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**Accounting School System to Avoid Educational Inequalities**

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## **Abstract**

The working paper focuses on the effects of the social economic and cultural background on student achievement, deepening from the methodological point of view. The main hypothesis developed here is that the social economic and cultural conditions of the educational environment have significant effects on students' achievement. Secondary data analysis had been done by using information from the Italian national large scale survey to assess student performances on reading, done into 2012-13 school year by the National Institute for the Evaluation of the Education System (INVALSI). Students from the 10th grade of the ISCED scale had been taken into account and descriptive and multivariate analysis had been done. The main results show the relationship between student performances on reading literacy and social economic and cultural status, distinguishing by type of school.

Keywords : INVALSI; ESCS; student achievement; inequalities, large scale survey; national testing.

## Overview

The paper deepens the effects of student social economic and cultural background on their achievement. The main aim is to reflect on the validity of the indicator about the social economic and cultural status (ESCS), estimated by the National Institute for the Evaluation of the Education System (INVALSI) during the national large scale surveys done to assess the Italian student performances on reading literacy and mathematics.

Since the 2007-08 school year, the Italian Ministry of the Public education establishes annually the external evaluation of the Italian educational system and the benchmark of learning that students have to achieve when they are at grades 2nd and 5th (primary school), 6th and 8th (middle school) of the ISCED scale; into the 2010-11 school year the survey had been extended to the students from the 10th grade of the ISCED scale (high school) and since the 2013-14 school year the survey had been stopped for the students from the 6th grade of the ISCED scale.

Progressively, for each of the interested level, this survey involved all the population of students, so that the sample design is census and, in particular, for students from the 8th grade, the results from testing have an incidence on the final examination at the end of the middle school, so that these tests are defined high stake<sup>1</sup>. Annually, on the month of May (on June for students from the 8th grade), INVALSI does these large scale surveys and selects a sample of students for each of the interested school level<sup>2</sup>, on the basis of which

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<sup>1</sup> The term "high-stakes" is used in the educational context to refer to the direct consequences of the accountability processes (Barzanò, 2008); Stobard and Eggen say that "tests become 'high-stakes' when the results lead to serious consequences for at least one key stakeholder. These consequences could be educational or occupational life chances or individual candidates. This is the case when, for example, testing is used for selection in education and training or to gain credentials that provide 'a licence to practise'. Where tests are used for accountability purposes in evaluating performance and to determine whether targets have been met, they become high-stakes for institutions such as schools and colleges, especially if they affect funding and recruitment" (Stobart and Eggen, 2012:1). High stake tests generate positive and negative consequences: in one hand, more attention on pedagogy curricula by teachers, more information to the families about school performances, less self referentiality and more competition between schools; in the other hand, uncorrected or opportunistic behaviours as well as teaching to the test or teacher cheating (Jacobb and Levit, 2003).

<sup>2</sup> The sample is representative of the Italian regions and, in high education, per type of school (lyceums, technical schools, vocational schools) and stratified by school, in which two classrooms are selected. The choice to use a student sample for reporting the status of the national educational system is to guarantee the validity of results and to avoid from uncorrected behaviours by students or teachers as well as cheating to the test or cheating to test (Quintano, Castellano and Longobardi, 2007; INVALSI, 2013b). The strategy consists of sending to the sampled classrooms external observers to administer tests and to control the administration and data collection procedures. Statistical

the research institute does a national report on the status of educational system, that is published on July on its official website<sup>3</sup>. On September of the same year, INVALSI sends to each school of the student population the results in reading literacy and mathematics, articulated by classroom/school - and for the high education, per type of school - by using a platform *ad hoc*.

The usefulness to have a measure of the influences of social economic and cultural factors at individual and school levels consist of to better understand results of national testing on student achievement, that otherwise would only be a photography of the *status quo* of the national education system.

As in the international large scale surveys, as well as the Programme for International Student Assessment (PISA) promoted by the Organisation for Economic Co-operation and Development (OECD, 2013b), where results underline the relevance of the social economic and cultural conditions on students' learning<sup>4</sup>, also into the Italian system of accountability of students' learning the indicator of cultural and social economic status (ESCS)<sup>5</sup> is positively correlated with students' results in national testing. Researches show that the social economic and cultural condition of students affects their achievement, future choice and academic success identifying conditions of inequality and what students are most at risk of social exclusion.

Starting from these assumptions, the aim of the article is to reflect on the utility of using the indicators of social economic and cultural background (ESCS), both to understand students' performances and to estimate the effects of their social economic and cultural status on learning and track school choice.

The main hypothesis developed here is that the social economic and cultural conditions of the educational environment (school and, in particular, classroom) have effects on students' achievement.

From the methodological point of view, a secondary data analysis had been done by using the database of the Italian national large scale survey on reading literacy of the 2012-13 school year, promoted by INVALSI<sup>6</sup>. The choice of reading literacy instead of mathematics is done by a theoretical consideration, consisted of the fact that reading is a transversal literacy (OECD, 2009) that is necessary to understand also the text of mathematical tests, and an analytical one, so that there is an high correlation between the two values so that students who perform well in reading literacy usually perform great also in mathematics (OECD, 2013a; INVALSI, 2013a).

