School-to-work Transitions in Italy: A Steeplechase with no Winner?

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Abstract[#].
Despite the massive participation of young people in the Italian university system, the share of university graduates is one of the lowest in Europe. This paper seeks to investigate the reasons of this paradox by looking at the theory of investment in human capital. The annual rate of return to high education in Italy are just below those in other countries, while the direct and indirect costs are similar to (if not lower than) those in other EU countries. These factors hence cannot explain the low average educational level of Italian young people. The proposed explanation of this paper is the enormous time necessary to achieve a university degree: this reduces the cumulated return to education, while dramatically increasing the opportunity cost of education. Heckprobit estimates of the returns to education in terms of employment opportunities as based on Household Survey data (SHIW) suggest that education is a statistically significant predictor of employment only for the over-30. Similar conclusions can be drawn for returns to education estimated by a Heckit model on the same data. This suggests that the ineffective working of the university system truncates the earnings profile of graduates as compared to individuals with a high school dimploma. However, it is also detrimental to the country's long-term growth and fertility rates, by postponing the labour market entry of young people, as well as the time of establishing their own families. This happens in a country where the retirement age is one of the lowest in Europe. Policy makers interested in the implementation of the Lisbon and the Bologna agenda should address more directly the issue of the time necessary to get a degree in Italy if they wish to reach the educational and employment targets.

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Introduction

Despite the massive participation of young people in the Italian university system, the share of university graduates is one of the lowest in Europe. This paper seeks to investigate the reasons of this paradox by looking at the theory of investment in human capital. The annual rate of return to high education in Italy are just below those in other countries, while the direct and indirect costs are similar to (if not lower than) those in other EU countries. These factors hence cannot explain the low average educational level of Italian young people. The proposed explanation of this paper is the enormous time necessary to achieve a university degree: this reduces the cumulated return to education, while dramatically increasing the opportunity cost of education. Heckprobit estimates of the returns to education in terms of employment opportunities as based on Household Survey data (SHIW) suggest that education is a statistically significant predictor of employment only for the over-30. Similar conclusions can be drawn for returns to education estimated by a Heckit model on the same data. This suggests that the ineffective working of the university system truncates the earnings profile of graduates as compared to individuals with a high school dimploma. However, it is also detrimental to the country's long-term growth and fertility rates, by postponing the labour market entry of young people, as well as the time of establishing their own families. This happens in a country where the retirement age is one of the lowest in Europe. Policy makers interested in the implementation of the Lisbon and the Bologna agenda should address more directly the issue of the time necessary to get a degree in Italy if they wish to reach the educational and employment targets.

The structure of this paper is as follows. Section one describes the main features of the Italian educational system presenting detailed information on educational targets set in the Lisbon strategy. Section two discusses alternative explanations of low educational attainment in Italy, with a special focus on tertiary education. Section three presents the methodology and data used to test the hypotheses presented in the previous section. Section four presents the results of econometric analysis. Some concluding remarks follow.

1. Educational attainment

1.1. A general picture

As noted, among others, in Checchi (2003a) and CNEL (2004), while the level of schooling of the youngest Italian generation is relatively high and distributed in a spatially even way, the level of educational attainment is still very low by EU standards, and the Southern regions dramatically further lag behind.

Table 1 shows that the share of people aged 25-64 with high secondary education is 43% and that with university education is only 10%. These figures are lower than the OECD average by 21% and 5%, respectively, a factor of about 50% in both cases. The relative position of the country does not seem to improve dramatically for the youngest cohort of adults, aged 25-34.

[Table 1 about here]

Figure 1 considers the youngest segment of people aged below 25. This group seems to be better off as compared to previous generations. However, the objective stated in the Lisbon EU Council of bringing the schooling rate of the 22-year olds up to 85% by 2010 is still far from being reached. Out of 100 young people entering high secondary education, about 20 fail to obtain their diploma. Only 62.6% of those who obtain a high secondary school diploma register at the university, with some differences between men (59.1%) and women (65.8%). Overall, this means that only 33.1% of the under 25 start tertiary education.

If one looks at the youngest generation, some improvement can be observed, with an increase in the share of 19-year old children holding a high school diploma and accessing University from 82.9% in 1999 to 89.8 in 2003. They amount to about 70.4% of the 19-year olds, or 65.3% for men and 75.7% for women.

Only minority fractions (47.9%) of those who register at the university obtain their degree after 6 years. As a consequence, the share of the under 25 who have a university degree is only 17.1%. Again, there are gender differences in favour of women: the share of women under 25 who attain their degree equals 19.3%. The comparable figure for men is 16%.

[Figure 1 about here]

It is also noticeable that the average time to graduation is from 7 to 9 years. This is about 1.75 times the official number of years foreseen in the official curricula and is 2.3 times the number of years that are necessary in the UK to get a university degree[1]. It is not rare that people still attend university courses when they are over thirty.

[1] In fact, in the same time which is necessary on average to an Italian student to obtain a University degree, a UK colleague could obtain also a Master degree and a Philosophy doctorate.

1.2. The 2001 reform process

It is now about a decade since when Law n. 509/1999 has started a series of dramatic reforms of the university system. In 2001, following the Lisbon and Bologna processes, Italy adopted the so-called "3plus2" track system. This implies that students obtain a kind of Bachelor degree after three years and then proceed to another two-year programme if they want to complete. The introduction of this system represented an improvement in terms of the time necessary to obtain a university degree and, consequently, of the share of dropouts: in 2005 it appeared that 59.6% of those who registered in 2001 obtained their degree after four years. However, if one considers that the Bachelor degree is only an intermediate step to access most jobs and professions, it was clear already some years ego that the new system would not dramatically reduce the number of years that are necessary to obtain the same certificate, in terms of qualification, that existed before 2001.

