DISCUSSION PAPER SERIES

No. 3198

SORTING AND PRIVATE EDUCATION IN ITALY

Giuseppe Bertola and Daniele Checchi

LABOUR ECONOMICS and PUBLIC POLICY

Centre for Economic Policy Research

www.cepr.org

Available online at: **_CEPRURL_**

ISSN 0265-8003

SORTING AND PRIVATE EDUCATION IN ITALY

Giuseppe Bertola, European University Institute, Firenze and CEPR
Daniele Checchi, Università degli Studi di Milano

Discussion Paper No. 3198
February 2002

Centre for Economic Policy Research
90–98 Goswell Rd, London EC1V 7RR, UK
Tel: (44 20) 7878 2900, Fax: (44 20) 7878 2999
Email: cepr@cepr.org, Website: www.cepr.org

CEPR Discussion Paper No. 3198

February 2002

ABSTRACT

Sorting and Private Education in Italy*

This Paper discusses reforms of Italian secondary schools' curriculum and funding in light of theoretical considerations, the experience of other countries, and empirical evidence. We briefly review socio-economic views on the schooling system's role in shaping the social structure and productive potential of new generations. The current structure of the Italian secondary school system lets the student population sort itself, on the basis of individuals' financial and cultural background, along both vocational versus comprehensive and public versus private dimensions. We characterize the outcome of this sorting, and its relationship to further educational experience, with a statistical analysis of a sample of university students. Not surprisingly, we find that in Italy Catholic private schools play a different role from that of their American counterparts, which have been found to improve the performance of relatively poor students. Italian confessional and other private schools appear to cater to the needs of relatively less talented students from relatively rich family backgrounds.

JEL Classification: I20
Keywords: education quality and education reform

Giuseppe Bertola
Department of Economics
European University Institute
Badia Fiesolana
I- 50016 San Dominico di Fiesole FI
ITALY
Tel: (39 055) 4685 225
Fax: 939 055) 4685 202
Email: giuseppe.bertola@iue.it

Daniele Checchi
Dept. Economia Politica
Università Degli Studi di Milano
via Conservatorio 7
I-20122 Milano
ITALY
Tel: (39 02) 7609 4519
Fax: (39 02) 7600 9695
Email: daniele.checchi@unimi.it

* For helpful comments we thank Christopher Flinn (the discussant) and other participants in the conference 'Qualità del processo formativo ed esiti sul mercato del lavoro,' Milano, 16-17 November 2001.

Submitted 18 January 2002

1. Introduction

The economics and politics of private schooling provision are intricate and controversial. Recent efficiency-oriented reforms of public transportation, urban sanitation, health, even prison administration tend to replace public provision of goods and services with private production at subsidised rates. Should governments issue tax-financed vouchers payable to private non-profit suppliers of education? The issue is particularly topical in Italy, where the Constitution stipulates that public and private schools have equal rights but the latter should not be State-funded. Regional governments, however, have begun to issue income-rated vouchers applicable to either public or private schooling costs. And the Education Minister of the new Berlusconi government, Ms. Letizia Moratti, was among the signatories of a 1999 "*Scuola Libera!*" manifesto advocating radical privatisation of schooling provision in Italy. [1]

Interest in the motivation and effects of education policy is also enhanced in Italy by reforms of the primary, secondary, and university-level structure of curricula. These reforms are currently in the implementation phase, after an extremely long gestation period. Gambetta (1987, Chapter 2) offers a very useful description of the Italian education system in the early 1980s, and analyses the effects of previous reforms. That description and analysis remain interesting and useful today because, even though reforms were being discussed at the time, the system remained virtually unchanged until the late 1990s. The policy debate was then and still is centred on whether the Italian secondary school system should conform to the Anglo-American comprehensive model, or rather remain similar to those of continental Europe countries where parallel vocational and generalist tracks are separated early in a student's school career. Advocates of reform claim that comprehensive schooling prevents segregation of low- and middle-class children; opponents emphasise the advantages of school selectivity for elite formation.

A reform legislated by the left-wing majority of the late 1990s moves the Italian education system towards the former model, and is quite clearly meant to eliminate stratification of more or less elitist school curricula. [2] The right-wing government elected in 2001 campaigned against the reform,

---

[1] See *Liberal*, 18 November 1999, or http://www.agesc.it/Liberal.htm. That document stated that the State should 1.Finance, not provide education, 2.Support a variety of educational options, 3.Ensure equal dignity of all schools, 4.Deprive all degrees of legal validity, 5.Set an annual per-pupil educational expenditure, 6. Pay it out to families, 7. Possibly set the value of vouchers below the cost of State education, by no more than 10%, in order to support universal service.

[2] *Legge quadro* n.30 of 10/2/2000 combines *scuola media* (the lower secondary school, whose curriculum was unified in the late 1960s reform studied by Gambetta, 1987) and elementary school in a single primary school curriculum; abolishes its final examination (*esame di licenza media*); increases compulsory education to 16 years of age (from 15), with 2 additional years of compulsory on-the-job training for school leavers (*obbligo formativo*); shortens the total duration of primary and secondary school by one year (from 13 to 12 years); reforms the secondary school curriculum, as composed by an initial biennium, identical for all tracks, to be followed by additional 3 years which are track specific. The law also prescribes that all secondary school tracks, regardless of their vocational orientation, must be named "*liceo*" (high school), like the non-vocational tracks of the existing system.

pledging to stop its implementation and preserve the elitist high school track (*liceo,* which the government would like to keep distinct from vocation school and lengthen by one year). The agenda of the current Italian government also includes a school voucher program, meant to increase equality of opportunity and allow talented children of poor families to obtain high-quality education in the private sector.

Similar issues of school stratification and educational freedom of choice are also quite important in other countries, including the United States, where the Bush administration intended to introduce tax-financed subsidies for private religious schools before losing control of the Senate. In many of those countries, and especially in the US, a substantial body of academic empirical work has tried to assess the efficiency and distributional implications of the *status quo* structure of education, and of possible reforms. In Italy, however, much of the policy debate is largely ideological, and scarcity of data has so far prevented serious evaluation efforts.

This paper first reviews scientific perspectives on educational systems, then offers a statistical analysis of University records focused on the implications of the current mixed system of private and public, vocational and generalist education in Italy. Theoretical arguments and empirical evidence suggest that deregulation of the education industry (with or without public funding) need not be as beneficial as it might be in a simpler environment. In Italy, where vocational and generalist tracks coexist, private schools appear to cater to segments of the population that are not only wealthier, but may also be *ex ante* less likely to perform well in school. Current debates between advocates of public and private provision fail to take this initial configuration into account, and may therefore disregard possibly undesirable side effects of increased reliance on private schooling.

2. Economics and education

Demand and supply of education interact in markets that are quite distant from the competitive paradigm of textbook economic models. The economic benefits of education accrue much later than the time its costs are paid, are random and hardly verifiable, since they depend importantly on behaviour of the student in the labour market as well as on the quality (which is generally difficult to ascertain *ex ante*) of education. Such information problems generally prevent markets from ensuring that private costs and benefits are fully accounted for by appropriate intertemporal state-contingent contracts. Moreover, some of the benefits of education are public in nature, i.e. they accrue to society at large rather than to specific individuals.

Checchi (1999) and his references discuss in detail theoretical interactions between public and private supply of education, and their implications for economic efficiency and resource distribution. Briefly, education plays three related but conceptually distinct socio-economic roles. First of all, the

school system provides young individuals with essential communication and behavioural skills that will allow them to interact with other members of society. In primary school, children learn not only how to read and write, but also to respect each other and obey rules. Such communication and behavioural skills are essential for the smooth functioning of any organised system of social interaction.

A second very important role of education is of course that of supplying the labour market with suitably trained and selected factors of production. Schools embody in new generations advanced productive skills (*human capital*), in the form of an ability to formulate correctly, analyse, and solve problems, and/or of technical know-how. The former skills are general, and can be learned by exercising and refining one's ability to reason at an abstract level; the latter skills can be learned more mechanically, for specific applications. School systems also select (*screen*) members of new generations, and sort them according to their ability to perform different tasks. The educational curriculum of a student has value in the labour market if it enhances and certifies general and/or specific skills and talents. Hence, not only society but also individual students benefit (in the form of higher wages and/or better employment opportunities) from school curricula that transmit and certify their usefulness in production.

In order to interpret many features of school systems in market economies, however, it is important to account for their third important role, namely that of shaping the structure of social stratification across generations. The private value of education is obviously higher when high-quality curricula are scarce in the labour market and, more generally, in the socio-economic system. When supplying and certifying skills and talents, schools select and sort members of new generations according to their socio-economic duties in society, and the structure of a schooling system can prevent or foster intergenerational mobility across different ladders of the social structure.

How does coexistence of public and private supply of education bear on these roles of schooling, and on other institutional features of socio-economic systems? Clearly, it is easier for (primary) schools to foster social cohesion if their enrolment is a representative cross-section of society and they are managed by civil servants. As far as the first role of schools is concerned, their output is a public good, valued by society as a whole rather than by each individual in isolation. Hence, it is easy to see why Article 34 of Italy's Constitution would prescribe free (State-financed), comprehensive, and mandatory education for at least 8 years. Just as clearly, however, the other two purposes of school systems (which offer private benefits to individual students) need not be served as well as the first one by a public and comprehensive school system.

Public school systems can be more or less selective at different stages of the student's curriculum, and the presence of private schools alongside public ones can have important implications for the scope and character of education. To see why, it is useful to suppose initially that the cost of

private education is born directly by families, and to recognise that financial market imperfections generally constrain poor families' educational investments. Then, the customer base of private schools predominantly includes students from relatively rich families, which also offer a better cultural background when educational achievement and financial resources are correlated. As regards the first, social role of schools, this implies that the children of "better" families will only learn to interact with each other, not with their poorer cohorts who remain segregated in cheaper public schools.

As regards the economic role of schooling in the transmission of knowledge and selection of skills, private schools can have important efficiency advantages. Since their customers pay for services, they are presumably more motivated to monitor the quality of education received. Hence, competition among private schools with each other and with public schools can increase efficiency of education supply. The quality of education, however, is not as easy to assess as that of groceries. Educational inputs (such as the number and qualifications of teachers, and the size and quality of classrooms) are to some extent observable and measurable, but educational output depends importantly on the quality of the student pool attracted. In principle, the quality of an educational experience should be evaluated on the basis of the students' labour market experience in the decades after graduation. In practice, the perceived quality of education is strongly influenced by a school's reputation, which changes very slowly and effectively prevents new entrants from contesting the incumbents' market position; and by a variety of possibly spurious indicators, such as the pleasantness of the school's premises. The role of private schools is much clearer as regards the third, stratification-oriented role of education. To the extent that financial resources and social connections limit access to private education, private schooling offers a very effective means of excluding members of different social strata. Suppliers of private education do compete with each other and with public schools along this dimension, sorting themselves along a menu of more or less exclusive offerings along financial, social, and talent dimensions.

