

Job satisfaction among young European higher education graduates

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Abstract. The effects of diverse education-related variables on job satisfaction scores are analysed using a sample of European higher education graduates at early stages of their working life. Ordered choice models for job satisfaction are estimated including as explanatory diverse educational variables such as field of study, graduates' evaluation of their educational experience, the match between the competences developed during education and those required by jobs, as well as information on graduates' values and interests. The results show, even after controlling for actual job characteristics, that education-related variables have a great impact on graduates' job satisfaction. Additionally, estimation results by each one of the countries included in the sample are also presented.

Keywords: appropriateness of qualification, job satisfaction, study conditions, study provisions, usefulness of study

Introduction

In its general formulation the human capital theory treats education as an investment generating different types of returns. The relationship between education and earnings has become a fundamental tool in the research on earnings, wages and income in developed and developing economies (for reviews see Psacharopoulos 1994; Cohn and Addison 1998; Card 1999). In addition, it was found that the explanatory power of the simple human capital earnings model increased as non-wage variables were added into the utility measure (Haveman and Wolfe 1984; McMahan 1998). The economic relevance of education increases when non-monetary benefits were taken into account (Duncan 1976).

Non-monetary job benefits are in general difficult to identify and measure because most of them are subjective, that is, they depend on personal preferences. However, these are real benefits since they add to worker's general well being and quality of life and, consequently, must

be taken into account for a rational analysis of educational investment. The non-monetary job benefits can be categorized as fringe benefits, general working conditions and consumption benefits. *Fringe benefits* are defined as goods, services, or deferred money income received by the employee but paid for by the employer (e.g. medical insurance, pension plans, paid vacations and sick leave). The *working conditions* relate the job's material working environment, such as health and safety characteristics of the job, the rigidity of the work schedule, and so on. The *consumption benefits* comprise the current positive flow of satisfaction provided by the work situation: helping others is a consumption benefit of some jobs, as are the interest of the tasks, challenge, and social relationships associated to jobs. Most consumption benefits represent subjective reactions of individuals to their situation. As such, they are much more difficult to value than either fringe benefits or working conditions.

The analysis of job satisfaction offers a way for evaluating both the monetary and the non-monetary job benefits at once. Locke (1976) defines job satisfaction as "a pleasure or positive emotional state resulting from the appraisal of one's job or job experiences". Researchers have proposed two general explanations of job satisfaction. The first attributes differences in job satisfaction to characteristics of the job; the second attributes them to characteristics of the worker. These two models are variously called job conditions versus worker attributes (Miller 1980); situational versus dispositional determinants (Gruenberg 1980); or job reward, which presents the various types of benefits and utilities that people obtain from their jobs, versus work values, which reflect not only the importance that individuals place on these rewards but also the centrality of work to one's life and identity (Kalleberg 1977; Kalleberg and Loscocco 1983).

Job satisfaction indicates how people value the whole package of both monetary and non-monetary returns to their jobs according to their own personal tastes, preferences and expectations. Therefore, it may be used to gain insight into the effects of workers' education on utility from work and, ultimately, on general welfare of individuals. As a matter of fact, survey responses on job satisfaction have been used in economic analysis as proxy data for utility from work, with job satisfaction being in turn a key determinant of total well-being for working individuals (Van Praag 1991), leading to a rapidly developing body of literature on the economics of happiness (Veenhoven 1996).

Standard economic theory postulates that job satisfaction, understood as a proxy measure of utility from working depends positively on

income and negatively on hours of work, and that it also depends on a set of other worker-specific and job-specific characteristics. Other schools of thought, however, find that job satisfaction depends on the individual's expectations, physical and psychological needs, and values (Locke 1976), and highlight the moderately positive relationship between job satisfaction and life satisfaction (Landry 2000). A number of economic and other social science studies on subjective utility from work find out that higher levels of education are unambiguously associated with higher levels of satisfaction (Ross and Van Willigen 1997; Hartog and Oosterbeek 1998). Nonetheless, there are several papers suggesting a negative effect of perceived over-qualification on diverse job satisfaction dimensions (Johnson and Johnson 2000; Hartog 2000). Other studies suggest that longer schooling may influence job satisfaction negatively (Warr 1992; Blanchflower and Oswald 1992; Clark and Oswald 1996; Clark 1996). This counter-intuitive result has been explained through the formation of expectations under the so-called comparison income hypothesis: subjective job satisfaction depends not only on absolute income, but also on income relative to a reference level against which individuals compare themselves (Clark and Oswald 1996). Comparison income was found to be an important influence on individuals' overall job satisfaction, although the evidence suggests that better educated individuals tend to place a lower emphasis on pecuniary as opposed to non-pecuniary aspects of work (Ward and Sloane 2000).

This paper aims at clarifying the role of educational factors in explaining job satisfaction for higher education graduates' (HEG's). Previous research on job satisfaction has considered education merely as schooling length. Our data set, the CHEERS survey (Careers after Higher Education – A European Research Survey), allows us to present a new perspective on the educational causes behind job satisfaction. By focusing on HEG's only, we are able to consider a richer set of relevant education-related characteristics such as field of study, personal values, and opinions about the educational experience, as well as graduates' perception of the match between their competences and the requirements of their jobs. More than 36,000 graduates holding a first higher education degree from twelve countries were surveyed 4 years after graduation, that is, graduates from 1995 were surveyed in 1999. The study included graduates from Austria, the Czech Republic, Finland, France, Germany, Italy, the Netherlands, Norway, Spain, Sweden and the United Kingdom, as well as Japan (Schomburg and Teichler in press; Teichler in press).

Recently, successful European policies have been oriented towards the promotion of student and academic mobility, and to the creation of trans-national research networks and projects within Europe, which would ultimately contribute to the creation of a European graduate labour market. Therefore, we first address the educational determinants of job satisfaction for HEG's by weighting the data corresponding to graduates from different countries into a pooled European sample which is analysed as a whole. However, labour markets in Europe still remain national to some extent because of the variety of obstacles that restrain the development of trans-national recruitment and careers. European countries do have cultural differences, including languages, show diverse patterns of internal regional disparities resulting from different paths and degrees of economic development, and display different higher education systems as well. Since all these disparities may affect both the job opportunities opened for graduates and their evaluation of their actual jobs, we also analyse the educational determinants of job satisfaction for HEG's in each individual country included in the CHEERS sample.