About ten years after the 1999 reform, enough time has passed to run a first assessment of the effects of the reform (AlmaLaurea, 2008). Several caveats are in order, though. First, it is necessary to distinguish "pure" from "hybrid" graduates, the former being those graduates who have started and finished their course of studies after the reform started. This is important to avoid "negative" sample selection bias, due to the fact that those graduates who come from a pre-reform course are the worst of their cohort. Consider that, as already noted, on average it may take from 7 to 9 years to get a university degree. Second, the reform is not working at full performance as yet. The new "pure" graduates are the best of their cohort, which might cause positive sample selection bias. Think of a study aiming to assess whether, by reducing the curricular years and therefore the opportunity cost of education, the university reform favors access to tertiary education of people coming from weak socio-educational background. Focusing on the earliest post-reform graduates means underestimating the possible impact of the reform on the intergenerational transfer of human capital and of socio-economic status. Since only the most advantaged students will graduate among the first, then it will appear that access to university would be less, not more "democratic" after the reform.

With these caveats in mind, using the data set of AlmaLaurea, Cammelli (2008) notices several improvements due to the "3plus2" system, namely: a) the age at graduation has fallen down from 28 to 24.2 years after the Bachelor degree and to 27.1 years after a 2nd level programme. This result is to appreciate also considering the increase in the share of students registering late; b) the increase in the share of the graduates under-23 from zero to 18%; c) the reduction in the delay at graduation from 69% to 49% of the curricular time and the ensuing increase in the share of people graduating

in the curricular time from 10 to 34.3%; d) the increasing share, up to 19% of the graduates who do training during their studies, especially in the field of health related professions, such as being a nurse; e) a slight increase in the share of graduates whose social origin is humble or whose parents have low educational levels: up to 72% of all graduates have parents with no university degree; f) an increase in the adult student population up to 21% of the new registrations; g) a significant increase up to 75% in the share of "pure" graduates who declare that they have regularly attended their courses, which causes an increasing demand for lecture halls in every faculty. Indeed, these were all declared targets of the 1999 reform.

The shortcomings of the old system that still survive include: a) the "classist" feature of university education, which determines also the tendency of graduates coming from a low socio-economic background to pool in those programmes which are less on demand in the labour market; b) a worrying, although only slight increase in the delay of the latest graduates from 24 to 24.2 years: it means that again the weakest segments of every cohort of students are now completing their studies; c) the insufficient presence of foreign students (only 41,000); d) the tendency of Italian students not to use the Erasmus programme (only 5%).

In addition, a new illness seems to weaken some of the positive effects of the reforms, namely the lack of a full recognition in the labour market of the three-year degree. This explains why 83% of those who obtain it continue their studies up to the 5th year. The consequence is that the main objective of the reform, namely reducing the age at graduation, is less effective than it could otherwise have been.

The simplest possible interpretation of the high dropout rate of university student could be found in the selection process during the studies. However, such selection process is not perhaps the most difficult to overcome. As Table 2 shows, while the average skill level in terms of reading literacy of Italian pupils at the age of 10 is higher than average according to the PIRLS study, instead that of secondary school students is lower than average, according to the PISA study[2].

[Table 2 about here]

Regional differences are an important issue in Italy also in terms of educational attainment rates. While the spatial distribution of high secondary enrolment rates is rather similar across regions, that of completion, both at the secondary and at the tertiary level is not. Dropout rates are much higher in Southern regions both from high secondary and from tertiary education. Moreover,

[2] To my knowledge, there is no comparable evaluation study available for people with a University degree. However, some simple reasoning helps understanding that the situation is not different.

the Southern regions perform worse in both the PIRLS and PISA studies in terms of reading literacy.

The evidence previously presented suggests a simple question. Why is the Italian level of education attainment so much lower than in other EU countries? Answering this question, whose relevance for the success in the country of the Lisbon strategy is obvious, is the aim of the following sections. Various possible explanations are considered.

The specific contribution of this study is trying to assess the returns to education in terms of both wages *and* employment opportunity for the youngest segments of the population. The main conclusion is that while the distributions of wages and jobs by educational level are as expected based on the human capital model for the adult population, they are flat, instead, for the youngest segments. This is for two main reasons, both related to the poor organization of the Italian educational system. This last seems, on the one hand, unable to change the natural distribution of skills as determined by the family background of individual and, on the other hand, very costly for individuals. These two factors are closely linked: the longer the time necessary for students to attain their degree, the lower the benefits of high education and the higher its marginal cost for the poorest segments of the population or those segments whose parents have the lowest level of educational attainment.

2. Explaining low educational levels

There are various possible explanations of why the level of education of Italians is so low by EU and even by OECD standard. A first group of factors regards the demand for high skill labour. The Italian production system is heavily concentrated on traditional manufacturing, such as food, footwear and leather. This specialisation pattern in low tech industries is the result, among other factors, of a long history of “competitive devaluations”, which favoured the competitive sector against high tech industries. The reason of the differential impact of devaluation across manufacturing sectors is to be found in the fact that international competition is based on price competitiveness in the case of traditional manufacturing, whereas it is based on other factors, such as the technological level of productions, economies to scale and so on, in the case of modern manufacturing and the service sector. This explains also why the Italian production system is essentially based on small and medium sized enterprises, flexible enough to bear and control for the risk of an internationalisation process based on price competitiveness, but not on technological

upgrading. Now, the traditional sector employs a much lower amount of skilled labour, which could cause, in turn, low returns to education as well as low investment. Therefore, a demand side explanation should not be discarded: assuming that there is a strong complementarity between physical and human capital, it is reasonable to hypothesise that low educational levels would be driven by the low technological level of Italian productions.

However, macroeconomic factors are effective if they alter the microeconomic equilibrium condition of individuals. According to the theory of investment in human capital, education is not only consumption good, but more importantly an asset and people invest in education until the point when the marginal benefit and the marginal cost of education equal each other.

A first hypothesis considered in the literature is that the marginal benefit of high education is low in Italy. The literature has focused not only on earnings, but also on job opportunities.

Higher probability of employment versus unemployment and inactivity, as shown in the distribution of activity, employment and unemployment by educational level at different ages. Check whether the result of the empirical analysis in the following sections that the distribution is not as expected holds also in unconditional average levels.

Give also the distribution of long term unemployment by age. Note that such long term unemployment among young people is a consequence of the lack of competencies that the educational system gives to graduates in Italy, where people have no working experience at all. Also this is the consequence of the lack of training systems.

