

Overeducation among European University Graduates: a comparative analysis of its incidence and the importance of higher education differentiation

Carlo Barone · Luis Ortiz

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Abstract The incidence of overeducation in eight European countries is here assessed by means of multiple indicators. With the exception of Spain, the results reveal that overeducation is a minor risk amongst European tertiary graduates. Yet, the contrast between different indicators reveals the existence of an overeducation of a moderate kind in countries with high rates of tertiary attainment (Norway, Finland and Netherlands). Our results also reveal the importance of higher education differentiation for understanding the risk of overeducation. Graduates from humanistic fields, bachelor courses and vocational colleges are more exposed to overeducation, though their disadvantage varies cross-nationally.

Keywords Overeducation · Fields of study · Higher education differentiation · Graduate employment · Transition from school to work

Introduction

In the last decades, European countries have gone through a process of educational expansion, an important part of which has taken place in Higher Education (HE). Such increase has been accompanied by a process of internal differentiation. The Bologna process has recently favoured a growing vertical differentiation (bachelor/master courses) which now complements the horizontal differentiation between fields of study and, in several countries, between universities and vocational colleges.

The process of educational expansion in HE is regarded by some as intrinsically good; even necessary, in order to meet an increasing demand for skills that would be naturally

C. Barone (✉)

Department of Sociology and Social Research, Università di Trento, Via Verdi, 26, Trento, Italy
e-mail: carlo.barone@soc.unitn.it

L. Ortiz

Department of Political Science and Sociology, Universitat Pompeu Fabra,
Ramon Trias Fargas, 25-27, 08005 Barcelona, Spain
e-mail: luis.ortiz@upf.edu

associated with the advent of ‘knowledge’ society. Moreover, it could be argued that it is always good to have better educated people, not the least because education exerts positive effects on active citizenship.

For others, though, educational expansion is not always positive. Hartog (2000) suggests that ‘the strong expansion of participation has outpaced the increase in the demanded levels of education’ (134). According to this view, the risk of devaluation of diplomas, and therefore of social demotion of tertiary graduates, is real. Overeducation has been found associated with low productivity and low job satisfaction (Groot and van den Brink 2000). If overeducation exists, it could entail a serious waste of societal and individual resources.

In this work we will assess the prevalence of overeducation in comparative perspective. Our contribution to the previous literature is threefold. First, we compare the incidence of overeducation across eight European countries: Spain, Italy, Austria, Germany, Czech Republic, the Netherlands, Norway and Finland. Although partly forced by data constraints described in “[Data and methods](#)”, this country selection encompasses a wide variety of institutional arrangements of education and labor markets. The lack of suitable data has largely prevented a comparative work of this kind so far. The literature on overeducation has mainly paid attention to Anglo-Saxon countries, mostly Great Britain and the United States; less is known about continental Europe and Scandinavian countries. Our second contribution is to highlight the importance of institutional differentiation within HE for the risk of being overeducated, a domain hardly explored so far. In particular, we want to assess the possibility that this risk is concentrated in some academic fields (e.g., humanities) and branches (e.g., bachelor courses, vocational colleges) of HE. Finally, we analyze overeducation by means of multiple indicators, tentatively proposing a new indicator that focuses on the skill requirements of occupations held by graduates. The performance of this indicator will be assessed relative to the two more traditional ones, based on the so-called ‘statistical’ and ‘subjective’ approaches. In the latter case, we have also developed a ‘variant’ of standard subjective indicators that pays more attention to the internal differentiation of HE. The comparison between different indicators, advocated in previous work (Sloane 2003), will allow us to identify a moderate type of overeducation not previously dealt with in the literature.

Theoretical framework and hypotheses

Human capital theory regards overeducation as a negligible phenomenon. Overeducation might conceal the lack of human capital endowments other than formal schooling, such as ability, on-the-job training or experience (Chevalier 2003). There would not be overeducated workers, but workers with a lack of adequate skills. Even if overeducation existed in its ‘true’ sense, it would be just a short-term mismatch to be naturally corrected by the market (Becker 1980).

According to human capital theory, workers would be prone to give up their jobs if they do not yield adequate returns to their skills endowments. According to job mobility theory, though, workers may stay in jobs for which they are overeducated in order to attain the right amount of skills to get a match (Sicherman 1991). This theory is thus mostly concerned with the mechanisms of correction of overeducation, either through internal promotion or job change.