3. The supply of private schooling in Italy and elsewhere

The education industry produces a less than purely private good and, since an education's impact on life outcomes takes years if not decades to become apparent, the private aspects of its output's quality are relatively hard to assess for final users. Further, choices made by parents may or may not be aimed at maximising the students' payoffs in later life. All this may explain why (like justice administration, medical services, and pharmaceutical production) education is heavily regulated and/or publicly provided. In what follows we discuss some aspects of public and private institutions' competition in the relevant market (also see De Fraja, 2002, and references therein), and we argue that the industry's

supply behaviour interacts in complex and interesting ways with sorting by students on the demand side of the educational market.

Education has many dimensions, and different market failures are differently relevant for different types of education. Public-good aspects are most relevant for primary education, whose main purpose is formation of minimal social skills. At higher levels of education, schooling offers private benefits, in the form of specialised skills and selective certification, but also in the form of exclusive status. On the basis of such considerations we proceed to document the characteristics of private education in Italy and other countries, with particular attention to the United States as an interesting opposite extreme case and a source of extensively researched data.

Information on the incidence of private education at different levels of schooling and for different population groups is of interest in this respect. Among the 2.693.328 Italians enrolled in a secondary school during the 1994-95 school year, only 6.5% were enrolled in a private school. This percentage varies across secondary school types, from 1.2% for vocational schools to 9.8% for *liceo* high schools. Figure 1 depicts the historical evolution of private education shares in the Italian student population, for the post-war period. While the private share of primary education hovers slightly below 8% in the post-war period, lower secondary and upper secondary shares decline over time publicly supplied education increases. In absolute numbers, private schools' enrolment is rather stable at all educational levels. In Italy, private schools were already in demand from high-middle classes, and were almost unaffected by the unification of the lower secondary school in 1962 (which raised the enrolment in public lower secondary school – including training schools – *avviamento professionale* - from 572.306 in 1950-1 to 2.795.522 in 1978-79, when baby-boomers completed compulsory schools). A similar trend is followed with a lag by the public (upper) secondary school: enrolment was slightly below 100.000 at the beginning of the 50's and peaked to 2.599.452 in 1990-91.

For economic as well as politico-ideological reasons, the prevalence of religious schools is an important aspect of the issue we study. In Italy, roughly 1000 of the about 1800 private schools in existence are Catholic. A confessional orientation has potentially important implications, in that it may affect both the demand for educational services and the conditions under which they are supplied. As outlined above, schools not only supply skills and certificates that are privately valuable (because they improve each individual's labour market opportunities), but also imprint new generations with socially valuable ethical and social characteristics. Clearly, the second type of output is both particularly important and somewhat peculiar in the case of Catholic and other confessional schools. A religious orientation may be more or less desirable for different families, but certainly affects their decision to demand purchase private education when public education is available. The religious character of many educational establishments also has potentially important implications for the conditions under which

they supply education. This is because it may allow them to obtain high-quality factors of production at relatively low prices, such as the labour of teachers who are not only motivated by wages in their work, or schooling facilities financed by bequests. Historically, in fact, religious Orders have pursued their mission by competing very successfully in the various market segments identified by our brief theoretical overview above. Some, such as the Jesuits, have specialised in offering extremely high quality (and not inexpensive) education to the elite. Others, such as the Scolopians, were instead founded (much earlier than public elementary schools) for the purpose of catering to the primary schooling needs of the poorest, and more recently the Salesians focused on preparing urban working-class youth for the labour market. [3] Thus, the supply of confessional education interacts in interesting ways with the comprehensive vs. vocational and private vs. public classification of schools in general.

Not only in Italy, but also in the United States and many other countries, Catholic and other religious organisations are active in supplying and funding education. Aggregating all educational levels, private education covers about 8% of the school population in Italy and about 10% in the US, but the characteristics of the two countries are very different at more disaggregate levels. In the 1980s, the extensive "*High School and Beyond*" survey offered American economic and social researchers rich opportunities to study the relationship between family background, school curricula, and subsequent labour market success. A particularly controversial, but robust finding was that a Catholic appears to be associated with labour market and further education outcomes that are slightly more favourable on average and, especially, less tightly related to the students' background. [4] To understand how the relevant effects were estimated, and to interpret them, it is important to note that in the United States Catholic schools are not attended only by Catholic students. Many Catholic schools are located relatively poor urban neighbourhoods, where Irish and Italian immigrants first settled before moving to the suburbs and leaving the inner cities to newer and poorer minorities. So, they are attended by a mix of students with heterogeneous backgrounds, while enrolment in a Catholic school is *ceteris paribus* more likely for the children of Catholic families. This makes it possible for researchers to try to disentangle the effects of schooling from those of background characteristics, under the identifying assumption that a Catholic background makes Catholic schooling more likely but does not otherwise influence a student's performance in higher education and in the labour market.

In the United States, public education is locally funded, hence its quality is far from uniform, and it is not surprising to find that private schools offer better education. It is harder however to understand why attendance of Catholic schools should not only benefit American students on average (in terms of better opportunities for and better performance in higher education, and labour market

[3] Interestingly, these and other religious orders have subsequently re-targeted their educational products, responding in economically sensible ways to the competition by public schools and to the changing character of their customer base.
[4] See e.g. Coleman, Hoffer, and Kilgore, 1982; Evans and Schwab, 1995; Neal, 1997; Altonji et al, 2000.

outcomes), but also be especially beneficial for students from disadvantaged backgrounds. It has been suggested that a student culture based on self-discipline, on the notion that "*No one fails who works hard*," and on the feeling of belonging to a voluntary community may be an important asset for primary and secondary Catholic educational establishments. There is also some evidence that the teachers employed by Catholic schools are better monitored and more highly motivated than their colleagues who work – for significantly higher wages – in public schools (see Bryk et al, 1993, and Lazear 1999 for a recent review of this literature).

Information on teacher motivation and effectiveness is not available for Italy, but it may be of interest to report comparative pay information. According to the last national contract, a teacher working in a public secondary school at the beginning of her career (i.e. without previous teaching experience) earns a gross 1.750.000 lira (approximately 900 €) monthly wage. [5] At the end of her career, with 35 years of seniority, she earns 3.084.000 lira (approximately 1593 €). In confessional private schools, monthly wages are 1.792.000 lira (approximately 925 €) and 2.328.000 lira (approximately 1.202 €) at the beginning and end of a teacher's career. [6] Finally, a teacher in private non-confessional schools earns 1.516.000 liras (approximately 783 €) at the lowest level and 2.086.000 liras (approximately 1.077 €) at the highest. [7] On the whole, it seems that private school teachers are similarly paid at the beginning of their career (at least by confessional schools), but face flatter age-earning profiles. One possible explanation is that teaching in private schools is considered as a transitory experience at initial career, to be replaced sooner or later by moving to the public educational system.

4. An empirical exercise

In the light of US evidence and current policy debates, it is quite interesting to study whether and how similar phenomena may be relevant in Italy, where Catholics are not a minority and Catholic schools need not cater to the needs of particularly poor population strata, as is the case in the US. Unfortunately, relevant statistical information is scarce. No survey comparable to the American *High school and beyond* data set is available in Italy. Hence, we analyse from the relevant theoretical perspective individual data on university-level performance by pupils of public and private high schools.

Our data set is drawn from the administrative files of *Università degli Studi di Milano*, the State University in a city where private Universities are also present. The file includes all regularly enrolled

[5] In addition, individual teachers are also paid an additional amount based on cumulated past inflation (*indennità integrativa speciale*). These figures are drawn from the national contract for public school professors (*posizioni stipendiali a regine dal 1.6.1999)*, including a monthly increase of 96.000 liras starting from 1.6.1999.

[6] Figures drawn from the national contract between workers' unions and the association of religious schools (AGIDAE). There is also a provision for additional "merit" pay (*superminimi*), between 99.000 and 675.000, determined on an individual basis.

[7] Figures drawn from the national contract between workers' unions and the associations of private non religious schools (*istituti di educazione e istruzione gestiti da enti privati* - ANINSEI and ASSOSCUOLA).

students in the 1999-2000 academic year. It contains information on the student's background (the type of secondary school attended will be of particular interest in what follows) as well as on his or her academic performance, which we will use as a proxy for (relative) economic success in the labour market.

4.1 Descriptive statistics

The available data set is not a representative sample for the Italian or Milanese population of secondary school students. First of all, the distribution across school types of Milanese students is similar to the national average (see table 1), but a larger proportion attends private educational establishments, especially as regards high schools (see table 2). This probably reflects the fact that family incomes are higher in Milan than in Italy as a whole, and may also depend on supply factors. Further, the sample only contains high school students who go on to college. Not surprisingly, by far the largest fraction of the sample attended *licei* high schools, while relatively few come from technical and vocational schools whose graduates are likely to enter the labour market without attending college (table 3). The incidence of private *licei* is the same in the sample as in the population, while private technical and vocational schools are over-represented. Sample selection is also generated by drawing from the records of a *public* university, rather than from those of the three private universities in Milan. Table 4 tabulates the percentage representation of various secondary school types in our sample, which do not coincide with their population counterparts in table 2: this could reflect self-sorting of students in different higher-education establishments.

Population inference from such a selected sample is clearly very difficult. In order to control for the multi-dimensional process that selects observations into our data set, we would need information on the probabilities of transition by different individuals from various types of high school into our State University, rather than into the labour market or other (private) universities. Since a sample of high-school students with suitable covariates is not available to us, our results can be distorted by selection bias. The various sources of such bias, however, to some extent compensate each other. If for example students from richer families tend to be underrepresented both in public secondary schools and universities, we would expect the private education fraction to be smaller in table 4 than in table 2. [8] In summary, we oversample students from university-oriented secondary schools, and undersample students from high-income families within the population of university students. As regards attendance

[8] We can approximately assess the potential impact of this selection bias by looking at the average family incomes. Using the Bank of Italy survey on household incomes conducted in 1998, we find that the median family (net) income is 70.385.200 liras in the city of Milan (14 observations from families with at least one "student" member who has graduated from secondary school) and 57.158.490 liras in the entire country (784 observations from similar families). In our student sample, the median family (net) income is 54.227.500 in the province of Milan (36.416 observations) and 52.751.000 liras for the entire population (61.343 observations). Thus, we indeed under-sample the richest among the families whose offspring attends college.

of private secondary schools, the two should partially offset, because the former induces overrepresentation of private schools, while the latter works in the opposite direction.