The paper is organised as follows: Section 2 offers a summary of standard macro-economic, labour market, and higher education indicators, as well as a description of the current work situation for HEG's emerging from the CHEERS data set, for each one of the countries considered. Section 3 presents the methodological approach and discusses model specification and estimation issues. The main results of our study both for the European pooled sample and for individual country samples are discussed in Section 4 and, finally, Section 5 provides a summary and concludes.

Data descriptives

The aggregate economic performance and labour market situation, as well as the patterns of higher education enrolment in the countries included in our study are summarised in Table 1 (OECD 2002). As an indicator of the countries' relative level of development, GDP per capita has been measured in equivalent US dollars converted using the purchasing power parity (PPP). Accordingly, Norway and the Netherlands are the richest countries with over \$26,000 followed by Austria, Japan and Germany, with GDP per capita between \$24,000 and \$25,000. Further countries, i.e. Italy, Sweden, Finland, the United Kingdom and

Table 1. Statistics of economic development and enrolment by country, 1999

	(1)	(2)	(3)	(4)	(5)
Italy	23,952	60.6	11.3	43#	1#
Spain	19,044	64.4	15.8	48	15
France	23,155	68.1	11.8	37	21
Austria	25,704	72.2	4.7	33	n.a.
Germany	24,627	71.8	8.7	30#	13#
Netherlands	26,440	74.1	3.6	51	1
UK	23,303	77.6	6.0	46	28
Finland	23,429	74.0	10.2	71	n.a.
Sweden	23,476	79.5	7.1	67	7
Norway	29,013	82.0	3.2	59	7
Czech Rep.	13,553	73.1	8.7	25	9
Japan	24,933	78.1	4.7	39#	32#

Source: OECD 2002.

(1) GDP per capita in equivalent US dollars converted using PPP.

(2) Participation rate in the labour market for population between 25 and 64 years old.

(3) Unemployment rate for population between 25 and 64 years old.

(4) Net rate of entrants in tertiary education type A. # gross rate.

(5) Net rate of entrants in tertiary education type B. # gross rate.

France are around \$23,000, while Spain and the Czech Republic are the poorest economies, with GDP per capita below the level of \$20,000.

Table 1 also shows labour market participation rate and unemployment rate as main aggregate indicators of labour market conditions. Norway and Sweden show the highest participation rate, over 80% in both cases. In the other end, we find Spain (65%) and Italy (61%) with the lowest participation rates. Regarding unemployment, Norway has the lowest level at some 3.2%, which is in the range of frictional unemployment. In contrast, we find Spain with 15.8%, and France, Italy and Finland with unemployment rate over 10%.

The last two columns in Table 1 provide information about enrolment in higher education. The rate of new entrants to higher education in bachelor programmes or long university-type programmes (ISCED 5A) provides information about the type of individuals who were addressed in the graduate survey CHEERS, which provides the microdata used later in this paper. Accordingly, the Nordic countries have the highest enrolment rates, while the Czech Republic, Germany and Austria have lowest rates of new entrants. As a complement, the last

column provides information on new entrant students to other tertiary education programmes requiring at least 2 years of study.

Table 2 shows some basic labour market indicators for young HEG's in the different countries, estimated from the results of the CHEERS survey. This table presents unemployment rate, annual gross income, percentage of HEG's graduates with temporary job contracts, proportion HEG's who declare that their job is under their qualifications, and average reported level of job satisfaction.

The unemployment rate for graduates is lower, in general, than the one corresponding to the whole workforce in each country; however, it ranges widely between 0.9% for Norway and 13.0% for Spain. The average annual gross income for the twelve countries analysed was about 24,000 euro, with figures for each country standardised by PPP. Income was clearly higher than average for in Germany (31,300 euro), the United Kingdom (26,800 euro) and Norway (26,200 euro) and clearly lower in the Czech Republic (12,900 euro) and Spain (17,500 euro). Altogether, over 22% of the professionally active HEG's surveyed hold a temporary job contract about 4 years after graduation. The proportion of temporary contracts was by far the highest in Spain, applying to one half of the working graduates. In contrast, temporary jobs in Japan represented the smallest percentage. On average, over 20.5% of graduates reported that a lower level of education would have sufficed to hold on their current jobs. The proportion of those considering themselves not adequately employed with respect to their level of education was clearly above average in Japan (31.6%), Spain (29.6%) and Italy (27.7%). In contrast, few graduates in the Nordic countries and in the Netherlands hold this view.

According to this description, HEG's face much harder labour market conditions in Spain, France and Italy than in other countries, with higher risks of unemployment and of non-permanent employment, and lower average earnings. Looking only at labour market indicators, one would expect that graduates' overall job satisfaction should be higher in those countries with more favourable labour market perspectives for HEG's. In the CHEERS survey, HEG's were asked a specific question worded as: "*Altogether, to what extent are you satisfied with your current job?*". For their answer, they could choose out of five ordered categories ranking from 1 (very dissatisfied) to 5 (very satisfied). The last column 5 in Table 2 shows that the average level of reported job satisfaction among HEG's is rather similar across countries. This finding would be surprising if we expected graduates' job satisfaction to be determined only by employment conditions and job characteristics.

Table 2. Main labour characteristics of graduates, 1999

	Unemployment rate	Annual gross income (k)	Temporary-contract employment (%)	Appropriateness of the level of education (%)	Job Satisfaction (scale 1-5)
Italy	5.7	20.3	29.4	27.7	3.4
Spain	13.0	17.5	51.5	29.6	3.7
France	8.6	21.6	16.2	26.8	3.7
Austria	4.0	26.1	27.6	20.8	3.8
Germany	2.8	31.3	22.8	25.7	3.6
Netherlands	1.8	25.5	22.2	16.1	3.8
UK	2.4	26.8	17.3	23.5	3.6
Finland	1.5	25.2	36.2	12.5	3.9
Sweden	1.2	24.5	13.3	8.7	3.8
Norway	0.9	26.2	17.9	8.3	4.0
Czech Rep.	1.9	12.9	17.4	13.2	3.9
Japan	4.0	21.1	10.9	31.6	3.3
Total	3.8	23.8	22.2	20.5	3.7

Source: Own calculations from CHEERS data set.