These arguments are directly relevant for our work, because we will not consider here the occupational position held at labour market entry, but 5 years after graduation. By then, it can be expected that our respondents have had time enough to accumulate more human

capital outside the school system (via job experience, internships, etc.). Hence, we should anticipate a limited amount of overeducation across graduates according to the above theories.

Credentialism leads to a different prediction. Its starting point is that formal education would hardly enable employers to assess actual workers' productivity; it rather enables them just to evaluate the amount of further training job candidates need to optimise their marginal productivity (Thurow 1975). In other words, employers use formal education as an indicator of prospective workers' productivity, and they rank job candidates accordingly. Hence, a higher formal qualification would place individuals in the higher ranks of the job queue: this creates an incentive to study as long as possible. A credential inflation dynamics may thus be generated, and overeducation may become a realistic scenario. We arrive at a similar conclusion from the perspective of the signalling model (Spence 1973), which regards education as a signal of individual traits (e.g. intelligence) prevalent before school enrolment. However, education is a signal that can be manipulated by individuals. Through more education, they would manage to signal higher ability and motivation to employers. Here again we see that there are pressures conducive to credential inflation.

Sociological approaches to overeducation pay more attention to the role of both educational and labor market institutions. In particular, their degree of stratification and selectivity affects considerably the supply of graduates. Highly stratified systems of education divert a greater share of students away from HE (Müller and Gangl 2003): the better match between the school system and the labour market, as exhibited by dual systems of education like the German one, makes educational pathways alternative to HE more appealing here. Furthermore, a high selectivity at entry into HE related to the attendance of the pre-academic track is another aspect of stratification that may keep the number of tertiary degrees low, thereby enhancing their economic value. Indeed, among the eight countries under examination, the three highly stratified systems of Germany, Austria and the Czech Republic display particularly low tertiary attainment rates (OECD 2006), likely to prevent overeducation. It may be argued that also Italy, characterized by a moderate degree of stratification, displays low tertiary attainment rates. In our view, Italy illustrates how selectivity can complement stratification: drop-out rates found in Italian universities are the highest ones observed in OECD countries (OECD 2006). Drop-out rates are also comparatively high in Austria, whereas in the Czech Republic low tertiary attainment rates are due to the limited number of places available in HE- another form of selectivity. Hence, a mix of stratification and selectivity counteracts credential inflation pressures in these countries. This constrains severely the supply of graduates, so that a low amount of overeducation is to be expected.

Tertiary attainment rates are much higher in Norway, Finland, Spain and, to some extent, in the Netherlands, countries that have 'truly' moved to mass HE. However, it would be naïf to expect that a rapid expansion of diplomas mechanically translates into overeducation. Much depends on the corresponding expansion of graduate employment, which varies cross-nationally. Also in this respect we would regard sociological approaches which emphasize the importance of institutions as most promising. For it is clear that Scandinavian countries, as well as the Netherlands, have followed a 'high-skill strategy' that combines high participation in HE with an active role of the welfare state as employer (Esping Andersen 2004). Not surprisingly, these countries display the highest share of managerial and professional employment among the eight countries under study, mainly driven by a high share of skilled employment in the public sector, most notably in welfare state employment. According to the European Union Labor Force Survey (EULFS), managerial and professional employment among people aged 30 to 34 years in Norway,

Finland and Holland ranges between 45 and 53% while it is below 40% in the other countries except Germany. Furthermore, employment in education, health and social work drives most of these cross-national differences, though structural factors also play a significant role: the technology-intensive, export-led Scandinavian economies may be opposed to the Spanish economy with its over-sized construction sector.

It remains to be seen whether these demand-side factors compensate the comparatively high tertiary attainment rates of Norway, Finland and, to a minor extent, the Netherlands. What is clear is that Spain exhibits ‘Scandinavian’ rates of educational attainment without displaying a Scandinavian employment structure. Thus it is in this country where over-education should be a major risk.

It is at this point of our theoretical reasoning that the differentiation of HE may play a significant role. As HE expands in most European countries, its institutional traits may become increasingly salient for the explanation of overeducation: fields of study and different branches within tertiary education (bachelor vs. master courses, universities vs. vocational colleges).