Comparing tables 2 and 4 we see that private school attendance appears to be associated with a higher probability of university enrolment. If we take the incidence of private schools according to different types of secondary (second column of table 2) and multiply this vector by the secondary school origin of the students (first column of table 3), we find that if public/private school origin were irrelevant to further education 19.1% of the University enrolment should originate from private schools. Since the proportion observed in the University sample is slightly higher at 21.9%, the likelihood of University enrolment is higher for those exiting from private schools.

We proceed to document the main differences between students from public secondary schools and students from private schools. In table 5 we see that students from private schools tend to be less academically brilliant. Not surprisingly, students from private schools belong to richer families. The average difference is 5 millions lira (nearly 2600 €) in yearly net income and 39 millions (nearly 20.000 €) in self-reported wealth.[9] The University career of students from private secondary schools proceeds at a lower speed (as measured by the average number of passed exams per year of enrolment) and yields lower average grades. [10] Since student can choose how much time to devote to preparing each exam, slower students are *ceteris paribus* expected to obtain higher marks. Hence, a summary indicator of a student's *performance* (the position of the speed-vs-average-mark trade-off) is computed and reported in the table as the ratio of the cumulative sum of marks and the number of enrolment years, or the product of the average mark and the exams-per-year measure of speed. In terms of this indicator, the performance of students from private secondary is unambiguously worse, because they are slower and obtain lower marks.

Below, we will relate University-level performance to the type of secondary school attended and to the student's background, which also bears on secondary school choices and is more than usually difficult to characterise precisely. The data set includes indicators of family income, but does not contain information on the cultural background of the students, such as their parents' educational achievements. We do observe the marks obtained at the exit of the secondary school and the type of secondary school attended. The exams and marks are hardly comparable across school types, but the Board of Public Education administers uniform nation-wide examinations for each type of school. Hence, normalising the grades within each of the 80 secondary school degrees (and converting the 60-

[9] The self-reported "wealth" indicator available in the student's record is the value of real estate declared for fiscal purposes. It excludes the value of the family residence, if owned (100 million lire are deducted from the value of other real estate if the residence is rented) and all financial wealth. Thus, it is a downward-biased measure of the family's resoucrces, more so for richer families since financial assets increase more than proportionately with total wealth across Italian families (see Cannari-D'Alessio in Rossi 1994).

[10] From the computation, we are excluding the students that have not passed an exam yet (3959 students, two thirds of which enrolled for their first year in 1999).

100 scale adopted in 1998 to the earlier 36-60 scale, and adding a point to account for "cum laude" scores) we can obtain an indicator of each individual's academic prowess at the end of secondary school. On this basis, we see in Table 5 that the average mark of private school pupils at the exit of secondary school is lower by more than one point. This conveys some, albeit very imperfect, information as to variation in individual that can be attributable to an individual's background (not necessarily innate) characteristics, i.e., "*everything that contributes to the child's income potential, is in the child at the time he takes his education decision, and cannot be purchased on the market*" (Rubinstein-Tsiddon, 1998, p.19). For the sake of brevity we will refer to such characteristics as "talent." Rubinstein and Tsiddon's empirical analysis uses the parents' education level as a proxy for this notion. Here, we measure "talent" with secondary school exit marks, normalised within each (vocational, or generalist) type of secondary school. [11] We acknowledge at the outset, however, that this use of terms is potentially misleading in the context of our analysis, because measured performance at the end of secondary schools is affected both by each individual's potential ability (or "talent") and by the schools' own contribution to his or her development. To the extend that observable indicators of talent are correlated over time for a given individual, good performance at the time of secondary school graduation is an indicator that students were viewed as "gifted" at the exit of lower secondary school. [12] The information conveyed by the secondary school exit mark as to the individual's ability to perform well at the university level, of course, may well be different in different secondary school tracks. And selection of students into different secondary school tracks may further distort the relationship between the observable "talent" proxy (high-school exit mark) and the underlying individual background characteristics. Our data make it impossible to address these concerns rigorously, but we will keep them in mind when discussing empirical results.

In Table 6, private school attendance appears to be correlated with the subsequent choice of faculty. The shares of students from confessional private schools are highest in the faculties of Law, Medicine and Pharmacy, leading to professional and better-paid jobs. [13] This raw correlation could be spurious, however, in that the choice of attending private high schools generally depends on characteristics that also affect faculty choice. Table 7 reports a multinomial logit estimate of the

[11] The two proxies are both imperfect, andobviously related. In a different data set (a representative sample of 6377 Italian students surveyed in 1993 at the completion of secondary school: see Gasperoni, 1996), the partial correlations of marks (measured in 60th) and parent's education are:

$$mark = \underset{(120.3)}{40.6} + \underset{(4.9)}{0.56}\times father\ education + \underset{(8.2)}{0.95}\times mother\ education,\ \ R^2 = 0.04,\ \ RMSE = 7.01$$

[12] In the alternative sample of 6377 Italian students surveyed in 1993 at the completion of secondary school, the average mark at exit (measured in 60th) varies according to the evaluation at the exit of the lower secondary school as follows: 40.9 for "sufficient", 42.8 for "good", 45.8 for "distinct" and 50.3 for "optimum."

[13] Checchi (2000), Table 2, estimates the differential return of different university degrees in the 1995 sample of the Bank of Italy survey on household incomes. Controlling for sector and job position, he reports that the highest return is associated with a degree in Law (the estimated coefficient is 0.54), followed by a degree in Medicine (0.48), Economics (0.37) and Engineering (0.30).

determinants of faculty choice. The model fits the data rather poorly but suggests that attending a private secondary school is not particularly relevant to faculty choice, which is much more strongly related to attendance of a specific secondary school (for example attendance of a *liceo* high school for the law faculty). [14]

4.2 Sorting across secondary schools

Before proceeding to evaluate empirically the relationship between university performance and secondary school types, we need to discuss self-sorting of students. We have already mentioned that one salient feature of the Italian educational system is its stratification across a generalist training track (in high schools: *licei*) and a vocational training track (in technical and professional schools: *istituti tecnici* or *istituti professionali*). While in countries such as the US students are sorted across public and private schools (or in some cases between private catholic and public schools), in the Italian case the sorting potentially occurs along the generalist vs. vocational dimension. Thus, outcomes can be tabulated in six categories (see Table 8): public high schools, private confessional high schools, private lay high schools, public vocational schools, private confessional vocational schools and private lay vocational schools.

Private secondary schools are not all alike. [15] We see in table 8 that students from confessional private schools also come from richer families. In general, students from confessional schools are richer than students from non-confessional private schools. Without conditioning on income and other available information, the performance of students from confessional schools is superior to the performance by student from private non-confessional schools and comparable to that of students from public schools. From this table it is impossible to ascertain whether students from confessional private schools outperform students from public schools. Some intuition can be obtained by comparing this evidence with theoretical expectations. Standard human capital theory predicts that to the extent that talent is observable, and subject to resource constraints, parents should invest more in more talented children. [16] So, more financial resources should be spent on education of children who are very talented and/or (in the presence of financial market imperfections) whose family is relatively rich. If enrolment in private school makes it possible to improve educational outcomes and these effect is more pronounced for highly talented students, then heterogeneous families should sort themselves out along a downward-sloping line in [talent, income] space representing indifference between paying for private education and accepting lower-quality public education.

[14] In this case, using a partition of schools that combines type and sector (see below) yields at most marginally significant results, probably because the type of secondary is excessively aggregated.

[15] The administrative file identifies only private/non private secondary schools. Starting from name and address of secondary schools coded as "private", we were able to classify 643 out of 678 private institutions: thus only 113 students were left unclassified with respect to the type of secondary school attended. We thank Chiara Colleoni for research assistantship.

[16] See e.g. Owen-Weil 1997 and DeFraja 2002.

Our data set does not contain information about the (perceived) talent of students at the age of 14, when the public/private choice was taken. We argued above, however, that normalised secondary school graduation marks may contain useful information on individual talent at the time of secondary school choice. The panels of Figure 2 display the distribution of students in various types of secondary school according to this proxy for talent, and to current income as a proxy for the family's financial circumstances at the time of secondary school choice. Circles are centred at the average talent and income of each secondary school in our sample, and their size is proportional to the number of student observations from that school.[17] The horizontal and vertical lines indicate the median talent and equivalised income in the full sample. Interestingly, high-quality students are abundant in confessional private schools, but relatively scarce in other private schools. The theory outlined above predicts that private school students should cluster in the top-left (high-talent offspring of poor families) and bottom-right (low-talent offspring of rich families) portions of each graph. Many private schools, however, appear to cater to students whose financial and talent resources lie in the bottom-left quadrant of the graphs. Since that educational product is dominated by that of many public schools, at least if university-level performance is the objective of secondary-school attendance, the families' choice of sending their children to such schools cannot be interpreted as a decision to purchase "high-quality" education in the sense underlying the standard theoretical framework.

Before discussing other possible determinants of schooling choices in the next section, we analyse in detail the relationships about which our dataset is most informative, namely those between private schooling (and other observable characteristics of students) and university-academic performance.

Tables 9a-9b-9c report the results of descriptive regressions on the complete data set. As mentioned, the variable we dub "talent" is only loosely related to individual characteristics *before* secondary school. To the extent that different schools provide different educational experiences, secondary school exit grades are in principle jointly determined, on the basis of unobservable individual characteristics, with the choice of attending different secondary schools. For this reason, we report regressions of academic performance first on a set of explanatory variables that excludes normalised high-school grades (or "talent"), then on sets that include "talent" and that interact it with the type of secondary school.

The first three columns of Table 9a omit students who have not passed at least one exam; the other three columns consider the entire sample for which non-missing information is available.[18] Students from richer families perform better, in terms of both average marks and speed of progress.

[17] To avoid clutter, schools with fewer than 10 students in the University enrolment sample are omitted.

[18] We set to zero the average mark of students who have not taken any exam yet. Hence, the independent variable is distinctly not normal, with a discrete probability mass at zero and a continuous distribution between 18 and 31.

