

REFORM OF HIGHER EDUCATION AND SOCIAL GRADIENTS IN UNIVERSITY GRADUATES' OUTCOMES^{*}

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Abstract

In 2001 a university reform (also known as the “3+2”) shortening the length of undergraduate studies in most college majors was introduced in Italy. We use the 2004 cohort of university leavers to investigate differences in social gradients between university graduates from “short” (3-year) and “long” (pre-reform) degrees in some educational and employment outcomes. Our analysis shows that social gradients are not evident neither on degree performance nor on hourly wages conditional on employment, irrespective of degree duration. However, after the introduction of the “3+2” reform individuals with low socio-economic status are relatively less likely to continue in postgraduate education and more likely to have switched to short degrees, which are also the degrees paying lower wages irrespective of social status. We conclude that, as shown by other studies, the reduction of degree length might have increased participation into HE but does not appear to have had an equally effective role in reducing labor market inequalities among university graduates with different socio-economic status.

KEYWORDS. Higher education reform, Italy, Labor market, Social gradient, University
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1. Introduction

The first decade of the new millennium has been a period of profound changes in several European countries' Higher Education (HE, hereafter) systems. In seven governmental meetings (Paris 1998, Bologna 1999, Prague 2001, Berlin 2003, Bergen 2005, London 2007, Leuven 2009) many European countries set the main principles for the development of an integrated and coherent European Higher Education Area (EHEA).¹ The main changes, envisaged to promote labor mobility among member countries, involved a harmonization of the structure of university programmes, as well as the introduction of a credit system to facilitate the mutual recognition of degrees across countries and higher education institutions (HEIs, hereafter). We will refer to this process as the “Bologna process”, named after the place where agreements to build an EHEA were firstly formalized, the University of Bologna with the signing in 1999 of the Bologna declaration by Ministers of Education from 29 European countries.

Italy was among the first countries to change its HE system according to the Bologna process' guidelines. In particular, a binary single-tier structure, in which students could enroll into either ‘long’ (*Laurea*) or ‘short’ (*Diploma universitario*) degrees was abandoned in favor of a unitary two-tier system. This restructuring of university degrees implied, among other things, a shortening of undergraduate studies in many college majors, such as Engineering (from five to three years) and Economics (from four to three years) just to take two examples.

One of the goals of the “3+2” reform was to ensure a larger diffusion of HE among the population. This was particularly important for Italy which, before the reform, lagged behind

¹ Signatory countries were from 1999: Austria, Belgium, Bulgaria, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, United Kingdom; from 2001: Croatia, Cyprus, Liechtenstein, Turkey; from 2003: Albania, Andorra, Bosnia and Herzegovina, Holy See, Russia, Serbia, Republic of Macedonia, from 2005: Armenia, Azerbaijan, Georgia, Moldova and Ukraine, from May 2007: Montenegro.

in terms of number of university graduates, university drop-out rates and actual length of university studies. Indeed, it was common for Italian students to complete undergraduate studies in their late twenties.

Recent research has shown that the reform achieved these objectives. It increased participation in HE (Cappellari and Lucifora, 2009) and reduced drop-out (Di Pietro and Cutillo, 2008). Empirical analyses also show that the reform had a differential effect on individuals with different family backgrounds and mostly benefitted able individuals coming from lower backgrounds. To put it shortly, the reform has increased the equality of educational opportunities.

We focus here on a different, related, but relatively unexplored issue: we investigate whether the “3+2” reform also had a role in equalizing the education and labor market outcomes of individuals once they have overcome the first threshold of enrolling in HE and the second threshold of completing their undergraduate studies. In particular, we investigate whether – provided that it increased equality of educational opportunities – the reform also helped remove the social advantage of some groups in the labor market for university graduates. We consider four outcomes of university graduates. The first is the degree final grade obtained, the second is the likelihood to enroll in postgraduate studies, the third is the wage obtained in the labor market and the last is job satisfaction with respect to wages, the last two outcomes are conditional on employment. Our objective is to assess whether social gradients in educational and employment outcomes still persist after the introduction of the “3+2” reform, and to give an idea of the magnitude of the advantage given by parental socio-economic status.

The structure of the paper is as follows. The next section briefly introduces and discusses the “3+2” reform. Section 3 reviews the related literature, with special focus on

Italy. Section 4 and 5 describe the data and the empirical strategy used, respectively. Section 6 discusses the main result and Section 7 concludes.

2. The Italian education system and the “3+2” reform

Italy has a tracked upper secondary school system. At the age of 14 students must choose among three broad tracks: academic, technical and vocational.² University entry is not selective, except for few majors (such as Medicine and Dentistry, for instance), and all individuals who completed five years of upper secondary education and obtained a Diploma by passing the central exit examination (*Esame di Stato*) are entitled to enroll in HE.

Before 2001, the Italian higher education system was characterised by a binary single-tier structure, in which students could enrol into either ‘long’ (four to six years, *Laurea*) or ‘short’ (two years, *Diploma universitario*) courses in a selected number of fields. Short courses, however, were not a popular choice: for example, among the high school graduates of 1998 only 11 percent opted for the two year degrees. Long courses can be considered by far the most relevant form of university education under the old system.

In the new HE system post-2001, students enroll into a first three-year cycle (*Laurea breve*), and, after graduation from the first tier, they can continue university studies to pursue a second two-year degree (*Laurea magistrale*).³ The new structure is often referred to as the “3+2” system.⁴ However, in some college majors even after the reform degrees maintained a unitary structure with four-year to six-year durations (single-cycle degrees, *Lauree magistrali a ciclo unico*). These are often degrees necessary to enter regulated professions whose exercise requires passing a qualification exam, such as the Medical professions. The complete

² In Italy the age of compulsory schooling is currently 16.

³ We will often refer to *Laurea breve* and *Laurea magistrale* as First-level and Second-level degrees, respectively.