Higher wages

Benefits: in Italy, the advantage of adult people with a high level of education attainment in terms of wages and employment opportunities are similar to other countries. There is a number of studies confirming this.

High costs? Costs include:

Direct costs: High tuition fees?

Indirect costs:

Opportunity cost: Long stay at the University

Non-monetary costs: Low quality of education at high school; poor family background

Costs: Tuition fees are increasing, but remain very low, compared to other EU countries with a much higher level of education attainment.

Opportunity costs and non-monetary costs appear the most important.[3] This paper focuses on the opportunity cost. As already noted the time to graduation is among the longest in the world (from 7 to 9 years on average). Moreover, the time necessary to find a job is in Italy extraordinarily high. Long-term unemployment among Italian young people is one of the highest in the world.

This two single factors – time to graduation and long-term youth unemployment – are sufficient to explain many important features of the Italian educational system, such as: 1) the low share of Italians that have a University degree; 2) the high drop out rate at the University; 3) the inability of the Italian system to positively alter the distribution of skills based on family background, against its promise of universality and progressivity.

Figure 2 and 3 shows the possible role of long periods of tertiary education on the equilibrium condition in the model of investment in human capital and in terms of the earnings profile by age, respectively. In addition, the figures use the USA as a term of comparison. As well known, in the USA and other Anglo-Saxon countries the Bachelor degree lasts 3 years for most students and the dropout rate is relatively low. Figure 2 shows that with an increase in the cost of education, the equilibrium level of human capital shrinks. Figure 3 shows that obtaining a degree after much longer periods of time means reducing the chance to fully exploit the returns of high education which is not only immediate, but also long-lasting.

[Figure 2 and 3 about here]

While the first two points are obvious, the latter deserves further explanations. If the time to obtain the benefits of high education are so long, it is obvious that the cost is not equally distributed across individuals with a different family background. By the way, it will be shown that the time to graduation is strongly related to family background and also the grade at the University. As a consequence, the

Moreover, as shown, among others, in Checchi (2003a), Caroleo and Pastore (2009), the Italian educational system discriminates against those with a poor family background. These last tend to go to the vocational schools, which prevent them from doing University well. Also if the high secondary education provides low quality of education, this implies that it does not give the same opportunities to everybody.

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[3] The long period of time that young people spend at the university has also other opportunity costs, such as that of living with parents up until very late in their thirties and the low fertility rate. This issue has been the object of a number of contributions (Giannelli and Monfardini, 2000; 2003; Manacorda and Moretti, 2006; Becker, 2006).

3. Methodology and data

This study aims at estimating the returns to education in terms of wages and employment opportunities at different ages. The paper considers the young teenagers (15-18), the young adults (19-24) and the young people above the conventional age of 24. Two groups are considered: those aged 24-30, and those aged 24-35.

The paper aims to assess the impact of education on success in the labour market in terms of the probability to find a job, taking into account participation into further education. Since the choice to remain into education affects the probability to find better jobs with a higher probability later, it is likely that those who are already in the labour market are systematically different from those into education, which might affect our evaluation of the impact of education on labour market outcomes. It is likely, for instance, that those young people whose parents have a higher level of education tend to invest more into education, since parents transfer to their children values and also a general knowledge of the way of working of the labour market.

The estimates are obtained using the Heckprobit model. This model allows estimating the probability to be employed rather than unemployed or inactive controlling for the probability that the individual is rather participating into further education. This model is similar to the Heckman procedure to control for sample selection bias generally used to estimate earnings taking into account of the missing information regarding those who do no actually work. Family background, in terms of education of the mother and father as well as of household income are the instruments.

The assumption of the modelling strategy pursued here is that the primary decision of young people is whether to participate to the labour market or study. Only at a later stage, once decided to leave education, the young person will seek permanent employment. This would suggest refuting both a MNL and a MNP model[4], and to opt for a Heckman correction procedure, which in this case is indeed the so-called Heckman PROBIT (Heckprobit), since the variable detecting the labour market state is binary and takes a value of 1 for employment and of 0 for joblessness, where joblessness includes unemployment and inactivity. Introduced for the first time by Van de Ven and Van Pragg (1981), the Heckprobit allows estimating PROBIT models when there is suspect of sample selection bias. In the case under scrutiny, if the sample of individuals participating in the

[4] Other natural alternatives would be a conditional LOGIT model (which requires detailed longitudinal data able to individualise the time of exit from education) and a bivariate PROBIT model (which is generally used for evaluation of the gross impact of pro-active schemes).

labour market is systematically different from that of those who are in education, coefficients of determinants of success in finding employment might be biased.

The unemployed and inactive individuals are pooled together because in the case of young people such labour market states are often very similar. In the seminal paper by Clark and Summers (1982), young people have a high degree of turnover and the transitions from unemployment to employment are not less sizeable than those from inactivity to employment. Also the transitions from unemployment to inactivity are high. Poterba and Summers (1995) find that the differences between unemployment and inactivity are weak, causing dramatic classification errors. This is likely to occur especially among the youngest segment of the population. Of course, this assumption is to be taken with the due caveats, keeping in mind the contribution by Flinn and Heckman (1983). They suggest that the behaviour of individuals who are inactive because they are disabled, retired or otherwise unable to work is different. For this reason, the group of those who declare not to work because they are unable to work have been excluded from the analysis, whereas the disabled who do not declare to be unable to work have been included in the analysis[5].

From an analytical point of view, the Heckprobit model assumes the existence of an underlying relationship, also called latent equation:

$Yj^* = Xj\,\beta + u1j$

such that the binary outcome is observed, which is mirrored by a PROBIT equation:

$Yjprobit = (Yj^* > 0)$

In this paper, this binary outcome corresponds to employment and joblessness. The dependent variable, however, is not always observed. To capture the relevant effect on the standard PROBIT results the corresponding selection equation is introduced:

$zj\gamma + u2j > 0$

such that

$Yjselect = (zj\gamma + u2j > 0)$

$u1 \sim N(0,1)$

$u2 \sim N(0,1)$

$corr\,(u1\ u2) = \rho$

When $\rho \neq 0$, i.e. there is correlation between error terms of main and participation equation, the standard PROBIT model will produce biased results. The Heckprobit procedure instead is intended

[5] See Caroleo and Pastore (2007) for a survey of the literature.

to correct for selection bias, and to provide consistent, asymptotically efficient estimates for all the parameters in the model.