Coming from a public *liceo* high school is invariably associated with the highest performance for all three indicators. Students from confessional *liceo* high school and from non-confessional private high schools display the next-best performances, and the ranking of public, confessional, and non-confessional private schools is similar for vocational schools. Comparing vocational and generalist schools, we see that a vocational background appears to slow down a student's University career.

The regressions reported in Table 9b control for normalised secondary-school exit marks, or "talent." They provide similar indications as to the ranking of different secondary school tracks. Not surprisingly, normalised secondary school grades (or "talent") predict University academic performance well.[19] Of course, this need not offer information on the true determinants of private schooling choices, since those grades depend not only on "talent" as perceived at the time of secondary school enrolment, but also on further development of the student's skills *during* high school education. However, a private school curriculum appears to be associated with poorer university performance regardless of whether the "talent" proxy is controlled for, and this casts considerable doubt on the notion that private schools are unqualifiedly "better."

Development of academic skills during secondary school may in general differ across different educational tracks. In Table 9c, where the coefficient of the secondary-school exit mark is allowed to differ across school types. Perusal of the bold-face interaction coefficients in that table (separate regressions by type of school, not reported, deliver a similar message) indicates that the impact of that grade on university performance tends to be larger for *liceo* high schools than for vocational schools, and larger for public than for private schools. To the extent that both secondary- and university-level performance are jointly determined with school choice by the underlying, unobservable background characteristics of each student, these coefficients (like those of Tables 9a and 9c) cannot be free of selection bias. The evidence, however, is quite intriguing, and could be rationalised by a structural model whereby private schools offer smaller payoffs to relatively less talented students, and attract a relatively large share of such students from the population.

The same pattern of productivity rankings is confirmed on a faculty-by-faculty basis in Table 10, and in similar regressions where coefficients are allowed to vary types of secondary schools. In such smaller samples, however, the coefficients are not always statistically significant (especially in the case of the medical school, where the results are possibly influenced by the fact that there exist medical schools associated with confessional private hospitals).[20]

[19] This prediction ability is even probably greater when we consider the fact that this sample is self-selected, given the high drop out rates in initial years of attendance. Checchi, 2000 estimates a probit model of dropout during the academic career, and finds that the secondary school graduation mark is negatively related to drop-out probabilities.

[20] We omit the *Scienze motorie* Faculty (which trains physical education teachers and began operating in 1998), because only 307 are enrolled in it.

To the extent that students are self-sorted across different secondary schools, these statistical results merely describe correlation and cannot be interpreted in causal terms. For example, the coefficient associated with attendance of a public *liceo* high school does not imply that a random student would improve his or her average marks by 1.194 points if forced to attend that type of secondary school (column 1 of table 9b). The coefficient measures the "average effect" for an average member of the group that has attended a public *liceo*, but its estimated value could be entirely attributable to unobservable characteristics of that group. In order to control for self-sorting, we as researchers would need to exploit variation in the data with respect to aspects that are relevant to choice of secondary school, but irrelevant to University performance. [21]

Since our data set includes some information on the family's wealth, we have experimented with that variable as an instrument for the choice of attending private schools. For simplicity, we apply standard IV estimation techniques to the (discrete) choice under study. An appropriate instrument should be relevant to the choice of attending different schools, which is arguably the case if the cost of private education is more or less burdensome for families with different current resources and imperfect access to financial markets. To validate exclusion from the outcome equation, the instrument should have no relation to university performance after controlling for other observable characteristics of the student's background.[22] Lacking better instruments, we suppose that the financial wealth indicator's variance component that is orthogonal to family income and other observable covariates is not structurally related to University performance, and allow it to affect the choice of private vs. public school.

To focus on binary choices, we consider in turn three alternatives: public vs. private schools; public vs. confessional schools; public vs. confessional *liceo* high schools. Table 11 summarises student performance in terms of the overall "productivity" measure (average marks time their speed), and reports the coefficients for these three binomial alternatives, estimated both by ordinary least squares and with family wealth as an instrument. The regression is not conditioned on "talent," but a similar message is conveyed by IV estimation (not reported) of the other specifications considered in Table 9: while the average least square effect is negative, the marginal effect of attending a private (or a

[21] The US empirical work briefly reviewed above, for example, can measure the effect of Catholic schools (which cater to both Catholics and non-Catholics in that country) under the assumption that the family's religious orientation is relevant to the choice of a Catholic school, but does not otherwise affect labour market outcomes. See for example Altonji et alt. 2000 where they exploit a large set of additional information to model the choice of a private catholic school. This identification strategy is not practical in Italy, where the population is almost completely Catholic.

[22] When included on the right-hand side of regression like those reported in Table 9a,b,c, financial wealth is significantly correlated with University performance outcomes. Of course, in OLS regression the coefficient of wealth may pick up the indirect role of that variable in determining secondary school choice and, through that channel, University performance. It may also be the case that correlation between financial wealth and the family's labour income (human wealth) is generated by unobservable ability of parents: if talent has some persistence across generations, children talent and financial wealth are correlated. "Wealth" as measured in our dataset (see footnote 9) has low correlation with income, as many families report zero. In a just-identified structural system, of course, the identifying assumption cannot be tested.

confessional) school is positive. This may indicate that students who attend expensive private schools because of their families' relatively large wealth do benefit from attending private schools, and more strongly so when they are less talented. [23] Conversely, the effect of private schooling on university performance remains negative when the student's "talent," as measured by the normalised secondary school exit mark, is used as an instrument for private-school choice. The evidence is admittedly far from robust, since both family wealth and "talent" are measured *after* secondary school choice in our data set, and the available proxy for talent is in principle jointly determined with that choice. However, it is *prima facie* consistent with a remedial role for private schools within a stratified multi-track educational system. On average, private schools improve the performance of students from rich families, but their value added seems to be recovery of less brilliant students rather than across-the-board high quality education.

The evidence in the last two columns of Table 11, which examine the determinants of enrolment in a confessional *liceo* high school, can be interpreted differently. In this case students are doubly selected, according to both the funding and orientation of their secondary school, and their university performance appears to benefit strongly from attending this type of school. As long as the families' choice of secondary school is constrained by financial considerations, the IV results can be given a causal interpretation, and indicates that attending private/confessional schools is beneficial for rich and less talented students.

The empirical perspective of our IV exercise can offer useful insights into the possible implications of public funding for privately supplied education. Like the component of wealth that is orthogonal to other observable family characteristics (and, by assumption, to the component of University performance outcomes left unexplained by such characteristics), vouchers would increase the propensity to choose private schools. If private school is especially beneficial for less talented student from rich families, a school-voucher program will not affect their financially unconstrained choices. Of course, such a program might in principle allow less talented students from poor families to take advantage of the private school system's remedial capacity. The social implications of this outcome, however, are not as clear as those of programmes that let relatively talented financially constrained students obtain better education, whether in public or private establishments. It is also quite likely that the industrial organisation of the private educational sector would not remain unchanged in the new circumstances.

In summary, we find that average student performance correlates with the type of secondary school attended. Secondary school attendance can be ranked according to the positive correlation with

[23] For example, a maximum likelihood probit regression for attending a private school reads as follows (SE in parenthesis):

$$prob(private\ school = 1) = \underset{(0.009)}{-1.09} + \underset{(0.001)}{0.018} \times \log(wealth) - \underset{(0.006)}{0.095} \times talent, \quad Pseudo\,R^2 = 0.001, obs = 61343$$

student performance in the following order: public high schools, private confessional high schools, private lay high schools, public vocational schools, private confessional vocational schools and private lay vocational schools. When allowing for self-sorting of students in different types of secondary, we find that private (or confessional) schools play a remedial role for students from wealthier families.[24]

4.3 Discussion

What is purchased by families who pay for private schooling? On the basis of the results above, the answer cannot be simply "better quality education." Attending a private school does not ease access to desirable faculties, and its effects on student performance within each faculty are positive only (if at all) for less talented children of wealthy families. Moreover, the average performance of students from private schools is lower, and this could have some negative stigma implications. Our reading of the suggestive empirical results obtained above is focused on a possible remedial role for private schools. The IV results indicate that attendance of private/confessional schools appears to have a positive impact on university careers for a specific subgroup of relatively low-talented students from wealthier families. Thus, the data are consistent with the hypothesis that the payoff from private education is not uniformly higher than that of public education. Rather, the education technology of Italian private schools appears superior to that of public schools when applied to low-talent students, not when applied to high-talent students. Allowing for such heterogeneity of schooling technologies, rather than focusing on a single index of "quality" (as in models surveyed by De Fraja, 2002) can explain both why private and public educational institutions coexist, and why the latter tend to be attended by relatively talented and poor students.

We proceed to outline some other possible reasons why families enrol their children in private secondary schools that do not provide better performance at the University level (and, presumably, in the labour market). We note at the outset, however, that available data are not very informative on the relevant aspects. For example, private schools may offer convenience (because of their location, extended care facilities, infrequent teacher strikes, and less disruption of teaching activity by student protests), rather than high-quality education. This might make them attractive to families, especially those where both parents work, but lack of suitable background information in our data set makes it impossible to test of this hypothesis against other plausible alternatives, such as the idea – outlined above – that the effect of private education is different for heterogeneously talented students.

Finding that university performance (conditional on University enrolment) is not improved by a private-school curriculum need not imply that secondary-school tuition is wasted even for families who

[24] Students from private schools and from lower income families are overrepresented in our sample. It is unlikely, however, that such compositional effects affect our results importantly: since family income (or wealth) and private school attendance are positively correlated, the two selection-induced biases have opposite signs.

do wish to equip their children for further studies. Since private school pupils are somewhat more likely to enrol in higher education (see tables 2 and 4 above), such families may optimally trade-off easier access to the University against academic performance there. A related, but somewhat different and more specific explanation for the relationship between our data's talent and income indicators could be based on the fact that, in a world of imperfect financial markets, tuition fees prevent the children of poorer families from attending private schools (unless targeted school vouchers recreate the missing market). To the extent that this result in a more homogeneously rich environment in private schools, their tuition fees pay for poverty exclusion, which may be valuable from the individual family's point of view quite independently of the student's talent. [25] An empirical counterpart to the economic return of an investment in exclusion could be represented by a *peer effect:* having better schoolmates improves the child performance, and/or affords access to social networks that may prove helpful in the labour market. We can try to assess the strength of such effects averaging the marks at exit of secondary school according to single school and year of exit (deducting the individual contribution to the average). [26] Similarly, we can test for a *neighbourhood effect* by controlling for the average family income at the secondary school level. [27] Table 12 reports regression estimates of University performance on these and other available background indicators (the sample includes only recently enrolled students, to reduce selection bias from dropout attrition). The estimates indicate that a peer effect is only somewhat apparent when it is allowed to differ across different school types. When we interact the type of school origin with our measure of peer effect, we find that students from non-vocational private high schools seem to take advantage of the average talent of their schoolmates. Conversely, the performance of students from public high schools appears to be negatively affected by the same variable. In the case of vocational schools, however, both types of school are positively affected by the peer effect. The existence of a peer effect does not contradict the general result of (average) better performance for students from public high schools: in fact, summing the coefficients of the corresponding dummies we see that the "public high school" effect dominates all the others.