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procedures are applied during the phase of elaboration of data to correct the effect of cheating on the performances of the no sampled students.

<sup>3</sup> For further information please see the website <http://www.invalsi.it/invalsi/index.php>.

<sup>4</sup> For that reason the volume II of the most recent edition (2012) is completely focuses on the theme of equity at school. For further information please see OECD (2013b).

<sup>5</sup> For further information on the estimation of ESCS, please see Campodifiori, Figura, Papini and Ricci (2010).

<sup>6</sup> To deepen the results of the survey please see the Final Report edited by INVALSI (2013a).

The article focuses the analysis on all the Italian students nested in the classrooms of the 10th grade of the ISCED scale (the second classrooms of high education) that participated at the Italian standardized national tests. The choice to select the students from the 10th grade of the ISCED scale is suggested by the aim of the research, that consists of the study of inequalities in learning among students and, in particular about those by the social economic and cultural conditions at individual and aggregated level. The second reason consists of the fact that in high education it's possible to know if there are differences in term of guidance; moreover studies on inequalities in education and also results from the national reports on student learning show that the learning gap between advantage and disadvantage students is greater in high education than in the school of the first cycle.

Descriptive analysis and multivariate regressions models had been done to estimate differences that reflect inequality explained by the effects of social economic and cultural background on students' achievement, taking into account the fact that the school system is organized hierarchically, so that students are nested in classrooms nested in schools. On the basis of these results, the attention had been taken into account at micro-social level, towards schools, to reflect on the usefulness of the indicator of ESCS for well explain results at school and classroom levels.

### Sample and method

The population of Italian students nested in the classrooms of the 10th grade of the ISCED scale, the second classroom of the high education, that participated as well as sampled at the Italian standardized national tests of the 2012-13 school year, is taken into account: 38.202 students nested into 2.189 classrooms for reading literacy. The sample is probabilistic and stratified by Italian regions and school; in particular for the high education the student sample is representative also per type of school: lyceums, technical schools and vocational schools, as the Table 1 shows. To ensure the inference of results from the sample to the Italian population of students from the 10th grade of the ISCED scale (560.491 students), a procedure of weighting had been done<sup>7</sup>.

**Table 1 - Sampled students per type of school.**

School type	Reading literacy	
	N	%
Lyceums	16,340	42.8
Technical schools	12,850	33.6
Vocational schools	9,012	23.6
Total	38,202	100.0

<sup>7</sup> For further information about the procedure of sampling, weighting please see the Technical Report on the National testing (INVALSI, 2013b).

A secondary data analysis had been done by using datasets of the sampled students from the 10th grade of ISCED scale from the Italian national large scale survey done by INVALSI on reading literacy in 2012-13 school year.

To estimate the differences in term of social cultural and economic status, it had been taken into account the index of social economic and cultural background (ESCS), that INVALSI estimates by using factorial analysis on some variables collected by a student questionnaire administered to all the students that are involved in the national testing. ESCS is based on discrete indicators like the level of parents education (HISEI), their employment status (PARED) and on a continuous variable able to express a measure of proximity of the material conditions of student way of living outside the school (HOMEPOS)<sup>8</sup>.

Linear regressions and multilevel modeling had been done to measure the effects of social economic and cultural background at individual and school level on student achievement. Because of there is high segregation in high education by different tracks among types of school (lyceums, technical and vocational schools), it was necessary to distinguish analysis among different types of schooling for having reliable results. The Statistical Package for the Social Sciences (SPSS) and the software HLM (Raudenbush *et al.*, 2004) had been used to run analysis.

## Results

On the average, as well as the Table 2 shows, the ESCS mean score of the students nested into lyceums is higher than those of students from technical and vocational schools. There is the same trend at the regional level, as Graph 1 shows for reading literacy.

**Table 2 - ESCS mean per school type.**

School type	ESCS
Lyceums	0.35
Technical schools	-0.20
Vocational schools	-0.56

*Source: elaboration of the INVALSI datasets, grade 10th, 2012-13 school year, reading literacy.*

The graphs 1 explains the average of ESCS by Italian regions, distinguishing by type of school. The analysis confirm the general trend (table 2), so that it can be supposed that the familiar conditions affect the students' secondary track school choice.