Consequently, other factors, including education, may be influential as well.

This first exploratory analysis suggests that graduates' job satisfaction in Europe is far more homogeneous across countries than labour market conditions and than graduates' perceptions about their actual employment situation. These issues will be discussed in depth later on, in Sections 3 and 4.

Methodology and models

To clarify the effects of education on job satisfaction, we select from the CHEERS data set only individuals between 26 and 35 years of age that worked at least 10 hours per week either as employees or as self-employed workers. After deleting those cases with missing values on satisfaction scores and income, we are left with 24,414 records valid for the analysis.

We analyze the influence of education on graduates' job satisfaction in two complementary ways. First, we build up a pooled sample including data for HEG's from all EU countries weighted by the proportion of higher education students, and by the population of the corresponding country. This allows for a trans-national view on the educational determinants of HEG's job satisfaction within Europe. Second, since the data set involves eleven countries (plus Japan, which is excluded from the pooled sample for the sake of homogeneity) we carry out additional regressions by each country exploring the possibility of divergent national patterns on the influence of education on HEG's job satisfaction.

The dependent variable in our analysis is graduates' self-assessed job satisfaction, so to reflect its ordinal character we implement ordered probit models. Maximum-likelihood estimation of the models is carried out using the Newton–Raphson algorithm based on second derivatives (Green 1997).

The explanatory variables are classified into three main categories representing diverse elements that, according to the literature, could influence graduates' self-assessed job satisfaction scores: educational variables, labour-market status variables, and other individual-specific characteristics. It should be noticed that both the educational and individual-specific variables influence the labour market chances of graduates, thus defining their actual occupational status that, in turn, is a key determinant of self-assessed job satisfaction.

All individuals in the sample had completed a higher education degree, so consequently we consider a wide range of educational variables related to diverse aspects of the educational experience, as explanatory variables for job satisfaction. These incorporated the answers to questions on the usefulness of study, the relevance of competences in the current job, the use of knowledge acquired during the study, the relationship between study fields and areas of work, and the appropriateness of qualifications for jobs. We use binary variables for eight different fields of study: Education, Humanities, Social Sciences, Law, Natural Sciences, Mathematics (including Computer Sciences), Medical Sciences and Engineering, with the latter acting as reference category. Additionally, we include graduates' opinion about their educational experience through their assessment on the contents of courses, structure of programs, quality of teaching, and the provision of work placements during the study.

Following the standard literature, we consider annual gross income, average working hours per week, and firm size as main labour market status variables, with both income and work hours expressed in natural logarithms for estimation purposes. Since public sector employment, full-time jobs, and permanent job contracts have specific characteristics that many graduates would consider desirable, we include a binary variable for each one of these circumstances. We also define binary variables for five different sectors of activity: the primary and secondary sector, the educational sector, the health sector, public administration, and other services. Additionally, the unemployment rate in each country is added to the model as a control variable.

Individual-specific characteristics such as age, gender, and educational background of parents are also included as explanatory variables in the model for job satisfaction. Besides, a block of variables reflecting graduates' personal life goals is also considered. Detailed definitions and coding of the variables involved in the analysis are presented in Appendix A, which also reports the descriptive statistics for all of them in Table A1.

Estimation results for job satisfaction

The pooled regression: job satisfaction in Europe as a whole

To clarify the effects of each explanatory variable on job satisfaction scores, we estimate three different specifications of the ordered probit equation on the pooled European data set in order to assess the total, the indirect, and the direct effects of education on graduates' job satisfaction

across Europe. The first specification uses only educational and individual-specific characteristics as regressors, so it estimates the total effects of education on job satisfaction without looking at actual attributes of the jobs held by graduates. The second specification includes as explanatory variables only labour-market status variables and, consequently estimates the indirect effects of education, via observable job attributes, on satisfaction. The third specification combines both sets of explanatory variables, thus estimating the direct effects of education on job satisfaction once its indirect effects have been removed. The estimation results for all three specifications of the satisfaction equation are presented in Table 3. Model I provides information about the total effects of education-related variables and other individual-specific characteristics on job satisfaction scores irrespective of actual job characteristics. Results show, first, that women report themselves as being noticeably less satisfied in their jobs than do comparable men, counter to the spirit of most of literature (Clark and Oswald 1994). It should be noticed, however, that women feel significantly less satisfied than men when only educational and individual-specific characteristics, but not actual job attributes, are taken into account (Souza-Poza and Souza-Poza 2000). The result may be explained because women feel relatively deprived and, consequently, tend to feel less satisfied than comparable men. This explanation supports the notion that establishes dissatisfaction as emerging from deprivation relative to one's expectations (Miroswsky and Ross 1989). Additionally, and bearing in mind that women still have, in general, poorer jobs than comparable men, this finding would lend statistical support to the hypothesis of the persistence of gender asymmetry among European young graduates. On the other hand, family educational background influences job satisfaction in the expected way: the higher the mother's educational level, the higher graduates' satisfaction scores reached on their jobs, with father's education showing a neutral effect. Besides, we find a negative total effect from age on job satisfaction as predicted by conventional literature (Clark et al. 1996).

In addition, we find a significant relationship between job satisfaction and graduates' perception about their educational experience. Having had a well-designed degree program, with practical emphasis on teaching and learning, a good provision of work placements, and good course contents raise graduates' job satisfaction later. This result may be explained because the completion of a well-organised higher education program with practical emphasis and work practice develops better professional competences that open access to better job opportunities, thus resulting in higher levels of job satisfaction.

With respect to graduates' life goals, Model I provides evidence to suggest that individuals who score high on non-pecuniary motives tend to be more satisfied than those who seek preferentially to make money or further academic inquiry. This finding implies that jobs provide graduates with favourable social, personal and family conditions, but, at the same time, they are not well-paid enough and do not have enough possibilities for further learning.

When exploring the segmentation of the different educational fields, we note that graduates in Humanities, Social Sciences, and Law tend to be less satisfied in their jobs than Engineering graduates, the omitted, reference category. Contrarily, Mathematics graduates tend to be more satisfied with their jobs than graduates from other study fields. As the estimates in Model I are controlled for personal values and other individual-specific attributes, these results should be explained by differences in actual job attributes for graduates from different fields.

