

Inequality in education: can Italian disadvantaged students close the gap?

Tommaso Agasisti and Sergio Longobardi

Politecnico di Milano (Italy), e. tommaso.agasisti@polimi.it

University of Naples “Parthenope” (Italy), e. sergio.longobardi@uniparthenope.it

Agenda

- ✗ Motivation and objectives
 - ✓ research question
- ✗ Background
- ✗ Data and method
- ✗ Results
- ✗ Discussion and policy implications

Motivation and objectives

- ✗ Main determinants of students' achievement:
 - ✓ Student and family's background
 - ✓ School factors
- ✗ The vast literature about the limited role (if any) of schools' resources (since Coleman, 1966; Hanushek, 1986; 2003)
- ✗ The risk of inequality: students' chances are (strongly) determined by their family's background

Motivation and objectives

- ✗ The link between students' background and their academic performance is well documented.
- ✗ Nevertheless, there are students who are able to overcome their (disadvantaged) starting point.

Resilient students:

- ✓ Disadvantaged background, but...
- ✓ Good academic performance.

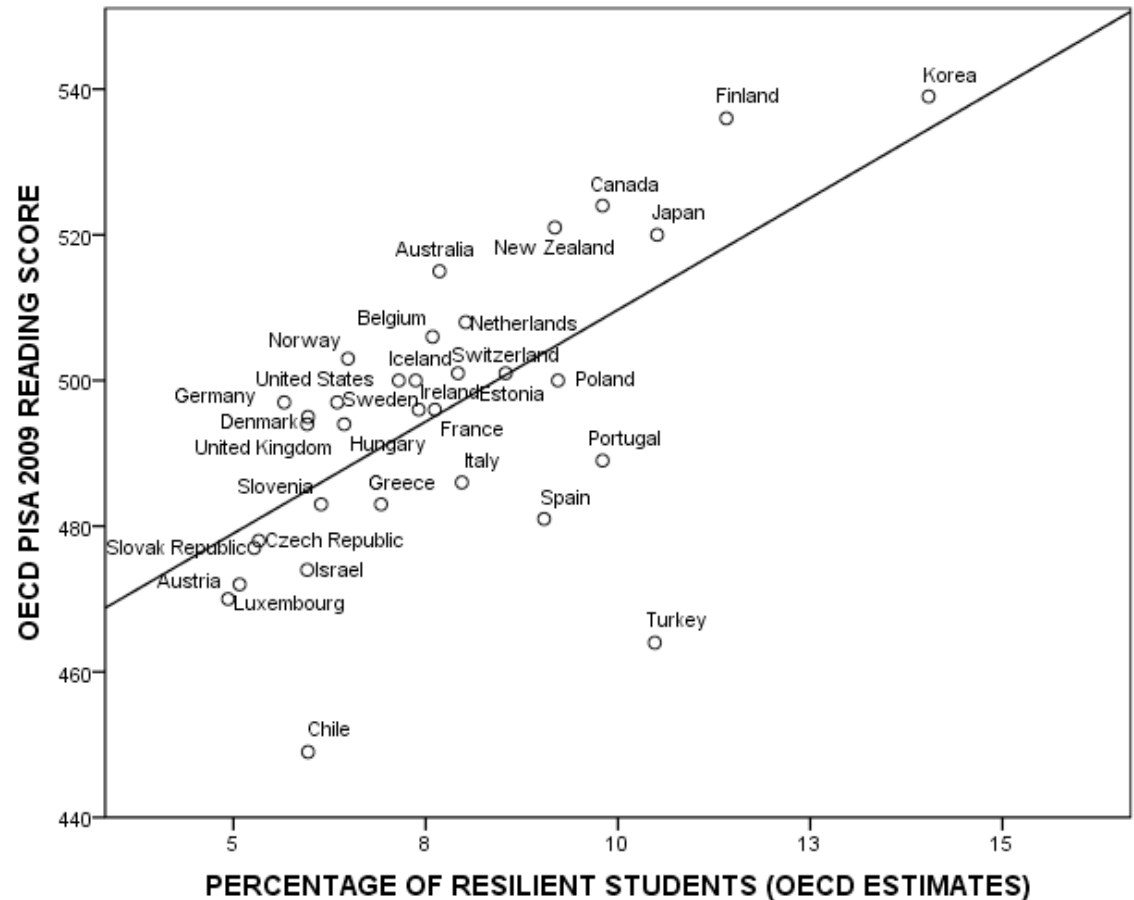
- ✗ Their characteristics (OECD, 2011):
 - ✗ Innate ability, motivation

Motivation and objectives

✗ Why a focus on resilience?

