

The effect of grants on university drop-out rates: evidence on the Italian case

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- We study the causal impact of need-based grants on university dropout in the first year
- Policy relevant topic. In Italy:
 - low university completion rate
 - significant number of dropouts occur during the first year of study

Scholarships and dropout: causal effect

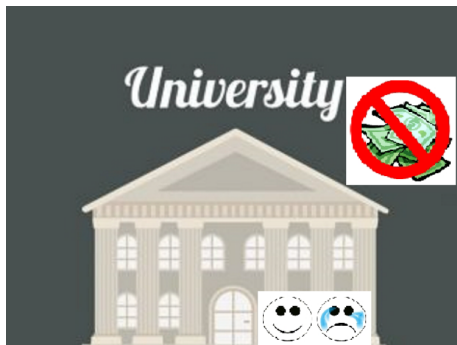
- In general, to evaluate the grants causal effect, we would like to compare students who received the grant with students who did not, all other things being equal
- But this comparison may be confounded by several omitted characteristics of the student (Bettinger, 2007; Mealli and Rampichini, 2012):
 - family economic conditions;
 - ability;
 - commitment to study (voluntary application process).

Idea: focus on eligible students in the same university in the same year



- In the first year of enrollment, eligibility is based on the students' economic indicator I
- If $I \leq \text{Threshold}$ the student becomes eligible for grants, BUT...

Treated and control group



- NOT all of them are awarded the scholarship due to the lack of funds;
- We have a treatment group (beneficiaries) and control group (eligible but not beneficiaries);
- we study the effect of the grant on the treatment group (ATT), with respect to the control group;

- Administrative data (Anagrafe Nazionale Studenti) Period: 2003-2013
- Working sample includes students:
 - 18-20 year-olds;
 - enrolled for the first time in an Italian university;
 - recipient of scholarship (treated) or eligible but not awarded the scholarship (non-treated) [▶ Descriptive Stats](#)

- PRO: In general literature focuses on specific case studies
- CONS: No info on family income/education.

However:

- both treated and control are poor because their income is below some thresholds, but treated are slightly poorer,
- the available set of covariates and the fact that the analysis compared beneficiaries and eligible students within university helped in reducing possible remaining differences.

Empirical strategy (1)

$$Y_{iut} = \alpha S_{iut} + \beta X_{iut} + D_{ut} + \epsilon_{iut}. \quad (1)$$

- Y_{iut} : dummy for dropout (student i enrolled in university u at time t dropped out at the end of the year)
- S_{iut} : binary treatment status
- X_{iut} : gender, area of residence, dummy for out-of-site students, high school type and grade, dummy for urban local labor system of residence
- D_{ut} : university/time FE

Empirical strategy (2)

Two steps procedure (Rosenbaum and Rubin, 1983-84):

- 1 Propensity score (logit):

$$e(X, D) = \mathbf{E}[S_{iut}|X_{iut}, D_{uT}] = Pr(S_{iut} = 1|X_{iut}, D_{uT}) \quad (2)$$

- 2 Blocking with Regression:

- Split the sample into J sub-classes according to the propensity score;
- Run J OLS regressions of the outcome on the treatment status and X_{iut}, D_{uT} (J estimates $\hat{\alpha}_j$, one for each block).
- Average treatment effect on the treated group:

$$ATT = \sum_{j=1}^J \frac{N_{treatj}}{N_{treat}} \cdot \hat{\alpha}_j \quad (3)$$

- weights: the proportion of treated units in each block

Results - drop-out rate

Estimated effect of scholarship on dropout					
block #	N(treated)	N(tot)	weight	α_j	standard error
$j=1$	2,313	16,749	0.0158	0.0256***	0.0075
$j=2$	11,124	38,247	0.0762	0.0008	0.0035
$j=3$	5,575	11,822	0.0382	-0.0047	0.0053
$j=4$	13,373	18,607	0.0916	-0.0236***	0.0049
$j=5$	113,577	119,722	0.7781	-0.0323***	0.0046
ATT			-0.0270***	0.0036	
N	205,147				

The grant reduces the drop out rate by 2.7%. This means that the drop-out rate for those who received the grant would have increased from 7% to about 10% in the absence of a grant.

Results - drop-out rate, interactions

Estimated average impact of scholarship on dropout, interaction terms				
	(1)	(2)	(3)	(4)
treatment	-0.0315*** (0.0056)	-0.0123*** (0.0041)	-0.0455*** (0.0059)	-0.0355*** (0.0045)
treatment*female	0.0075 (0.0067)			
treatment*resident South		-0.0311*** (0.0075)		
treatment* <i>licei</i>			0.0335*** (0.0066)	
treatment*high grade				0.0263*** (0.0058)

The grant is more effective in reducing drop out:

- for students living in the South,
- for students from vocational studies,
- for students with low grade at the final exam of high school.

Results - drop-out rate, robustness (1)

- Not straightforward to compare a student in humanities to a student in science: fixed effects university/time/field specific (4 fields: sanitary, science, social and humanities)
- Different estimation methods (Kernel matching and Propensity score re-weighting) and different sub-samples
- The range of the effect of the grant goes from -2.7% to -4.3%.

- Our analysis confirms the role of financial constraints in explaining large differences in university dropout rates: about 1/3 of the students would have left university in the absence of the grant.
- Reducing the dropout rate of students from low income families can lead to more equitable schooling opportunities, thus improving educational mobility across generation
- and can have an impact on several outcomes such as labor market outcomes, social outcomes (OECD, 2016).

Descriptive statistics

Descriptive statistics for treated and non-treated groups.			
	Treated	Non-treated	Differences
Pct. of dropout	0.07	0.10	-0.027*** (0.001)
Pct. of female	0.64	0.61	0.032*** (0.002)
Pct. of resident in the North	0.32	0.24	0.082*** (0.002)
Pct. of resident in the Center	0.18	0.13	0.051*** (0.002)
Pct. of resident in the South	0.50	0.63	-0.133*** (0.002)
Average high school grade	83.30	85.26	-1.969*** (0.061)
Pct. from <i>licei</i>	0.55	0.61	-0.061*** (0.002)
Pct. of study in a different area from that of residence	0.21	0.06	0.154*** (0.002)
Pct. of living in an urban LLS	0.39	0.43	-0.038*** (0.002)
Pct. of foreign students	0.04	0.01	0.025*** (0.001)
N	146,005	59,219	

Source: ANS