⁴ For a more detailed description of the “3+2” reform see Cappellari and Lucifora (2009).

list of single-cycle degrees is: Medicine and Surgery (6 year), Dentistry (5 years), Veterinary (5 years), Pharmacy and Industrial Pharmacy (5 years), Architecture (5 years), Construction Engineering (5 years), Teaching (4 years).⁵

There are many reasons why the restructuring of university studies may have changed the social gradients in both educational and employment outcomes. A reduction in the length of undergraduate studies is likely to reduce both up-front and non-pecuniary costs of studying, benefiting therefore poor and/or low ability students. Hence, from this side the reform will increase equal opportunities in undergraduate education. Moreover, we may expect a reduction in the returns to undergraduate degrees following the switch to a “mass university system”. This may happen for a number of reasons: a pure “supply effect”; a reduction in the signaling value of undergraduate education; changes in the ability distribution of university graduates; a lower stock of human capital. In turn, lower returns of university degrees may induce some individuals to pursue more years of higher education by enrolling into the second tier, and it may well be that progressions to post-graduate studies depend on family background. To put it differently, the expansion of higher education and the equality of educational opportunities in undergraduate education may not automatically translate into higher equality in the second tier of HE and as a consequence, in the labor market. This phenomenon has for instance been observed in other countries, such as for instance the UK (Machin and Blanden, 2004), where the expansion of HE mainly benefitted relatively wealthy individuals.

3. Past literature

⁵ The degree in Law was converted to a single-cycle structure as of 2003.

There are at least three streams of literature that are worth mentioning for the purpose of the analysis in this chapter. The first concerns similar HE reforms reducing the length of undergraduate degrees that were implemented in other countries to comply with the Bologna process. The second relates to the effect of the Italian “3+2” reform on individual outcomes before obtaining a degree, such as college enrolment and drop-out. The third and last stream pertains to the existence and magnitude of a social gradient in tertiary education and labor market outcomes in Italy.

We were able to find only one study evaluating the effect of HE reforms reducing the length of undergraduate studies in European countries other than Italy. Cardoso et al. (2006) investigate the consequences of the “Bologna process” in Portugal on the demand for higher education. The study exploits the fact that universities had the choice to implement the reform and restructure academic programs in the academic year 2005-2006, or to postpone it up to two years. They show that degree courses whose curricula were modified in order to comply with the new principles recorded an increase in demand. This positive effect is found to be stronger in those institutions taking the lead in the reform process, which the authors interpret as a signaling (of quality) effect.

The literature on the consequences of the “3+2” reform in Italy is richer. Di Pietro and Cutillo (2008) use Italian National Statistical Institute’s (ISTAT, henceforth) survey data on high school leavers and show a reduction in drop-out rates after the reform; D’Hombres (2007) comes to the same conclusion using the same data and different econometric strategies. Cappellari and Lucifora (2009) use the same survey to investigate the effect of the reform on the probability of enrolling in HE. They employ a before-after strategy and show that the reform significantly increased the probability of going to college and that this effect was stronger for individuals with good upper secondary schooling results but low family

background. Hence, the reform led to increasing equality of opportunities at entry into HE. Although these studies show that the reform achieved the objectives of widening participation into HE and of reducing drop-out rates, they are not able to explain through which pathways these effects took place. Bratti et al. (2010) use a case study for the Faculty of Economics of a university located in the Centre of Italy and show that the reform reduced student workloads and raised student outcomes measured in terms of the average marks obtained in first-year exams and the number of exam attempts failed. The authors also show that despite this effect being consistent with both an increase in Universities' efficiency and a reduction in HE standards after the reform, several pieces of evidence points to the latter explanation.⁶

The literature that investigates the social gradients in tertiary education and labor market outcomes in Italy is also quite rich. Several studies report positive correlations between family background and various forms of university achievement. Individuals with a good family background (e.g., with college educated parents) are more likely to enroll in HE (Di Pietro and Cutillo, 2008, Cappellari and Lucifora, 2009), less likely to drop out from university (Di Pietro, 2006, D'Hombres, 2007, Di Pietro and Cutillo, 2008, Cappellari and Lucifora, 2009) and more likely to hold a university degree (Checchi et al. 1999, Checchi and Flabbi, 2007, Checchi et al. 2008). A social gradient exists despite the Italian HE system being highly publicly subsidized (Perotti, 2002) and the policies that were implemented to improve access to HE during the 90s, when a very high number of new degrees and university campuses were created (see Bratti et al. 2008). Various explanations have been advocated for the strong correlation between parents' and children's education, especially for HE, including the existence in Italy of early tracking (Brunello and Checchi 2007, Checchi and Flabbi

⁶ Jacobs and van der Ploeg (2006) warn against the potential risks of a reduction of educational standards following an increase in university competition due to the Bologna process, especially when funding is mainly public and based on input or output measures such as the number of students or the number graduates, whose quality is often difficult to assess.

2007), which reinforces social advantage, and the parking lot hypothesis, according to which individuals from low backgrounds often enroll in HE while continuing to look for a job, and their enrolment and drop-out choices are more sensitive to the status of the labor market (Dornbusch and Giavazzi 2000, Di Pietro 2006).

The social gradient is not limited to tertiary education but extends also to labor market outcomes. Graduates with good family backgrounds are more likely to experience better outcomes when it comes to entering the labor market. Biggeri et al. (2001) show that individuals with highly educated parents have faster university-to-work transitions. Di Pietro and Cutillo (2006) find that university graduates with parents with prestigious jobs earn higher wages and Bagüès et al. (2008) show that graduates with more educated parents also enjoy wage premia. There are different explanations for this social gradient observed in employment outcomes. It might reflect graduates' *unobserved ability* not captured by the secondary schooling variables, degree final grade or other *observed ability* controls normally included in empirical studies or it might act as a proxy of the graduate's social network helping her to find a good job.⁷

4. Data

Since 1992, every three years, ISTAT has regularly collected data on the education and employment outcomes of Italian university graduates through a Graduate Employment Survey⁸ (GES, hereafter). The target population is formed by university graduates of a given year, and a stratified sample from such population is interviewed three years after graduation. GES gathers information on university graduates' family background (parents' education and

⁷ Recent empirical work, however, does not seem to support this second explanation. Indeed, for Italy, Pellizzari (2009) and Sylos-Labini (2004) find a wage penalty for finding a job through informal methods such as family referrals. However, the latter finds positive returns to having direct knowledge of the employer before being hired.