The analysis is carried out using the 2002 wave of the Bank of Italy household survey, carried out every two/three years. This is the only available source of data including detailed information on education attainment, on the educational level of parents of young people and on wages, in the meantime. It is, therefore, no surprise that almost all previous studies on educational issues in Italy are based on this source of data, This is an advantage of this data set in as much as it allows comparison of the results achieved with those of previous studies.

The regressors in the main equation include education, gender, regions. Educational attainment is measured using not only the general levels of post-graduate, tertiary and secondary education, but also the specific types of diploma held by individuals. The regressors in the selection equation are the same as those in the main equation, plus three instrumental variables. As already noted, these last include the father and mother's education, as well as the income of the household head. Table A1 provides a detailed definition of all the variables used in the estimates[6].

4. Results

Results are summarized in the concluding remarks.

Concluding remarks

The analysis developed in this paper suggests that school-to-work transitions in Italy are a steeplechase with no winner. This paper studies the determinants of labour market participation of young people (18-35) by means of a Heckman probit model to control for the selection of those involved into education.

Main findings: The educational system is unable to change the existing distribution of skills based on family background. Participation and success in finding a job crucially depend on education, but they are attained very late. They appear only for the over 30.

Women are more into education, but have a much lower success in finding jobs. An explanation is that these two phenomena are closely linked to each other: women know that discrimination is very high and invest more in education to reduce the risk of discrimination.

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[6] A possible alternative would be to use the 1950-1952 reform as an instrumental variable (Checchi, 2003b).

The reform of the education system based on Lisbon and Bologna are in the right direction of reducing the number of years statutorily needed to graduate. However, as already noted, the risk is high that in the qualification based system of Italy, the limitation imposed on the Bachelor degree as a way to access jobs, will neutralize the potential benefit of the reform in terms of reducing the number of years necessary to young people to obtain their certificate. But they need coordination

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Appendix of Tables and Figures