On the average, the composition of students from lyceums is characterized by a positive mean of ESCS, on the contrary in technical schools the estimation is negative, followed by vocational schools, where the value of ESCS is the worst. In other term, results show that, on average, the trend is that students whit a

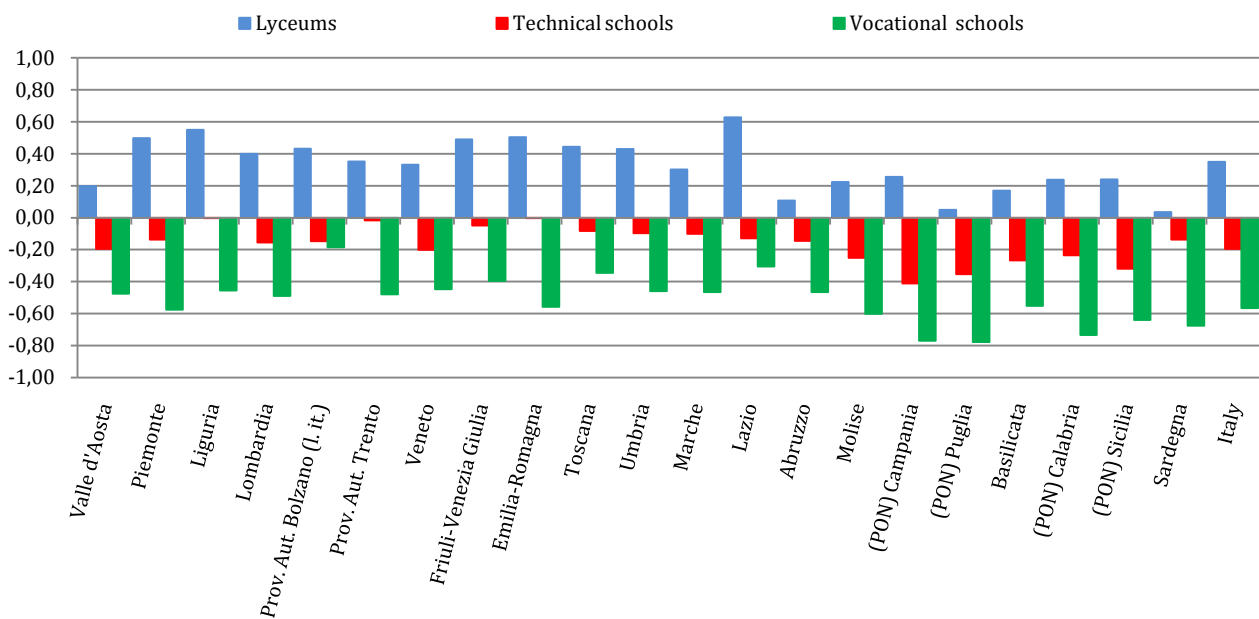
<sup>8</sup> For further information on the estimation of ESCS, please see Campodifiori, Figura, Papini and Ricci (2010).

higher social economic and cultural conditions choose lyceums; students with a lower family status choose technical education and students with the lowest background choose vocational education. The gap of ESCS between type of school is great; the differences work self-segregation of schools, aspects that could affect students' achievement.

With the exception of some regions in which the difference of ESCS between technical and vocational schools is really tiny, nevertheless it exists; regions from the South are located on the right of the graph, showing more disadvantaged conditions from the social economic and cultural point of view, not only for students that are in vocational and technical school but also for students from lyceums that show an average ESCS value littler than that from students from lyceum of the rest of the Italian regions.

Into the graph the acronym "PON" is used for the Italian regions that are taken into account into the National Operative Programme aimed to rise the Convergence objective established by the European Union (EU)<sup>9</sup>. These regions are Calabria, Campania, Puglia and Sicilia.

**Graph 1 - ESCS mean per Italian regions and per type of school.**



Source: elaboration of the INVALSI datasets, grade 10th, 2012-13 school year, reading literacy.

<sup>9</sup> The regions are Campania, Puglia, Calabria, Sicilia; they are defined as "PON" because they benefit of finances from the EU to rise the Convergence Objective. As a matter of fact they are included among the EU Convergence Regions and are targets of interventions in order to improve the quality of education systems, because they have a GDP per capita below 75% of the EU average, so that they are considered disadvantage. Different reports and studies are done in educational evaluation focusing on the quality education system and student learning in the regions from the PON area: for further information please see the documents published by INVALSI at link <http://www.invalsi.it/invalsi/ri/sis/doc.php>.

The following multivariate regression model (Table 3) shows the effect of ESCS on learning outcomes, controlling by other relevant variables as well as gender, citizenship, regularity, marks in reading and in math at school, type of school and regions.

**Table 3 - The multivariate regression model.**

	Reading literacy
Intercept (score on reading literacy)	191.1***
Female	-1.83***
Immigrant first generation	-11.99***
Immigrant second generation	-5.11***
Early school enrollees	-2.25
Students who have repeated a grade	-6.60***
Mark in Italian language centered around its mean	10.64***
Mark in math centered around its mean	3.20***
Student ESCS	0.83***
Classroom ESCS	16.40***
Lyceums	14.79***
Vocational schools	-17.19***
Valle d'Aosta	24.00***
Piemonte	18.79***
Liguria	8.64***
Lombardia	21.02***
Province of Bolzano	11.62***
Province of Trento	19.57***
Veneto	21.20***
Friuli Venezia Giulia	13.90***
Emilia	16.04***
Toscana	5.92***
Umbria	9.39***
Marche	15.41***
Abruzzo	2.41***
Molise	-0.23
Campania	-0.86
Puglia	7.63***
Basilicata	4.64***
Calabria	-3.75**
Sicilia	-6.22***
Sardegna	-1.15
R <sup>2</sup>	0.45
R <sup>2</sup> adj	0.45

Legend: \* p < 0.05, \*\* p < 0.01, \*\*\* p < 0.001.