⁸ *Indagine campionaria sull'inserimento professionale dei laureati.*

occupation), secondary education (school track, secondary school final grade, etc.), undergraduate university education (major, degree final grade, institution attended, completion time, etc.), and about post-graduate education (enrolment, major, etc.) and the labor market outcomes (labor force status, type of occupation, working hours, wages, etc.).

The latest available GES refers to the graduates of 2004, interviewed in 2007. From the perspective of our analysis, 2004 is a special year in that university graduates from both the old and new regime obtained a degree in that year. Specifically, the last cohort of students enrolling in the old regime (academic year 2000/2001) and the first cohort from the new regime (enrolling in 2001/2002) completed their studies in 2004. Therefore, we are able to observe individuals from the two groups obtaining a university degree in the same time period, so that we can exclude that any difference in their post-graduation behavior are driven by differences in the business cycle, which is typically a problem with before-after comparisons.

Thence, the survey population is represented by all Italian university graduates in the year 2004 from both long (“old” degrees and unique-cycle degrees) and short (three-year) degrees from all Italian universities, 167,886 and 92,184 graduates, respectively. The survey sample is stratified by gender, HE institution and type of degree course and includes 26,570 graduates from long degree courses and 20,730 from short degree courses.

In order to perform a meaningful analysis and to compare like-with-like, we decide to drop older graduates and those who graduated with a delay with respect to the legal length. In particular, we first drop graduates older than 29 in 2007 (17,932) and those who graduated with delay (13,380). So doing, we mean to exclude very old graduates who enrolled in the pre-reform system who may have very different levels of ability from those of the new graduates. For the same reason, we exclude graduates who took longer than expected to

complete their studies, since by construction the maximum delay observed for the new graduates is zero for short degree graduates, who enrolled in 2001 and graduated in 2004. Applying these criteria we are left with 15,824 individuals (6,554 long degree and 9,270 short degree graduates). To check the robustness of our analysis to this sample definition, we also considered an extended control group, that includes individuals from long degrees who graduated with a one-year delay. Indeed, in light of the fact that long degrees may be more difficult or that educational standards might have been reduced in short degrees (Bratti et al. 2010), this second definition could provide a better comparison group. In this case, the selected sample includes 20,105 individuals (10,835 long degree and 9,270 short degree graduates).

We consider four different university graduates' outcomes. The first one is the undergraduate degree final mark, which varies between 66 and 110 *cum laude* (recoded to 111). The second is the probability of enrolling in post-graduate education. The third outcome is hourly wage,⁹ and the fourth is job satisfaction with respect to hourly wages. The last two outcomes are conditional on employment. The description of the dependent and the independent variables is reported in the Appendix.

[TABLE 1 about here]

Table 1 reports the sample means for some of the covariates used in the econometric analysis and the outcome variables distinguished by type of degree, short vs. long. It is clear that graduates with short degrees have a lower socio-economic and academic background, and are of course younger. Graduates with short degrees have lower final grades, earn lower

⁹ Hourly wage was computed by dividing monthly labour income by the number of weekly working hours multiplied by 4.2.

hourly wages, are more likely to continue in HE and more satisfied with their wages. The differences between long and short degrees generally fall when the second definition of the control group is considered, although they remain statistically significant.

4. Econometric strategy

The university graduates' outcomes will be modeled in the following way:

$$y_i = \alpha_0 + \alpha_1 FAMILLY_i + \alpha_2 SHORT_i + \alpha_3 (FAMILLY_i * SHORT_i) + \mathbf{x}'_i \beta + \epsilon_i \quad (1)$$

where y_i is the university graduates' outcome, $FAMILLY_i$ is the measure of family background we are interested in, $SHORT_i$ is a dichotomous indicator which takes on value one for individuals enrolled in short degrees and zero otherwise, \mathbf{x}_i is a vector of individual characteristics and ϵ_i a classical error term.

We are interested in assessing the differences in the social gradient between long and short degrees, which are captured by the $FAMILLY_i * SHORT_i$ interaction terms. We do not attribute to these coefficients a "causal" interpretation, though. The observed correlations between family background and the outcomes may either reflect some other unobserved individual trait such as innate ability or they may capture a true causal relationship (e.g., educated parents may help students with their homework, buy better educational inputs or help them find good jobs). We are mainly interested here in assessing robust statistical correlations, and our main concern is to avoid that the differences in the social gradient between the two different types of degrees is capturing the effect of some other unobservable characteristic systematically differing between individuals enrolled in long and short degrees. To put it briefly, we want the difference in the effect of social gradients by long and short degrees to be driven only by degree length. For this reason, it is important to control for all

characteristics that may covary with both length of studies and outcomes, thereby inducing spurious correlation if omitted. In this respect, some important factors appear to be family background, proxied by parental education (the highest education between parents, codified using the International Standard Classification of Education, ISCED hereafter), gender and academic ability, proxied by the school track, final secondary school grade and their interaction. So, our main identifying assumption is that *conditional on the covariates we included, the degree length is not capturing any other systematic difference between individuals enrolled in long and short degrees that also interacts with family background leading to better (or worse) graduates' educational or labor market outcomes*. In short, conditional on the covariates long and short graduates are “the same” except for the length of their degrees, and a short degree shows what would be the social gradient for an individual enrolled in a long degree had he chosen the shorter degree.

In order to increase the credibility of this assumption, we also estimated specifications including college major fixed effects and Higher Education Institutions (HEIs) fixed effects. There are two main reasons to include these fixed effects. The first is that, as we said, the reduction in degree length was not the same in all majors. Hence, the reform is likely to have changed also the college major mix among graduates, especially by socio-economic background. Also the distribution of graduates across HEIs may have changed, in case some institutions expanded their offer especially of short degrees. Controlling for both college major and HEIs is also important as – irrespective of degree length – educational standards and labor market outcomes are likely to systematically differ both among college majors (Ballarino and Bratti 2009, Buonanno and Pozzoli 2009) and among HEIs (Brunello and Cappellari 2008, Bagüès et al 2009, Di Pietro and Cutillo 2006), which in turn are likely to be correlated with family background.

