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Labor Market Effects of Field of Study in Comparative Perspective

An Analysis of 22 European Countries

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Abstract

This article seeks to provide one of the first systematic comparative analyses of labor market consequences associated with fields of study. Using data of 22 countries from the European Labor Force Surveys (2004 and 2005), we analyze how field of study affects unemployment and occupational status for university-educated graduates. Our core hypothesis is that relative differences between fields should increase with educational expansion at the university level. Results of multilevel two-step regressions generally confirm our expectations. The more students graduate from universities, the greater the differences in labor market chances of university graduates from different fields.

Key words: cross-national comparison • educational expansion • field of study • labor market • multilevel analysis

INTRODUCTION

In modern societies, education is the most important resource determining allocation processes to different labor market positions. In addition to the vast literature on labor market returns to different *levels* of education, scholars have become increasingly concerned about the labor market consequences of different *fields of study*. Most studies on this issue have dealt with the contribution of field of study to explain wage differences using data from the US (e.g. Daymont and Andrisani, 1984; Gerhart, 1990; Grogger and Eide, 1995; Loury, 1997). Only recently, sociologists have started to recognize the importance of the specific field of an educational degree for social stratification and begun to analyze its impact on

labor market outcomes such as occupational prestige (Katz-Gerro and Yaish, 2003; Shwed and Shavit, 2005; Smyth, 2005; van de Werfhorst, 2004), job mismatches (van de Werfhorst, 2002; Wolbers, 2003), access to service class positions (Kim and Kim, 2003), employment status (Katz-Gerro and Yaish, 2003; Reimer and Steinmetz, 2007; Smyth, 2005), and income (Bobbitt-Zeher, 2007; Hansen, 2001; Kalmijn and Van der Lippe, 1997; Marini and Fan, 1997; van de Werfhorst, 2004).

While results are sometimes difficult to compare due to different field classifications used,[1] they clearly indicate considerable differences in economic rewards associated with different fields of study. For example, graduates from 'soft fields' (e.g. Biglan, 1973) such as the humanities or social sciences are frequently found to fare considerably worse than their peers in the 'hard fields' such as the natural sciences or engineering. The results, however, depend on the country and outcome studied. While most studies find that humanities degree-holders typically have lower income or earnings (e.g. Arcidiacono, 2004; Marini and Fan, 1997), results for occupational status are less clear cut and seem to vary more between nations (e.g. van de Werfhorst, 2004). Up until now, very few studies have attempted to systematically address the question of why returns to field of study differ across countries. The few available studies mostly compare two or three countries (Kim and Kim, 2003; Machin and Puhani, 2003; Reimer and Steinmetz, 2007; van de Werfhorst, 2004), which only permits rather indirect tests of hypotheses about the causes of cross-national differences.[2]

In this article, we argue that with increasing numbers of university graduates in the labor market, the signal value of a university degree from less academically challenging and less selective fields like the humanities and social sciences will deteriorate. Specifically, we test the hypothesis that educational expansion is associated with a worsening of labor market chances of humanities graduates relative to other fields, both in terms of heightened unemployment risks and lowered occupational status. Drawing on harmonized data from 22 European countries from the European Union Labor Force Survey (EULFS), we first describe country differences in the distribution of university graduates across different fields of study and summarize the labor market outcomes they typically attain. Next, we use a two-step multilevel models to assess whether educational expansion at the university level explains part of the observed variability in the labor market outcomes of university graduates, focusing on individuals with a degree in the humanities relative to university graduates from other fields. Finally, we discuss and summarize our findings.

THEORETICAL BACKGROUND

Why are different fields of study differently valued in the labor market? From a human capital perspective, it is argued that the typical learning environments, as well as acquired competencies and skills, vary between fields (Paul and Murdoch, 2007; van de Werfhorst and Kraaykamp, 2001). Certain fields may develop more productive skills than others. Furthermore, fields of study may differ in the

extent they convey general versus occupation-specific skills. Since employers are interested in reducing training costs, they would prefer hiring applicants with a matching, occupation-specific degree to hiring applicants with mainly general education. If some fields lack an occupation-specific curricular orientation, while others clearly prepare for specific occupations, applicants from less specific fields will have greater difficulties finding a job: they more often have to compete against other applicants with more specific skills who are preferred by employers because they require less training (Glebbeek et al., 1989; van der Velden and Wolbers, 2007).

From a signaling perspective (Spence, 1973), successful completion of degrees in some fields of study is assumed to be more strongly dependent on prior ability than in other fields. These more challenging fields are also assumed to carry higher rewards. As a consequence, fields of study effectively sort students by their ability, because more able students succeed in and choose the more rewarding, more challenging fields. Conversely, less able students will choose less demanding and less rewarding fields. As employers learn about the different ability distribution across fields, fields in which success strongly depends on prior ability will carry a higher signal value in the labor market than fields of study that depend less strongly on prior ability. If ability remains scarce, unequal outcomes between different fields of study will persist.

Finally, supply restrictions of graduates from specific fields that are due to social closure (Sorensen, 2000; Weeden, 2002) might generate unequal outcomes between fields. Closure strategies can take the form of field-specific, student-intake restrictions through entrance requirements or levels of tuition designed to exclude a certain portion of applicants. As labor market rewards rise in response to supply restriction, competition for study places should intensify. Through institutionalized screening and selection mechanisms, the cognitively and/or financially most endowed applicants are admitted. As a consequence, mean ability in these more competitive fields should rise, which then also increases the signal value of these fields on the labor market.