*Source: elaboration from INVALSI (2013a: 133).*

The analysis underlines the fact that ESCS at the aggregated level of the classroom has a greater impact than at the individual level. In other term, taking into account the fact that the range of ESCS is (-3.6; + 2.0), the increase of one point of ESCS of the classroom adds 16.4 points in reading performances and 17.5 points in math; on the contrary, the individual ESCS has not a strong effect, even if it's significant. This aspect is coherent with the fact that the cultural capital of parents has a strong impact on the improvement of language comprehension.

In the previous analysis, it is noticeable that ESCS at the individual level has a little effect; on the contrary, the effect of ESCS at classroom level is quite large<sup>10</sup>.

The analysis goes on focusing on the variability of results among students, that is an indicator of equity and inequalities in schools and in classrooms within schools.

INVALSI estimates the variance of results in reading literacy by using the total deviance decomposed into three components: deviance between schools and between and within classrooms in the school. The percentage ratio between the total variance of each area and that of Italy is taken into account for reducing the effect of the numerical differences of the population and the sample of each geographical area (INVALSI, 2013a)<sup>11</sup>.

The variance between schools is a measure of how much those schools differ in term of results: the higher variance, the greater difference between schools in term of students' performances. The same interpretation is according to the variance between classrooms; while the variance within classroom shows the inter-individual differences (INVALSI, 2013a).

The following graph, from the 2nd to the 4th, show the decomposition of the variance of students' results in reading literacy, distinguishing by type of school and geographical areas<sup>12</sup>. Particularly, the vertical axis

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<sup>10</sup> This is also valid for mathematical, where moreover ESCS at individual level seems to be not significant on students' performances (INVALSI, 2013a:134).

<sup>11</sup> For further information about the measurement of the variability of results please see the chapter 6 of the National Report edited by INVALSI (2013a, 117:131).

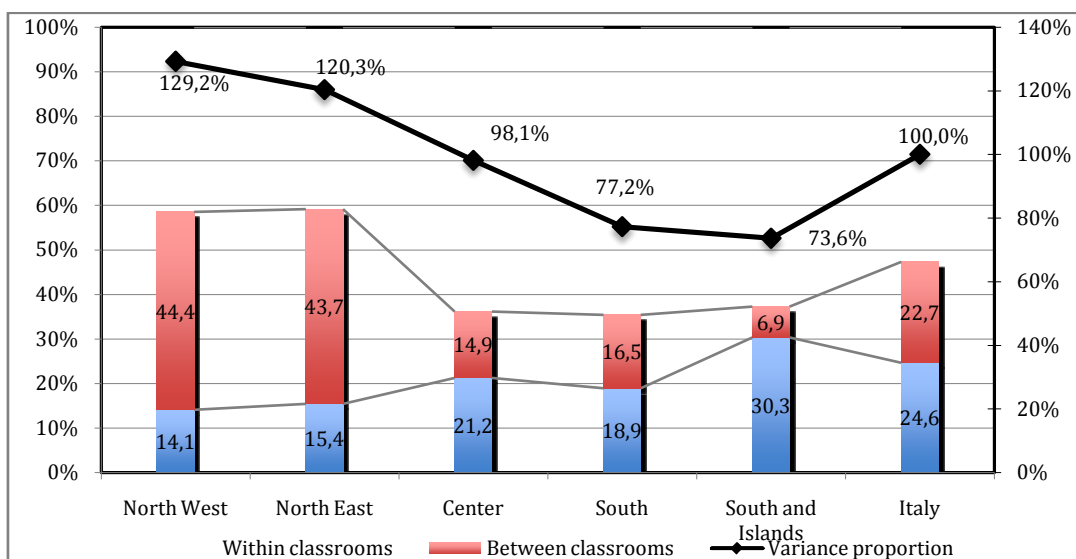
<sup>12</sup> The regions had been aggregated into 5 geographical areas:

- North West: Liguria, Lombardia, Piemonte and Valle d'Aosta;
- North East: Emilia-Romagna, Friuli-Venezia Giulia, Veneto and Trento and Bolzano provinces;
- Center: Lazio, Marche, Toscana and Umbria;
- South: Abruzzo, Campania, Molise and Puglia;
- South and Islands: Basilicata, Calabria, Sardegna and Sicilia.

on the left shows the scale of the deviance between classrooms and between schools (the histograms in red and blue); while the vertical axis on the right is referred to the ratio between the variance of the geographical area and the variance of Italy (the black line). The analysis shows that the variance between schools is major into the regions from the South than in the rest of the country: the more variance of results between schools or between classrooms in a school, the more differences among them.

More specifically, the analysis of the variability of results in reading literacy among students from lyceums (graph 2) shows that the variability of results is minor in the South and South and Island than in the other examined areas; in other terms there is more homogeneity in the performances of students from lyceums of the south regions of Italy than in the rest of the country.