When both college major and HEIs fixed effects are included in the analysis, we will be investigating the differences in the social gradients between long and short degrees' graduates *in the same college major and from the same HE institution*. This increases the likelihood of comparing like with like but at the same time in this way we will estimate the *net effect of family background*.¹⁰

5. Results and discussion

In this section we describe the main results of the empirical analysis related to the three outcome variables that we consider. In order to assess the robustness of our results to potential *omitted variables bias*, we often estimate several specifications, progressively “saturating” the models. In each Table we present two sets of results, one for the narrower comparison group of long-degree individuals graduating in time, and the other for the broader comparison group including also individuals graduating with one year delay.

University degree final grade

In the GES 2004 university degree final grade is observed in interval form for grades below 100 ($\leq 79, 80-89, 90-94, 95-99$) and continuously above this threshold. For this reason, we use *interval regression* (see Stewart, 1983). However, in the specifications including

¹⁰ Due to small cell sizes we could not include HEIs (67) by college major (16) interactions, that is we do not allow HEIs to have differential effects on graduates' outcomes by college major. Moreover, the specification in equation (1) assumes that the effect of family background is the same across college majors and HEIs. In general both college major and HEIs can be considered as *confounding factors* when assessing the effect of short degrees, but also as *mediating factors*, as the choice of specific majors or HEIs may be affected by socio-economic status. An analysis of the effect of family background on college major and HEIs is beyond the scope of this chapter, and in any case, since we only have data on graduates, only analyses conditional on university graduation would be possible with our data.

HEIs fixed effects we failed to obtain standard errors for some of the coefficients. This is likely to be due to the small number of individuals sampled from some institutions. For this reason, we had to switch to OLS. In particular, for the cases in which the grade was observed in interval form, we simply imputed the central value in the interval.¹¹ Although this naïve procedure is known not to give consistent estimates, a comparison between OLS and interval regression estimates of the model with college major fixed effects shows only minor differences, see , columns 3 and 4 (10 and 11 for the second comparison group) in Table 2. This is likely to be the case as for the large majority of individuals we observe the grade precisely and not in interval form. This leads us to conclude that estimating the model with OLS is not particularly harmful in our specific case. Accordingly, OLS estimates are reported in columns 5-7 and 12-14.

Parental background is measured by the maximum educational level between father and mother measured with the ISCED scale, a variable we call HISCED. Table 2 shows an “inverse” social gradient for the final grade, that is individuals from the bottom class (HISCED 1-2) outperform those from the medium class (HISCED 3-4). In the pooled sample this gradient shows up for individuals with HISCED 3-4, while splitting the sample by gender we observe that the gradient is at HISCED 5-6 for men and HISCED 3-4 for women. In all cases, the social gradient is not differentiated between short and long degrees. A possible interpretation of these results is that high socio-economic status individuals may have better connections in the labor market and find good jobs irrespective of degree performance (and degree length), that is they may have lower economic returns to effort.

[TABLE 2 about here]

¹¹ For instance, 84.5 for the 80-89 interval.

Probability to enroll in postgraduate studies

It must be noticed that postgraduate education means something very different for long and short degrees. For individuals graduating from long degrees, post-graduate education essentially coincided with PhD programs, as first degrees were approximately equivalent to a foreign master degree. Very different is the case in the new regime, where the reform introduced a totally new study course, the two-year second tier. It is therefore natural to expect that this widening of the supply of post-graduate education exerted a positive effect on the probability of post-graduate enrollment, e.g. by meeting the needs of individuals who desire some post-graduate education, but without facing the burden of a PhD.

While the overall positive effect of the reform is expected, less obvious is whether there are differences in continuation rates among individuals with different family backgrounds, conditional on holding the same type of degree. Did the reform increase post-graduate education for all university graduates? Or were these increases unevenly distributed by social class? Answering these questions will indicate the extent to which inequalities of opportunities were actually reduced by the reform or they were simply shifted upward in the education ladder.

Table 3 reports the coefficients from a logit model for the continuation probability, in which the dependent variable takes on value one in case the individual continued in postgraduate education and zero otherwise. Logit coefficients on dummy variables multiplied by 100 can be interpreted as the percent changes in the odds determined by “switching on” the characteristics represented by the dummy. As we said, the positive effect of short degrees on the probability to continue was largely expected. The most interesting result is that in short degrees both men and women from better backgrounds are more likely to continue in

postgraduate education. For men, the relative advantage involves only the higher class (HISCED 5-6), while for women both the medium (HISCED 3-4) and the higher class are more likely to continue in postgraduate education after short degrees. The magnitude of the effect is large and the coefficients are precisely estimated. When the first definition of the control group is adopted, men (women) with HISCED 5-6 have a 51.3 (89) percent higher odds than those with HISCED 1-2 (columns 5 and 6). For women, also individuals with HISCED 3-4 have an advantage over those with lower HISCED. Results are very similar when the second definition of the control group is used and robust to adding control variables.

[TABLE 3 about here]

Wages conditional on employment

Labor incomes are observed in discretized form.¹² Given the very high number of categories (181), however, we used OLS. Following most of the literature estimating earnings equations, we used the logarithmic transformation of hourly wages as the dependent variable.¹³ As we do not have convincing exclusion restrictions to estimate a sample selection model, we simply run an analysis conditional on employment. This is likely to be a problem especially for females, for whom labor force participation is not universal, although less in our case than in others since we consider university educated women, who generally exhibit high attachment to the labor market (Bratti, 2003). In order to focus on a homogenous sample, for the estimation of earnings equations we only considered individuals who found their current job after graduation, and excluded those who started the current job while still in education.

¹² Monthly income categories increasing by 10€ up to 2,000€ per month, then by 100€ above this threshold.

¹³ In this case, the coefficients on discrete independent variables show the percent increase in wages associated with those variables.