Model II in Table 3 illustrates the effects of diverse observable job-specific characteristics on HEG's self-assessed job satisfaction scores. Since educational experiences influence the job opportunities opened to graduates, the estimates here may be understood as a consequence of the indirect effects of education, via actual job status, on job satisfaction. It is noteworthy to observe that when only job characteristics are included in the regression, women appear to be more satisfied than their male counterparts, a common finding in other studies (Clark et al. 1996). Women are more satisfied than men with comparable jobs, probably because in this case they compare themselves with other women in the workforce holding poorer jobs, with lower relative income, or who simply are unemployed.

As expected, income positively influences job satisfaction and, besides, public sector workers tend to be more satisfied than private sector workers with otherwise comparable jobs as found, among others, by De Santis and Durst (1996). HEG's working in education and other services are more satisfied than those working for the public administration. Graduates working in small firms and those holding permanent job contracts are also more satisfied than graduates in otherwise comparable jobs. As a consequence of the comparison mechanisms, a high level of unemployment in a country increases job satisfaction because under this circumstance even HEG's are less likely to be employed.

In addition, we find that both using at work of the knowledge and skills acquired during the study, and the match between education level and job level influence graduates' job satisfaction. We define a graduate as overeducated if his/her educational level was above the qualification

Table 3. Ordered probit estimates for job satisfaction. European pooled sample

Explanatory variables	Model I		Model II		Model III	
	Individual Attributes		Job characteristics		Job characteristics and individual attributes	
	Coef.	z-values	Coef.	z-values	Coef.	z-values
Female	-0.0658	-4.385	0.0525	3.665	-0.0060	-0.387
Age	-0.0188	-6.244			-0.0191	-6.045
Father's higher education	0.0190	1.152			-0.0011	-0.068
Mother's higher education	0.0970	5.035			0.0804	4.142
Course content of major	0.0186	1.846			0.0054	0.526
Design of degree program	0.0457	5.479			0.0399	4.728
Practical emphasis on teaching and learning	0.0332	4.515			0.0039	0.512
Teaching quality	0.0019	0.204			0.0090	0.971
Provision of work placements	0.0566	9.686			0.0307	5.135
Interest in social prestige	0.0739	10.320			0.0406	5.588
Interest in personal development	0.0873	7.821			0.0835	7.415
Interest in varied social life	0.0579	7.528			0.0504	6.490
Interest in home/family	0.0243	3.529			0.0141	2.034
Interest in making money	-0.0647	-7.637			-0.0741	-8.635
Interest in academic inquiry	-0.0239	-4.002			-0.0277	-4.210
Interest in job itself	0.1904	22.121			0.1905	21.894
Education (reference is Engineering)	0.0394	1.174			0.0398	1.092
Humanities (reference is Engineering)	-0.1368	-5.304			-0.0494	-1.825

Table 3. (Continued)

Social sciences (reference is Engineering)	-0.0812	-4.138	-0.0484	-2.362
Law (reference is Engineering)	-0.0639	-2.118	-0.1072	-3.365
Natural Sciences (reference is Engineering)	0.0061	0.224	0.0681	2.440
Mathematics (reference is Engineering)	0.2431	7.431	0.1434	4.243
Medical sciences (reference is Engineering)	-0.0436	-1.479	-0.1651	-4.208
Private sector			-0.1296	-7.063
Annual gross income in K-Euro (PPP)			0.3089	19.974
Hours worked per week			0.0367	1.515
Small firm (< = 10 workers)			0.0382	3.598
Full-time job			0.0428	0.482
Permanent contract			0.1454	8.067
Qualifications used at work			0.1186	13.013
Under-educated (reference is same level degree)			0.1118	4.165
Over-educated (reference is same level degree)			-0.4814	-25.635
Deficit in competences (refer. similar compt.)			0.1349	5.719
Surplus in competences (refer. similar compt.)			-0.6339	-18.376
Further education			-0.0440	-2.427
Primary and secondary sector (refer. Pub. Admin.)			-0.0148	-2.135
Other services (reference is Pub. Admin.)			0.0639	1.614
Education sector (reference is Pub. Admin.)			0.1666	4.675
Health sector (reference is Pub. Admin.)			-0.0448	0.623
Unemployment rate			0.0210	11.991
Observations	24,414	24,414	24,414	24,414

Table 3. (Continued)

Explanatory variables	Model I		Model II		Model III	
	Individual Attributes		Job characteristics		Job characteristics and individual attributes	
	Coef.	z-values	Coef.	z-values	Coef.	z-values
Lrchi2(23)	1,627					
Lrchi2(18)			3,270			
Lrchi2(40)					4,284	
Prob > chi2	0.0000		0.0000		0.0000	
Log Likelihood	-32,267		-31,445		-30,938	

Source: Own calculations from CHEERS data set.

required for his/her specific occupation taking into account the personal opinions of surveyed graduates. According to this method, a graduate is undereducated if his/her educational level is below the required for his/her specific occupation. Hence, we measure over-education and under-education by defining two binary variables taking the value one if the respondent was over- or undereducated, respectively. Results show that overeducated graduates are by far less satisfied in their jobs than those in the matched situation, as found, among others, by Battu et al. (1999) and Vila and García (in press). Over-education is, consequently, one of the most influential circumstances producing dissatisfaction for young graduates in Europe. Nevertheless, undereducated graduates are more satisfied than well-matched graduates, probably because they have better jobs than they anticipated.

The results are complemented with the analysis of graduates' self-reported competences. Our data made it possible to compare the competences acquired by graduates at the time of graduation with those required by their jobs 4 years after graduation. We include two binary variables for individuals who believed that they have a lack of competences, and for those who report an excess of competences, respectively. Again, HEG's reporting a surplus of competences tend to be relatively more dissatisfied, and those with a deficit tend to be more satisfied, than graduates who exactly match the right competences for the job.

The analysis of the match between job level and education level based on the notion of an adequate match as a one-to-one relation is vulnerable to the criticism that this involves a very rigid view of optimal allocation (Oosterbeek 1992). It suggests the existence, for each level of education, of an optimum job level and the implication that assignment to any other job level is necessarily sub-optimal. Sub-optimality is implied particularly with respect to under-utilisation: the individual is supposed to simply have been at school longer than necessary for his/her job. Nevertheless, our results show that job satisfaction, as a personal perception, is alien to these considerations.