As regards fields of study, from a human capital perspective, scientific and technical disciplines may provide higher levels of “productive skills” than humanistic disciplines, because their curricula emphasize more the acquisition of occupation-specific skills (Reimer et al. 2008). Thus, they may enjoy better labor market prospects. Credentialism theories arrive at a similar prediction, though for different reasons: these fields may be more selective, thus signalling higher levels of ability and motivation. Finally, from a social closure perspective, some fields are more protected from overeducation because stakeholder groups are more successful in keeping the supply of their graduates low and in regulating the demand for the corresponding occupations. Again, humanistic fields are expected to be in a less favourable position, as compared for instance to medicine, law or architecture (Ortiz and Kucel 2008).

As regards branches of HE, in sequential systems of HE students with a master degree have higher skill endowments than undergraduate students and should thus enjoy better labour market prospects, according to human capital theory. Credentialism again would say that a master degree may signal higher ability and motivation. Credentialism further suggests that the disadvantage of bachelor degrees is particularly strong when large numbers of students attain them, so that their signalling value is particularly weakened. Thus, among our sequential systems of HE, their disadvantage should be stronger in Spain and Norway than in the Czech Republic.

In binary systems, there is a distinction between vocational colleges and universities.¹ The former aim at providing more occupationally-specific and ready-to-use competencies. Hence, from a human capital perspective, they could be in a favourable position relative to university courses, which are less applied. Yet, universities signal higher cognitive ability, as they tend to recruit students with higher achievement in upper secondary education, and they ensure a more robust background to learn new competencies and work tasks. Hence, from a credentialism perspective, they may lead to more favourable labour market prospects. Which influence prevails probably depends on specific institutional features of HE. In particular, where vocational colleges are fully recognized as HE institutions and preserve a relatively high degree of selectivity, their negative signal is less pronounced. Vocational colleges have been established virtually everywhere by the

¹ We refer generically to vocational colleges to indicate: Polytechnics (Finland), Diplomi universitari (Italy), Hogescholen (Netherlands), Fachhochschulen (Germany, Austria). It refers to the situation in the late 90s when the respondents of the REFLEX survey that we use in our analyses attended HE.

upgrading and merging of pre-existent post-secondary institutions. As such, at the beginning they enjoy lower status and prestige than traditional universities. However, they systematically strive to catch up with universities and to mimic the university model. In Germany, *Fachhochschulen* have been introduced in 1970 and this process is already at an advanced stage (Mayer et al. 2007). Hence, the negative signal associated with vocational colleges should be weak. Their institutionalization is relatively high also in Italy, where vocational courses are directly organized by universities. However, in Austria, and Finland vocational colleges have only very recently been established as tertiary-level courses, they are institutionally separate from universities and they entertain an ambiguous status of former post-secondary institutions. This applies also to the Netherlands, where their social status is much inferior to universities, which have remained a small, selective, research-intensive sector. These cross-national differences are sustained and reinforced by differences in the degree of selection into vocational colleges. German *Fachhochschulen* are again in a favourable position: they have preserved a relatively selective profile (*numerus clausus*, strong qualification restrictions, entry exams). Italian and Austrian vocational colleges display also relatively high entry barriers, whereas access is less selective in the Netherlands and Finland, as vocational colleges have turned into mass institutions to accommodate the large numbers of applicants to HE. Thus, we expect the disadvantage of vocational colleges to be smallest in Germany and Italy and highest in the Netherlands and Finland. It is less clear the extent to which the human capital component of vocational colleges also differs between countries. German *Fachhochschulen* are closely related to professional practice: their students spend two semesters of work experience (*Praxissemester*) and their programmes are often prepared in collaboration with employers. Vocational colleges in Austria and Italy also have a markedly applied orientation, wide recourse to internship and a limited offer of courses in applied disciplines. Such orientation is weaker in Finland and the Netherlands, where programmes combining learning and working have been introduced later. This would further reinforce our previous expectation concerning cross-national differences in the relative disadvantage of vocational colleges.

Data and methods

Data

We will use the data from the REFLEX survey, carried out in 2005 among individuals of fifteen European countries who graduated from tertiary institutions in the year 2000.² REFLEX contains detailed and highly comparable information on fields of study and other dimensions of HE differentiation. It also enables to build several indicators of overeducation and to model the risk of overeducation controlling for an extensive set of variables (see below).