Table 4 shows a negative wage premium for short degrees. In the pooled sample this amounts to 7.1 percent when using the first control group and to 6.5 percent when the second control group is used, in our preferred specifications controlling for major and HEIs fixed effects (columns 5 and 12, respectively). However, from the gender specific estimates in columns 6-7 and 13-14 it is clear that short degrees are especially penalizing for men, for whom negative premia are -12 percent or -9.3 percent according to the specific control group adopted. As we said in Section 2 different justifications can be given for this lower return to short degrees, it might come from a pure supply effect, an education signaling effect, the lower ability of new graduates or just the lower human capital content of short degrees. However, the fact that there are gender differences in the returns to short degrees is not easy to reconcile with any of these explanations, also in the case men and women are imperfect substitutes in the labor market, as the expansion of HE especially benefitted women who are now becoming increasingly more educated than men. One possible explanation for this finding is that for women the lower human capital content of short degrees is more than compensated by the “preference” of employers for younger (short degrees) over older (long degrees) female graduates, which may ensure a longer period of stable labour market attachment before experiencing the interruptions related to childbearing. Alternatively, one may think that most women are likely to be overeducated and earn similar wages irrespective of degree length.

In general, conditional on the other covariates there is no social gradient in the return to a degree, neither short nor long. This does not rule out of course the possibility that low family background graduates could be over-represented in short degrees, a fact that will be investigated below. It is anyway useful to stress that our analysis refers to early labour market

outcomes. We cannot exclude that a high socio-economic status may help university graduates to enter jobs with steeper earnings profiles or enhance their career opportunities.

[TABLE 4 about here]

Worker's wage satisfaction conditional on employment

Table 5 reports the coefficients of an ordered logit for job satisfaction regarding earnings. The results show a positive effect on satisfaction for graduates in short degrees in the pooled sample, which is however not robust to splitting the sample by gender. No significant social gradient emerges. Interestingly, graduates from shorter degrees are more satisfied with their salaries despite being paid less than their counterparts graduating from longer degrees, suggesting that the new graduates may have lower expectations about their job, or at least about their pay.

[TABLE 5 about here]

Discussion

The overall picture provided by the analysis above seems to be that of an educational system which grants equal opportunities in the labor market to individuals, conditional on the type of degree achieved. However, as we already said, conditioning on the type of degree, short vs. long, may mask all the effects of socio-economic status on the labor market outcomes that are mediated by the choice of a specific type of degree. Indeed, we already saw that short degrees produce significant negative wage premia, with respect to long degrees, and this may also explain why individuals from privileged backgrounds who obtained a short

degree tend to enroll in the second tier. It seems like the inequality that still exists in the labor market mainly depends on the type of degree chosen.

As further evidence that this is likely to be the case, we also estimate a model of the probability to switch from long to short degree courses for those graduates who enrolled in HE before the reform was in place. These individuals were offered the alternative of staying in the old degree courses or switch to the new system, that is to shorter degrees that were not available at the time of their enrolment.¹⁴ Table 6 shows the estimates of a logit model where the dependent variable takes on value one if the student made the switch to the new system and zero otherwise. The estimation sample includes individuals who graduated from long degrees and those who graduated in short degrees although they were originally enrolled in long degrees. Clearly, individuals with the highest socio-economic status (HISCED 5-6) were less likely to switch to the new system, their odds are 35.2 lower for men, and 53.6 lower for women, than individuals with parental HISCED 1-2, who are in turn not statistically different from individuals with HISCED 3-4. Our findings suggest that individuals from the low and medium classes did prefer shorter courses and when the new option was introduced they largely took advantage of it. This result is in line with previous evidence, for instance those provided by Rochat and Demeulemeester (2001) who find that low social class individuals generally enroll in short technical courses.

[TABLE 6 about here]

¹⁴ Observations referring to these individuals have been used in the regression analyses of the paper, while including a dummy variable for “switchers” in the relevant conditioning sets. We also estimated the same models excluding “switchers” altogether. Also in this case no significant social gradient emerges in the degree final grade and log hourly wage, while as expected - since low socio-economic status individuals are overrepresented among switchers - there is a decline in the social gradient in the probability of postgraduate studies for short graduates, which turn out to be statistically significant at conventional levels only for women. These additional results are available from the authors upon request.

7. Concluding remarks

Previous research showed that the “3+2” reform increased participation into HE of individuals from less wealthy family backgrounds, by increasing university enrolment and reducing drop-out. Is it possible to conclude from this evidence that the reform was a step further towards equal opportunities in postgraduate education and in the labor market?

Our answer is no. The analysis in this chapter shows indeed that individuals from low family backgrounds are relatively more likely to hold short degrees than better off individuals and that they were more likely to have switched from long to short degrees, in the case they enrolled in the old system. At the same time, our analysis shows a substantial wage gap between university graduates with long and short degrees in favor of the former. Curiously enough, this wage penalty is larger for men. Thus, low family background individuals are more likely to hold degrees giving lower wage returns. By contrast, we do not find any additional advantage of high background individuals in the labor market, conditional on the type of degree, that is the return to degrees does not show a social gradient. The same is true for the degree final grade and job satisfaction with respect to wages. To conclude, our findings suggest that the “3+2” reform instead of reducing inequality might have simply shifted forward the time of inequality, which now shows up at higher levels of education with respect to the past.

Appendix. Variables description

DEGREE FINAL GRADE. It is the final grade obtained in the undergraduate degree.

PROBABILITY TO CONTINUE IN POSTGRADUATE EDUCATION. It is a dummy that takes on value one if an individual enrolled in postgraduate education and zero otherwise.

LOG HOURLY WAGE. It is the natural logarithm of hourly wage.

JOB SATISFACTION ABOUT WAGES. It is a discrete ordered variable that takes on the values: 4= very satisfied, 3 = quite satisfied, 2 = not very satisfied, 1 = not satisfied at all.

SHORT DEGREE. It is a dummy that takes on value one if an individuals graduated in a short degree and zero otherwise.

HISCED. It is the highest between mother's and father's educations according to the International Standard Classification of Education (ISCED). We group HISCED into HISCED 1-2 (primary and lower secondary), HISCED 3-4 (upper secondary and post-secondary non tertiary education), HISCED 5-6 (first stage and second stage of tertiary education). HISCED 1-2 is used as the reference group in the econometric models.

AGE 25-29. A dummy for individuals 25 or older (the estimation sample only includes individuals younger than 30). Younger graduates (less than 24) are the reference group.

FEMALE. A dummy which equals one if the individual is female and zero otherwise.