Regarding specific fields, we expect that 'hard fields' like mathematics, physics, computer science, and engineering rely more heavily on pre-existing (e.g. mathematics) academic abilities than other fields. Arcidiacono (2004) demonstrates with data from the US that students with a major in natural sciences indeed had significantly higher test (SAT) scores in mathematics as well as in the verbal tests than their peers in the humanities, social sciences, and business. These ability differences will translate into different signal values in the labor market. Furthermore, significant earnings differences between these fields may persist even after selection is taken into account. In the aforementioned study, natural science graduates were found to receive higher earnings premiums compared to their peers in the humanities and social sciences after controlling for various ability indicators (Arcidiacono, 2004), which also indicates differences in the development of human capital between fields. Closure mechanisms may also

increase the signal value of certain fields by increasing labor market rewards for graduates from these fields through limitations of supply and thereby attracting more able students. Altogether, mean ability of students within these fields and consequently their signal value on the labor market should rise. In contrast, we expect that success in 'soft fields' such as humanities and social sciences is less dependent on prior academic ability. As a consequence, the average ability level of applicants in these fields will be lower, since the most able applicants will attempt to secure a place in fields with the highest labor market rewards. Furthermore, employers might expect greater training costs when hiring graduates from soft fields due to the generality of their training, which might further decrease their employment opportunities.[3]

Educational Expansion

Even though all European countries have witnessed rising university enrolment in the course of educational expansion, there is considerable variance in the share of university graduates across countries. According to EULFS data, in 2004/5 only eight percent of the population of 20- to 39-year-olds obtained a university degree in Austria, while in Norway the corresponding figure is 28 percent.[4] We expect that this variability of educational expansion at university level partly accounts for the differences we observe within countries in the relative labor market value of different fields of study.

Specifically, we argue that growth in the share of university graduates has further increased differences in mean ability between fields of study at universities, and thereby led to increasing inequality in labor market outcomes of university graduates from different fields. This argument rests on the assumption that in the course of educational expansion increasing number of less able students are obtaining access to university education (also see Gebel and Pfeiffer, 2007; Walker and Zhu, 2005). Consequently, the marginal student admitted to university after educational expansion is less likely to meet the admission requirements of or to have the ability to succeed in more challenging fields. He or she will instead select (or be selected into) less academically demanding fields, which causes mean ability as well as the signal value of these fields to decline. In contrast, more challenging fields remain un- or less affected by this change in the ability distribution of university applicants.[5]

While all fields have an interest in protecting their standards, we assume that the differences in the 'ability-requirements' of the different fields will result in less able students increasingly selecting or being selected into less challenging fields such as the humanities or social sciences. In contrast, we expect that 'hard fields', like mathematics, physics, computer science, and engineering continue to succeed in attracting more able students. As already observed by Clark three decades ago, different academic fields may react differently to growing numbers of students in higher education:

> Expansion into mass higher education has widened these internal differentials, with medicine, the natural sciences and sometimes engineering protecting their standards

> through limited access, while other units, in humanities, the social sciences, and sometimes such semiprofessions as education, take all comers. (Clark, 1978: 248)

With an increase in the number of less able students due to educational expansion, the ability sorting described above and the resulting inequalities intensify. Mean ability in the 'soft fields', like humanities, should decline, which also leads to a decline in their signal value on the labor market. The decline in mean ability, through peer effects, may furthermore result in a decline of teaching standards and, subsequently, a decline in the amount of skills taught within these fields. This leads us to the hypothesis that the labor market positions of university graduates from the humanities are lower compared to university graduates from other fields in countries with a higher share of university graduates. We test for these relative differences in labor market position using both unemployment risk and occupational status as dependent variables.

Other Institutional and Structural Factors

A considerable body of sociological research has been devoted to identify characteristics of educational institutions and their consequence for the education-labor market linkage (e.g. Allmendinger, 1989; Breen, 2005; Kerckhoff, 1995; Müller and Shavit, 1998). For example, van de Werfhorst (2004) argues that productivity differences of graduates from different fields may be more visible to employers if higher education awards more clearly structured degrees. We assume that in countries where most university graduates acquire an occupation-specific tertiary degree such as law or engineering, employers might be particularly reluctant to hire and promote graduates from fields that develop more diffuse labor market qualifications such as the humanities. Unfortunately, the well known institutional divide between countries focusing on the formation of more vocational versus more general qualifications at the upper-secondary level is not necessarily applicable to tertiary education (e.g. Müller and Wolbers, 2003). Lacking an elaborated indicator for the vocational orientation of higher education system for all European countries in our sample, we consider the average dispersion of graduates from different fields across occupational categories as a measure for *occupational specificity* of university education for each country.

Among labor market institutions, *employment protection legislation* (EPL) is an important constraint on employer behavior in many European countries, and past research has shown that it has a substantial effect on early labor market careers (Breen, 2005; Gangl, 2003; Wolbers, 2007). EPL restricts both employers' ability to terminate employment contracts at will and to use non-standard (fixed-term, part-time, and other contingent) forms of employment. Either restriction makes the employers' hiring decision more risky, because rigid EPL raises the costs associated with hiring and firing workers. Therefore, if EPL is rigid, employers have to screen applicants more carefully, which should increase employers' reliance on field of study as a signal. Consequently, EPL should

increase differences in the relative labor market chances of graduates from different fields.

Finally, the relative value of different fields of study may vary with the state of the *business cycle*. In a period of economic downturn, labor demand will be lower and competition for available vacancies will increase. Under these conditions, it appears likely that less competitive groups, that is, graduates from less challenging fields, will encounter more problems in finding employment and a high status position (Coleman, 1991). Alternatively, graduates from more occupation-specific fields such as medicine may have fewer opportunities to switch to other jobs than graduates from more general fields. Hence, in periods of economic downturn, graduates with very specific occupational qualifications may suffer from heightened unemployment risk or may have to accept lower occupational status positions.[6]

DATA AND SAMPLE

For descriptive and multivariate analyses, we use data from the European Union Labor Force Survey (EULFS) for 22 European countries from the years 2004 and 2005.[7] The EULFS consists of large-scale nationally representative labor force surveys that are standardized and harmonized by EUROSTAT (2005).[8] It provides quarterly, cross-sectional information on individual labor force participation and various other aspects of employment. Data on field of study are only available from 2004 onwards. In total, we use 161 surveys from 22 countries, with most countries contributing eight surveys.[9]

As a partial remedy for problems induced by unobserved heterogeneity at the individual level, we restrict our country-specific samples along several dimensions. We only included individuals aged 20 to 39 years to mitigate age or cohort effects that might increase heterogeneity within fields. More importantly, we restricted the sample used for analysis to university graduates only, that is, individuals holding ISCED 5A and ISCED 6 degrees. We dropped ISCED 5B degree holders because programs of this type are typically very heterogeneous within, and even more so, between countries.[10] This sample restriction results ensures comparability of fields of study to the extent achievable given our data source. Even after reducing the sample, we still have many observations at the individual level: the sizes of our analytical samples range from 1286 observations for Estonia to 50,984 observations for the Netherlands, with an average sample size of 18,645 observations per country.