Finally, the direct influence of education on job satisfaction is analysed by estimating Model III in Table 3. We consider here both graduate-specific and job-specific characteristics together as explanatory variables, so estimates reflect both the direct impacts of education variables on job satisfaction and its indirect effects, via actual job characteristics. When both sets of variables were included in the satisfaction equation, the main results obtained from Models I and II are simultaneously upheld for most of the key variables, although some noteworthy differences appear.

First, gender does not show any significant effect on the level of satisfaction reported by graduates when Model III was considered, as a consequence of the balance between the opposite forces described when explaining results on gender from Models I and II. Women tend to value their jobs better (Model II), but they hold poorer jobs in general (Model I), than comparable men. Second, significant effects on job satisfaction are found for Natural Sciences and Medical Sciences graduates: the first ones tend to be more satisfied, while the second group tend to be less satisfied than the reference group. In terms of the sector of activity, graduates working in the primary and secondary sectors appeared now to be significantly less satisfied than those working in public administration.

Summarising, graduates' job satisfaction in Europe appears to be driven by education to a very high extend. We find evidence of both direct and indirect positive effects of education on job satisfaction for the pooled sample of European HEG's.

Regressions for each country

The job satisfaction estimates obtained separately for each country (in this case, Japan is considered as well) using the specifications of Models I and III are respectively shown in Tables 4 and 5. When Model I, that captures the total effects of education on job satisfaction, is examined by countries, very small cross-national differences are found. In most cases, the signs of the coefficient estimates by country are the same as for the pooled European sample described above, which suggests that the total effects of educational determinants of job satisfaction are quite homogeneous across Europe. Nonetheless, some differences appear in the value of the estimates (not showed in the table) and in the significance levels for some variables in specific countries.

Differences between men's and women's job satisfaction under Model I are significant in Italy, Germany, Austria and Sweden, which suggests stronger labour market differences between genders in these countries. As before, we find a significant and positive link between job satisfaction and a well-designed program, content of courses and practical learning in most countries. With respect to life goals, the same features marked above for the pooled European sample are found now in each country surveyed. However, when the influence of study field is examined, noteworthy cross-national differences became apparent, suggesting country-specific patters of labour market segmentation. Education

Table 4. Ordered probit estimates for job satisfaction. Model I. Results for each country

Explanatory variables	Italy	Spain	France	Austria	Germany	Netherlands	United Kingdom	Sweden	Finland	Norway	Czech Republic	Japan
	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values
Female	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{**}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}
Age	(-) ^{**}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(+) [*]	(-) ^{**}	(-) ^{***}	(-) ^{***}	(-) ^{***}
Father's higher education												n.a.
Mother's higher education	(+) ^{**}			(+) [*]			(+) ^{**}					n.a.
Course content of major										(+) ^{***}	(+) ^{***}	(+) ^{***}
Design of degree program		(+) ^{**}		(+) ^{***}	(+) [*]		(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) [*]	(+) ^{***}	(+) [*]
Practical emphasis on teaching and learning	(+) ^{***}	(+) ^{***}	(+) ^{**}	(+) ^{***}	(+) ^{***}		(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}
Teaching quality	(+) ^{**}									(+) ^{***}		
Provision of work placements	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) [*]	(+) ^{**}	(+) ^{***}	(+) [*]	(+) [*]	(+) ^{**}	(+) ^{***}	(+) ^{***}
Interest in social prestige	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{**}	(+) ^{***}	(+) ^{***}	n.a.	n.a.	n.a.	n.a.
Interest in personal development	(+) ^{**}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	n.a.	n.a.	n.a.	n.a.

Table 4. (Continued)

Explanatory variables	Italy	Spain	France	Austria	Germany	Netherlands	United Kingdom	Sweden	Finland	Norway	Czech Republic	Japan
	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values	<i>z</i> -values
Interest in varied social life	(+) ^{***}	(+) ^{**}	(+) ^{**}	(+) ^{***}	(+) ^{***}		(+) ^{***}	n.a	n.a	n.a	n.a	n.a
Interest in home/family				(+) ^{***}	(+) ^{***}		(+) [*]	n.a	n.a	n.a	n.a	n.a
Interest in making money	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	n.a	n.a	n.a	n.a	n.a
Interest in academic inquiry	(+) [*]	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}			n.a	n.a	n.a	n.a	n.a
Interest in job itself	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	(+) ^{***}	n.a	n.a	n.a	n.a
Education (ref. Engineering)		n.a					(-) ^{***}	(+) ^{***}	(-) ^{***}	(+) ^{***}		(+) ^{***}
Humanities (ref. Engineering)	(-) ^{***}	(-) ^{**}	(-) ^{**}	(-) ^{**}	(-) ^{**}	(-) ^{**}	(-) ^{**}	(+) ^{***}	(+) ^{***}	(+) ^{**}	(+) [*]	
Social sciences (ref. Engineering)	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}	(-) ^{***}			(+) ^{**}	(+) ^{**}	(-) [*]		
Law (ref. Engineering)	(-) [*]									(+) ^{***}	(+) ^{***}	(+) ^{***}
Natural Sciences (ref. Engineering)				(-) ^{***}	(-) ^{***}			(+) [*]	(+) [*]			

Table 4. (Continued)

Explanatory variables	Italy	Spain	France	Austria	Germany	Netherlands	United Kingdom	Sweden	Finland	Norway	Czech Republic	Japan
	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values
Mathematics (ref. Engineering)				(+)*	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	n.a	(+)*
Medical sciences (ref. Engineering)	(+)*		(+)*	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(+)*
Observations	2,223	1,840	2,063	1,836	2,971	2,642	2,110	1,933	1,945	2,518	2,333	2,899
Lrchi2(23)	189	259	161	185	248	94	161	185	97	69	131	126
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Log Likelihood	-2,951	-2,399	-2,744	-2,333	-3,800	-3,159	-2,886	-2,419	-2,373	-2,952	-2,735	-4,080

Source: Own calculations from CHEERS data set. * $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$.

Table 5. Ordered probit estimates for job satisfaction. Model III. Results for each country.