The results are consistent with a strong "neighbourhood effect" on further-education outcomes, in that university performance is increasing in the average incomes of secondary schoolmates' families, for all school types (only confessional schools appear to feature significant

[25] See De Fraja (2002) for models of school competition where admission criteria play a role along with tuition fees. From the social point of view, as remarked above and discussed formally by Bénabou (1996) and others, segregation across census lines may have detrimental effects on the educational system's efficiency. Gradstein and Justman (2001) discuss the implications of educational funding schemes in the presence of cultural differences, as may result from mass immigration.
[26] Even if this does not ensure that students facing the same peer effect actually attended the same class, we are at least sure that they attended the same school during the same years. We stress the fact that our measure of peer effect if very imperfect, since we cannot control for self-sorting of students. Only a random allocation of students to schools could allow a more precise measure of the peer effect. See Hoxby 2000 for a discussion of this issue.

interactions). [28] But the data offer very limited support to the idea that peer effects should be more pronounced in more homogenous environments (Coleman et al, 1982), and the evidence is overall quite mixed.

Estimation and inference are certainly hampered by our dataset's lack of information as to outcomes other than University-level performance. In Italy, University exam performance does not appear to be significantly related to subsequent labour market outcomes (Boero et al., 2002), which are importantly influenced instead by pre-university qualifications and background characteristics. If private education at the secondary school level provides access to socio-economic networks (rather than largely irrelevant university-level educational outcomes), it might conceivably offer a valuable asset in this setting. It will be interesting in future work to assess this channel's relevance on data collected from a survey administered to recent graduates of the same University from which our data set is drawn. Preliminary analysis, however, indicates that a private-school curriculum does no more than university performance to improve labour market outcomes.

5. Concluding remarks

Our empirical evidence offers interesting insights into the character of self-sorting mechanisms when, as is currently the case in Italy, students with heterogeneous talent and family background characteristics can choose among a wide menu of coexistent and overlapping generalist/vocational, public/private, and lay/confessional schooling options. On average, academic performance is better among students from public schools. However, private schools (both confessional and lay) improve performance of a subgroup of students whose choice of private school attendance is correlated with family wealth. We also find some evidence of peer effects at the secondary school level, of varying intensity and sign across school types. In both vocational and generalist schools, student performance also appears to be influenced by neighbourhood effect, at least in the case of non-confessional environments.

How does the evidence bear on the general issues discussed in the theoretical portions of the paper? In general, self-sorting (or segregation) of students can be problematic under two respects: imperfect socialisation of new generation, due to insufficient exposure to human diversity, and inefficient allocation of student ability in the presence of peer effects. The former aspect faces an unavoidable trade-off between each individual's freedom to choose (and to self-sort) and social obligations. The latter aspect is irrelevant whenever student interactions do not create externalities, but

[27] Using family wealth gives similar results. Including both variables reduces their individual significance, due to collinearity. Results are very similar when schools with few students in the sample are omitted, and robust to a variety of slightly different specifications.

[28] When we combine average peer effect with its dispersion (measured by standard deviation) results are similar: the inverse of the coefficient of variation is positively significant with respect to income but not with respect to talent.

becomes more and more problematic the stronger is peer pressure. In addition, the efficiency consequences are strongly intertwined with the sorting device. [29]

The Italian educational system allows student to sort themselves according to both talent and family income. The "best" students (in terms of both personal ability and cultural background at family level) self-sort into *liceo* high schools. Students from wealthier families also appear to self-sort into private and often confessional schools. Such sorting can have negative implications in the presence of peer and neighbourhood effects, which amplify differences in academic performance among students. In Italy, the left-wing government's secondary school reform aims at cancelling one of these divides by homogenising curricula up to age 16, abolishing the formal distinction between high schools and vocational schools, and easing mobility across different educational tracks. The current government instead would like to preserve the distinction between high schools and vocational schools, and to subsidise private school attendance. Both policies would strengthen self-sorting opportunities, in an Italian educational system that already features many intricate such opportunities.

Of course, differentiation of school curricula and school vouchers could increase efficiency through more intense competition among public and private schools. [30] In order to enhance competition, however, funding should be explicitly targeted towards removing the market imperfections reviewed in Section 2 above, for example through official rating of schools and teachers on the basis of objective performance criteria, which are not envisaged in the Italian policy debate. Unconditional school vouchers would do little to decrease inequality of financial resources across families. They would simply increase demand for private education, making it affordable for somewhat poorer (but still relatively rich) families, and would possibly only make competition more intense *within* the private education sector. Our evidence as to sorting along the talent dimension of the student population suggests that private schools do not offer uniformly better education: rather, the returns to talent appear higher in the public sector, especially in *liceo* high schools. While further work is undoubtedly needed to improve statistical measurement of the relevant effects and to analyse the nature of competition among schools, it appears difficult to argue that stronger competition from private schools would necessarily improve efficiency in such a situation. In order to be competitive, schools need to attract good students (who both customers and inputs of the educational process), and good experienced teachers, who currently work in the public sector (especially in *liceo* high schools) because, as documented above, wages are higher there than in the private sector. To increase teacher salaries, private schools would need to increase tuition fees (unless they become better able to draw on donations), thus discouraging students from enrolling.

[29] Fernandez-Gali 1999 show that sorting can occur either through market mechanisms (families compete for best schools using school fees) or through meritocratic screening (only best students are admitted). They show that in a world of imperfect financial markets, the latter alternative is Pareto superior to the former.

In light of the current situation, it perhaps not as easy as standard views make it to envision an improvement of Italian education supply via increased competition by the private sector. The evolution of the reform process will presumably reinforce the stratified character of Italy's educational system. To improve efficiency in such a setting, it would be important to concentrate resources on primary school, so as to compensate existing difference in student cultural background originating at family level; and on merit-based secondary and tertiary levels, with exam-based admission as in the French and other schooling systems and a reduced role for family wealth. In this respect, school vouchers can play a significant role if they are suitably targeted to poor families, and conditioned on student performance. Otherwise, they will create additional demand for private schooling without improving human capital formation.

[30] See the New Zealand experience of school competition reported in Fiske-Ladd 2000.

References

Altonji, J., T.Elder and C.Taber (2000). "Selection on observed and unobserved variables: assessing the effectiveness of catholic schools." NBER wp.7831

Bryk, Anthony S., Valerie E. Lee, and Peter B. Holland (1993) *Catholic schools and the common good* Cambridge (Mass.), Harvard University Press.

Bénabou, R. (1996). "Heteroegeneity, Stratification, and Growth: Macroeconomic implications of community structure and public finance." *American Economic Review* 89, pp.584-609.

Boero, G., A.McKnight, R.Naylor, and J.Smith (2002) "Graduates and Graduate Labour Markets in the UK and Italy." In this issue.

Checchi, D. (1999) *Istruzione e mercato - Per una analisi economica della formazione scolastica.* il Mulino

Checchi, D. (2000). "University education in Italy." *International Journal of Manpower* vol 21, n. 3-4: 160-205.

Coleman, J.S., T.Hoffer and S.Kilgore. (1982). *High School Achievement: Public, Catholic, and Private Schools Compared*, New York: Basic Books Inc.

De Fraja, G. (2002) "Private and Public Schools: Theoretical Considerations." In this issue.

Evans, William N., and Robert M. Schwab (1995) "Finishing High School and Starting College: Do Catholic Schools Make a Difference?" *Quarterly Journal of Economics* 110(4), November 1995, pp. 941-74

Fernandez, R. e J.Gali. (1999). "To each according to… ? Markets, tournaments and the matching problem with borrowing constraints." *Review of Economic Studies* 66: 799-824.

Fiske, E. and H.Ladd (2000). *When school compete – a cautionary tale.* Brookings Institution Press, Washington DC

Gambetta, Diego (1987) *Were they pushed or did they jump? Individual decision mechanisms in education*, Cambridge (UK), Cambridge University Press.

Gasperoni, G. (1996). *Diplomati e istruiti.* Il Mulino, Bologna.

Gradstein, M., and M.Justman (2001). "Public Education and the Melting Pot." CEPR Discussion Paper No.2924.

Hoxby, C. (2000). "Peer effects in the classroom: learning from gender and race variation," NBER wp n.7867.

Lazear, E. (1999). "Educational production," NBER wp n.7349

Neal, Derek (1997) "The Effects of Catholic Secondary Schooling on Educational Achievement," *Journal of Labor Economics* 15(1), January 1997, pp. 98-123

Owen, A. and D.Weil. (1997). "Intergenerational earnings, inequality and growth," *Journal of Monetary Economics* 41/1: 71-104.

Rossi, N. (ed) (1994). *La transizione equa.* il Mulino, Bologna.

Rubinstein, S., and D.Tsiddon. (1998). "Coping with technological progress: the role of ability in making inequality so persistent." Tel Aviv University working paper 27-98, December.