Figure 1. The steeplechase

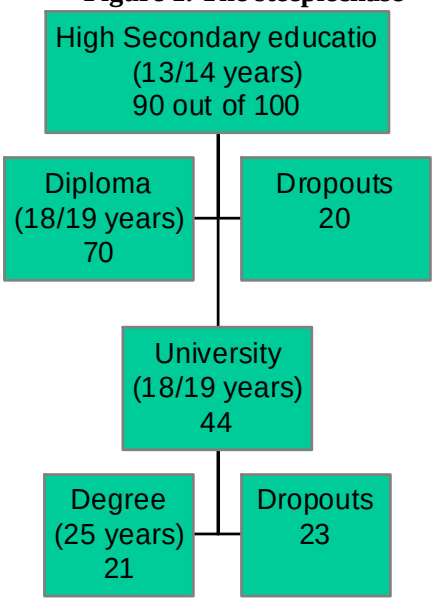

Figure 2. Equilibrium investment in education. A comparison of Italy and USA

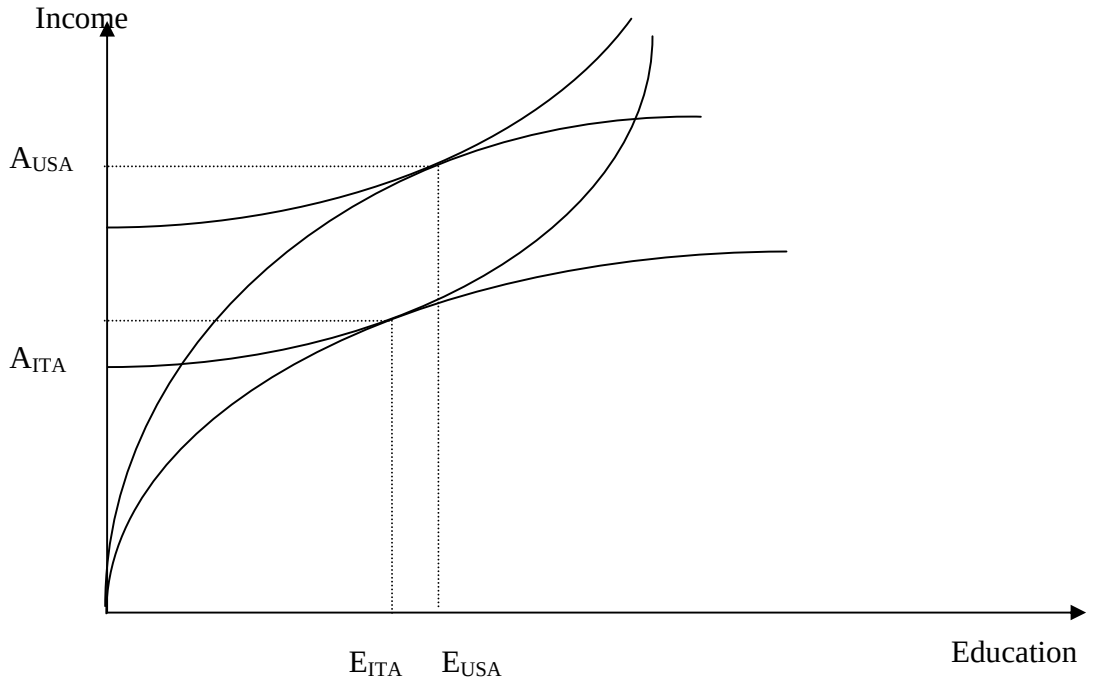

Figure 3. Earnings profile. A comparison of Italy and the USA

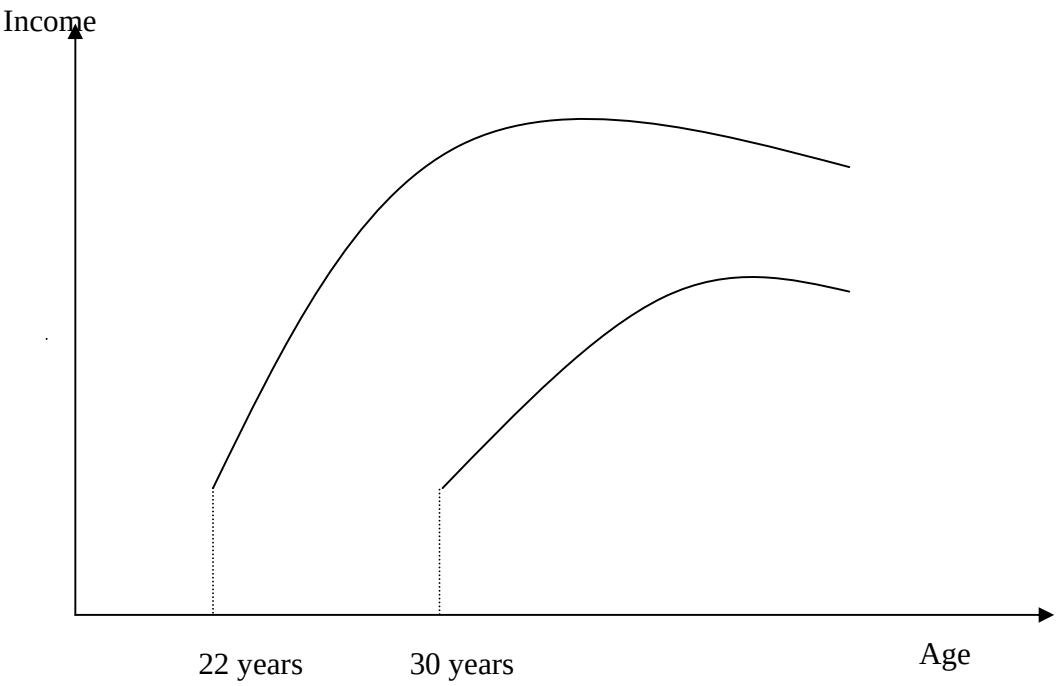

Table 1. Levels of educational attainment (%, 2001)

	High secondary		University	
	25-64	25-34	25-64	25-34
Italy	43	57	10	12
Germany	83	85	13	14
France	64	78	12	18
UK	63	68	18	12
USA	84	88	28	30
OECD	64	74	15	18
Italy-OECD	-21	-17	-5	-6

Source: CNEL (2004).

Table 2. The quality of secondary education

	Reading litearcy	
Country	Primary (PIRLS- aged 10)	Secondary (PISA – 15 years)
Italy	541	487
Germany	539	484
France	525	505
UK	-	523
USA	542	504
OECD	529	499
Italy – OECD	+12	-12

Source:

```
heckprob outcome  age women cf nordest centro sud isole ///
                  [pweight=pesofl] if a15t18, ///
                  select (age women cf nordest centro sud isole edlevfa edlevmo yihh)
///
            robust first noskip
                  model LR test inappropriate with robust covariance estimates,
                  option skip ignored and performing Wald test instead
```

Aged 15-18, Italy

```
Probit model with sample selection              Number of obs      = 917
                                                Censored obs       = 798
                                                Uncensored obs     = 119
                                                Wald chi2          = 40.51
Log pseudo-likelihood = -328.3387               Prob > chi2        = 0.0000

                              Coef.       Std. Err.      z    P>|z|     [95% Conf.
Interval]
outcome
age   {c |}        .2402894   .1917413     1.25   0.210    -.1355166    .6160955
women {c |}       -.3686219   .2643597    -1.39   0.163    -.8867573    .1495135
cf {c |}       -1.268196   .5608059    -2.26   0.024    -2.367355   -.1690361
nordest {c |}        .9291904   .5264532     1.77   0.078    -.1026388     1.96102
centro {c |}        .0712732     .43063     0.17   0.869    -.7727461    .9152924
sud {c |}        -1.67497   .3716494    -4.51   0.000    -2.403389   -.9465505
isole {c |}       -1.201469   .3915452    -3.07   0.002    -1.968883   -.4340546
_cons {c |}        -2.61504   3.439513    -0.76   0.447    -9.356362    4.126282
select
age   {c |}        .3129676   .0692319     4.52   0.000     .1772756     .4486596
women {c |}        .0518143   .1494426     0.35   0.729    -.2410879    .3447164
cf {c |}        2.171342   .8289853     2.62   0.009     .5465606    3.796123
nordest {c |}       -.2917178   .2544958    -1.15   0.252    -.7905205    .2070848
centro {c |}       -.4918731   .2401417    -2.05   0.041    -.9625423    -.021204
sud {c |}        .1214987   .2206275     0.55   0.582    -.3109233    .5539207
isole {c |}       -.0633138   .2439082    -0.26   0.795    -.5413651    .4147374
edlevfa {c |}       -.2279298   .0641832    -3.55   0.000    -.3537266    -.102133
edlevmo {c |}       -.2062281   .0646047    -3.19   0.001    -.3328511   -.0796052
yihh {c |}       -.0000229   8.30e-06    -2.75   0.006    -.0000392   -6.60e-06
_cons {c |}       -4.433349   1.127232    -3.93   0.000    -6.642683   -2.224015
/athrho     {c |}       -.8422996   .3668443    -2.30   0.022     -1.561301   -.1232979
rho   {c |}       -.6870252   .1936925                          -.915631    -.1226769
Wald test of indep. eqns. (rho = 0): chi2(1) = 5.27  Prob > chi2 =      0.0217
```