Explanatory variables	Italy	Spain	France	Austria	Germany	Netherlands	United Kingdom	Sweden	Finland	Norway	Czech Republic	Japan
	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values
Female					(-)*		(+)**					(+)**
Age			(-)**		(-)**	(-)**		(+)**				(-)**
Father's higher education							(+)**	(+)**				n.a
Mother's higher education	(+)*						(+)**		(+)*	(+)**		n.a
Course content of major		(+)*		(+)**			(+)**	(+)**	(+)*	(+)**	(+)**	(+)**
Design of degree program		(+)**		(+)**			(+)**	(+)**	(+)**	(+)**	(+)**	(+)*
Practical emphasis on teaching and learning		(+)**		(+)**			(+)**	(+)**	(+)**	(+)**	(+)**	(+)**
Teaching quality							(+)*			(+)*		
Provision of work placements	(+)*	(+)**		(+)*	(+)*		(+)*			(+)**	(+)**	
Interest in social prestige	(+)**	(+)**		(+)**	(+)**		(+)*	(+)*	n.a	n.a	n.a	n.a
Interest in personal development	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	n.a	n.a	n.a	n.a
Interest in varied social life		(+)*			(+)**		(+)*		n.a	n.a	n.a	n.a
Interest in home/family					(+)*			(+)*	n.a	n.a	n.a	n.a
Interest in making money	(-)**			(-)**	(-)**	(-)**	(-)**	(-)*	n.a	n.a	n.a	n.a
Interest in academic inquiry				(-)**	(-)*		(+)**	(-)*	n.a	n.a	n.a	n.a
Interest in job itself	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	n.a	n.a	n.a	n.a
Education (reference is Engineering)	(+)**	(+)**	n.a	(+)**	(+)**	(+)**	(+)**	(+)**	n.a	n.a	n.a	(+)**
Humanities (reference is Engineering)			(-)**						(+)**	(+)**	(+)**	(+)**

Table 5. Continued.

Explanatory variables	Italy	Spain	France	Austria	Germany	Netherlands	United Kingdom	Sweden	Finland	Norway	Czech Republic	Japan
	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values
Social sciences (reference is Engineering)			(-)*						(+)**	(-)*		
Law (reference is Engineering)			(-)**						(+)**			(+)*
Natural sciences (reference is Engineering)					(+)**		(+)**		(+)**		n.a.	
Mathematics (reference is Engineering)					(-)**		(-)*	(-)**		(-)**		
Medical sciences (reference is Engineering)				(-)*	(-)**			(+)*		(+)**		(-)**
Private sector		(-)**	(-)**	(+)**	(+)**		(+)**	(+)*		(+)**		(+)**
Annual gross income in K-Euro (PPP)	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)*	(+)**	(+)**	(+)**	(+)**
Hours worked per week	(+)*											
Small firm (<= 10 workers)	(+)**		(+)**				(+)**	(+)**				
Full-time job	(+)**		(+)**		(-)**							
Permanent contract	(+)*	(+)*	(+)**	(+)**	(+)**							
Qualifications used at work	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**
Under-educated (ref. is same level degree)	(+)**	(+)**	(+)**	(+)**	(-)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**	(+)**
Over-educated (ref. is same level degree)	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**
Deficit in competences (ref. similar compet.)	(+)**			(+)**			(+)**		(+)*	(+)*		(+)**

Table 5. Continued.

Explanatory variables	Italy	Spain	France	Austria	Germany	Netherlands	United Kingdom	Sweden	Finland	Norway	Czech Republic	Japan
	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values	z-values
Surplus in competences (ref. similar compet.)	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)**	(-)*
Further education			(+)**									
Primary and secondary sector (ref. Pub. Admin.)			(-)**				(-)*				(-)**	(-)**
Other services (reference is Pub. Admin.)			(-)*		(+)**						(-)**	(-)*
Education sector (reference is Pub. Admin.)	(+)**	(+)**	(+)*	(+)**	(+)**						(-)*	(-)*
Health sector (reference is Pub. Admin.)	(-)*											
Observations	2,223	1,840	2,063	1,836	2,971	2,642	2,110	1,933	1,945	2,518	2,333	2,899
			Lrchi2(38)	Lrchi2(39)					Lrchi2(32)		Lrchi2(31)	Lrchi2(30)
	546	640	496	333	665	217	410	275	270	313	360	388
Prob > chi2	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Log Likelihood	-2,772	-2,209	-2,576	-2,258	-3,591	-3,097	-2,764	-2,374	-2,286	-2,830	-2,621	-3,949

Source: Own calculations from CHEERS data set. * $p \leq 0.10$; ** $p \leq 0.05$; *** $p \leq 0.01$

graduates tend to be more satisfied than the reference in Finland and Japan, but to be less satisfied in Sweden. Graduates from Humanities are more satisfied in Finland and the Czech Republic, but less satisfied in Italy, France, the Netherlands and the United Kingdom. In Social Sciences, Spanish, Italian and Norwegian graduates are more dissatisfied, while the Finns tend to be more satisfied, than those in the reference group. Graduates from Law have lower levels of job satisfaction in France while, in contrast, graduates in this field of study report higher satisfaction in Norway and the Czech Republic. Notable differences are found as well for Medical Sciences graduates: Italian, French, Finnish and Japanese graduates are more satisfied, while German, Swedish, Norwegian and Czech graduates are less satisfied, than the reference category. Nonetheless, graduates in Mathematics tend to be more satisfied than the reference group in many countries.

Estimation results for Model III by countries are presented in Table 5, showing the direct effects of education on job satisfaction, once its indirect effects through actual job characteristics have been controlled for. Consistent results are found for most of the key variables across European countries, plus Japan. Some country-specific differences arise, however, regarding a number of determinants. These differences reflect nation-specific characteristics regarding economic performance, labour market dynamics, and the organisation of the higher education system, as well as cultural diversity.