The field of study variable provided by EUROSTAT permits the differentiation of 15 different fields. We joined thematically close fields with few observations, arriving at an eight-field classification: teacher training and education science (ED), foreign languages, arts and humanities (HU), social sciences, business and law (SBL), natural sciences (NAT), engineering, manufacturing and construction (TEC), health and welfare (HW), and services (SE). For the sake of parsimony, we also tested statistically whether fields could be further aggregated

without losing valuable information. The basic logic of our test was to assess, given a regression model of different labor market outcome variables on respondent's fields of study, how much the fit of the model would deteriorate if two fields were joined. These tests were generally negative, which left us with the somewhat unwieldy eight-field classification.

DESCRIPTIVE RESULTS

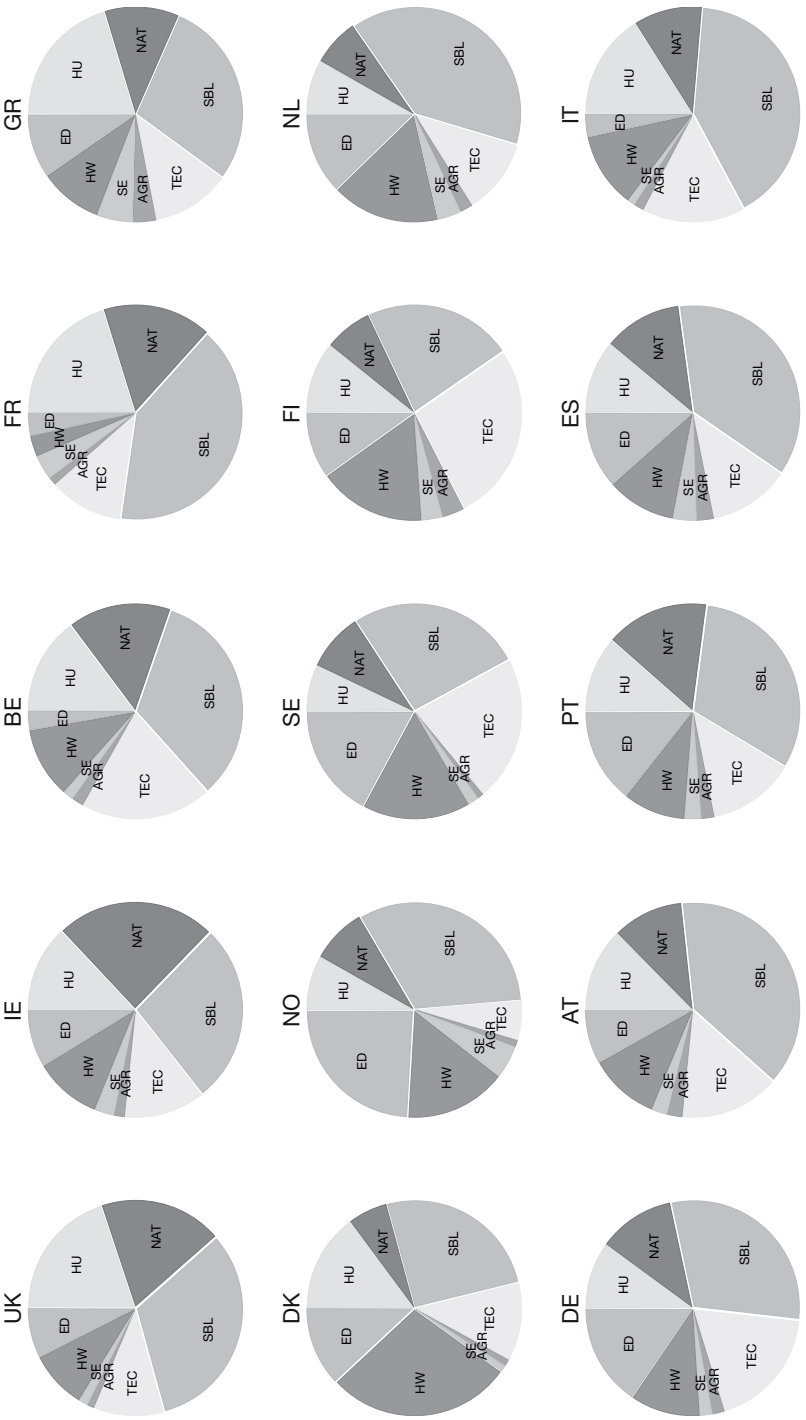
We arranged Western European countries in three groups (Figure 1) according to cross-national similarities and distribution differences of university graduates across fields. Countries in the first row (UK, IE, BE, FR, GR) all have one third of university students graduates with a degree in the humanities or natural sciences. They have the largest combined share of graduates in these two fields. Second, they are marked by a relatively low combined share in the education and health/welfare fields, which is around 20 percent or less.

