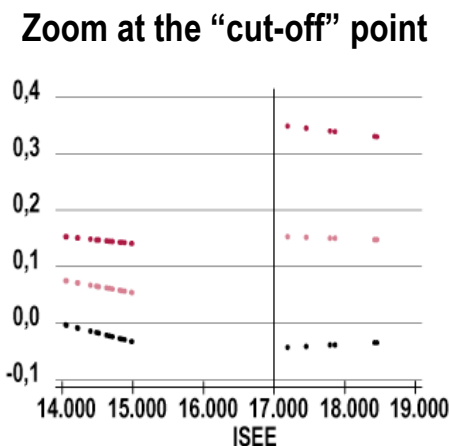
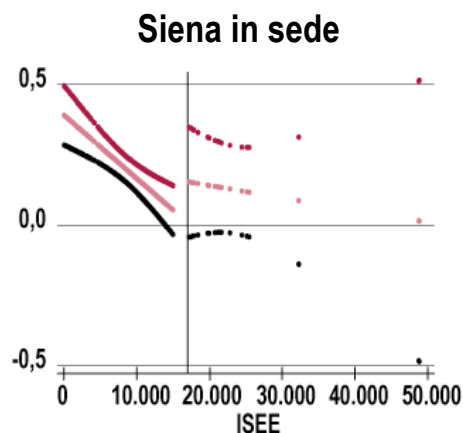
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## Bias-adjusted matching estimator

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Abadie and Imbens (2011) Bias-corrected matching estimators combine some of the advantages and disadvantages of both matching and regression estimators:

- may be more difficult to implement than matching estimators without bias correction, is not fully efficient
- have the advantage of an additional layer of robustness

# Matching: results

## Effetto medio della borsa sull'abbandono al 1° anno di corso, coorti 2005/06 e 2006/07

		Coef.	Std. error	z	P> z	[95% Conf. interval]	
FIRENZE ( <i>in sede</i> )	SATT	-3%	0,0257082	-1,340	0,1810	-8,5%	1,6%
FIRENZE ( <i>fuori sede</i> )	SATT	-9%	0,0185184	-4,900	0,0000	-12,7%	-5,4%
PISA ( <i>in sede</i> )	SATT	-22%	0,0390718	-5,760	0,0000	-30,2%	-14,8%
PISA ( <i>fuori sede</i> )	SATT	-23%	0,0166886	-13,960	0,0000	-26,6%	-20,0%
SIENA ( <i>in sede</i> )	SATT	-17%	0,0468697	-3,690	0,0000	-26,0%	-8,0%
SIENA ( <i>fuori sede</i> )	SATT	-17%	0,0220049	-7,590	0,0000	-21,0%	-12,4%

Matching variables: gender, high school attended, high school final mark, faculty, lagged enrollment, Isee

# Balancing after matching

variables	Firenze				Pisa				Siena			
	lived in the city		moved to the city after enrolling		lived in the city		moved to the city after enrolling		lived in the city		moved to the city after enrolling	
	std avg diff (%)	variance ratio	std avg diff	variance ratio	std avg diff	variance ratio	std avg diff	variance ratio	std avg diff (%)	variance ratio	std avg diff (%)	variance ratio
gender	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0	0.0	1.0
high school mark	-19.0	1.2	-7.2	1.1	7.0	1.2	-1.1	1.0	0.9	1.3	-3.3	1.2
attended technical institute	0.2	1.0	-0.5	1.0	1.9	1.0	0.1	1.0	0.1	1.0	0.0	1.0
attended high school specializing in education	5.6	1.1	2.7	1.0	13.7	1.4	0.8	1.0	2.6	1.1	2.3	1.1
attended high school in humanities/sciences	-4.2	1.0	-6.9	1.0	-18.4	1.0	-3.3	1.0	-1.7	1.0	-6.6	1.0
lagged enrollment	8.1	1.2	2.3	1.0	17.1	1.7	0.8	1.0	3.3	1.0	10.3	1.2
Area scientifica	2.1	1.0	0.1	1.0	-5.0	1.0	-0.6	1.0	28.5	2.6	1.2	1.0
Area sociale	-6.5	0.9	-2.1	1.0	-7.1	1.0	0.1	1.0	25.7	1.4	2.5	1.0
Area umanistica	3.4	1.1	0.2	1.0	10.3	1.3	1.2	1.0	-36.6	0.7	3.8	1.0
Isee	-127.8	0.8	-70.4	0.6	-141.2	0.6	-55.0	0.8	28.7	0.3	-73.4	0.2

## Heterogeneity of effects

The grant impact changes according to

- statistical model (and to the control group)
- University
- student typology
- ....*dimension through which the impact is measured*  
(*persistence of studies and attainment of degree*)



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