A more detailed comparison between two specific countries, Spain and Germany, may help to clarify the effects of diverse determinants of graduates' job satisfaction under the extended specification in Model III. Thus, German female HEG's tend to be less satisfied than male ones, whereas in Spain gender has no significant effect on job satisfaction after controlling for job attributes. According to our interpretation, German female graduates would feel more deprived than Spanish female graduates regarding men. Perhaps, the lower proportion and more recent incorporation of German female graduates into the labour market may explain this difference. Besides, satisfaction declines significantly with age in Germany, but no in Spain. In this case, the most important difference between both countries is the age of the graduates at the moment of finishing their studies, quite higher in the case of Germany. It seems that for older graduates additional age is even more unsatisfactory. A good provision of work placements during the study raises graduates satisfaction in both countries. In contrast, both the design of programs and the practical emphasis on learning are relevant to graduates' satisfaction in Spain, whereas these educational variables

do not influence satisfaction in Germany, suggesting a more homogenous higher education system in the latter country. The greatest differences appear between the two countries regarding field of study. In Germany, Mathematics graduates are more satisfied, and Medical Science graduates are less satisfied, than the reference group. Contrarily, only Education graduates are more satisfied than the reference group in Spain. These results may be a consequence of differences in the organisation of the health and education systems, predominantly provided by the public sector in both countries but with a different structure of the professional ladder, perhaps more comfortable in Spain than in Germany for young graduates. The difference in the case of Mathematics and Computer Science can be explained by the better opportunities for these graduates in the more developed German labour market.

Actual job attributes show, in general, the same effects on both countries, although it is remarkable that German graduates holding full-time jobs tend to be less satisfied than those with part-time job contracts, which suggests the existence of a relative higher demand for part-time positions in Germany. The effects of the match between education and employment are also similar. The use of qualifications at work raises job satisfaction, whereas both over-education and having a surplus of competences reduce graduates' satisfaction in both countries. Besides, under-education reduces satisfaction in Germany, but not in Spain, perhaps a difference due to cultural reasons. As for the effects of the sector of activity, working in the education sector is highly valued in both countries, whereas working in other market services increases satisfaction in Germany but reduces it in Spain. Additionally, working in agriculture and manufacturing sectors in Spain reduces satisfaction, whereas it has a neutral effect on satisfaction for German HEG's, which may be a consequence of the relatively more recent transition of Spain towards a tertiary, service-based economy.

Summarising, the estimation results for job satisfaction by countries illustrate the relevance of national labour markets for different type of graduates, and confirm the persistence of nation-specific traits of labour market segmentation, combined with long-term national educational policies, and with the cultural traditions of each country.

Conclusions

In this paper we approached the question of the education-related determinants of job satisfaction for young HEG's in Europe. Over the

last few years, a number of studies focussed on job satisfaction have been published; however, our research proposes two new relevant points of interest. First, it is based on a multi-country set of data, which allows both a pan-European view at the topic and comparisons to be made between individual countries, so we can observe what is similar and what is not among them. The second aspect of our research that should be emphasised is the quality of the data regarding education. We are able to consider many education-related characteristics such as fields of study, graduates' opinion about their educational experience, their basic life values, and their perception of the match between knowledge and competences acquired and those required by jobs. This comprehensive data set permits us to present a new perspective on the educational causes behind job satisfaction.

Firstly, we find that job satisfaction among different European countries is relatively homogeneous despite a number of national differences in the labour market situation of young graduates. This finding suggests that job satisfaction, as a personal perception, is a relative issue closely related to comparison and expectations. Individuals compare their own current situation with the situation of comparable people around them and draw conclusions depending on their expectations and relative personal position. In this sense, it is remarkable that the unemployment rate in the country is positively related to individual satisfaction.

Secondly, we have disentangled an interesting link between gender and job satisfaction. When regressions include only education and other personal characteristics, men tend to be happier than comparable women, that is, since women have in general poorer jobs than men with similar personal characteristics they feel relatively deprived. On the other hand, when regressions include labour status variables only, women were happier than men with comparable jobs. This again is a result of the comparison effect: a woman with a job similar to those held by men compares herself to the rest of women in the labour market, perceiving herself in a relatively better situation. If we bear in mind the fact that our data consist only of young graduates from developed countries, with long traditions of gender equality policies, this result is extremely disappointing and raises doubts about the status of gender equality in the labour market. European women are increasingly delaying marriage and childbirth while attending higher education institutions and establishing working careers. More women are joining the labour force than ever before, and they are more likely to have a continuous lifetime work experience. Higher education enrolment of women is nearly the same as men, but women still choose major fields of study that differ from those

of men, and that are less likely to lead to high level, high pay jobs. European governments have embarked upon an active policy of promoting equality between men and women. The growing number of European initiatives is a powerful thrust in this direction, but the major difficulty in investigating this matter lies in the fact that data collection is neither regular, nor co-ordinated. Studies quite often produce gender statistics, but it is quite rare to find real concern over gender issues. Relevant information needs to be available in order to properly assess the respective labour market situations of men and women and to follow them as they evolve.

Thirdly, we find out that the educational experiences are related to later job satisfaction both directly and indirectly, and that these links last at least 4 years after graduation. In this sense, it is relevant to point out that those graduates who had a positive educational experience, with emphasis on practical learning and with provision of work practice during their studies, are more likely to be satisfied at work later than graduates with poorer educational experiences.

Fourthly, we find that the positions currently held by young European graduates do not fulfil their expectations regarding earnings and possibilities for further academic inquiry. Nevertheless, graduates that place a high value on family life, social prestige and personal development tend to be happier with their jobs. These results suggest that although current graduate positions are neither as well paid nor as creative as expected by young HEG's, they allow for a promising future from social and personal points of view.

Fifthly, we find out that a surplus of qualifications and competences regarding jobs is one of the most relevant causes of dissatisfaction for HEG's. We have tested this result through three different variables: use of knowledge acquired during study, the match between education level and job level, and the comparison between competences acquired and competences needed in the job. In the three cases, the results show a high level of disappointment when graduates cannot use their knowledge and competences at work. It is surprising, to some extent, that the opposite situation (to be under-educated or having lower competences than required) increases graduates' job satisfaction. Apparently, the feeling of being under-educated or under-competent does not bother young graduates, probably because they are in positions better than those they anticipated, and are enjoying some other extra benefits.

Sixthly, we find that, in general, European young graduates are more satisfied when they work for the public sector, and that they also prefer, other things being equal, working in small firms, with permanent job

contracts, and in full time jobs. Jobs in the service sector, especially in the education sector, increased the probability of high satisfaction. Nevertheless, a good salary is a key factor leading to increased job satisfaction, other things being equal. Regarding field of study, graduates from Engineering, Mathematics and Computer Science are in general more satisfied than graduates from other fields, although we find evidence of diverse nation-specific patterns in job satisfaction by study field.