✓ The proportion of resilient students is positively associated with overall country's educational performance (achievement)

Figure 1. Resilient students and students' achievement: a cross-country comparison - OECD-PISA2009 data



Motivation and objectives

- ✗ In this paper, the focus is on school-level characteristics which are related with “student resilience”
- ✗ We choose to analyse a subsample of *disadvantaged students in disadvantaged schools...*
 - ✓ Reducing bias from “peer-effects” – attending schools in which the student body has an advantaged background
- ✗ RQ: *Are there particular characteristics of disadvantaged schools that are positively associated with students' resilience (the latter defined as the ability of disadvantaged students to obtain high achievement scores)?*

Background

- ✗ The Italian school system
 - ✓ 7.5 million students (from primary to upper secondary education), 33,000 schools, about 670,000 tenured teachers
 - ✓ Private schools: 5% of the total
 - ✓ Tracking at secondary-level: Licei, technical and vocational schools
- ✗ Strong regulation exerted by the Ministry of Education
 - ✓ Teachers are civil servants appointed by the Ministry
 - ✓ Allocation of teacher to schools managed by a local branch of the Ministry
 - ✓ Teachers' salary determined nationally by the Ministry
- ✗ Low school autonomy...
 - ✓ but sometimes schools' principals adopt a proactive behaviour (i.e. non-curricular activities, projects, etc.)

Data and method

- ✗ OECD-PISA 2009 – reading scores
- ✗ Sample selection:
 - ✓ The use of ESCS indicator (OECD's indicator of socio-economic background); mean = 0, s.d. = 1
 - ✓ Selection of “disadvantaged schools”: average ESCS < 33rd percentile
 - ✓ Within disadvantaged schools, students with ESCS > 3rd quartile were dropped
 - ✓ Regression: reading score versus (squared) ESCS
 - ✓ Using regression's residuals to create two groups of students: resilient **(RES)** and disadvantaged low-performers **(DLA)**.

Data and method

- ✗ Final sample:
 - ✓ 302 schools
 - ✓ 3,276 students

- ✗ After the selection of the sample, we run a multilevel logit model to identify which factors are associated with the probability to be a resilient students:
 - ✓ Student-level: gender, ESCS, immigrant, family structure, attitude towards computer, joy/like reading, get along well with teachers;
 - ✓ School-level (principal's answer): school type (Licei, technical, vocational); location (city), school resources, extra-curricular activities, teacher shortage, care about absenteeism.