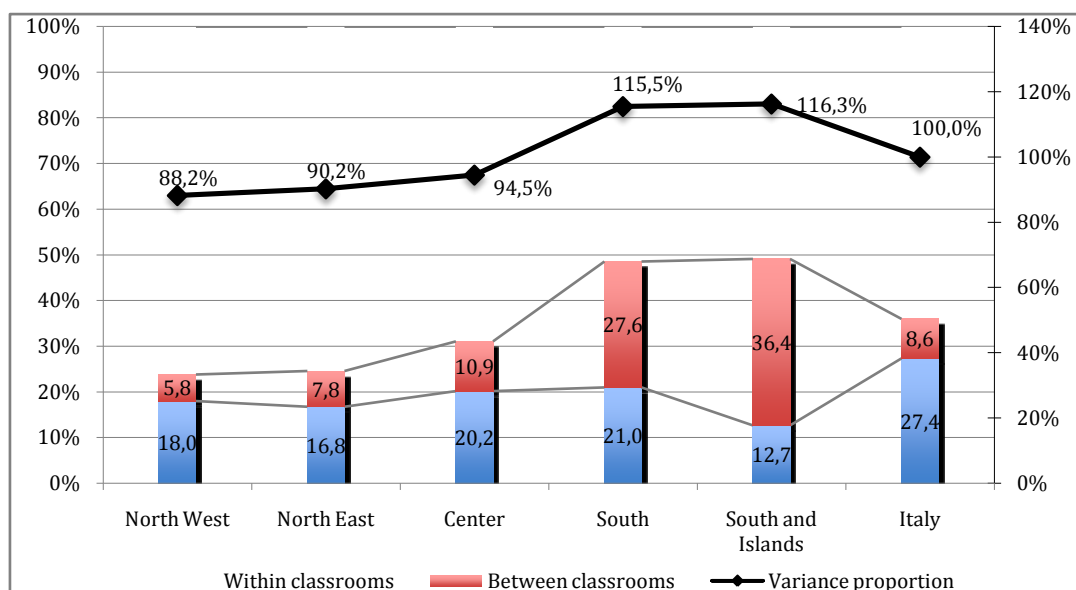
**Graph 3 - Decomposition of the variance results on reading literacy - Lyceums.**



Source: INVALSI (2013a: 127).

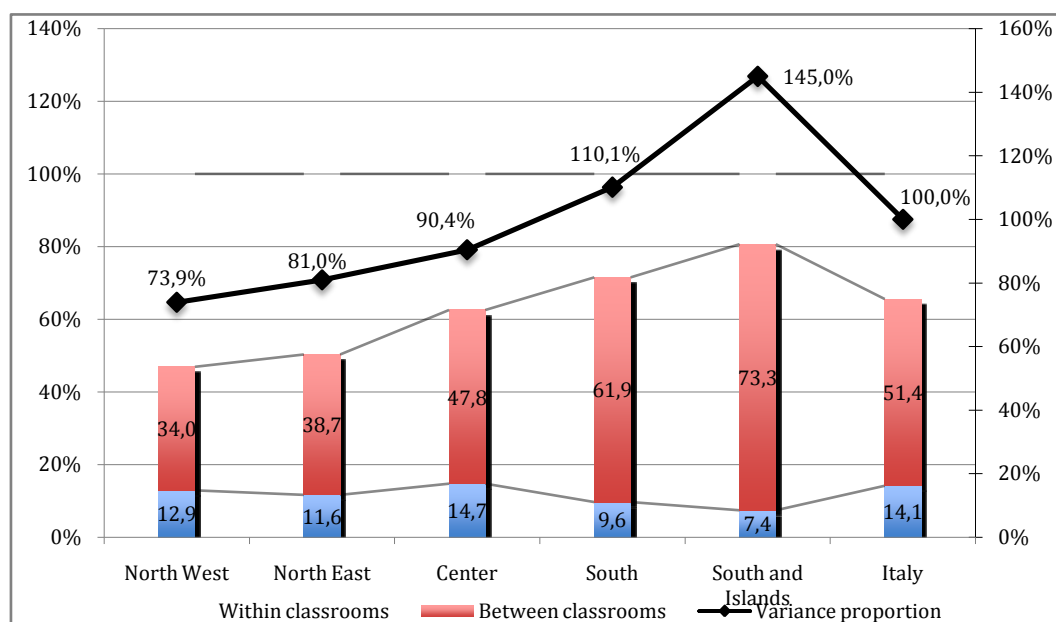
On the contrary, for the technical and vocational schools (graphs 3 and 4), there are more differences among students in term of performances in the south than in the rest of Italy.

**Graph 4 - Decomposition of the variance results on reading literacy - Technical schools.**



Source: INVALSI (2013a: 128).

**Graph 5 - Decomposition of the variance results on reading literacy - Vocational schools.**



Source: INVALSI (2013a: 129).