Finally, the results by specific country do not differ substantially from the global results except in the analysis by study field and by sector of economic activity. It is interesting to note that the results related to personal points of view about the educational process and about personal values of individuals do not show different patterns across countries. Nevertheless, the influence of the field of study and that of the economic sector graduates work in do vary widely from one country to another. Our results imply that young HEG's from different European countries share quite similar conceptions of work and life although, at the same time, both the educational and the labour market structures are still rather divergent among countries. In some countries a job in Education is relatively well valued while the opposite happens in other countries; a degree in Medical Sciences is also very positively regarded in some countries but it is negatively valued in others. These results may be influenced as well by differences among countries in the organisation of services such as education or the health system. Additionally, they can also be explained by surpluses or shortages regarding specific professional degrees as a consequence of the lack of transparent information about European higher education and imperfect trans-national labour mobility.

Appendix A

Table A1. Descriptive statistics

Variable	Mean	Std. Dev.
Female ¹	0.50	0.50
Age ¹	29.14	2.42
Father's higher education ¹	0.34	0.47
Mother's higher education ¹	0.21	0.41
Course content of major ²	3.51	0.85
Design of degree program ²	3.19	0.98

Table A1. Descriptive statistics

Variable	Mean	Std. Dev.
Practical emphasis on teaching and learning ²	2.76	1.16
Teaching quality ²	3.32	0.91
Provision of work placements and other work experience ²	2.45	1.33
Interest in social prestige ³	3.07	1.04
Interest in personal development ³	4.44	0.67
Interest in varied social life ³	3.81	0.95
Interest in home/family ³	4.01	1.02
Interest in making money ³	3.77	0.89
Interest in academic inquiry ³	3.42	1.23
Interest in job itself ³	4.04	0.86
Education (reference is Engineering) ⁴	0.05	0.23
Humanities (reference is Engineering) ⁴	0.12	0.33
Social Sciences (reference is Engineering) ⁴	0.31	0.46
Law (reference is Engineering) ⁴	0.07	0.26
Natural Sciences (reference is Engineering) ⁴	0.09	0.29
Mathematics (reference is Engineering) ⁴	0.06	0.23
Medical Sciences (reference is Engineering) ⁴	0.08	0.27
Private Sector ⁵	0.70	0.46
Log. annual gross income in K-Euro (PPP) ⁵	3.11	0.54
Log. hours worked per week ⁵	3.57	0.26
Small Firm (<= 10 workers) ⁵	0.22	0.41
Full-time job ⁵	0.89	0.31
Permanent contract ⁵	0.78	0.42
Primary and secondary sector (reference is Pub. Admin.) ⁶	0.19	0.39
Other services (reference is Pub. Admin.) ⁶	0.43	0.50
Education sector (reference is Pub. Admin.) ⁶	0.14	0.35
Health sector (reference is Pub. Admin.) ⁶	0.08	0.28
Qualification use at work ⁷	3.37	1.09
Under-educated (reference is same level degree) ⁸	0.11	0.31
Over-educated (reference is same level degree) ⁸	0.24	0.43
Deficit in competences (reference is similar competences) ⁹	0.13	0.33
Surplus in competences (refer. is similar competences) ⁹	0.05	0.22
Further Education ¹⁰	0.36	0.48
Unemployment Rate ¹¹	4.69	3.76

¹ Age was coded in years. Female was coded 1 for female and 0 for male. We included the educational level of both parents, if they completed higher education (coded 1) against those who did not complete that level of education (coded 0).

² To measure the study provision and study conditions that graduates experienced in their course of study, respondents were asked to assess the following statements: (i) course content of main subject, (ii) design of degree program (iii) practical emphasis on teaching and learning, (iv) teaching quality and (v) provision of work placements and other work experience. Responses were coded from 1 to 5, where 1 = very bad, 2 = bad, 3 = neutral, 4 = good, 5 = very good.

³ In the same way, graduates were asked to assess the following life goals: (i) social prestige, (ii) personal development, (iii) varied social life, (iv) home/family, (v) making money, (vi) academic inquiry and (vii) work. Responses were coded from 1 to 5, where 1 = not at all important, 2 = not important, 3 = neutral, 4 = important and 5 = very important.

⁴ We used dummies for eight different fields of study: Education, Humanities, Social Sciences, Law, Natural Sciences, Mathematics, Medical Sciences and Engineering. The last field was used as a reference.

⁵ Labour market status variables included, earnings, hours worked, type and size of the institutions and the nature of the sector among others. Earnings were measured as annual gross wage for dependent workers and as annual gross earnings for self-employed workers, in thousand of euro and standardised by purchasing power parity. Working hours were measured as reported average working hours per week. The type of institution contrasted public sectors (coded 1) with other sectors (coded 0). The institution's size was coded 1 for small institutions (less than 11 workers) and 0 for otherwise. Information regarding employment was coded 1 for full-time jobs and 0 for part-time jobs. Types of contract contrasted permanent contracts (coded 1) and temporary contracts (coded 0).

⁶ We also used dummies for five different sectors of activity: the primary and secondary sector, the educational sector, the health sector, public administration and other services (public administration was omitted).

⁷ The use of knowledge and skills acquired in study as a part of graduates' current job was also measured. Respondents were asked to what extent they used the knowledge and skills acquired in their current job. Responses were coded from 1 to 5, where 1 = not at all and 5 = to a very high extent.

⁸ The appropriateness of educational qualifications for employment and work was measured using three dummy variables: under-educated, over-educated and the same level. The latter was used as a reference. We defined a graduate as overeducated if his/her educational level was higher than required for his/her specific occupation. According to this method a graduate was under-educated if his/her educational level was lower than required for his/her specific occupation. Hence, we measured over-education and under-education creating dummy variables and taking the value one if the respondent was over- or under-educated.

⁹ The importance of competences on current job was also measured. Our data made it possible to compare graduates' self-reported acquired competences at the time of graduation with the competences that graduates felt they needed four years after graduation. We estimated two dummy variables for individuals who believed that they had a lack of competences and for others who had an excess of competences.

¹⁰ Any further education and training required to obtain or keep a professional qualification after graduation was coded 1 if the graduates had taken further education and 0 for those who had not taken additional education.

¹¹ Finally, the unemployment rate according to the sample was calculated for each country.

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