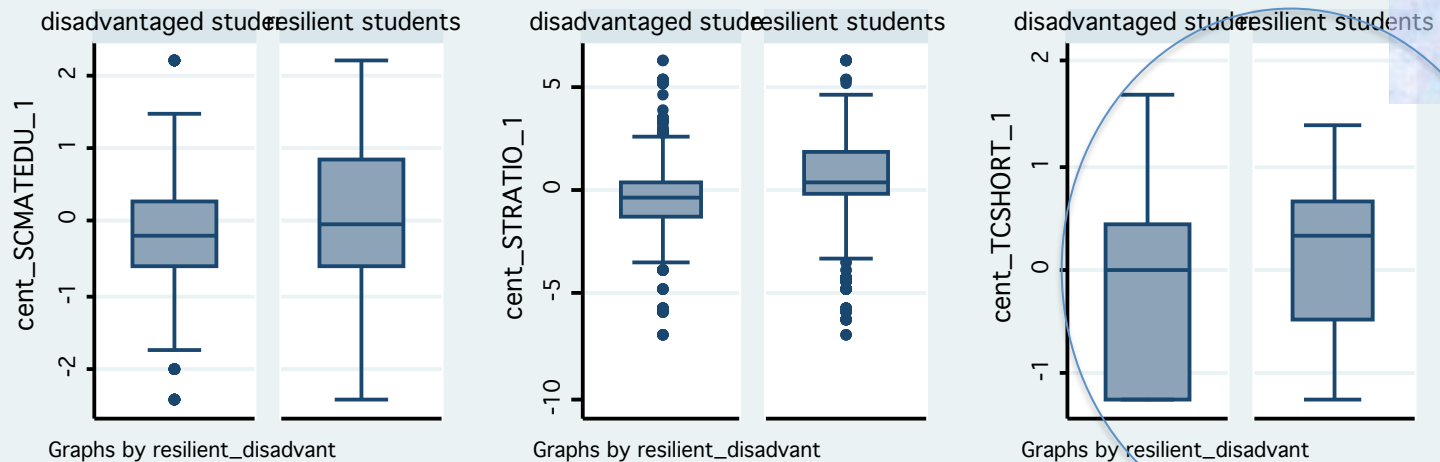
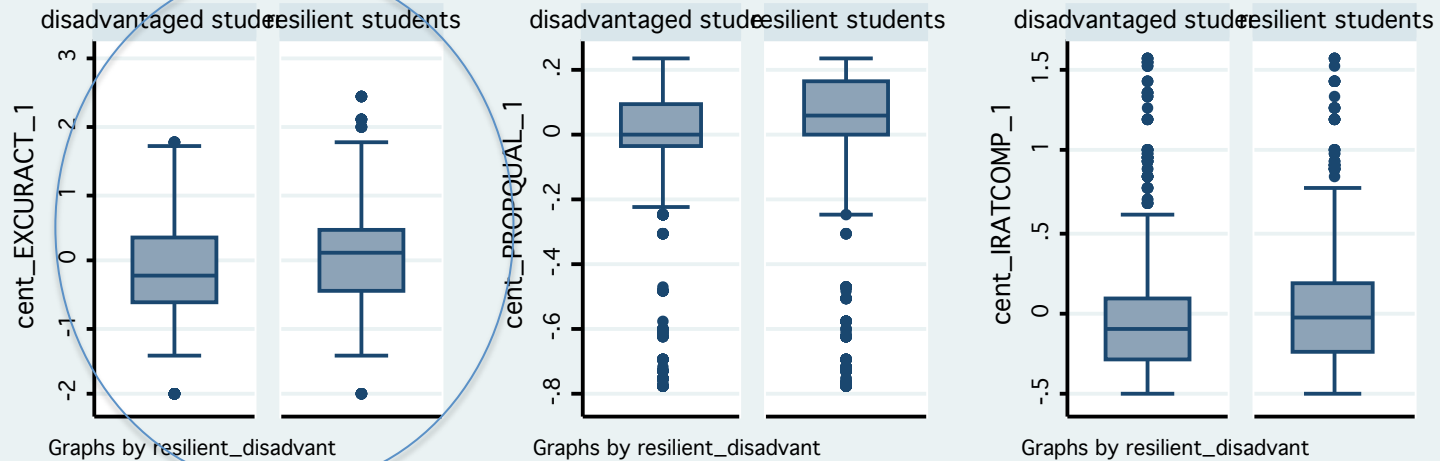
Data and method

✗ Descriptive statistics reveal that:

- ✓ Immigrants are more numerous among DLA (10%) than RES (2%)
- ✓ Motivation is strongly related with RES status (variable: Joy in reading)
- ✓ “Get along well with teachers”: 90% RES, 70% DLA
- ✓ School resources are higher in schools with higher performance
- ✓ Licei enrol higher proportion of RES (25% of Licei among schools in the third quartile of the distribution of RES student proportion).
- ✓ Extracurricular activities more present in schools with higher proportion of RES

Figure 3. The distribution of school level variables:
resilient students (RES) versus disadvantaged low-achievers (DLA)

Extracurricular
activities



Teacher
shortage

Data and method

- ✗ We reported the results derived from the multilevel logit model, and more specifically:
 - ✓ Coefficients
 - ✓ Odd ratios, which represent how many times the probability of being RES is associated with the covariate under scrutiny.

- ✓ ... for instance, a odd ratio of 2 associated with the variable “female”, would mean that a female student is, all else equal, 2 times more likely to become a resilient student.