In return, national samples are not very large in REFLEX (see Table 2). This prevented us from carrying out some analyses that would be of interest (e.g., modelling interactions between educational fields and branches of HE). More importantly, to minimize the risk

² Only Isced 5a graduates were sampled. Hence, post-secondary vocational training and similar courses included in category 5B were not included. Data collection was based on telephone or web-interviews. For more information on the methodology of this survey, see (Allen and van der Velden 2010).

that our results would be biased by low statistical power, we decided to select the eight countries for which at least 1,500 valid cases were available for our multivariate analyses.³

Indicators of overeducation

Overeducation has been traditionally measured by means of objective or subjective indicators. The most accurate objective indicators are, in our view, those based on ‘dictionaries’ of occupation, compiled by job analysts who report the different types of skills required to optimally perform each occupation and thus declare the level of education optimally required for it. Unfortunately, this kind of indicator is not available for most countries, as massive efforts are needed to build these dictionaries and they can easily become obsolete due to occupational change.

Facing these constraints, many researchers rely on a cruder objective indicator. The assumption behind it is that a graduate is overeducated if she is employed in a job that most other job holders manage to access with lower qualifications. In particular, it is conventionally established that overeducated workers are those whose years of education are one standard deviation above the mean of schooling of incumbents in the same occupation. This so-called statistical approach simply considers the distribution of schooling within occupations. No reference is made to their skill requirements: only formal, credential requirements are given consideration. This approach can be severely biased by dynamics of credential inflation: if the number of graduates increases, employers may raise formal requirements for some occupations, even though lower qualifications would suffice to perform them optimally. Hence, according to this approach, if employers start demanding a tertiary degree for physiotherapists or insurance representatives, these may be counted as graduate jobs, therefore under-estimating overeducation. Conservative as it is, this second objective indicator usually yields the lowest estimates of overeducation (Groot and van den Brink 2000).

The only *feasible* way to correct this *downward bias* is then resorting to subjective indicators. Here, interviewees are either directly asked to assess the match between their job and educational attainment, or the minimum educational requirements to hold the job they have. These indicators have been praised because they enable to capture many specific job situations that only job holders are able to report: they deal “precisely with respondent’s job, not with any kind of aggregate” (Hartog 2000, 24). Unfortunately, it is not really clear what subjective indicators measure: skills requirements, formal requirements, a mix of the two or some form of job satisfaction. It is the respondent who decides for the researcher what overeducation means.

Furthermore, all measurement approaches discussed so far share the limitation that they ignore the internal differentiation of HE. For instance, they underestimate overeducation because they do not record a kind of moderate overeducation, where an individual holds an upper-level tertiary degree (e.g. master) but she would just need a lower-level tertiary degree (e.g. bachelor). This risk may gain growing significance with the expansion of HE: graduates cannot be treated anymore as a homogeneous population.

This problem can be easily fixed with subjective indicators. We will use two distinct subjective indicators, derived from the same question: “what type of education do you feel was most appropriate for your work?” For each country, one response situates the proper type of education below the tertiary level. This option clearly marks a situation of

³ By exploring the data of the 2005 EULFS for the same countries, we have checked that the main socio-demographic variables work well in the REFLEX country samples.

Table 1 Skill-based indicator: validation analysis

	Chronbach Alpha	Factor loadings				
		'Mastery of your own field or discipline'	'Knowledge of other fields of disciplines'	'Analytical thinking'	'Ability to rapidly acquire knowledge'	% Explained variance
Italy	0.69	0.74	0.63	0.76	0.78	54.4
Spain	0.77	0.74	0.71	0.82	0.81	59.8
Austria	0.66	0.60	0.64	0.78	0.79	50.1
Germany	0.65	0.61	0.59	0.77	0.81	49.8
Netherlands	0.74	0.71	0.66	0.80	0.82	56.6
Finland	0.69	0.63	0.63	0.80	0.82	52.8
Norway	0.70	0.67	0.69	0.76	0.80	53.3
Czech Republic	0.67	0.62	0.68	0.78	0.77	51.1

overeducation, as perceived by the interviewee. Another response allows detecting a kind of moderate overeducation, where a master (or university) graduate holds a position for which a bachelor (vocational college) degree would be sufficient. We have thus created a second, subjective indicator that takes the differentiation of HE into account.

