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The Bologna process in Italy: an empirical assessment of its impact on educational participation

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Outline

1. Bologna process in the Italian education system
2. Theoretical framework and hypotheses
3. Data and techniques
4. Main results
5. Conclusion and discussion

The old model of tertiary education

Before Bologna process (approved in 1999; fully implemented in 2001):

- A largely undifferentiated and unitary (legal length: 4-6 years) where Higher Education could be equated with academic education.
- Long courses with high workload were offered by universities.
- Frontal teaching and absence of tutoring.

A selective system unable to manage the increased heterogeneity of students → Excessive duration of university studies, high drop-out rates and low tertiary attainment rate.

The new model of tertiary education

After Bologna process:

- The old unitary system was replaced by a sequential system, articulated in bachelor (3 years) and master (2 years) courses.
- The student workload is clearly defined and constrained in terms of ECTS credits.
- The overall organisation of teaching and the examination procedures are changed (tutoring, laboratory activities).

The new system becomes less selective. Time, effort and costs to complete university were reduced → growing enrolments; lower drop-out rate and higher attainment rate.

Hypotheses: enrolment rate

H1: we expect that the reform has enhanced university enrolment in Italy on Higher Education.

H2: we expect that the students from lower social groups have benefited more from the reform.

Students from disadvantaged social groups are particularly sensitive to the costs and risks of the investment in education.

An alternative explanation involves ceiling effects, indeed students from upper classes had already reached the saturation of enrolments before the reform. As a consequence, any further expansion will reduce the gap between social groups.

Hypotheses: continuation chances

H3: we expect that university students from the upper classes are more likely to continue up to the master level.

The Bologna process offers new opportunities of vertical differentiation. Indeed it creates a new education level. The students from upper social groups will have an incentive to continue to the master level in order to preserve their competitive advantage.

Data

1. *“Survey on the education and work careers of upper secondary graduates”*. It is a repeated cross-sectional study of Italian upper school leavers conducted by ISTAT (Italian NIS).
Four waves: 1998; 2001; 2004; 2007 involving students who finished high school three years before (1995; 1998; 2001; 2004 cohorts).
2. *“Labor force survey”*. It is also carried out by ISTAT and we cover the waves from 2006 to 2008.

The analysis is based on a counterfactual approach using a propensity score matching estimator.

Outcomes:

1. Enrolment rate
2. Drop-out rate (conditional)
3. Survival in university education (unconditional)

Treatment: Bologna process reform (1999/2001). We have two groups:

1. Before 2001: control group
2. After 2001: treatment group

Evaluation design (2)



The design of our evaluation is based on a before-after comparison exploiting a matching procedure. We compare the 1998 and 2001 cohorts of graduates (2001-2004 waves) in order to assess the effects of the Bologna process.

Moreover, we compare also the 1995 and 1998 cohorts (untreated individuals) in order to control for any pre-existing cohort trend (placebo effect). Time-series analysis to detect previous long-term trends in university enrolments.

Finally, we compare the 2001 and 2004 cohorts to assess whether any possible effect of the reform has persisted in the years immediately following the reform (lasting consequences).

Matching procedures (1)

Roughly speaking PSM ex post mimic an experiment by constructing a suitable comparison group matching treated and untreated. The comparison group is selected as similar as possible to the treatment group in terms of their observable characteristics.

Propensity score matching VS OLS regression:

1. common support: effectively compare only comparable individuals;
2. non-parametric: avoid potential misspecifications;
3. heterogeneous effects: OLS does not recover ATT

Matching procedures (2)

Variables for matching procedure:

1. socio-demographic variables (gender, area of residence, birth year, citizenship);
2. social origins (parental education, father's occupational class, mother's employment status);
3. school achievements (marks in lower and in upper secondary final exams, upper secondary track, attendance of a private, school failures and interruptions);
4. labour market conditions (unemployment rate for high school graduates aged 19-21).