Table 1 – Distribution of students according to the type of secondary school – entire population – 1994-95 – percentage points

	City of Milan	Lombardy	Italy
Vocational schools	17.8	18.8	19.0
Technical schools	44.2	44.4	41.6
High schools (*licei*)	29.9	26.9	28.2
Other schools	8.1	9.9	11.2
Total	100.0	100.0	100.0

Table 2 – Distribution of students according to public/private type of secondary school – entire population – 1994-95 – percentage points

	Province of Milan		Italy	
	state schools	local & private schools	state schools	local & private schools
Vocational schools	96.0	4.0	98.0	2.0
Technical schools	90.1	9.9	94.0	6.0
High schools (*licei*)	75.9	24.1	89.7	11.3
Other schools	80.4	19.6	87.0	13.0
Total	86.2	13.8	92.7	7.3

Table 3 – Distribution of students according to the type of secondary school – students enrolled at the University of Milan – 1999-2000

resident in:	City of Milan	Lombardy	Italy
Vocational schools	6.9	6.8	6.6
Technical schools	24.0	25.2	25.2
High schools (*licei*)	63.9	62.0	62.1
Other schools	5.2	6.0	6.1
Total	100.0	100.0	100.0

Table 4 – Distribution of students according to public/private type of secondary school students enrolled at the University of Milan – 1999-2000

resident in:	Province of Milan		Italy	
	state schools	local & private schools	state schools	local & private schools
Vocational schools	86.6	13.4	84.9	15.0
Technical schools	85.1	14.9	86.5	13.5
High schools (*licei*)	74.4	25.6	77.4	22.6
Other schools	79.6	20.4	79.9	20.1
Total	78.1	21.9	80.4	19.6

Table 5 – Descriptive statistics according to public/private type of secondary school students enrolled at the University of Milan – 1999-2000

	State secondary schools (51.341 obs)		Private secondary schools (12.636 obs)			
	Mean	St.Dev.	Mean	St.Dev.	Min	Max
sex (1=woman)	0.561	0.496	0.560	0.496	0	1
Age	24.88	5.51	25.36	5.37	18	79
#member in the family	3.55	1.03	3.42	1.05	1	11
mark at exit sec.school	45.81	7.01	44.66	6.88	36	60
Normalised mark exit sec.s.	0.035	0.99	-0.144	0.97	-2.013	3.579
family income	58.223.530	37.542.330	63.240.460	47.373.250	0	1.611.686.000
Equivalised family income*	31.623.020	18.601.920	35.663.020	23.617.640	0	657.968.100
family wealth indicator	65.365.470	193.683.500	104.482.700	411.776.300	0	36.227.815.000
# passed exams	14.06	9.01	14.18	9.15	0.5	80.5
exams per year (speed)	2.88	1.84	2.66	1.78	0.04	31
average mark in exams	25.21	2.43	24.67	2.47	18	31
Performance (av.mrk×speed)	73.91	49.80	66.98	47.16	1	799.80

* equivalence scale is the square root of the number of family member

Table 6 – Choice of faculty according to different type of secondary school students enrolled at the University of Milan – 1999-2000

Faculty of attendance	public high school	Confessional high school	private lay high school	public vocational school	confessional vocational school	private lay vocational school
Agricultural sciences	48.35	4.74	2.49	39.21	1.81	1.53
Pharmacy	58.09	9.45	3.72	22.74	1.90	1.05
Law	44.40	9.40	5.80	31.65	3.06	2.81
Literature&philosophy	53.52	6.24	5.93	27.37	2.84	1.08
Medical school	49.69	9.11	3.28	25.43	2.46	4.25
Veterinary science	52.17	6.67	4.39	30.14	2.07	1.33
Sciences (math.chem.phisics)	49.95	5.71	2.69	36.69	1.61	1.25
Physical education(*ISEF*)	34.53	4.89	3.91	50.49	3.26	1.63
Political sciences	37.52	5.88	6.38	40.85	2.96	3.19
Total	*48.27*	*7.12*	*4.76*	*32.17*	*2.51*	*2.10*

Table 7 – Choice of faculty – multinomial logistic regression – robust standard errors
students enrolled at the University of Milan – 1999-2000

	agricult. sciences	pharmacy	Law	literat& philosoph	medical school	veterinar y science	sciences math.chem	political sciences
age	0.529**	0.586**	0.633**	0.635**	0.620**	0.559**	0.602**	0.651**
sex	0.457**	1.326**	0.862**	1.068**	0.869**	1.057**	0.230*	0.520**
log(family income)	-0.044	-0.084**	-0.073*	-0.055	-0.064*	-0.064**	-0.038	-0.053
high school (*lic.classico*)	-13.738**	-14.055**	-12.814**	-13.126**	-14.594**	-14.122**	-13.975**	-13.646**
high school (*lic.scientifico*)	-14.462**	-15.144**	-15.200**	-15.690**	-16.254**	-15.283**	-14.847**	-15.297**
Technical school (*ITI*)	-15.026**	-16.709**	-15.399**	-16.464**	-17.930**	-16.122**	-15.524**	-15.362**
Teaching school (*magistrale*)	-16.559**	-17.216**	-16.489**	-16.168**	-17.575**	-17.405**	-16.775**	-16.430**
Vocational school (*ITP*)	-14.787**	-15.728**	-16.000**	-16.251**	-15.985**	-16.180**	-15.835**	-15.733**
high school (*lic.artistico*)	-15.937**	-16.988**	-16.523**	-15.296**	-17.805**	-16.182**	-16.160**	-16.566**
high school (*lic.linguistico*)	-15.911**	-16.531**	-15.571**	-14.945**	-17.616**	-16.355**	-15.958**	-14.862**
European scnd school	3.736	3.281**	2.552**	2.950**	2.880**	3.359**	3.099**	2.425**
public sec.s.	0.672	0.505	0.321	0.770	0.266	0.262	0.634	0.233
local authority sec.s.	-0.170	-1.099	-0.209	0.455	-0.119	-0.641	-0.357	-0.292
Private confess. sec.s.	0.449	0.762	0.694	0.572	0.637	0.312	0.495	0.276
Private oth.confess.sec.s.	19.557**	18.674**	19.312**	19.990**	19.287**	18.256	19.059**	19.644**
Private non confess.scnd.schl	0.168	0.291	0.642	0.648	0.554	0.196	0.049	0.395
Constant	5.370**	5.122**	4.976**	4.805**	5.998**	5.587	5.534**	4.372**

Number of observations = 61314
Log likelihood = - 111475.95
Pseudo R^2 = 0.0591

* significance at 95% ** significance at 99%. The Physical Education faculty (*Scienze Motorie*, previously *ISEF*) is the comparison group.

Table 8 – Descriptive statistics (means) according to different type of secondary school
students enrolled at the University of Milan – 1999-2000

	public high school (29.857 obs)	confessional high school (4.354 obs)	private lay high school (2.804 obs)	public vocational school (18.938 obs)	confessional vocational school (1.476 obs)	private lay vocational school (1.160 obs)
Sex (1=woman)	0.60	0.56	0.57	0.51	0.69	0.28
Age	24.26	24.28	25.41	25.96	25.70	27.38
Mark at exit sec.school	45.54	45.12	43.47	46.28	46.44	44.16
Normalised mark exit sec.s.	0.06	-0.02	-0.29	0.05	0.02	-0.16
Family income	63.392.570	70.925.540	62.242.520	52.395.630	60.214.410	58.200.570
Equivalised family income*	34.232.620	39.887.010	35.536.680	28.732.100	33.836.000	32.651.280
Family wealth	75.185.830	129.288.000	92.460.630	53.489.290	125.192.100	86.477.140
# passed exams	14.62	14.71	13.90	13.26	13.90	12.85
Exams per year (speed)	3.03	2.96	2.42	2.62	2.62	2.38
Average mark in exams	25.59	24.99	24.41	24.64	24.66	23.81
Performance (av.mrkxspeed)	78.86	75.37	60.26	65.58	65.76	57.94

* equivalence scale equal to the square root of the number of family member

Table 9a – Determinants of student performance, excluding secondary school mark (no "talent")- students enrolled at the University of Milan – 1999-2000
(robust standard errors – t-statistics in parentheses)

Model 1: average mark (excluding 0 exams)
Model 2: exams per year (excluding 0 exams)
Model 3: student productivity (excluding 0 exams)
Model 4: average mark
Model 5: exams per year
Model 6: student productivity

Model :	1	2	3	4	5	6
# obs :	56282	56282	56282	59665	59665	59665
Depvar:	avgmark	speed	product	avgmark	speed	product
sex	0.149	0.20	5.490	0.605	0.241	6.520
(1=woman)	(7.84)	(15.10)	(15.41)	(11.62)	(17.85)	(18.04)
log equiv.	0.037	0.032	0.937	0.177	0.046	1.267
fam.income	(5.24)	(4.80)	(5.22)	(8.47)	(7.05)	(7.33)
public	1.278	0.262	10.242	3.619	0.490	15.657
high schl	(20.76)	(4.53)	(6.63)	(17.93)	(9.01)	(10.91)
confess.	0.785	0.121	5.148	2.793	0.319	9.850
high schl	(11.19)	(1.94)	(3.09)	(12.79)	(5.38)	(6.28)
priv.lay	0.102	-0.146	-3.255	1.478	-0.019	-0.196
high schl	(1.36)	(-2.31)	(-1.94)	(6.14)	(-0.31)	(-0.12)
public	0.520	-0.025	0.697	1.754	0.097	3.525
vocat.schl	(8.35)	(-0.44)	(0.45)	(8.52)	(1.77)	(2.45)
confess.	0.357	-0.098	-1.686	1.587	0.010	0.862
vocat.schl	(4.36)	(-1.39)	(-0.91)	(5.89)	(0.15)	(0.48)
priv.lay	-0.187	-0.385	-10.122	-0.188	-0.377	-9.939
vocat.schl	(-2.04)	(-4.92)	(-4.98)	(-0.62)	(-5.09)	(-5.20)
R^2	0.231	0.33	0.328	0.066	0.307	0.308

Note: additional controls are the intercept, age, living area, faculty of attendance, whether attending a 3-year course and whether graduate in the year.

Table 9b – Determinants of student performance, including secondary school mark ("talent") - students enrolled at the University of Milan – 1999-2000
(robust standard errors – t-statistics in parentheses)

Model 1: average mark (excluding 0 exams)
Model 2: exams per year (excluding 0 exams)
Model 3: student productivity (excluding 0 exams)
Model 4: average mark
Model 5: exams per year
Model 6: student productivity

Model :	1	2	3	4	5	6
# obs :	56282	56282	56282	59665	59665	59665
Depvar:	avgmark	speed	product	avgmark	speed	product
sex	-0.023	0.146	3.60	0.310	0.175	4.312
(1=woman)	(-1.33)	(11.17)	(10.36)	(6.12)	(13.15)	(12.29)
log equiv.	0.024	0.028	0.799	0.154	0.040	1.092
fam.income	(3.71)	(4.28)	(4.57)	(7.54)	(6.37)	(6.51)
talent	0.917	0.287	10.087	1.508	0.339	11.267
(norm.mark)	(106.38)	(42.78)	(55.58)	(59.97)	(49.76)	(61.51)
public	1.194	0.236	9.317	3.476	0.457	14.591
high schl	(19.66)	(4.08)	(6.04)	(17.27)	(8.42)	(10.17)
confess.	0.761	0.114	4.878	2.755	0.311	9.563
high schl	(11.25)	(1.83)	(2.95)	(12.71)	(5.27)	(6.15)
priv.lay	0.255	-0.098	-1.579	1.755	0.043	1.873
high schl	(3.50)	(-1.56)	(-0.95)	(7.37)	(0.72)	(1.19)
public	0.339	-0.082	-1.297	1.487	0.037	1.533
vocat.schl	(5.51)	(-1.41)	(-0.84)	(7.24)	(0.67)	(1.06)
confess.	0.229	-0.138	-3.096	1.422	-0.027	-0.372
vocat.schl	(2.87)	(-1.97)	(-1.68)	(5.35)	(-0.40)	(-0.21)
priv.lay	-0.223	-0.396	-10.512	-0.185	-0.377	-9.922
vocat.schl	(-2.54)	(-5.10)	(-5.22)	(-0.62)	(-5.13)	(-5.26)
R^2	0.362	0.353	0.367	0.120	0.336	0.354

Note: additional controls are the intercept, age, living area, faculty of attendance, whether attending a 3-year course and whether graduate in the year.