The second group comprises the Scandinavian countries and the Netherlands. Compared to the countries in the first and third row, these countries have on average the highest share of 20- to 39-year-olds graduating from university among the Western European countries (Table A1). The Scandinavian countries and the Netherlands are distinguished by the largest combined share of graduates in the education and health/welfare fields, while their combined share of graduates in the humanities and natural sciences is below-far below average. This distribution may in part reflect a distinctive approach to educational expansion, with privileged fields of study preparing for high-skill, public service sector occupations. It may also reflect that, in these countries, a lot of public service sector employees are educated at university, while in other countries, incumbents of similar occupations have been trained in ISCED 5B or post-secondary programs. Furthermore, it may be that this emphasis on high-skill public service jobs is at the expense of enrolment/graduation rates in other fields, particularly the humanities and natural sciences.

The third group comprises Austria and Germany, as well as Italy, Portugal, and Spain. Except for Spain, these countries are distinguished by a rather low share of university graduates. In terms of their distribution across field, they cut a middle ground between the countries in the first and second row. They neither have remarkably high or low combined shares of graduates in the humanities and natural sciences, nor do they have remarkably high or low combined shares of graduates in education and health/welfare fields. Finally, it is striking that some countries (especially Belgium, France, and Italy) have very low shares in the education field, which is probably due to either classification error or institutional differences in teacher training, such that elementary school teachers are not educated at university level (i.e. in ISCED 5A institutions). Hence, cross-national comparability of this field may be compromised.

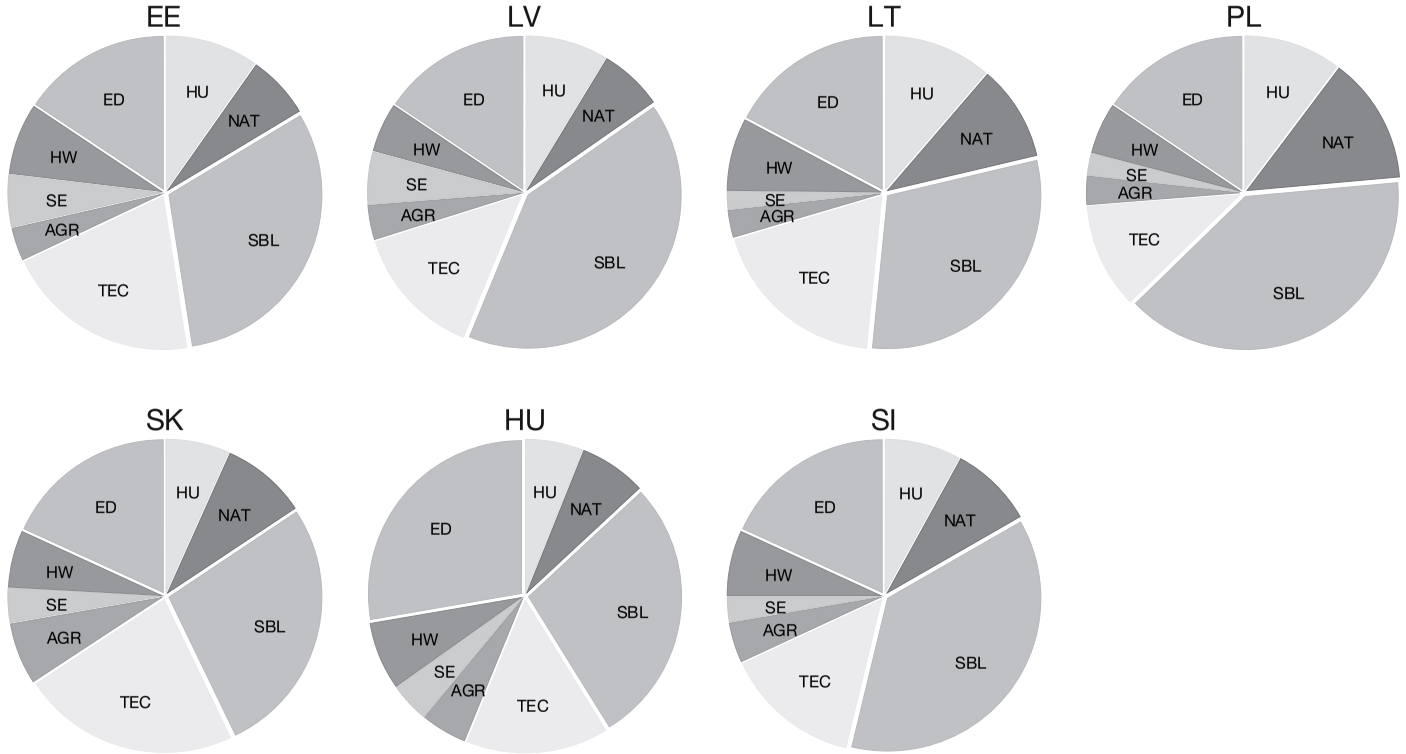
The Central Eastern European countries (Figure 2) are characterized by rather low shares of university graduates similar to other Central Western and

Figure 1 Distribution of university graduates across eight fields of study in 15 Western European countries



ED - Teachers and Education Science, HU - Humanities, SBL - Social Sciences / Business / Law, NAT - Natural Sciences, TEC - Engineering / Construction, AGR - Agriculture, HW - Health and Welfare, SE - Services.
Source: European Union Labour Force Survey 2004/2005, authors' calculations.

Figure 2 Distribution of university graduates across eight fields of study in seven Central and Eastern European countries



ED - Teachers and Education Science, HU - Humanities, SBL - Social Sciences / Business / Law, NAT - Natural Sciences, TEC - Engineering / Construction, AGR - Agriculture, HW - Health and Welfare, SE - Services.

Source: European Union Labour Force Survey 2004/2005, authors' calculations.

Southern European countries. In terms of field distribution, they have in common relatively low shares of graduates from the humanities and natural sciences, except for Poland. Furthermore, they have among the highest shares of graduates from the education as well as agricultural field, and among the lowest shares of graduates from the health and welfare field.