UPPER SECONDARY SCHOOL TYPE. Dummies for the secondary school type. We consider the following seven school types provided by ISTAT, which can be grouped in three main tracks. Academic track: scientific lyceum, classical lyceum, language lyceum; Technical track: technical school; Vocational track: art school, pedagogic school, vocational school. Scientific lyceum is the reference group.

UPPER SECONDARY SCHOOL FINAL GRADE. Final grade obtained at the upper secondary schooling central exit examination. It ranges between 36 and 60.

WORKING WHILE STUDYING. It is a dummy which takes value one if the individual worked while studying and zero otherwise.

COLLEGE MAJOR. Dummies for the first degree college major. We consider the following groups provided by ISTAT: scientific; chemical-pharmaceutical; geo-biological; medical; engineering; architecture; agriculture; economics-statistics; politics-sociology; law; literature; languages; psychology; physical education; defense and police. Economics-statistics is the reference group.

HIGHER EDUCATION INSTITUTIONS (HEIs). Dummies for HEIs. The reference is set to the University of Padua.

SWITCHER. It is a dummy that takes on value one if an individual who enrolled in the pre-reform system switched to the new regime (short degree) and zero otherwise. Non-switchers are the reference group.

REGION. Dummies for 20 Italian administrative regions (NUTS-2). Piedmont is the reference group.

PART-TIME JOB. It is a dummy that takes on value one if an individual has a part-time job and zero otherwise. Full-time jobs are the reference group.

TEMPORARY JOB. A dummy that takes on value one if an individual is working with a fixed term contract and zero otherwise. Permanent jobs are the reference group.

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Tables

Table 1. Means and difference in means of selected variables by length of degree

Variable	control group: old graduates "on time"			control group: old graduates with one year of delay at maximum		
	long	short	A-B	long	C-B	
	A	B		C		
<i>Socio-economic status</i>						
HISCED 1-2	0.216	0.287	-0.071 ***	0.228	-0.059 ***	
HISCED 3-4	0.384	0.445	-0.061 ***	0.400	-0.045 ***	
HISCED 5-6	0.400	0.268	0.132 ***	0.372	0.104 ***	
<i>Secondary school type</i>						
scientific lyceum	0.499	0.424	0.074 ***	0.488	0.064 ***	
classical lyceum	0.245	0.148	0.097 ***	0.227	0.078 ***	
language lyceum	0.036	0.038	-0.005	0.037	-0.003	
art school	0.008	0.014	-0.006 ***	0.011	-0.004 **	
pedagogic school	0.044	0.078	-0.033 ***	0.045	-0.032 ***	
technical school	0.152	0.251	-0.099 ***	0.176	-0.074 ***	
vocational school	0.016	0.044	-0.028 ***	0.016	-0.029 ***	
<i>Secondary school final grade</i>	51.864	50.411	1.452 ***	51.297	0.885 ***	
<i>Gender (men)</i>						
women	0.606	0.567	0.038 ***	0.582	0.014 **	
<i>Age (<=24)</i>						
25-29	0.641	0.209	0.433 ***	0.726	0.517 ***	
<i>Degree final grade (66-111)</i>	106.204	103.868	2.337 ***	105.211	1.343 ***	
<i>Log hourly wage</i>	2.095	2.066	0.029 ***	2.079	0.013 ***	
<i>Continuation rate in PG education</i>	0.544	0.656	-0.112 ***	0.496	-0.160 ***	
<i>Job satisfaction about wage (1-4)</i>	2.687	2.721	-0.034 **	2.664	-0.057 ***	

*significant at 10%; **significant at 5%; ***significant at 1%.

Table 2. Degree final grade

	control group: old graduates "on time"							control group: old graduates with one year of delay at maximum						
	all					men	women	all					men	women
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
short degree (sd)	-1.078*** (0.169)	-1.143*** (0.276)	-1.339*** (0.271)	-1.375*** (0.279)	-1.393*** (0.347)	-1.481** (0.645)	-1.292*** (0.346)	-0.697*** (0.155)	-0.730*** (0.250)	-1.097*** (0.245)	-1.117*** (0.254)	-1.080*** (0.312)	-1.207** (0.564)	-0.971*** (0.314)
HISCED 3-4	-0.491*** (0.166)	-0.587** (0.276)	-0.692*** (0.262)	-0.729*** (0.269)	-0.696** (0.274)	-0.805 (0.489)	-0.634** (0.293)	-0.512*** (0.153)	-0.526** (0.218)	-0.566*** (0.202)	-0.590*** (0.210)	-0.577*** (0.210)	-0.836* (0.425)	-0.456** (0.228)
HISCED 5-6	-0.268 (0.208)	-0.271 (0.333)	-0.387 (0.297)	-0.436 (0.306)	-0.526* (0.298)	-1.340** (0.520)	-0.138 (0.348)	-0.418** (0.191)	-0.444* (0.263)	-0.447* (0.232)	-0.471* (0.241)	-0.473* (0.249)	-0.890*** (0.313)	-0.219 (0.328)
HISCED 3-4 * sd		0.163 (0.339)	0.429 (0.323)	0.446 (0.333)	0.360 (0.402)	0.036 (0.732)	0.496 (0.397)		0.031 (0.294)	0.268 (0.278)	0.275 (0.288)	0.239 (0.380)	0.037 (0.726)	0.318 (0.346)
HISCED 5-6 * sd		-0.011 (0.385)	0.572 (0.360)	0.597 (0.374)	0.712* (0.370)	0.998 (0.670)	0.565 (0.470)		0.064 (0.329)	0.590* (0.307)	0.595* (0.320)	0.690* (0.347)	0.594 (0.522)	0.631 (0.430)
majors fixed effects			yes	yes	yes	yes	yes			yes	yes	yes	yes	yes
institutions fixed effects					yes	yes	yes					yes	yes	yes
R2				0.264	0.317	0.339	0.279				0.270	0.328	0.333	0.297
No. observations	15,824	15,824	15,824	15,824	15,809	6,589	9,220	20,105	20,105	20,105	20,105	20,086	8,533	11,553

*significant at 10%; **significant at 5%; ***significant at 1%.