Table 9c – Determinants of student performance, including secondary school mark ("talent") interacted with school type - students enrolled at the University of Milan – 1999-2000
(robust standard errors – t-statistics in parentheses)

Model 1: average mark (excluding 0 exams)
Model 2: exams per year (excluding 0 exams)
Model 3: student productivity (excluding 0 exams)
Model 4: average mark
Model 5: exams per year
Model 6: student productivity

Model :	1	2	3	4	5	6
# obs :	56282	56282	56282	59665	59665	59665
Depvar:	avgmark	speed	product	avgmark	speed	product
sex	-0.024	0.145	3.563	0.311	0.174	4.281
(1=woman)	(-1.41)	(11.11)	(10.27)	(6.14)	(13.10)	(12.22)
log equiv.	0.023	0.027	0.772	0.154	0.040	1.068
fam.income	(3.53)	(4.17)	(4.43)	(7.52)	(6.27)	(6.39)
talent	0.544	0.092	3.801	1.034	0.134	4.577
(norm.mark)	(8.09)	(1.37)	(2.09)	(4.77)	(2.09)	(2.65)
public	1.215	0.247	9.636	3.526	0.475	15.132
high schl	(20.02)	(4.18)	(6.11)	(17.59)	(8.50)	(10.23)
confess.	0.790	0.128	5.355	2.802	0.332	10.261
high schl	(11.69)	(2.03)	(3.17)	(13.01)	(5.49)	(6.42)
priv.lay	0.281	-0.062	-0.739	1.901	0.095	3.108
high schl	(3.83)	(-0.96)	(-0.43)	(8.15)	(1.52)	(1.88)
public	0.371	-0.065	-0.730	1.535	0.057	2.188
vocat.schl	(6.04)	(-1.09)	(-0.46)	(7.51)	(1.02)	(1.47)
confess.	0.264	-0.120	-2.520	1.470	-0.008	0.245
vocat.schl	(3.32)	(-1.69)	(-1.34)	(5.54)	(-0.11)	(0.14)
priv.lay	-0.207	-0.393	-10.558	-0.077	-0.363	-9.749
vocat.schl	(-2.37)	(-4.93)	(-5.09)	(-0.26)	(-4.78)	(-4.96)
talentX	**0.458**	**0.243**	**8.134**	**0.430**	**0.247**	**8.459**
pub.high	(6.74)	(3.59)	(4.44)	(1.97)	(3.82)	(4.85)
talentX	**0.531**	**0.264**	**8.502**	**0.498**	**0.263**	**8.656**
con.high	(7.19)	(3.68)	(4.38)	(2.15)	(3.81)	(4.66)
talentX	**0.377**	**0.282**	**7.890**	**0.799**	**0.315**	**8.815**
priv.high	(4.65)	(3.84)	(3.98)	(3.14)	(4.42)	(4.61)
talentX	**0.256**	**0.122**	**3.691**	**0.502**	**0.143**	**4.304**
pub.vocat.	(3.73)	(1.80)	(2.01)	(2.26)	(2.19)	(2.46)
talentX	**0.157**	**0.097**	**3.012**	**0.592**	**0.137**	**4.105**
con.vocat.	(1.83)	(1.23)	(1.43)	(2.11)	(1.78)	(2.02)
talentX	**0.303**	**0.125**	**3.267**	**0.766**	**0.178**	**4.588**
priv.vocat	(3.23)	(1.41)	(1.39)	(2.46)	(2.09)	(2.06)
R^2	0.364	0.354	0.369	0.12	0.338	0.356

Note: additional controls are the intercept, age, living area, faculty of attendance, whether attending a 3-year course and whether graduate in the year.

Table 10 – Determinants of student performance by faculty – students enrolled at the University of Milan – 1999-2000
(robust standard errors - t-statistics in parentheses)

Model 1: agricultural science
Model 2: pharmacy
Model 3: law
Model 4: literature&philosophy
Model 5: medical school
Model 6: veterinary science
Model 7: sciences
Model 9: political science

Model :	1	2	3	4	5	6	7	9
# obs :	2804	3301	11530	13895	5945	2293	11236	8359
Depvar:	product	product	product	product	product	product	product	product
sex	-0.214	-0.521	-1.702	1.453	27.853	-2.722	5.884	3.028
(1=woman)	(-0.14)	(-0.42)	(-2.51)	(2.22)	(14.48)	(-1.56)	(8.46)	(3.69)
log equiv.	1.297	1.640	1.147	0.508	1.106	1.698	1.238	0.784
fam.income	(2.16)	(4.25)	(3.88)	(1.63)	(1.38)	(2.34)	(3.76)	(1.85)
talent	15.701	16.871	11.864	10.767	4.526	10.653	11.493	9.108
(norm.mark)	(19.57)	(26.16)	(30.34)	(34.87)	(4.94)	(11.47)	(32.17)	(17.65)
public	24.089	14.879	18.413	10.451	13.387	3.048	4.185	19.860
high schl	(3.87)	(3.95)	(7.55)	(4.45)	(2.75)	(0.53)	(0.82)	(8.76)
confess.	15.116	6.324	17.901	4.894	2.841	-7.003	0.767	13.559
high schl	(2.17)	(1.53)	(6.84)	(1.87)	(0.52)	(-1.11)	(0.14)	(4.50)
priv.lay	-1.862	1.552	5.341	0.302	5.338	-12.349	-9.619	3.958
high schl	(-0.25)	(0.35)	(1.98)	(0.12)	(0.74)	(-1.83)	(-1.76)	(1.49)
public	4.571	2.662	3.072	-6.409	29.940	-8.412	-4.541	5.128
vocat.schl	(0.73)	(0.69)	(1.26)	(-2.72)	(5.84)	(-1.46)	(-0.88)	(2.33)
confess.	-8.739	-6.533	2.223	-2.685	24.248	-15.624	-14.881	2.132
vocat.schl	(-1.07)	(-1.17)	(0.75)	(-0.92)	(2.91)	(-1.92)	(-2.66)	(0.76)
priv.lay	6.550	-12.307	-1.90	-12.661	-5.604	-25.543	-13.830	-2.385
vocat.schl	(0.81)	(-1.86)	(-0.65)	(-3.48)	(-0.86)	(-3.10)	(-2.30)	(-0.79)
R^2	0.217	0.304	0.228	0.174	0.291	0.176	0.229	0.166

Note: additional controls include intercept, age, living area and whether graduate in the year.

Table 11 – Determinants of student performance – students enrolled at the University of Milan since 1994 – 1999-2000
(robust standard errors - t-statistics in parentheses)

Model 1: student productivity
Model 2: student productivity (private instrumented with wealth)
Model 3: student productivity
Model 4: student productivity (confessional instrumented with wealth)
Model 5: student productivity
Model 6: student productivity (confessional high school instrumented with wealth)

Model :	1	2	3	4	5	6
# obs :	56282	56282	56282	56282	56282	56282
Depvar:	product	product	product	product	product	product
sex	5.442	8.505	5.729	6.601	6.159	6.428
(1=woman)	(14.82)	(14.92)	(15.60)	(15.01)	(17.17)	(14.87)
log equiv.	0.974	1.084	0.988	0.931	1.096	1.010
fam.income	(5.44)	(5.34)	(5.50)	(4.59)	(6.03)	(4.77)
private	-7.240	62.217				
school	-14.75)	(7.06)				
confes.			-3.211	83.365		
priv.sch			(-5.32)	(7.02)		
confes					-0.375	109.682
high schl					(-0.54)	(8.01)
R^2	0.328	0.094	0.326	0.085	0.318	0.019

Note: additional controls are the intercept, age, living area, type of secondary school of attendance (only first 4 columns), faculty of attendance, whether attending a 3-year course and whether graduate in the year.

Table 12 – Determinants of student performance – students enrolled at the University of Milan since 1994, coming from schools from which at least 10 students were originating – 1999-2000
(robust standard errors – t-statistics in parentheses)

Model 1: average mark - peer effect
Model 2: average mark - peer effect interacted with stratified
Model 3: exams per year - peer effect
Model 4: exams per year - peer effect interacted with stratified
Model 5: student productivity - peer effect
Model 6: student productivity - peer effect interacted with stratified