Furthermore, a multilevel analysis had been done to estimate the slope of the social economic and cultural status on student learning and to study school profiles.

The social economic and cultural background of student ("student ESCS") and the average ESCS of school had been taken into account respectively at student and school levels; moreover the analysis distinguishes schools from different geographical areas (North West, North East, Center, South and South

and Islands). The analysis had been run separately for each type of school: lyceums, technical and vocational school; the multilevel equation is the following.

Level-1 Model:

$$\text{Reading literacy score}_{ij} = \beta_{0j} + \beta_{1j}*(ESCS_{ij}) + \beta_{2j}*(Female_{ij}) + r_{ij}$$

Level-2 Model:

$$\begin{aligned} \beta_{0j} &= \gamma_{00} + \gamma_{01}*(school\ ESCS_j) + \gamma_{02}*(North\ East_j) + \gamma_{03}*(Center_j) + \gamma_{04}*(South_j) + \gamma_{05}*(South\ and\ Islands_j) \\ &+ u_{0j} \\ \beta_{1j} &= \gamma_{10} \\ \beta_{2j} &= \gamma_{20} \end{aligned}$$

Mixed Model:

$$\text{Reading literacy score}_{ij} = \gamma_{00} + \gamma_{01}*(school\ ESCS_j) + \gamma_{02}*North\ East_j + \gamma_{03}*Center_j + \gamma_{04}*South_j + \gamma_{05}*South\ and\ Islands_j + \gamma_{10}*ESCS_{ij} + \gamma_{20}*Female_{ij} + u_{0j} + r_{ij}$$

The tables 4, 5 and 6 show the results of the multilevel analysis.

Particularly, for lyceums (table 4), the null model<sup>13</sup> shows an average score on reading literacy about 214.3 points (s.e. 1.7)<sup>14</sup>, the value is above the national average of all the distribution of students from the grade 10th (the value is fixed at 200).

After controlling by the social economic and cultural conditions, the score on reading literacy is equal to 221.5 points, that value is greater than those of the other type of examined schools (tables 5 and 6). The school ESCS is significant among lyceums and affects more than the individual social economical and cultural conditions that, anyway, are significant. In other terms, an increase of one point of the individual ESCS corresponds to an increase of 3.6 points of the reading literacy score; while an increase of one point of the school ESCS increases students' performances of 13.3 points.

There are no significant differences between males and females and between students from North West and North East; on the contrary, on average, a student from a region of the Center performs 23.4 points lower than a student from the north, as well as a student from South and Islands (-23.3 points); also students from lyceums of the South perform 14.0 points minus than those from lyceums of the North West but in general

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<sup>13</sup> The null model is estimated by putting the average score on reading literacy as the effect and no independent variables.

<sup>14</sup> The abbreviation "s.e." is for "standard error".

they performs better than those from lyceums of the Center or the South and Islands. These results are really interesting if they are compared with the coefficients estimated by the multivariate regression model (table 3) and, moreover, with the average score of the regions articulated per type of school, that had been published into the National Report (INVALSI, 2013a:89). As a matter of fact, the analysis underlines graphically what are the Italian regions that perform better on reading literacy and viceversa, per type of schools.

More attention is necessary for the results from the lyceums of the regions from the Center, that show more difficulties than the other type of school of the Center: as a matter of fact the gap is great with the score of North West or North East, while among the school, both technical and vocational, that gap is minor.

**Table 4 - Results from multilevel analysis - Lyceums.**

	Coefficient	Standard error	T-ratio	Approx. D.f.	P-value
Reading literacy score	221.5	2.8	78.5	424	0.000
Individual level					
Female	-0.4	0.7	-0.5	15,952	0.596
ESCS	3.5	0.5	6.6	15,952	0.000
School level					
ESCS	13.3	4.0	3.3	424	0.001
North East	-1.7	3.0	-0.6	424	0.559
Center	-23.4	4.8	-4.9	424	0.000
South	-14.0	2.9	-4.8	424	0.000
South and Islands	-23.3	3.1	-7.6	424	0.000

*Final estimation of level-1 and level-2 variance components:*

Random Effect	Standard deviation	Variance component	df	Chi-square	P-value
Variance between schools	15.1	228.2	424	4364.72	0.000
Variance within schools	30.1	906.0			

*Source: elaboration of the INVALSI datasets, grade 10th, 2012-13 school year, reading literacy.*

The average score on reading literacy of students from technical school is under the national average (the value is fixed at 200) and equal to 191.9 points (s.e. 1.8).

However, after controlling by all the examined variables, the average score on reading literacy of a student from technical school (203.9) is over the national average (the value is fixed at 200), so that it suggests that the examined variables have an effects on students performances.

More specifically, females perform 2.1 points greater than males and there is also a significant effect of the social economic and cultural conditions of school and family.

In other terms, an increase of one point of school ESCS, increase student performances of 7.9 points; while when the individual ESCS increases of one point, student performances increase of only 1.2 points.