Labor Market Outcomes of Graduates from Fields of Study

The following section compares labor market outcomes of graduates from different fields within countries. In Table 1, we see that, except in Estonia, university graduates with a humanities degree have a higher unemployment rate than the average unemployment rate for university graduates in a given country. Unemployment rates tend to be relatively lowest for graduates from the health/welfare field.

Upon entering employment, considerable differences between fields persist. In Table 2, we present the average socioeconomic status university graduates from different fields attain expressed as a deviation from the mean socioeconomic status for university graduates in a given country. The rank order of fields has shifted: health and welfare degree-holders have among the lowest average ISEI scores. In all countries, their mean ISEI is below the mean ISEI of university graduates. The same applies to graduates from agriculture/veterinary and

Table 1 Field-specific unemployment rates for university graduates as deviations from university graduate mean unemployment rate, 2004/05 averages

Country	Mean	AGR	ED	HU	HW	NAT	SBL	SE	TEC
AT	0.04	−0.03	0.00	0.01	0.00	0.02	0.00	0.02	−0.01
BE	0.06	0.02	0.00	0.04	−0.04	−0.01	0.01	−0.01	−0.01
DE	0.05	0.00	−0.01	0.02	−0.01	0.00	0.00	0.01	0.00
DK	0.05	−0.03	−0.01	0.05	−0.02	0.01	0.00	−0.02	0.00
EE	0.04	0.03	0.00	−0.02	−0.03	−0.02	0.01	−0.04	0.01
ES	0.11	0.01	0.01	0.06	−0.03	−0.01	0.00	0.04	−0.04
FI	0.04	−0.01	−0.01	0.04	−0.01	0.02	0.01	−0.01	−0.01
FR	0.09	0.01	−0.07	0.02	−0.05	−0.01	0.01	0.02	−0.03
GR	0.13	0.07	0.00	0.04	−0.01	0.00	−0.02	−0.01	−0.03
HU	0.03	0.01	0.00	0.00	−0.02	0.00	0.00	0.03	0.00
IE	0.03	−0.01	0.00	0.01	−0.02	0.01	0.00	0.02	0.00
IT	0.10	0.00	0.01	0.05	−0.05	−0.01	0.01	0.05	−0.02
LT	0.05	0.01	0.00	0.01	−0.03	−0.01	0.00	0.02	0.00
LV	0.04	−0.02	−0.03	0.01	−0.03	0.01	0.00	0.04	0.02
NL	0.04	0.01	−0.01	0.02	−0.01	0.01	0.00	0.00	0.00
NO	0.02	0.00	0.00	0.01	−0.01	0.01	0.00	−0.01	−0.01
PL	0.10	−0.01	−0.01	0.02	−0.04	0.02	0.00	0.07	−0.02
PT	0.08	−0.02	0.01	0.03	−0.04	0.01	0.00	−0.04	0.00
SE	0.05	−0.01	−0.02	0.04	−0.03	0.05	0.00	0.00	0.01
SI	0.04	0.00	0.03	0.00	−0.03	−0.02	0.00	0.04	−0.01
SK	0.07	0.02	−0.01	0.01	−0.05	0.01	0.00	0.06	0.00
UK	0.03	−0.02	−0.01	0.01	−0.02	0.01	0.00	−0.01	−0.01

Source: Data from the EULFS 2004/05; own calculations.

services.[11] In contrast, humanities degree-holders obtain relatively high mean ISEI scores. In all countries except Ireland, their mean ISEI is above average. Education graduates secure on average the highest status positions. Altogether, Table 2 indicates substantial stratification of socioeconomic status by field of study, with surprisingly similar advantages or disadvantages associated with specific fields across all European countries.

Graduates from the technical and education fields generally have the most favorable outcomes in our sample of countries. Their unemployment rates are relatively low and their mean ISEI is among the highest. The unemployment rates for graduates from health and welfare are similarly low, but they also achieve relatively low status positions. For the most part, natural science graduates have average unemployment rates and obtain average socioeconomic status positions. Humanities degree-holders obtain somewhat higher status positions, but compared to natural science graduates, they have higher unemployment rates.

MULTIVARIATE ANALYSIS

In the following section, we seek to explain why the relative position of different fields of study on the labor market varies systematically across countries. We employ a multilevel framework, within which we model the effect of country level covariates on individual labor market outcomes of graduates from different

Table 2 Field-specific mean ISEI scores for university graduates as deviations from university graduate mean ISEI score, 2004/05 averages

Country	Mean	AGR	ED	HU	HW	NAT	SBL	SE	TEC
AT	53.4	−11.2	3.6	6.8	−18.7	2.3	2.1	−2.1	1.9
BE	51.8	−8.4	10.4	2.7	−14.6	0.9	0.0	−5.4	4.2
DE	57.3	−17.2	6.0	2.3	−16.4	1.0	0.0	−4.5	4.2
DK	54.7	−15.9	10.7	1.1	−12.4	2.4	3.6	−5.8	5.8
EE	51.7	−5.8	10.8	6.4	−7.2	3.1	−2.5	−3.4	−2.1
ES	52.8	−11.8	5.7	2.1	−15.7	2.4	0.8	−4.2	6.2
FI	55.4	−13.1	10.4	7.1	−8.7	3.0	−1.4	−8.1	2.0
FR	54.1	−8.1	13.3	2.2	−18.3	3.8	−4.5	−0.7	6.7
GR	56.7	−20.5	7.5	4.5	−24.0	3.3	1.8	−4.6	5.8
HU	56.0	−13.1	6.8	6.2	−15.0	0.5	−0.7	−5.2	−0.8
IE	51.6	−14.1	14.4	−0.1	−13.9	−0.5	−0.3	−5.2	5.2
IT	53.4	−12.8	−6.2	1.5	−12.6	−0.5	2.1	−7.9	5.3
LT	54.8	−6.4	6.2	4.4	−17.7	4.3	0.5	−4.5	−2.5
LV	50.6	−11.1	3.1	4.5	−12.0	5.1	1.6	−4.8	−3.6
NL	54.6	−8.0	7.0	3.2	−9.8	1.8	1.2	−5.0	−0.6
NO	50.4	−11.5	−3.3	0.5	−7.5	5.1	2.8	0.8	2.7
PL	55.8	−11.5	7.3	7.9	−19.7	2.7	−1.3	−3.6	−1.2
PT	53.1	−16.4	−0.4	4.2	−16.5	−0.3	2.5	−1.4	6.8
SE	56.2	−13.8	4.1	3.8	−11.8	−0.1	2.5	−9.0	2.4
SI	59.1	−12.2	7.7	5.5	−16.9	0.8	−1.3	−2.7	3.0
SK	54.2	−9.4	7.9	3.5	−15.2	2.1	1.7	−7.1	−2.1
UK	51.4	−9.2	12.7	0.6	−8.2	0.4	−1.6	−1.8	2.6