Note. The dependent variable is the degree final grade, which varies in the range 66-111 (110 *cum laude*). Models in columns 1-2 and 8-9 use an interval regression while all the other models are estimated with OLS. Estimates use probability weights. Heteroskedasticity robust standard errors in parentheses. Errors are clustered by HEIs in the model using HEIs fixed effects. The models also include controls for age, gender (except the gender specific regressions), secondary school track, upper secondary school final grade, grade by track interactions, and dummies for working while studying and being a switcher (to the new system). See the Appendix for a detailed description of the variables.

Table 3. Probability to continue in postgraduate education

	control group: old graduates "on time"						control group: old graduates with one year of delay at maximum					
	all				men	women	all				men	women
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
short degree (sd)	1.637*** (0.074)	1.075*** (0.107)	1.406*** (0.110)	1.548*** (0.193)	2.128*** (0.234)	1.269*** (0.202)	1.679*** (0.063)	1.240*** (0.090)	1.482*** (0.094)	1.611*** (0.188)	2.227*** (0.245)	1.333*** (0.172)
HISCED 3-4	0.148** (0.068)	-0.208* (0.124)	-0.143 (0.122)	-0.113 (0.102)	0.201 (0.192)	-0.295* (0.157)	0.154** (0.060)	-0.055 (0.087)	-0.027 (0.087)	0.003 (0.069)	0.351*** (0.131)	-0.163* (0.087)
HISCED 5-6	0.484*** (0.080)	-0.037 (0.122)	0.168 (0.124)	0.218* (0.128)	0.238 (0.160)	0.160 (0.156)	0.482*** (0.070)	0.170* (0.092)	0.294*** (0.094)	0.347*** (0.082)	0.363*** (0.112)	0.365*** (0.095)
degree final grades	0.021*** (0.004)	0.021*** (0.004)	0.027*** (0.005)	0.025*** (0.004)	0.034*** (0.005)	0.021*** (0.007)	0.032*** (0.004)	0.032*** (0.004)	0.031*** (0.004)	0.028*** (0.003)	0.032*** (0.005)	0.026*** (0.006)
HISCED 3-4 * sd		0.600*** (0.140)	0.466*** (0.140)	0.441*** (0.123)	0.175 (0.251)	0.578*** (0.175)		0.473*** (0.110)	0.377*** (0.111)	0.359*** (0.092)	0.069 (0.187)	0.455*** (0.119)
HISCED 5-6 * sd		1.092*** (0.145)	0.796*** (0.148)	0.743*** (0.158)	0.513** (0.217)	0.890*** (0.189)		0.925*** (0.122)	0.727*** (0.125)	0.683*** (0.125)	0.472** (0.194)	0.718*** (0.143)
majors fixed effects			yes	yes	yes	yes		yes	yes	yes	yes	yes
institutions fixed effects				yes	yes	yes			yes	yes	yes	yes
Pseudo R2	0.151	0.156	0.198	0.213	0.288	0.193	0.144	0.147	0.183	0.196	0.269	0.174
No. observations	15,824	15,824	15,824	15,809	6,586	9,207	20,105	20,105	20,105	20,086	8,533	11,540

*significant at 10%; **significant at 5%; ***significant at 1%.

Note. The dependent variable is a dummy indicator which takes value one if an individual enrolled in postgraduate education and zero otherwise. All models are estimated with logit, and the table reports logit coefficients. Estimates use probability weights. Heteroskedasticity robust standard errors in parentheses. Errors are clustered by HEIs in the model using HEIs fixed effects. The sample includes only individuals who found their current work after university graduation. The models also include controls for age, gender (except the gender specific regressions), secondary school track, upper secondary school final grade, grade by track interactions, and dummies for working while studying and being a switcher (to the new system). Job characteristics are two dummies for part-time (vs. full-time) and temporary (vs. permanent) jobs, respectively. See the Appendix for a detailed description of the variables.

Table 4. Log hourly wages

	control group: old graduates "on time"							control group: old graduates with one year of delay at maximum						
	all					men	women	all					men	women
	(1)	(2)	(3)	(4)	(5)			(6)	(7)	(8)	(9)	(10)		
short degree (sd)	-0.033*** (0.012)	-0.005 (0.022)	-0.076*** (0.022)	-0.074** (0.034)	-0.071** (0.034)	-0.120*** (0.045)	-0.052 (0.035)	-0.023* (0.012)	0.005 (0.019)	-0.073*** (0.020)	-0.066** (0.032)	-0.065** (0.032)	-0.093** (0.046)	-0.055* (0.030)
HISCED 3-4	0.005 (0.013)	0.016 (0.026)	0.010 (0.025)	0.007 (0.029)	0.009 (0.029)	-0.061 (0.046)	0.036 (0.030)	0.002 (0.013)	0.008 (0.021)	0.007 (0.020)	0.006 (0.025)	0.008 (0.025)	-0.029 (0.038)	0.022 (0.026)
HISCED 5-6	-0.013 (0.014)	0.023 (0.025)	0.012 (0.025)	0.008 (0.027)	0.013 (0.027)	-0.001 (0.043)	0.012 (0.036)	-0.010 (0.014)	0.017 (0.021)	0.012 (0.020)	0.013 (0.019)	0.017 (0.018)	0.001 (0.037)	0.023 (0.022)
degree final grade	0.002*** (0.001)	0.002** (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.001)	0.001 (0.002)	0.002** (0.001)	0.002** (0.001)	0.001 (0.001)	0.000 (0.001)	0.000 (0.001)	0.001 (0.001)	0.001 (0.001)
HISCED 3-4 * sd		-0.018 (0.029)	0.006 (0.028)	0.009 (0.036)	0.006 (0.036)	0.099* (0.054)	-0.033 (0.038)		-0.015 (0.024)	0.006 (0.023)	0.005 (0.031)	0.002 (0.032)	0.067 (0.046)	-0.024 (0.034)
HISCED 5-6 * sd		-0.069** (0.028)	-0.015 (0.028)	-0.014 (0.034)	-0.016 (0.034)	-0.001 (0.046)	-0.015 (0.042)		-0.075*** (0.025)	-0.022 (0.024)	-0.028 (0.029)	-0.029 (0.030)	-0.004 (0.040)	-0.038 (0.031)
majors fixed effects			yes	yes	yes	yes	yes			yes	yes	yes	yes	yes
institutions fixed effects				yes	yes	yes	yes				yes	yes	yes	yes
job characteristics					yes							yes		
R2	0.075	0.076	0.151	0.170	0.186	0.197	0.182	0.057	0.059	0.117	0.136	0.157	0.156	0.152
No. observations	7,724	7,724	7,724	7,719	7,719	3,177	4,542	10,142	10,142	10,142	10,135	10,135	4,403	5,732

*significant at 10%; **significant at 5%; ***significant at 1%.