Reform effect: overall level of participation

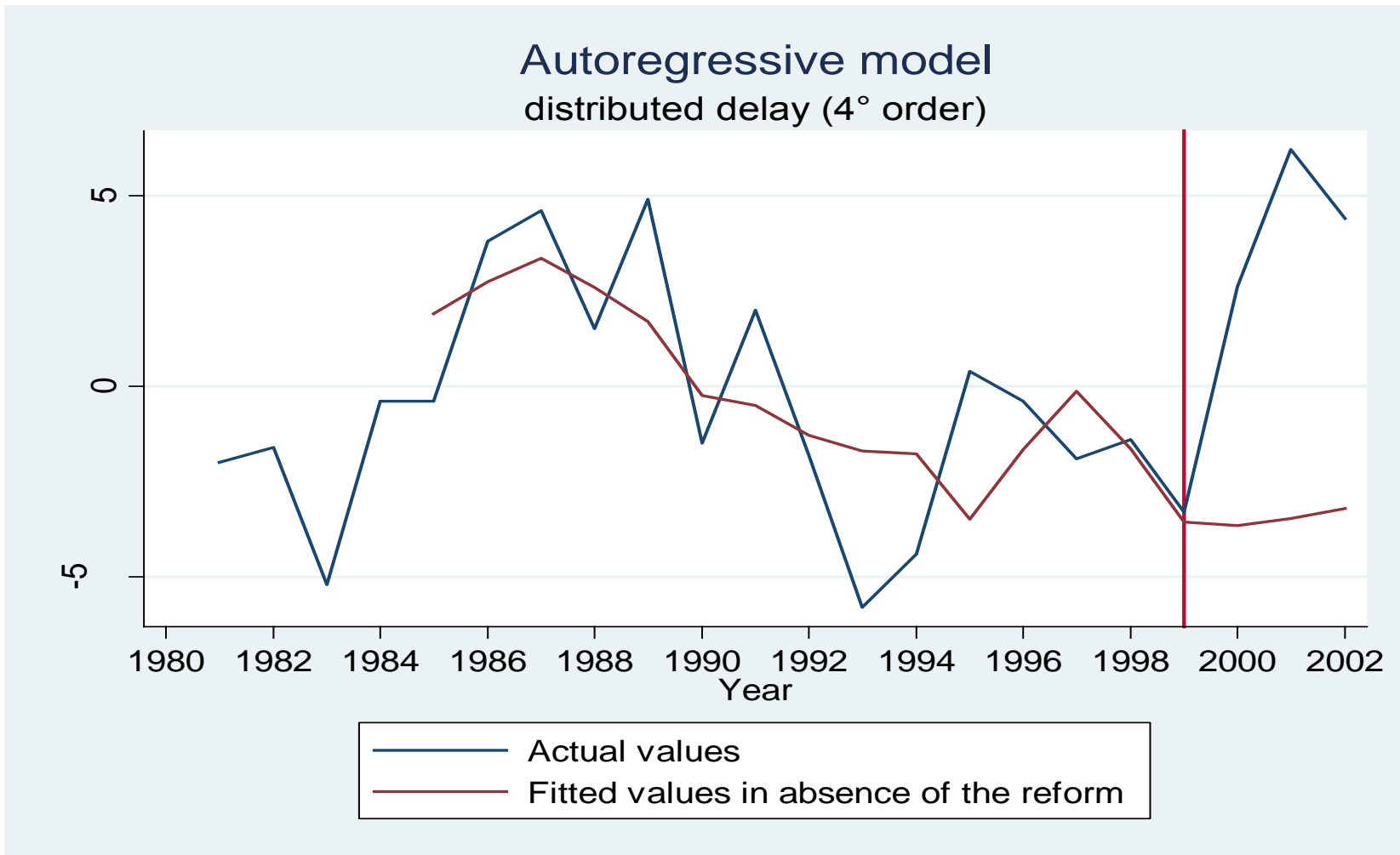
	Enrolment			Drop-out			Survival		
	ATT	S.E.	(N)	ATT	S.E.	(N)	ATT	S.E.	(N)
1998-1995	-0.049	0.0065	34,592	-0.065	0.0071	16,222	-0.009	0.0064	34,592
2001-1998	0.065	0.0068	37,460	0.024	0.0069	17,346	0.040	0.0066	37,460
2004-2001	0.052	0.0067	42,296	0.002	0.0068	24,665	0.038	0.0067	42,296

Kernel matching with caliper (0.01).

Parameters in red are not statistically significant.

The parameters are robust to different matching algorithms.

Comparison between actual and estimated trend



Reform effect: social inequalities in participation

Enrolment	1998-1995			2001-1998			2004-2001		
	ATT	S.E.	(N)	ATT	S.E.	(N)	ATT	S.E.	(N)
<i>Class origins</i>									
Entrepreneurs	-0.054	0.0411	1,421	0.083	0.0355	1,949	-0.0255	0.0243	2,534
Managers and professionals	-0.031	0.0201	4,329	0.051	0.0191	4,454	0.0285	0.0146	5,072
Skilled white collars	-0.048	0.0186	4,627	0.078	0.0183	5,248	0.0499	0.0151	6,458
Routine nonmanual	-0.051	0.0169	4,834	0.066	0.0195	4,390	0.0314	0.0186	5,158
Petite bourgeoisie	-0.058	0.0153	6,811	0.063	0.0156	7,044	0.0589	0.0147	8,141
Working class	-0.053	0.0101	13,965	0.056	0.0102	14,511	0.0311	0.0106	15,021
<i>Parental education</i>									
Primary degree	-0.046	0.0132	6,068	0.027	0.0228	4,647	0.013	0.0206	3,212
Lower secondary degree	-0.063	0.0097	15,675	0.065	0.0105	15,531	0.033	0.0106	15,109
Upper secondary degree	-0.041	0.0122	10,894	0.063	0.0114	13,866	0.046	0.0091	19,797
University degree	-0.002	0.0142	3,504	0.056	0.0157	3,828	0.018	0.0123	5,544

Kernel matching with caliper (0.01).

Parameters in red are not statistically significant.

The parameters are robust to different matching algorithms.

Continuation into Higher Education

Using the “*Labor force survey*” we link children records to parents (94% success in the linkage for people aged 22-29)
We estimate a total continuation rate of 62.5. It is very closed to the data furnished by other sources (e.g. Alma Laurea)

The effect of parental education is: (logit model with marginal effects):

Primary and lower secondary degree:	<i>reference category</i>
Upper secondary degree:	+12,3%
University degree:	+21,7%

N=3,334

Conclusions

- Growing enrolment rates.
- Reduced social inequalities in enrolment rates for parental education BUT not for parental class.
- Growing drop-out rates.
- New inequalities at the master level.

Thanks for your attention