AGED 19-24, Italy

```
Probit model with sample selection  Number of obs      =      1556
                                    Censored obs       =       672
                                    Uncensored obs     =       884
                                    Wald chi2(14)      =    129.61
Log pseudo-likelihood = -1194.393   Prob > chi2        =    0.0000

Robust
             Coef.   Std. Err.      z      P>z     [95% Conf. Interval]

outcome
degree           -1.235181   .4695979    -2.63 0.009    -2.155576   -.3147857
degshort         -1.193237   .5400274    -2.21 0.027    -2.251671   -.1348023
highsec          -.2664346   .1974939    -1.35 0.177    -.6535156    .1206464
vocsec           .1964288   .2342283     0.84  0.402    -.2626501    .6555078
age              .2217924   .0465346     4.77  0.000     .1305863    .3129986
women            -.2585624   .1303661    -1.98 0.047    -.5140754   -.0030495
married          -.4205923   .4076371    -1.03 0.302    -1.219546    .3783617
divorced         -1.208101   .6451641    -1.87 0.061      -2.4726    .0563969
cf               .1199968   .3292134     0.36  0.715    -.5252497    .7652433
partner          -.2074594   .4336513    -0.48 0.632      -1.0574    .6424815
nordest          .3146333   .2330729     1.35  0.177    -.1421812    .7714477
centro           -.4941255   .1853853    -2.67 0.008    -.8574741   -.1307769
sud              -1.432317   .2105376    -6.80 0.000    -1.844963    -1.01967
isole            -.9653905   .2421596    -3.99 0.000    -1.440015   -.4907663
_cons            -3.77363   1.056271    -3.57  0.000    -5.843883   -1.703376

select
highsec          -.8397632   .1118294    -7.51 0.000    -1.058945   -.6205816
vocsec           .3029939   .2381556     1.27  0.203    -.1637826    .7697704
age              .2321341   .0316492     7.33  0.000     .1701027    .2941654
women            -.2292172   .0985273    -2.33 0.020    -.4223272   -.0361073
cf               .4983453   .2553573     1.95  0.051    -.0021458    .9988365
nordest          .1237073   .1686714     0.73  0.463    -.2068826    .4542972
centro           .1678784   .1499277     1.12  0.263    -.1259745    .4617313
sud              .1033492   .1567138     0.66  0.510    -.2038041    .4105026
isole            .3184725   .1739624     1.83  0.067    -.0224876    .6594326
flowsec          -.0543358   .1305849    -0.42 0.677    -.3102775    .2016059
fvocsec          .0606678   .1923829     0.32  0.752    -.3163957    .4377313
fhighsec         -.4557034   .1679562    -2.71 0.007    -.7848916   -.1265152
fdegree1         -.8083248   .2245834    -3.60 0.000      -1.2485   -.3681494
mlowsec          -.4243722   .1331646    -3.19 0.001    -.6853699   -.1633744
mvocsec          -.4742212   .2151281    -2.20 0.027    -.8958644   -.0525779
mhighsec         -.8050455   .1560562    -5.16 0.000     -1.11091    -.499181
mdegree1         -1.359926   .2385321    -5.70 0.000     -1.82744   -.8924114
yihh             -9.11e-06   3.41e-06    -2.67 0.008    -.0000158   -2.42e-06
_cons            -3.483628   .6674287    -5.22 0.000    -4.791764   -2.175492
/athrho          .1050488   .2774877     0.38  0.705    -.4388171    .6489147
rho              .1046641    .274448     -.4126635    .5709389
Wald test of indep. eqns. (rho = 0): chi2(1) =  0.14   Prob > chi2 = 0.7050
```