But this still leaves unsolved the main problem of subjective indicators: it is not clear what they measure. We propose a subjective skill-based indicator that marks an improvement in this respect. REFLEX provides a battery of items where interviewees were asked to rate to what extent a set of skills are needed to perform their job. Some of these skills are learnt mainly on-the-job (e.g. “ability to negotiate effectively”), but four of them are significantly developed in HE, namely: the “mastery of a specific field”, the “knowledge of other, related fields”, “abstract, analytical thinking” and the “ability to rapidly acquire new knowledge”. In our view, this combination of in-depth knowledge and flexible information-processing skills is what differentiates graduate employment from more routine occupations that can be optimally performed without attending HE.⁴

As shown in Table 1, the Chronbach alphas for these four indicators range between 0.65 (Germany) and 0.77 (Spain). Moreover, factor analysis indicates that a one-dimensional solution fits the data well for all countries and that factor loadings are high, almost always comprised between 0.65 and 0.80. They are also similar across the four base indicators, though slightly higher for two of them, and across the eight countries. Hence they can be nicely summarized by an additive index to be used for cross-national comparisons. According to this index, graduates are overeducated when they hold jobs that (in their view) do not require those key competencies that must be acquired in HE.

As each of the four indicators ranges from 1 to 7, the top skill level possibly reported is 28. Using this continuous index for our analyses would be inappropriate since the notion of overeducation refers only to the *lower tail* of the distribution of skill requirements (i.e. cases of *under*-education are not relevant). Therefore, we have established a threshold to dichotomise the index at 16. It corresponds to an average skill level of 4, i.e. the intermediate point in the scale from 1 to 7. However, we can exploit the continuous nature of

⁴ Of course, one could wonder whether graduates really possess these skills. However, we are here interested in measuring overeducation rather than over-skill, which refers to the skills *actually possessed* by respondents.

Table 2 Indicators of overeducation

Percentage estimates for each country

	Statistical ^a	Subjective ^b	Skill-based ^c (threshold 16)	Subjective ^d (refined)	Skill-based ^e (threshold 12)
Italy (<i>N</i> = 2,641)	8.9	12.4	11.6	5.1	4
Spain (<i>N</i> = 3,342)	24.8	17.1	19.2	12.2	6.5
Austria (<i>N</i> = 1,478)	1.1	9.6	8.2	1.1	1.5
Germany (<i>N</i> = 1,445)	3.8	12.6	9.2	8.3	2.2
Netherlands (<i>N</i> = 2,988)	7.3	7.1	13.6	13.8	2.9
Finland (<i>N</i> = 2,105)	6.9	5.7	14.1	4.1	3.3
Norway (<i>N</i> = 1,953)	2.5	3.5	20.4	13.7	3.9
Czech Republic (<i>N</i> = 6,003)	1.5	3.9	7.1	7	1.7

^a The respondent is regarded as overeducated if her level of education is above that of 80% of job holders in her occupation

^b The respondent believes the suitable level of education to carry out her job is below tertiary level

^c The skill requirements of the respondent's job score scores below 16, in a 4–28 scale

^d The respondent (master or university graduate) believes a bachelor (vocational college) degree is enough to optimally carry out her job

^e The skill requirements of the respondent's job score scores below 12, in a 4–28 scale

the original index by dichotomizing at different thresholds, thus disentangling moderate forms of overeducation from strong ones, where skill requirements are particularly low (see Table 2).

Our skill-based indicator has the advantage that it takes into account the heterogeneity of jobs formally grouped within the same occupation. It is therefore more detailed and context-specific than the 'dictionaries' of jobs approach. However, it is a subjective indicator and may thus suffer from the sources of bias of this kind of indicators. Moreover, it is arguable that the importance of various skills to fulfil the job requirements is highly sensitive to the job field. For instance, for some technical disciplines an in-depth mastery of the specific field may be particularly important, whereas the knowledge of other related fields may matter less. Conversely, the latter could gain more relevance for some humanistic fields and for their related occupations. It should be borne in mind that our skill-based indicator cannot capture these relevant specificities.

From the above discussion it should be clear that each measurement approach has its pros and cons. Moreover, different indicators are known to lead to different estimates of the prevalence of overeducation (Groot and van den Brink 2000). Hence, it is worth using multiple indicators, and replicating this exercise for several nations, as we will do. This multi-indicator, multi-country approach marks an improvement over previous studies, as it enhances the robustness of our findings.