Source: Data from the EULFS 2004/05; own calculations.

fields of study. Our main macro covariate is university level educational expansion, measured as the percentage of individuals with an ISCED 5A and ISCED 6 degree among all 20- to 39-year-olds in 2004/5 (derived from the EULFS). Furthermore, we measure the general level of occupational specificity of university education in our set of countries by using an educational dispersion index (Dekker et al., 2002), based on ISCO-88 2-digit occupational codes. This index indicates how homogenous a certain ISCO occupation is with respect to the field of study of persons employed in this occupation. We used the weighted average of this index across all fields for every country. The index ranges between 0 and 1, with higher values indicating more heterogeneity and thus lower occupational specificity.[12] We also consider employment protection legislation (EPL), measured by the OECD overall EPL Index, version 2, from 2003 (OECD, 2004), and the average adult (35- to 54-year-olds) unemployment rate for 2004 and 2005 (derived from the EULFS) to control for differences in aggregate labor demand due different states of the business cycle. Table A1 in the appendix reports descriptive statistics for the independent variables.

We opted for a two-step estimation strategy.[13] First, we ran separate regressions for each country of our dependent variables on field of study dummies and controls (gender, age, doctoral degree, and quarter of survey). For the dependent variable unemployment probability, we used logistic and OLS regression for occupational status, measured by the International Socio-economic Index of occupational status (ISEI; see Ganzeboom and Treiman, 1996). In both cases, robust standard errors were computed. The humanities field was chosen as a reference category for the polytomous field of study variable.

In the 'second step regressions', the country-specific field of study coefficients from the 'first step regressions' are modeled as a function of country-level covariates. For example, we model whether the unemployment risk of natural science degree holders relative to humanities degree-holders increases if educational expansion increases. To account for heteroskedasticity of known form, that is, taking into account that our estimated dependent variables have different standard errors, we use a FGLS-like estimator, using weights that are derived in part from the standard error of the dependent variable estimated in the first step.[14] To control for heteroskedasticity of unknown form, we calculate Huber-White standard errors. Given the small sample size, sensitivity of estimates due to outlying observations is a potential problem. We use graphical methods as well as DFBETA statistics to identify outliers in our multivariate regressions. As a result of these analyses, we decided to drop Norway, which was an influential outlier with respect to educational expansion, leaving 21 cases for the multivariate analyses.

RESULTS

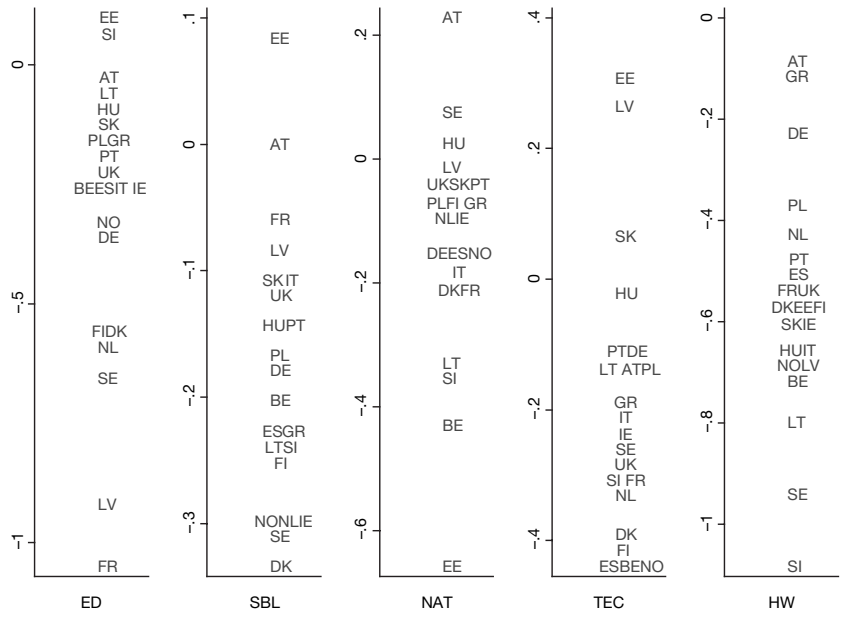
Figure 3 displays the country-specific, y-standardized logit coefficients from the 'first step regressions' of unemployment probability on field of study and

controls. The reference category for each field coefficient is the humanities field. The contrasts between agriculture and services are not displayed because these categories are often too thinly populated to generate reliable estimates. The picture generally confirms that humanities degree-holders have a higher unemployment risk than graduates from other fields net of the control variables in the respective country regressions. For each of the five fields shown, the country-specific logits (log-odds) are mostly below zero, that is, across countries the unemployment risk for graduates from these fields is lower than the unemployment risk of humanities degree-holders.

Next, we address whether the relative disadvantage of humanities degree-holders can be explained in terms of structural and institutional conditions. Table 3 reports results from weighted regression analyses in which we regress the logit coefficients graphed in Figure 3 on our macro-covariates. In order to obtain an estimate for the gross effect of educational expansion, we first compute a bivariate model. Controls for occupational specificity, as well as the extent of EPL and the state of the business cycle are introduced in a second model. The results indicate that a greater supply of university educated graduates leads to a higher unemployment risk of humanities degree-holders relative to graduates from other fields.