There are no significant differences between students from technical schools of North West and North East; on the contrary the differences are relevant with students from other parts of Italy. As a matter of fact, a student from the North West performs 12.5 points better than one from the Center, 20.1 points better than one from the South and 21.9 points better than one from the South and Islands.

These results are really interesting according to the fact that the analysis doesn't take into account the gap between schools caused by the type of school, because the analysis are run separately per type of school.

**Table 5 - Results from multilevel analysis - Technical schools.**

	Coefficient	Standard error	T-ratio	Approx. D.f.	P-value
Reading literacy score	203.9	1.8	111.4	376	0.000
Individual level					
Female	2.1	0.7	2.8	12,638	0.004
ESCS	1.2	0.4	3.2	12,638	0.002
School level					
ESCS	7.9	4.0	2.0	376	0.049
North East	-0.3	2.6	0.1	376	0.914
Center	-12.5	3.2	-3.9	376	0.000
South	-20.1	2.7	-7.3	376	0.000
South and Islands	-21.9	2.4	-8.9	376	0.000

*Final estimation of level-1 and level-2 variance components:*

Random Effect	Standard deviation	Variance component	df	Chi-square	P-value
Variance between schools	13.6	184.8	376	3108.7	0.000
Variance within schools	28.5	812.7			

*Source: elaboration of the INVALSI datasets, grade 10th, 2012-13 school year, reading literacy.*

Finally, the table 6 shows the results of the analysis about vocational schools. The null model for the vocational school shows a really critical situation: the average score on reading literacy is equal to 164.7 points (e.s. 2.0), a value strongly under the national average (the value is fixed at 200).

After controlling by all the examined variable, the value increases about 17 points. In the mixed model, the average score on reading literacy of students from vocational school (181.1) is greater than in the null model, reducing the gap between the national average and the performances of students from vocational school.

The analysis shows a strong effect of both the individual and aggregated social economic and cultural conditions. In other terms, when the school ESCS increase of one point, student performances rise up of 11.0 points; while when the individual ESCS increases of one point, student performances improve of 2.6 points. There are also gender differences into vocational schools: on average, females perform 6.0 points better than males. Moreover the differences are significant between different geographical areas: as well as for lyceums and technical schools, into vocational schools there are no significant differences between schools from North West and North East; on the contrary, the performances of the students from the regions of the Center are 9.1 points minor than those from the North West, followed by those from the South (-15.8 points) and from the South and Islands (-24.4 points), that show the worst situation.

Results underline the fact that the social economic and cultural conditions of schools and the characteristics of the territory where schools are embedded have a greater effects on young people's learning than the individual ones. Results show also that lyceums are those in which the ESCS has a major effect on

**Table 6 - Results from multilevel analysis - Vocational schools.**

		Coefficient	Standard error	T-ratio	Approx. D.f.	P-value
Reading literacy score		181.1	3.1	57.7	326	0.000
Individual level	Female	6.0	1.0	5.7	8,821	0.000
	ESCS	2.6	0.4	6.0	8,821	0.000
School level	ESCS	11.0	5.1	2.1	326	0.032
	North East	-3.3	2.8	-1.2	326	0.231
	Center	-9.1	3.0	-3.0	326	0.003
	South	-15.8	3.9	-4.0	326	0.000
	South and Islands	-24.4	4.8	-5.1	326	0.000

*Final estimation of level-1 and level-2 variance components:*

Random Effect	Standard deviation	Variance component	df	Chi-square	P-value
Variance between schools	13.7	189.3	326	2128.0	0.000
Variance within schools	29.5	869.2			

*Source: elaboration of the INVALSI datasets, grade 10th, 2012-13 school year, reading literacy.*