We will use the subjective indicator and its variant described above, the skill-based indicator and a measure based on the statistical approach. Since REFLEX is a graduate survey, all occupations are by default filled just with graduates, so that the statistical approach cannot be directly implemented. Yet, we can exploit the EULFS 2005 to apply an approximation of the statistical approach, following the proposal by Ortiz and Kucel (2008): a worker is overeducated if his/her level of education is above that of 80% of the

people employed in the same occupation. The level of education is measured with the Isced classification (five categories) while occupational position is defined according to 2-digit information on Isco-88 titles (more detailed 3-digit titles are not available in the EULFS). As in the case of the traditional one-standard deviation criterion, it could be objected that the 80th percentile threshold is arbitrary; yet it turns out that it leads to plausible results: drawing on this method, we have found remarkably similar results across countries: level 4 ('clerks') or below is the threshold to define overeducation for graduates.⁵ This seems reasonable, if we consider that the ISCO classification was designed precisely to group occupations according to their skill requirements, and that levels 1 to 3 were regarded as appropriate for graduates, whereas clerical and lower level occupations were not (Elias 1997). However, it is questionable that some occupations at Isco level 3, such as insurance representative, belong to graduate employment. As discussed above, the statistical approach may not record some moderate forms of overeducation, so it produces conservative, lower-bound estimates of overeducation.

Independent variables

Our core independent variables involve the two dimensions of HE differentiation discussed above: fields of study and type of tertiary institution. With regard to the first one, we use a twelve-category classification: (a) teacher education; (b) art, humanities; (c) psychology, sociology; (d) economics; (e) law; (f) biology; (g) math, physics, chemistry; (h) computing; (i) engineering; (l) architecture; (m) nursing, social work; (n) medicine, veterinary. However, with a detailed classification but small national samples, statistical power is an issue. Moreover, the most significant differences involve the divide between humanistic (categories a, b, c and m) and scientific fields (the remaining categories). Hence, for reasons of space, we will present our findings for this dichotomy and shortly comment on some more detailed results reported elsewhere (Barone and Ortiz 2010).⁶

As regards types of tertiary institution, we consider the difference between master and bachelor courses in sequential systems of HE (Spain, the Czech Republic and Norway); the other countries are all binary systems: here we differentiate between universities and vocational colleges.

Basic controls (gender, time since graduation, country of birth, parental education, marital status, number of children) were included in our models. Students' academic ability before enrolling in HE has been assessed through marks at the end of upper-secondary education and type of upper-secondary education completed.

Results

Table 2 shows the estimates of overeducation according to different indicators. The statistical approach (first column) yields estimates below 10% for all countries but Spain. The estimates of the subjective indicator (second column) are similar or somewhat higher, particularly for Austria and Germany, and again Spain is the outlier. In other words, these two indicators disagree to some extent as shown in previous research, but they lead to the same substantive conclusion: except for Spain, overeducation is a minor risk in all

⁵ This result does not change if we use the 75th or the 85th percentile as alternative thresholds.

⁶ This is the working paper of this manuscript: its appendix contains the full results and provides more information on variables and modelling issues.

countries under study.⁷ Our skill-based indicator (third column) confirms this diagnosis for most countries, but it points to substantially higher overeducation for The Netherlands, Finland and Norway. In column 5, we recompute the skill-based indicator with a lower threshold (12 rather than 16), thus focussing on the “strongest” forms of overeducation: estimates are now very low for all countries. This indicates that most individuals classified as overeducated in column 3 lie close to the threshold of 16: they are only moderately overeducated. In sum, all measurement approaches agree that overeducation is a serious problem only in Spain, but the skill-based indicator adds that moderate forms of overeducation are not uncommon in the other three mass HE countries.

All the above indicators forget about the increasing differentiation of HE, but overeducation may occur also when a master (university) graduate ends up in a job that would be more appropriate for a bachelor (vocational college) graduate. An overall low level of overeducation may thus conceal the demotion of graduates from the upper tracks to lower-tertiary jobs. REFLEX allows exploring this possibility, hardly considered in previous studies. Table 2 reports the percentage of graduates from the upper branches of HE (i.e. universities or master courses) who regard their jobs as requiring a low-level tertiary degree (fourth column). Only a small minority of upper graduates is in this situation. The exception again is Spain, along with Norway and the Netherlands. This further reinforces our conclusion that, although strong forms of overeducation are currently not very widespread among European graduates, in mass HE countries moderate forms of overeducation are more common.