This relation appears with and without controlling for institutional and structural factors; in three out of five cases, the effect is significant at the five percent level. The coefficient estimates for our indicator for the occupational specificity

Figure 3 Unemployment, y-standardized logit coefficients of field effects relative to humanities



Source: EULFS 2004/05; own calculations.

Table 3 Determinants of field specific unemployment probability relative to humanities, Western and Eastern European countries ($N = 21$, excl. Norway) (b-coefficients, t-statistics in parentheses)

	Education		Soc/Bus/Law		Natural Sciences		Technical		Health/Welfare	
	M1	M2	M1	M2	M1	M2	M1	M2	M1	M2
Ed. Expansion	5.76***	5.87**	1.90***	3.44***	0.03	−0.07	3.89***	3.97***	−2.01	−1.96
	(−3.74)	(−2 .76)	(−3.55)	(−6.22)	(0.03)	(−0.04)	(−3.79)	(−3.81)	(−0.85)	(−0.59)
Dispersion		−1.26		2.45***		−0.61		0.61		1.26
		(−0.48)		(3.53)		(−0.42)		(0.54)		(0.38)
EPL		−0.18		−0.00		−0.07		−0.12		0.02
		(−0.93)		(−0.05)		(−1.32)		(−1.55)		(0.14)
Business Cycle		0.03		0.49		−0.67		2.52**		2.19
		(0.17)		(0.62)		(−0.50)		(2.58)		(0.80)
F-test	14.00	2.70	12.57	11.00	0.00	0.92	14.36	8.67	0.73	0.82
R^2	0.23	0.28	0.24	0.56	0.00	0.05	0.29	0.42	0.04	0.07

*$p < .1$; **$p < .05$; ***$p < .01$.

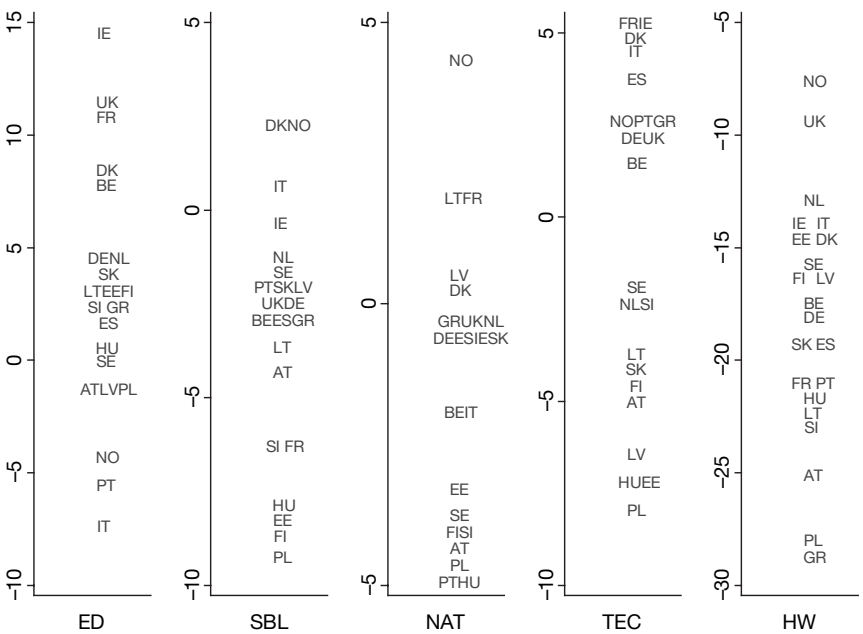
Source: Data from the EULFS 2004/05; own calculations.

of higher education, the general level of dispersion of graduates from different fields across occupations, show that there seems to be no systematic relationship between the general level of dispersion and the unemployment risk of humanities degree-holders relative to other fields. Contrary to our hypothesis, graduates from the social sciences/business/law fields have a worse position relative to humanities at higher levels of occupational specificity. Regarding EPL, the coefficients are mostly negative, as one may have expected, but they do not reach statistical significance in any case. The state of the business cycle does not appear to be systematically related to the relative unemployment risk of humanities graduates. This differs for the technical field, which is more affected by unemployment relative to the humanities in times of low aggregate labor demand (but see note 15).

While the previous section indicated a negative effect of educational expansion on the labor market value of humanities degrees, we now analyze whether humanities degree-holders are facing disadvantages due to educational expansion even after entering employment. Figure 4 displays the country-specific, OLS coefficients from the 'first step regressions' of ISEI on field of study and controls. The reference category for each field coefficient is the humanities field.

Net of the control variables in the respective country regressions, humanities degree-holders are generally neither disadvantaged nor advantaged (except relative to graduates from the health and welfare field) in terms of attained

Figure 4 ISEI, OLS-coefficients of field effects relative to humanities



Source: EULFS 2004/05; own calculations.

occupational status. However, we also observe substantial heterogeneity in the relative position of humanities graduates, which is what we seek to explain in the following section. Table 4 reports results from two sets of regressions, in which we regress the OLS coefficients graphed in Figure 4 on the extent of educational expansion with and without controlling for occupational specificity, as well as the extent of EPL and the state of the business cycle in a second model.

The results are only partly supportive of our hypotheses regarding educational expansion. The bivariate analyses indicate that, with a larger supply of university graduates, humanities degree-holders attain significantly lower mean ISEI scores in three out of five countries. However, none of the coefficients remains statistically significant when we introduce our additional macro-covariates, even if all coefficient estimates for educational expansion retain a positive sign. Compared to the analyses of unemployment, we find more consistent support for our hypothesis regarding occupational specificity. In countries characterized by higher occupational specificity, graduates from all five fields seem to attain higher occupational status than humanities graduates, although the relationship is statistically significant only for the natural sciences field. EPL does not seem to have systematic effects, even if it is associated with a reduction in the ISEI premium of education and health/welfare graduates relative to humanities graduates. Again, the state of the business cycle negatively affects the relative positions of graduates from the technical field relative to humanities graduates. Apparently, net of other structural and institutional conditions this group seems to be relatively susceptible to fluctuations in the state of the economy.