AGED 19-30, Italy

```
Probit model with sample selection              Number of obs      =            3202
                                                Censored obs       =             878
                                                Uncensored obs     =            2324
                                                Wald chi2(      30      )      =
372.04
Log pseudo-likelihood =       -2371.727                     Prob > chi2        =
0.0000

                             Coef.   Std. Err.      z    P>|z|     [95% Conf.
Interval]
outcome
postgrad {c |}        .4279837   .5620949     0.76   0.446      -.673702    1.529669
degree {c |}         -.1578712   .1656607    -0.95   0.341    -.4825603    .1668178
degshort {c |}         .3752847   .3005942     1.25   0.212    -.2138691    .9644386
highsec {c |}         .3355149   .1155801     2.90   0.004       .108982    .5620477
vocsec {c |}         .2732899   .1590362     1.72   0.086    -.0384154    .5849951
age {c |}          .2270926   .2270426     1.00   0.317    -.2179027    .6720878
age2 {c |}        -.0035596   .0044376    -0.80   0.422     -.012257    .0051379
women {c |}        -.4389973   .0893151    -4.92   0.000    -.6140517   -.2639428
married {c |}        -.3142527   .1790008    -1.76   0.079    -.6650878    .0365823
divorced {c |}        -.2454394   .3228031    -0.76   0.447    -.8781218     .387243
cf {c |}          .3862993   .1652727     2.34   0.019     .0623706    .7102279
partner {c |}        -.0911402   .2067323    -0.44   0.659    -.4963281    .3140477
piemvdo {c |}        -.2336244   .1737929    -1.34   0.179    -.5742523    .1070035
trentino {c |}          .805982   .3449509     2.34   0.019     .1298906    1.482073
veneto {c |}         .2896712   .1959544     1.48   0.139    -.0943924    .6737348
friuli {c |}          .094046   .2699826     0.35   0.728    -.4351101    .6232021
liguria {c |}         .0563852   .2911299     0.19   0.846     -.514219    .6269893
emilia {c |}          .098552    .179017     0.55   0.582     -.252315    .4494189
toscana {c |}        -.5358563   .1871917    -2.86   0.004    -.9027453   -.1689673
umbria {c |}        -.3696854   .2386306    -1.55   0.121    -.8373928    .0980221
marche {c |}        -.1204969   .1904064    -0.63   0.527    -.4936866    .2526928
lazio {c |}        -.7614412   .2046733    -3.72   0.000    -1.162593   -.3602889
abruzzi {c |}        -.9870883   .2347318    -4.21   0.000    -1.447154   -.5270223
molise {c |}        -.5977285   .3510918    -1.70   0.089    -1.285856    .0903988
campania {c |}        -1.591995   .1709098    -9.31   0.000    -1.926972   -1.257018
puglia {c |}        -1.222054   .1799969    -6.79   0.000    -1.574841   -.8692662
basilicata {c |}        -1.041571   .3722153    -2.80   0.005      -1.7711   -.3120429
calabria {c |}        -1.312268   .2276806    -5.76   0.000    -1.758514   -.8660223
sicilia {c |}        -1.237391   .1992194    -6.21   0.000    -1.627854   -.8469282
sardegna {c |}        -.7462317   .1902402    -3.92   0.000    -1.119096   -.3733679
_cons {c |}        -2.194274   2.886459    -0.76   0.447    -7.851631    3.463082

      select             {c |}
highsec {c |}        -1.080021   .1064055   -10.15   0.000    -1.288572   -.8714702
vocsec {c |}         .0936514   .1985105     0.47   0.637    -.2954219    .4827248
age {c |}          .8553022   .1915366     4.47   0.000     .4798974    1.230707
age2 {c |}        -.0139256   .0039548    -3.52   0.000    -.0216768   -.0061744
women {c |}        -.1845968   .0816217    -2.26   0.024    -.3445725   -.0246212
married {c |}         .7653768   .1979974     3.87   0.000      .377309    1.153445
cf {c |}          .322154   .1715177     1.88   0.060    -.0140144    .6583224
partner {c |}         .3661861   .2761193     1.33   0.185    -.1749977      .90737
```

```
piemvdo {c |}         .1371444    .172321     0.80   0.426    -.2005985    .4748873
trentino {c |}        -.0061473   .2590474    -0.02   0.981    -.5138709    .5015763
veneto {c |}         .1587938   .1772657     0.90   0.370    -.1886405    .5062282
friuli {c |}         .0590534   .2639969     0.22   0.823    -.4583709    .5764778
liguria {c |}          .029984    .250259     0.12   0.905    -.4605147    .5204827
emilia {c |}         .2605862   .1901604     1.37   0.171    -.1121214    .6332938
toscana {c |}         .0625518   .1834538     0.34   0.733    -.2970111    .4221147
umbria {c |}         .1686527    .263535     0.64   0.522    -.3478664    .6851719
marche {c |}        -.4020646   .1817835    -2.21   0.027    -.7583537   -.0457755
lazio {c |}        -.4284123   .1828283    -2.34   0.019    -.7867492   -.0700753
abruzzi {c |}         .1168094   .2208706     0.53   0.597    -.3160891    .5497078
molise {c |}         .6011052   .3349014     1.79   0.073    -.0552894      1.2575
campania {c |}        -.1131092   .1741016    -0.65   0.516     -.454342    .2281235
puglia {c |}         .2381548   .2027694     1.17   0.240     -.159266    .6355756
basilicata {c |}        -.5650073   .3041504    -1.86   0.063    -1.161131    .0311165
calabria {c |}        -.0887086   .2394384    -0.37   0.711    -.5579993    .3805821
sicilia {c |}        -.0184648   .1948217    -0.09   0.924    -.4003083    .3633787
sardegna {c |}        -.0803657   .2222243    -0.36   0.718    -.5159173    .3551859
edlevfa {c |}        -.1034452   .0309307    -3.34   0.001    -.1640682   -.0428222
edlevmo {c |}        -.1907008   .0294927    -6.47   0.000    -.2485055   -.1328961
yihh {c |}        -9.12e-06   2.21e-06    -4.13   0.000    -.0000134   -4.79e-06
_cons {c |}        -9.692629   2.286844    -4.24   0.000    -14.17476   -5.210496
/athrho {c |}        -.5450811   .3065517    -1.78   0.075{col 58}-1.145911    .0557492
rho {c |}        -.4968245   .2308841{col 58}-.8163951    .0556915
Wald test of indep. eqns. (rho = 0): chi2(      1      ) =           3.16         Prob
> chi2 =       0.0754
```

AGED 19-35, Italy

Probit model with sample selection

Number of obs	= 4748
Censored obs	= 1076
Uncensored obs	= 3672
Wald chi2(30)	= 540.31
Log pseudo-likelihood = -3313.429	Prob > chi2 = 0.0000