Moving to the multivariate analyses, we present results for the binomial logistic regressions ran separately for each of the three indicators of overeducation. The effects of our core variables, i.e. fields of study and branch of HE, are reported in Table 3. The odds ratios indicate that humanistic fields expose to a higher risk of overeducation. This applies both to the subjective and the skill-based indicator. Indeed, results for these two measures display a remarkable similarity and accord nicely with results of previous research. However, when it comes to the Isco-based indicator, we detect little evidence of higher overeducation for humanistic fields. We know that this conservative measure records only the stronger cases of overeducation, such as demotion to clerical or manual employment, while the two other measures are more sensitive to subtler forms of overeducation. It is with regard to the latter, then, that field of study exhibits its highest significance.

According to the subjective indicator, humanistic fields seem to protect from overeducation in Norway and in the Czech Republic. Our analyses based on the more detailed classification of fields of study, though, revealed that art and humanities in Norway expose to a higher risk of overeducation, as it happens in other countries, but this effect is offset by the favourable position of teacher education and social work.⁸ Similarly, in the Czech Republic teacher education and the social sciences are in a favourable position.

⁷ This agreement is confirmed when we compare them by means of contingency tables: individuals classified in the same way by the two indicators are between 85 and 97% of each national sample. Estimates reported in Table 2 are weighted. We have also computed the confidence intervals (adjusted by survey design) to check the statistical significance of the cross-national differences that we comment.

⁸ The above-cited working paper of this article reports the detailed results for fields of study with the subjective and the skill-based indicators. We show some revealing differences, particularly for Nordic countries, that go in the direction expected by our arguments on the meaning of different indicators (authors 2010, appendix). However, the incidence of overeducation is between 1.5 and 3.9% in Norway and in the Czech Republic for two out of three indicators of overeducation. Hence, these multivariate results should be taken with caution, just like results for the Isco-based indicator for Austria (1.1% of overeducation). Results concerning Spain are discussed in some more detail in the working paper.

Table 3 The risk of overeducation: the influence of fields of study and tertiary branch

Exponentiated coefficients (odds ratios) of logistic regression models

	Subjective		Statistical		Skill-based	
	Upper branch*	Humanistic fields	Upper branch	Humanistic fields	Upper branch	Humanistic fields
Italy	1.26	1.25*	1.40	2.39***	0.75	1.33*
Spain	1.05	1.52**	1.24**	0.56*	0.87	1.18
Austria	0.53**	2.54***	–	–	1.63	3.63***
Germany	1.24	1.09	0.99	0.47	0.97	1.71**
Netherlands	0.57*	1.56**	0.45***	0.80	0.71**	1.63***
Finland	0.32***	1.23*	0.12***	0.86	0.72**	1.30*
Norway	0.16***	0.50**	0.50*	0.92	0.50***	1.18
Czech Republic	0.44***	0.68*	0.34***	1.69	0.91	1.50**

'Upper branch' refers to master courses (vs. bachelor courses) in sequential systems of HE and to universities (vs. vocational colleges) in binary systems. Results for these two types of systems should not be directly compared

Significance levels * 10%, ** 5%, *** 1%

When we turn to the labour market prospects ensured by master (university) courses relative to bachelor (vocational colleges) courses, results for the three indicators display considerable similarity. Indeed, for all of them, in all cases where we detect a significant effect, it points to a competitive advantage of universities over vocational colleges and of master courses over bachelor courses. In most cases the effect looks rather strong, and results for our two Scandinavian countries and the Netherlands are particularly impressive. Hence, our results indicate that, over and above the influence of fields of study, a hierarchy between high and low tertiary degrees is being created as regard the risk of overeducation. However, this effect is not homogenous across countries: it is very strong in Nordic nations, but absent in Germany and Italy, in line with our expectations.