Note. The dependent variable is log hourly wage in 2007 Euros. All models are estimated with OLS. Estimates use probability weights. Heteroskedasticity robust standard errors in parentheses. Errors are clustered by HEIs in the model using HEIs fixed effects. The sample includes only individuals who found their current job after university graduation. The models also include for controls age, gender (except the gender specific regressions), secondary school track, upper secondary school final grade, grade by track interactions, dummies for working while studying and being a switcher (to the new system) and region where the individual works. Job characteristics are two dummies for part-time (vs. full-time) and temporary (vs. permanent) jobs, respectively. See the Appendix for a detailed description of the variables. The estimation sample includes only individuals who found their current job after university graduation.

Table 5. Job satisfaction regarding wages

	control group: old graduates "on time"							control group: old graduates with one year of delay at maximum						
	all					men	women	all					men	women
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
short degree (sd)	0.178** (0.074)	0.077 (0.131)	0.249* (0.133)	0.227 (0.143)	0.259* (0.145)	0.182 (0.280)	0.289* (0.165)	0.119* (0.066)	0.027 (0.105)	0.223** (0.109)	0.226** (0.104)	0.256** (0.110)	0.307* (0.163)	0.198 (0.129)
HISCED 3-4	0.004 (0.076)	-0.074 (0.132)	-0.072 (0.133)	-0.062 (0.152)	-0.083 (0.153)	-0.388 (0.254)	0.109 (0.182)	0.024 (0.065)	-0.015 (0.091)	-0.012 (0.093)	-0.003 (0.097)	-0.015 (0.098)	-0.003 (0.151)	0.014 (0.156)
HISCED 5-6	0.170* (0.088)	0.092 (0.140)	0.064 (0.144)	0.066 (0.199)	0.049 (0.192)	-0.197 (0.247)	0.228 (0.232)	0.155** (0.079)	0.088 (0.105)	0.067 (0.107)	0.063 (0.150)	0.051 (0.147)	0.129 (0.124)	0.037 (0.212)
degree final grades	-0.007 (0.005)	-0.007 (0.005)	0.004 (0.005)	0.007 (0.006)	0.008 (0.006)	0.008 (0.006)	0.009 (0.010)	-0.009** (0.004)	-0.009** (0.004)	0.001 (0.004)	0.003 (0.004)	0.004 (0.004)	0.005 (0.006)	0.004 (0.007)
HISCED 3-4 * sd		0.137 (0.155)	0.107 (0.157)	0.112 (0.162)	0.150 (0.169)	0.379 (0.282)	-0.056 (0.199)		0.096 (0.123)	0.066 (0.124)	0.067 (0.113)	0.096 (0.118)	0.043 (0.183)	0.052 (0.167)
HISCED 5-6 * sd		0.140 (0.167)	0.067 (0.171)	0.076 (0.212)	0.107 (0.204)	0.233 (0.229)	-0.061 (0.279)		0.179 (0.140)	0.106 (0.142)	0.120 (0.175)	0.149 (0.175)	0.001 (0.132)	0.164 (0.267)
major fixed effects			yes	yes	yes	yes	yes			yes	yes	yes	yes	yes
college fixed effects				yes	yes	yes	yes				yes	yes	yes	yes
job characteristics						yes						yes		
Pseudo R2	0.072	0.072	0.086	0.093	0.098	0.130	0.089	0.068	0.068	0.078	0.083	0.090	0.110	0.079
No. observations	7,718	7,718	7,718	7,713	7,713	3,174	4,539	10,135	10,135	10,135	10,128	10,128	4,400	5,728

*significant at 10%; **significant at 5%; ***significant at 1%.

Note. The dependent variable is a discrete ordered variable taking on the values: 4 = very satisfied, 3 = quite satisfied, 2 = not very satisfied, 1 = not satisfied at all. All models are estimated with an ordered logit, and the table reports the model coefficients. Estimates use probability weights. Heteroskedasticity robust standard errors in parentheses. Errors are clustered by HEIs in the model using HEIs fixed effects. The models also include controls for age, gender (except the gender specific

regressions), secondary school track, upper secondary school final grade, grade by track interactions, dummies for working while studying and being a switcher (to the new system), region where the individual works and log hourly wage. Job characteristics are two dummies for part-time (vs. full-time) and temporary (vs. permanent) jobs, respectively. See the Appendix for a detailed description of the variables. The estimation sample includes only individuals who found their current job after university graduation.

Table 6. Probability of switching to a short degree

	control group: old graduates "on time"			control group: old graduates with one year of delay at maximum		
	all	men	women	all	men	women
	(1)	(2)	(3)	(1)	(2)	(3)
HISCED 3-4	-0.044 (0.093)	0.007 (0.136)	-0.086 (0.123)	-0.035 (0.084)	0.064 (0.125)	-0.106 (0.112)
HISCED 5-6	-0.447*** (0.111)	-0.352** (0.155)	-0.526*** (0.151)	-0.423*** (0.103)	-0.362** (0.148)	-0.477*** (0.142)
Pseudo R2	0.086	0.103	0.077	0.087	0.106	0.078
No. observations	8,547	3,467	5,080	12,828	5,415	7,413

*significant at 10%; **significant at 5%; ***significant at 1%.

Note. The dependent variable is a dummy variable taking on value one if an individual enrolled in the old system switched to a short degree and zero otherwise. . All models are estimated with logit, and the table reports the logit coefficients. Estimates use probability weights. Heteroskedasticity robust standard errors in parentheses. The models also include controls for age, gender (except the gender specific regressions), secondary school track, upper secondary school final grade, grade by track interactions and a dummy for working while studying. See the Appendix for a detailed description of the variables.