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
outcome						
postgrad	.6414009	.5432885	1.18	0.238	-.423425	1.706227
degree	.2520241	.1190835	2.12	0.034	.0186248	.4854235
degshort	.8023629	.2681106	2.99	0.003	.2768758	1.32785
highsec	.4382119	.081328	5.39	0.000	.278812	.5976118
vocsec	.5676649	.1391879	4.08	0.000	.2948615	.8404682
age	.0460398	.1070506	0.43	0.667	-.1637755	.2558551
age2	-.0003269	.0018733	-0.17	0.861	-.0039985	.0033447
women	-.6526722	.0714832	-9.13	0.000	-.7927768	-.5125677
married	-.272403	.1322821	-2.06	0.039	-.5316712	-.0131348
divorced	.1170358	.2352175	0.50	0.619	-.3439819	.5780536
cf	.715135	.1294258	5.53	0.000	.4614652	.9688049
partner	-.0456981	.1488197	-0.31	0.759	-.3373794	.2459832
piemvdo	-.073763	.1398914	-0.53	0.598	-.347945	.200419
trentino	.924319	.2890659	3.20	0.001	.3577603	1.490878
veneto	.1977635	.1619348	1.22	0.222	-.1196228	.5151499
friuli	-.0523685	.2574418	-0.20	0.839	-.5569452	.4522082
liguria	.2373107	.2100704	1.13	0.259	-.1744196	.649041
emilia	.3230599	.1402164	2.30	0.021	.0482409	.5978789
toscana	-.2661657	.1510243	-1.76	0.078	-.562168	.0298365
umbria	.0662675	.1953779	0.34	0.734	-.316666	.4492011
marche	.0164947	.1582468	0.10	0.917	-.2936633	.3266528
lazio	-.4641812	.1619628	-2.87	0.004	-.7816224	-.1467399
abruzzi	-.656802	.1856379	-3.54	0.000	-1.020646	-.2929584
molise	-.4519458	.2828029	-1.60	0.110	-1.006229	.1023378
campania	-1.297645	.1372101	-9.46	0.000	-1.566572	-1.028718
puglia	-1.082966	.1447096	-7.48	0.000	-1.366592	-.7993406
basilicata	-.6930408	.2860972	-2.42	0.015	-1.253781	-.1323007
calabria	-1.202017	.1910575	-6.29	0.000	-1.576483	-.8275516
sicilia	-.9134984	.151418	-6.03	0.000	-1.210272	-.6167246
sardegna	-.4918886	.1502445	-3.27	0.001	-.7863625	-.1974148
_cons	.0083467	1.521795	0.01	0.996	-2.974317	2.991011
select						
highsec	-.8867349	.0977603	-9.07	0.000	-1.078341	-.6951282
vocsec	.3240331	.1858263	1.74	0.081	-.0401797	.6882459
age	.6695074	.0860314	7.78	0.000	.5008889	.8381258
age2	-.0094346	.0016656	-5.66	0.000	-.0126991	-.0061701
women	-.1961335	.0790962	-2.48	0.013	-.3511592	-.0411078
married	.7015465	.145858	4.81	0.000	.41567	.9874229
cf	.5256314	.1476121	3.56	0.000	.2363171	.8149457
partner	.449092	.223059	2.01	0.044	.0119044	.8862796
piemvdo	.1317263	.1569133	0.84	0.401	-.1758181	.4392706
trentino	.0750195	.2343629	0.32	0.749	-.3843233	.5343623
veneto	.1937603	.1585368	1.22	0.222	-.1169662	.5044867

```
friuli {c |}         .0474835   .2311645     0.21   0.837    -.4055905    .5005575
liguria {c |}        -.0438994    .238491    -0.18   0.854    -.5113331    .4235343
emilia {c |}         .1972286   .1655727     1.19   0.234     -.127288    .5217452
toscana {c |}         .0503735   .1591043     0.32   0.752    -.2614653    .3622122
umbria {c |}         .0368928   .2233973     0.17   0.869    -.4009578    .4747434
marche {c |}        -.3969696   .1574485    -2.52   0.012     -.705563   -.0883763
lazio {c |}        -.3914983   .1618071    -2.42   0.016    -.7086343   -.0743622
abruzzi {c |}          .065318   .1947829     0.34   0.737    -.3164494    .4470854
molise {c |}         .4684162   .3108017     1.51   0.132    -.1407438    1.077576
campania {c |}        -.1256722   .1545387    -0.81   0.416    -.4285625    .1772181
puglia {c |}         .1244044   .1729246     0.72   0.472    -.2145216    .4633305
basilicata {c |}        -.5654334   .2742065    -2.06   0.039    -1.102868   -.0279985
calabria {c |}        -.1201749    .232019    -0.52   0.604    -.5749238    .3345739
sicilia {c |}         .0571263   .1799155     0.32   0.751    -.2955016    .4097542
sardegna {c |}        -.0558548    .185414    -0.30   0.763    -.4192596    .3075499
edlevfa {c |}        -.1119018   .0267769    -4.18   0.000    -.1643834   -.0594201
edlevmo {c |}        -.1897624   .0268866    -7.06   0.000    -.2424592   -.1370656
yihh {c |}        -8.55e-06   2.00e-06    -4.28   0.000    -.0000125   -4.63e-06
_cons {c |}        -8.018195   1.087017    -7.38   0.000    -10.14871   -5.887681
/athrho {c |}         -.384228   .2100079    -1.83   0.067{col 58}-.7958359    .0273799
rho {c |}        -.3663736   .1818186{col 58}-.6617023    .0273731
Wald test of indep. eqns. (rho = 0): chi2(1) = 3.35         Prob > chi2 =       0.0673
```

AGED 19-35, Italy

Probit model with sample selection

Number of obs	=	4748	
Censored obs	=	1076	
Uncensored obs	=	3672	
Wald chi2(39)	=	499.02	
Prob > chi2	=	0.0000	

Log pseudo-likelihood = -3345.289

	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
outcome						
degrsc	.4321517	.2556893	1.69	0.091	-.0689902	.9332935
degrmed	-.393396	.2628575	-1.50	0.134	-.9085872	.1217951
degring	.2143359	.279553	0.77	0.443	-.3335779	.7622496
degrarch	.6522988	.4169305	1.56	0.118	-.1648701	1.469468
degrecst	.5966711	.2350361	2.54	0.011	.1360088	1.057333
degrposo	-.3153808	.3413374	-0.92	0.356	-.9843897	.3536282
degrgiur	-.1216079	.2867909	-0.42	0.672	-.6837078	.4404919
degrlet	.5291881	.198749	2.66	0.008	.1396472	.9187289
othedegr	.082002	.2456015	0.33	0.738	-.399368	.563372
istprof	.4839962	.1294849	3.74	0.000	.2302105	.7377819
isttec	.3323901	.0839929	3.96	0.000	.167767	.4970132
liccsl	.2282857	.1765361	1.29	0.196	-.1177187	.5742901
licart	.4795814	.226021	2.12	0.034	.0365882	.9225745
magistr	.260848	.1704866	1.53	0.126	-.0732996	.5949956
otherdip	.8857177	.5776638	1.53	0.125	-.2464826	2.017918

[…]

AGED 19-35, Italy

Probit model with sample selection — Number of obs = 4748
Censored obs = 1076
Uncensored obs = 3672
Wald chi2(31) = 493.70
Log pseudo-likelihood = -3352.874 — Prob > chi2 = 0.0000

	Coef.	Std. Err.	z	P>z	[95% Conf.	Interval]
outcome						
grade	.2903267	.1120429	2.59	0.010	.0707267	.5099267
istprof	.2788955	.1431266	1.95	0.051	-.0016275	.5594186
isttec	.1339298	.1037738	1.29	0.197	-.0694632	.3373228
liccsl	.0259328	.1844051	0.14	0.888	-.3354945	.38736
licart	.2761999	.2350365	1.18	0.240	-.1844632	.7368629
magistr	.0553255	.1801817	0.31	0.759	-.2978241	.408475
otherdip	.6813513	.5750778	1.18	0.236	-.4457805	1.808483
age	.0216144	.0108203	2.00	0.046	.000407	.0428218
women	-.6442092	.0717994	-8.97	0.000	-.7849335	-.5034849

[…]