Results on control variables, not reported here, go in the expected direction (output available upon request). In particular, women, students with poor achievement in upper secondary education and those from a low family background are more exposed to overeducation. Social origins display a small influence: in line with previous research, the direct effect of family background is modest among more educated individuals. Indeed only in Spain we detect marked effects of family background on all indicators of overeducation. Spain is the only country where overeducation is a mass phenomenon among graduates, so this exception suggests that social origins may come into play even among graduates, when the risk of social demotion becomes serious.⁹

Conclusions

It is often claimed that, because of the expansion of HE, overeducation is currently a serious risk for tertiary graduates. However, our comparative assessment indicates that this

⁹ The employment rates of graduates 5 years after graduation are high (above 90%), hence we do not expect that selection into employment creates serious biases. Control analyses based on Heckman selection models confirmed this expectation (results available upon request).

risk is distributed very unevenly across European nations. In some of them (Germany, Austria, the Czech Republic, Italy), it has hardly materialized so far. We have argued that this is not surprising, considering that the structure of their educational systems has severely constrained the growth in the number of graduates.

In other countries like Norway, Finland and the Netherlands the expansion of HE has been more pronounced, but these nations have also been quite successful in creating a larger share of skilled employment, and their welfare states have played an important role in this regard. Graduates in these countries are currently preserved from strong forms of overeducation, such as demotion into clerical or manual employment. When we look at the skill content of their jobs, though, it is less rich than in the previous set of nations. These countries thus manage to accommodate a larger number of graduates, but at the price of some of them ending up in jobs with moderately poor skill requirements. If we consider that these are often protected, well-paid jobs in the public sector, it sounds as a fair compromise.

Finally, Spain is in our study the “exception that confirms the rule”: it shows that when mass participation to HE is not accompanied by a high rate of skilled employment creation, overeducation is a concrete risk, even in its strongest forms of demotion into unskilled jobs. Hence, the Spanish case challenges the view of human capital theory that overeducation is a negligible, transient phenomenon. Mass overeducation is a realistic scenario, though for the moment it has materialized only in some European countries and mostly in a mild way.

Moreover, this positive picture may change rapidly in the coming years, and it could be different if we included more countries that have moved to mass HE. Great Britain is perhaps the most obvious example. Although we could not include Great Britain in our multivariate analyses, another study using REFLEX data estimated that 36% of British graduates are overeducated in their initial job, but only 14% 5 years after graduation (McGuinness and Sloane 2009). We do not believe that our country selection is biased against detecting overeducation (see Allen and van der Velden 2010). We would rather stress that most previous studies focussed on the very initial phase of labour market transition (e.g. first job), while our analysis refers to 5 years after graduation, when career patterns have crystallized more.

Our results also indicate that, within every country, overeducation is unevenly distributed among graduates. We found that it is more widespread among graduates of humanistic fields, even when we include an extensive list of controls which was not available in most previous studies. Furthermore, graduates from vocational colleges and bachelor courses are more exposed to overeducation. However, this is not the case in Germany and in Italy. Moreover, in other countries where the base risk is generally low (e.g. Czech Republic, Austria), even marked relative differentials would not affect much the absolute probability of being overeducated. However, in Nordic countries and in the Netherlands, where the lower branches of HE have expanded more and moderate forms of overeducation are more widespread, this internal differentiation can be more consequential.

The substantive conclusions drawn from our analyses should be read with the caution imposed by the limitations of all indicators of overeducation. Unfortunately, the skill-based approach based on ‘dictionaries’ of occupations, which would be our preferred option, is seldom available. Hence, researchers are faced with the alternative between the statistical approach and the standard subjective approach. However, our results indicate that the former tends to record only the strongest forms of overeducation. Hence, the only alternative to avoid this downward bias is resorting to subjective indicators. Then, we proposed two innovations. On one side, we have used a subjective indicator of overeducation that

tackles the internal differentiation of HE. Still, our main complaint with subjective indicators remains: they are too generic, as they leave completely unspecified the criteria to define overeducation. Also our skill-based indicator relies on subjective evaluations of respondents, but in a more detailed and transparent way, which makes explicit reference to the skill requirements of occupations. At the same time, we have stressed that our skill-based indicator is unable to capture variations of skill-requirements across occupations. Interestingly, both innovations allowed us to detect moderate forms of overeducation that turn out to be quite widespread in some European nations. In any case, given the limitations of subjective approaches, we would note that our results should be regarded as tentative. In our view, subjective indicators, however, refined they are, cannot replace more objective, skill-based indicators.

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