Model :	1	2	3	4	5	6
# obs :	26110	26110	26110	26110	26110	26110
Depvar:	avgmark	avgmark	speed	speed	product	product
sex	-0.046	-0.053	0.234	0.228	5.725	5.546
(1=woman)	(-1.77)	(-2.05)	(11.66)	(11.32)	(10.61)	(10.25)
log equiv.	0.006	0.008	0.035	0.035	0.881	0.901
fam.income	(0.52)	(0.72)	(3.11)	(3.16)	(2.99)	(3.06)
log fam.	0.014	0.015	0.010	0.011	0.321	0.330
wealth	(5.45)	(5.69)	(4.87)	(5.02)	(5.68)	(5.85)
talent	1.032	1.031	0.381	0.381	13.280	13.279
(norm.mark)	(80.21)	(80.11)	(37.40)	(37.45)	(47.75)	(47.79)
public	1.179	0.841	0.251	-0.338	10.20	-4.119
high schl	(8.59)	(1.01)	(2.18)	(-0.52)	(3.40)	(-0.24)
confess.	0.798	-0.850	0.113	0.693	5.237	14.888
high schl	(5.46)	(-0.63)	(0.92)	(0.58)	(1.64)	(0.47)
priv.lay	0.135	-7.780	-0.218	-4.072	-4.650	-122.486
high schl	(0.89)	(-3.31)	(-1.80)	(-2.86)	(-1.48)	(-3.33)
public	0.40	-3.134	-0.137	-4.188	-2.491	-112.071
vocat.schl	(2.88)	(-2.18)	(-1.17)	(-3.90)	(-0.82)	(-3.86)
confess.	0.066	-6.586	-0.092	-7.348	-1.799	-211.210
vocat.schl	(0.34)	(-1.67)	(-0.61)	(-2.33)	(-0.45)	(-2.51)
priv.lay	-0.776	-13.771	-0.839	-1.020	-22.951	-72.590
vocat.schl	(-3.45)	(-2.03)	(-4.80)	(-0.20)	(-5.11)	(-0.59)
peer eff	-0.004		0.007		0.143	
mark scnd	(-0.68)		(1.31)		(1.06)	
peer×publ		-0.042		-0.014		-0.487
high schl		(-4.79)		(-2.10)		(-2.70)
peer×conf		0.032		-0.020		-0.375
high schl		(1.67)		(-1.24)		(-0.90)
peer×lay		0.087		0.058		1.663
high schl		(3.41)		(3.24)		(3.58)
peer×publ		0.024		0.035		0.930
vocat.schl		(1.94)		(3.52)		(3.56)
peer×conf		0.137		0.129		3.858
vocat.schl		(3.09)		(3.27)		(3.59)
peer×lay		0.002		-0.068		-1.831
vocat.schl		(0.03)		(-1.38)		(-1.51)
neig.eff.	0.248		0.112		3.506	
fam.eq.incm	(5.00)		(2.91)		(3.42)	
neig×publ		0.236		0.131		3.901
high schl		(3.30)		(2.38)		(2.63)

neig×conf		0.034		0.043		1.052
high schl		(0.33)		(0.49)		(0.44)
neig×lay		0.431		0.145		4.843
high schl		(2.50)		(1.43)		(1.88)
neig×publ		0.255		0.252		6.877
vocat.schl		(1.95)		(2.77)		(2.77)
neig×conf		0.048		0.139		3.426
vocat.schl		(0.18)		(0.57)		(0.53)
neig×lay		1.306		0.327		13.343
vocat.schl		(2.72)		(0.86)		(1.41)
R^2	0.384	0.386	0.34	0.341	0.369	0.371

Note: additional controls are the intercept, age, living area, faculty of attendance, whether attending a 3-year course and whether graduate in the year.

Figure 1 – Evolution of private education in Italy

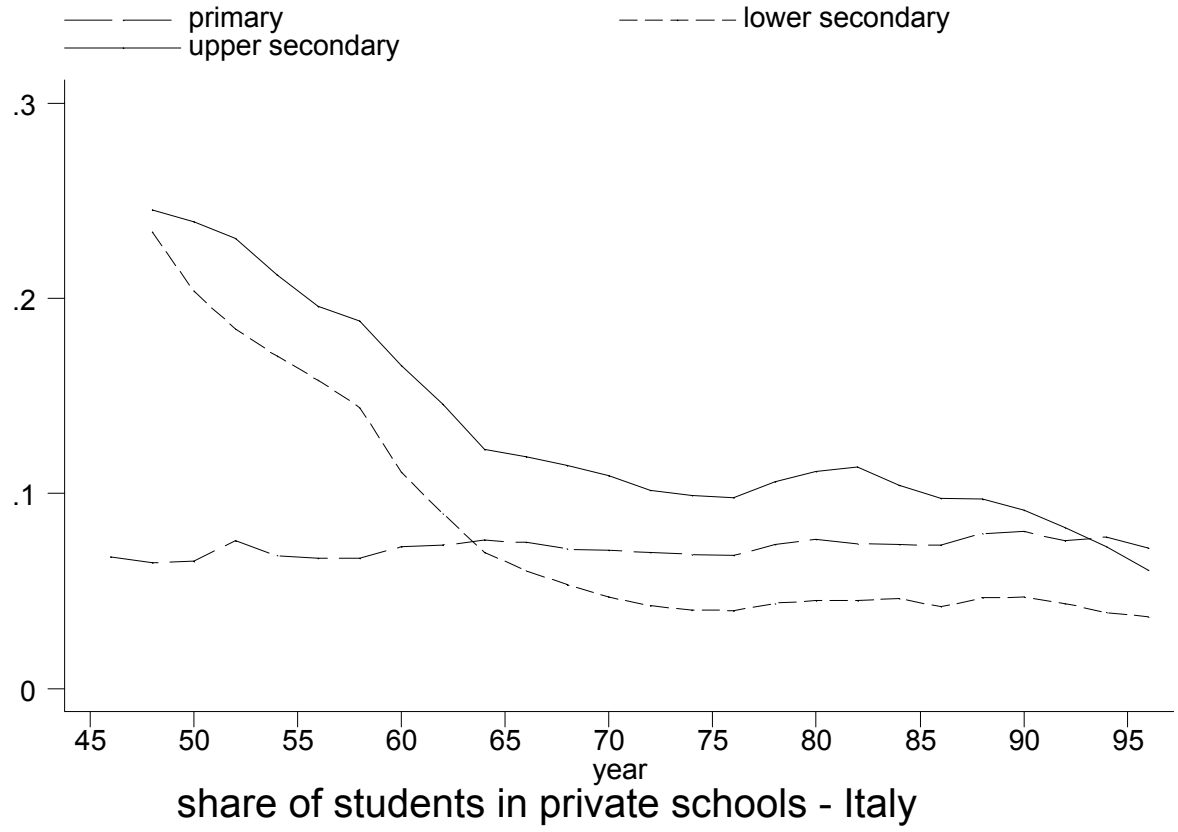
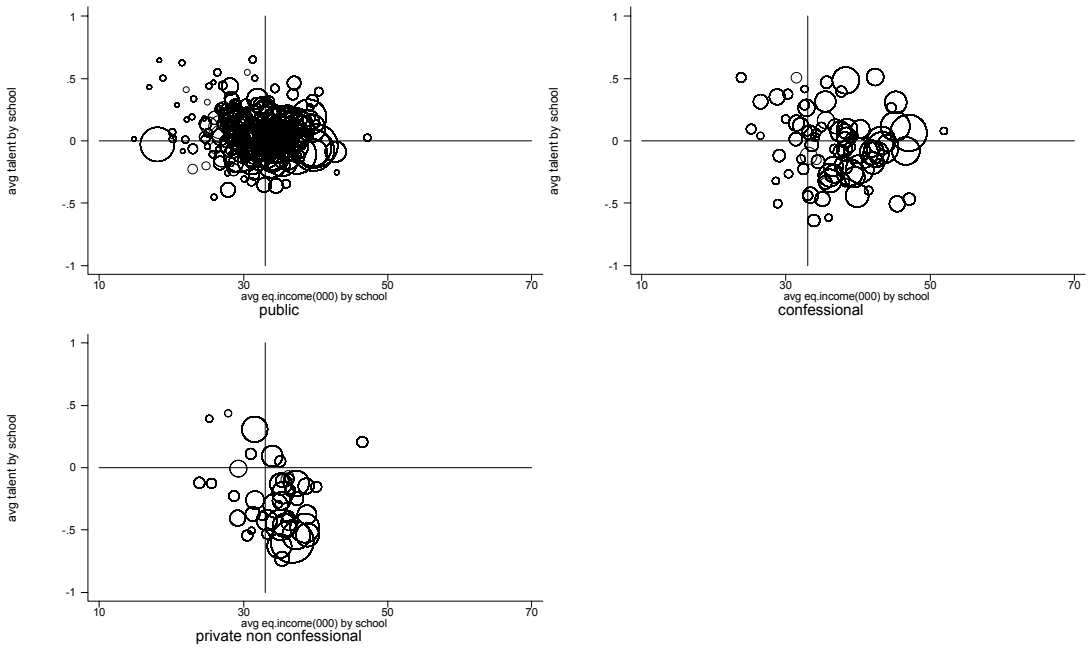
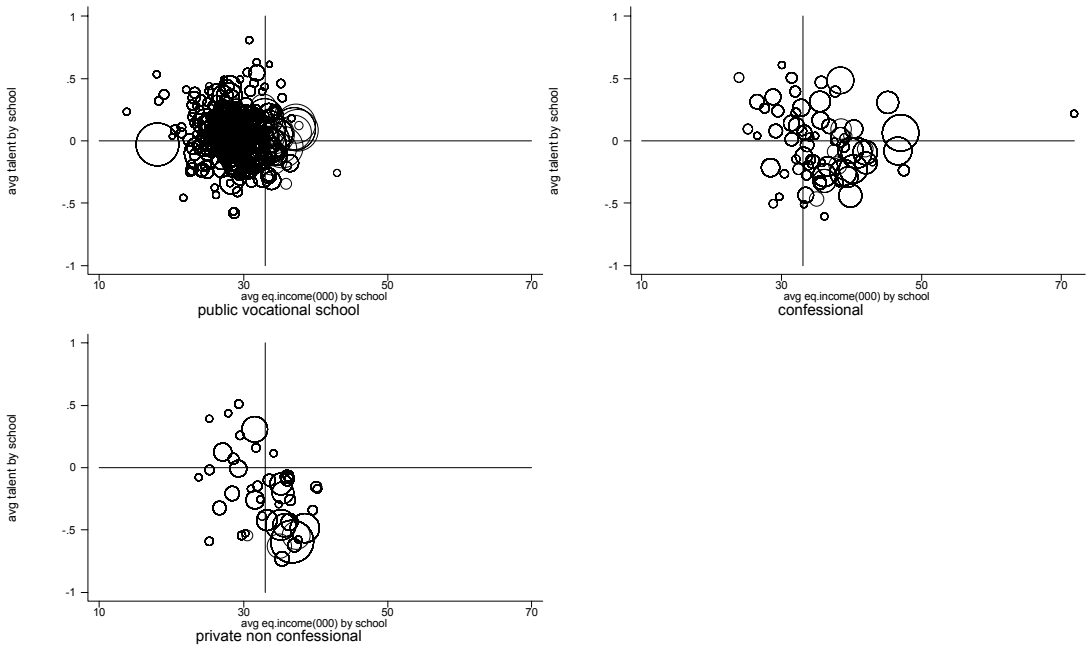


Figure 2 – Distribution of talent and resource proxies by type of secondary school



high schools



vocational schools