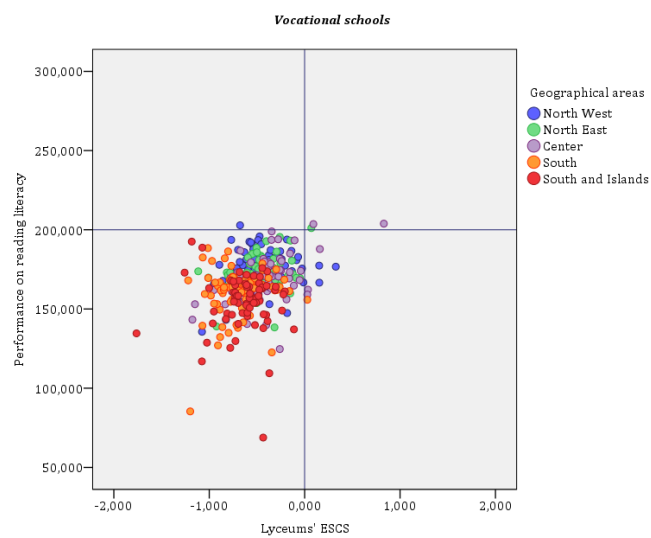
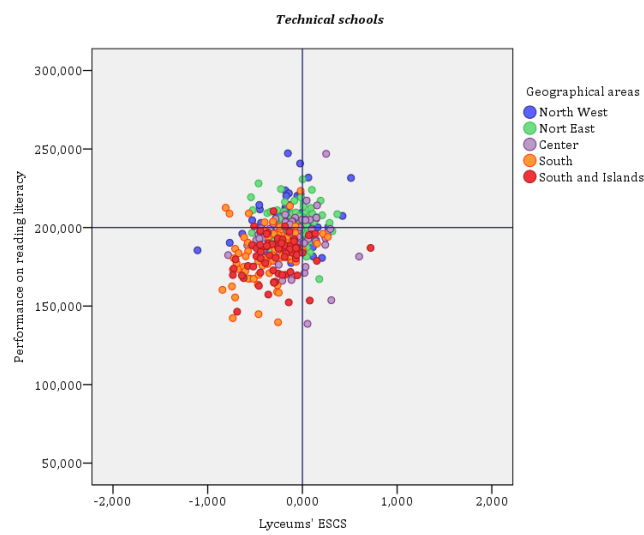
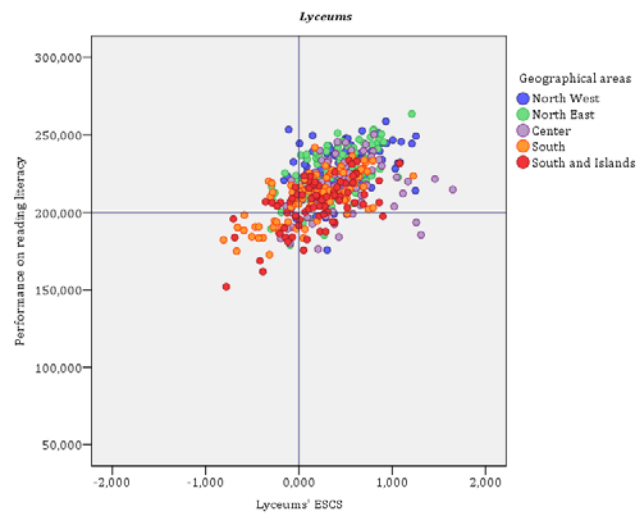
student performances at both individual and aggregated level, so that the more the lyceums are composed by advantage people, the more student performances are great and *viceversa*; however the territorial differences persist so that there are gaps between lyceums from the north and lyceums from the other parts of Italy.

Technical and, particularly, vocational schools, that usually are characterized by having more disadvantaged young people than into lyceums, seem to be affected by a sort of generative self-segregation caused by the effect to be into territories just deprived from the social economical and cultural point of view.

School profiles had been estimated to better understand differences between schools in term of student learning on reading literacy. The term “school profile” has been used in this report for graphs that display the relationship between school mean performance and school mean ESCS (Willms, 2006:12)<sup>15</sup>. The graph 5 shows the differences among lyceums, technical and vocational schools, distinguishing between geographical areas: the horizontal line shows the social economic and cultural conditions of schools by using the ESCS average; the vertical line shows the average score of school obtained in students' performances in reading literacy in INVALSI tests. The analysis underlines that, at the same average of ESCS, schools are different in term of students' achievement: in one hand there are substantial differences between school of different type; in the other the gap is evident between geographical areas.

<sup>15</sup> For further information about school profile, please see Willms (2004, 2006); Willms and Smith (2005) and Tramonte (2005a, 2005b).

### Graph 6- School profile per type of school.



Source: elaboration of the INVALSI datasets, grade 10th, 2012-13 school year, reading literacy.



## Conclusions

The 99.0% of the projects approved by the European Social Fund concern Axes I – Human Capital; that means that these funds were allocated to increase students' skills and develop professional competences of school staff as well as to the widening of the access to learning throughout life. Unfortunately inequalities in education persist. For that reason would be desirable to design interventions focused on the inclusion of all students so that everyone can enjoy the same opportunities as their peers.

Results underline that ESCS is a strong indicator of inequalities among students and schools. Researches on students' learning confirm that ESCS, at different level, individual or aggregated, affects performances.

During the official submission of results of national testing from INVALSI to schools, school operators critic the fact that in disadvantaged contexts it's very hard to achieve high values and that obtaining a score above the national average is not necessary the result but that could a good result to increase student learning step by step. This aspect is strictly connects to the theme of the added value (Martini, 2007; Ricci, 2008). For that reason since the national testing of the 2013-14 school year, INVALSI introduces a new benchmark to avoid social inequalities among schools and, particularly, to aid school operators to measure the progress of their school in student performances. The benchmark is an estimation that takes into account the information from the national testing. It consists of an indicator of the average score in reading and mathematics of two hundred Italian schools or classrooms equal to the examined one (school or classroom) in term of social economic and cultural background of students. The point of strength is that a school can compare its results or that of its classrooms with those from other Italian schools that are similar in term of social economic and cultural status; in this way it's possible to know how much the performances of a school or classroom are far from (above, under, or equal to) the average score of the two hundred similar school or classroom. In that way is evident how the results of the national large scale survey on student learning, aimed to be tools for accounting educational system, could be used by schools as strategy for improving student learning.

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