Results

	Coeff.	odds ratio	Coeff.	odds ratio
intercept	-1.946***		-2.280***	
Attitude towards computers	0.461***	1.585***	0.459***	1.583***
Attitude towards school	-0.094	0.911	-0.094	0.911
Joy/Like Reading	0.878***	2.407***	0.883***	2.419***
immigrate	-2.075***	0.126***	-2.172***	0.114***
sex=female	1.138***	3.122***	1.133***	3.105***
dum_family_structure	-0.016	0.984	-0.023	0.977
Teachers - Get along well - disagree	0.911***	2.486***	0.898***	2.456***
Teachers - Get along well - agree and strong agree	1.349***	3.854***	1.355***	3.877***

(A) Individual level characteristics

Results

	Coeff.	odds ratio	Coeff.	odds ratio
Lyceum	2.414***	11.183***	2.936***	18.840***
village o smalltown	0.468	1.597	0.145	1.156
city o largecity	-0.248	0.78	-0.576	0.562
Index on the school's educational resources (SCMATEDU)	0.442**	1.555**	0.349*	1.418*
The index of availability of computers (IRATCOMP)	0.157	1.17	-0.023	0.977
proportion of qualified teachers	0.611	1.842	0.934	2.546
The student-teacher ratio (STRATIO)	0.297***	1.345***	0.236**	1.266**
The index of teacher shortage (TCSHORT)	0.482**	1.620**	0.369*	1.446*
The index of extra-curricular activities (EXCURACT)	0.702***	2.019***	0.560**	1.751**
Achievement Principal	-0.386	0.68	-0.531	0.588
Achievement Teachers	-0.533	0.587	-0.276	0.759
student_absenteism_a lot	-1.433***	0.239***	-1.152***	0.316***
assessment_student_promotion	0.495	1.641	0.224	1.252

(B) School-level characteristics (focus of this paper)

Results

	Coeff.	odds ratio	Coeff.	odds ratio
North East			2.422***	11.268***
North west			1.620***	5.053***
Center			-0.627	0.534
South			0.435	1.545

(C) Macro-area dummies

Results

- ✗ Student-level variables confirm well-known facts:
 - ✓ The role of motivation/ability, captured by JOYREAD and ATTCOMP (odd ratios: 2.4 and 1.6, respectively);
 - ✓ Immigrants are less likely to be resilient (odd ratio: 0.11)
 - (the difficulties in social integration and difficulties at school – especially in reading)
 - ✓ “getting along well with teachers” is positively associated with resilience (odd ratio: 3.8).
 - The important role of teachers: interacting positively with students – especially with disadvantaged students for helping them

Results

- ✗ School-level factors (main focus of the paper)
 - ✓ They overall explain >25% of between-school variance in probability to become resilient students
 - ✓ The role of Licei (students are 18 times more likely to be RES than DLA)
 - (positive peer-effects? Motivation, not ESCS related – we controlled for ESCS!).
 - ANOVA and Tukey's test show no differences of resources between Licei and other schools.
 - ✓ Resources: no students:teachers ratio and facilities (computers); yes “quality” of educational resources (students 1.4 more likely to be RES)

Results

(SCHOOL-LEVEL variables – follows...

- ✓ Positive and significant role of extracurricular activities (students 1.7 more likely to be RES)
- ✓ If principal cares more about absenteeism (in other words, the phenomenon is problematic), students in the school are more likely to be DLA (odd ratio: 0.3)

Results

- ✗ The important role of North/South gap
 - ✓ Not only students perform better in the North (an extensive literature on this)...
 - ✓ ... but also being in the North is positively related with student resilience (students in the North-East area are 11 times more likely to be RES)
 - ✓ The role of wider socioeconomic context (not only family and school in the educational production process)

Discussion

- ✗ The role of school resources
 - ✓ At least for schools attended by a disadvantaged population, they can help students overcoming their background
- ✗ Extracurricular activities:
 - ✓ Less time in the disadvantaged background, together with more cultural-related time spent;
 - ✓ Favouring engagement with school and motivation
- ✗ School leadership
 - ✓ Principals who care more about the problem of absenteeism, that is interpret their role proactively

Policy implications

- ✗ The factors, which are positively associated with student resilience, should be managed by school management...
- ✗ School autonomy (school-based management, SBM)
 - ✓ The present context of Italian educational system is characterized by a strong regulation by the Ministry of Education
 - ✓ It is necessary to foster schools' autonomy – giving principals the tools for improving their schools' activity