Overall, we find that, in countries with larger numbers of university educated individuals, humanities degree-holders suffer from a relative disadvantage in the labor market. This particularly applies to their unemployment risk, which is significantly higher even when controlling for occupational specificity, employment protection legislation, and aggregate labor demand. We also find some, albeit weaker, support for our hypothesis regarding occupational status. While higher levels of educational expansion seem to negatively affect the relative status attainment of humanities graduates in the bivariate models, this relationship is no longer statistically significant when introducing other macro-covariates.

In order to test the robustness of our findings, we specified various additional models, excluding different subsets of European countries. Overall, the relationship between educational expansion and the relative unemployment risk or occupational status of humanities degree-holders remained stable and not driven by few outliers with respect to educational expansion.[15] Furthermore, given that men and women tend to choose different fields of study, we also split our sample by gender and reran the analyses (results available on request). While this reduction in individual-level sample size increased the uncertainty of our estimates, the general patterns did not change.

In terms of causality (King et al., 1994), our evidence must be regarded rather as an illustration of our hypotheses than a strict causal test. At the micro-level,

Table 4 Determinants of field specific ISEI relative to humanities, Western and Eastern European countries ($N = 21$, excl. Norway) (b-coefficients, t-statistics in parenthesis)

	Education		Soc/Bus/Law		Natural Sciences		Technical		Health/Welfare	
	M1	M2	M1	M2	M1	M2	M1	M2	M1	M2
Ed. Expansion	62.84**	42.73	16.77	3.12	18.56**	10.90	30.66	19.24	62.94***	28.27
	(2.46)	(1.53)	(1.37)	(0.18)	(2.49)	(0.81)	(1.53)	(0.63)	(3.63)	(0.83)
Dispersion		11.64		13.75		24.44*		8.70		31.73
		(0.53)		(0.87)		(2.02)		(0.39)		(1.40)
EPL		−3.39*		0.02		0.28		1.65		−2.26*
		(−2.02)		(0.01)		(0.37)		(1.07)		(−1.80)
Business Cycle		−4.79		−31.40		8.79		−57.17**		−48.34
		(−0.15)		(−1.26)		(0.05)		(−2.33)		(−1.27)
F-test	6.04	3.53	1.88	1.32	6.20	2.87	2.34	2.31	13.16	8.71
R^2	0.23	0.38	0.05	0.18	0.12	0.35	0.08	0.26	0.28	0.53

*$p < .1$; ***$p < .05$; ****$p < .01$.
Source: Data from the EULFS 2004/05; own calculations.

and especially at the macro-level where we seek to draw inferences, we have to assume that there are no unobserved factors confounding our estimates. We conducted various specification tests for our country-level regressions, for example, by looking at different subsets of countries and using different control variables. While our results regarding educational expansion were robust, the small sample size at the country level puts a natural cap on the number of control variables one can use. More importantly, at the country level, unit-specific unobserved factors are likely to influence the relative labor market values of different fields of study. For example, we cannot control for country-specific demand structures, employer beliefs, or institutional differences with respect to ability-sorting and selection into different fields.[16] Finally, although our arguments apply to explaining country differences in the relative position of humanities degree-holders, the effect of educational expansion on the relative labor market value of different fields is best modeled and studied over time within individual countries. This would solve the problem of time-invariant (but introduce the problem of time-varying) unobserved heterogeneity.

CONCLUSION

This article explored effects of field of study on labor market outcomes in a large number of European countries, using recent data from the European Union Labor Force Survey. In the descriptive section of the article, we found that countries differ substantially in the distribution of university graduates across fields of study. Furthermore, the size of different fields seems to reflect distinct approaches to educational expansion at the university level within European countries. For example, the Scandinavian countries, characterized by relatively high shares of university graduates, exhibit a particularly high combined share of graduates in the health/welfare and education field.

In the analytical section of the article, we examined how graduates from different fields fare with respect to unemployment and occupational status across 22 countries. Overall, we observed considerable cross-national similarities for both outcomes. In all but one country, humanities graduates possess an above average risk of unemployment. With respect to occupational status however, we find that health and welfare degree-holders have among the lowest average occupational status in all countries, whereas humanities graduates attain a relatively high occupational status compared to graduates from other fields.

In the multivariate analysis, we tested whether the relative labor market value of different fields of study varies systematically with structural context conditions in our set of countries. Our main argument was that educational expansion is associated with a decline in mean ability in less academically challenging fields like the humanities or social sciences. We assumed that the marginal student admitted to university after educational expansion is less likely to meet the admission requirements of or to have the ability to succeed in more challenging fields. Due to self-selection and institutional sorting, additional lower

ability students will increasingly end up in less academically challenging fields like the humanities and social sciences due to self-selection and institutional sorting. This in turn lowers the signal value of the respective degrees on the labor market, which is observed as lower occupational status and higher unemployment risk. Results are mostly supportive of this hypothesis. In countries with larger shares of university graduates, degree-holders from the humanities indeed have lower occupational status and higher unemployment risks. In case of unemployment, this finding was robust and statistically significant, even when controlling for occupational specificity, EPL, as well as the state of the business cycle. For occupational status, the effect of educational expansion pointed consistently in the expected direction, although it was statistically insignificant upon inclusion of the control variables.

Overall, we believe that our results show that educational expansion not only changes returns to different educational degree levels (e.g. van der Ploeg, 1994), but also affects returns to fields of study. For the future, it would be desirable to use panel data from several countries in order to develop a more rigorous test of the effect of educational expansion on the relative labor market value of different fields of study.

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Appendix

Table A1 Descriptive statistics independent variables

Country	% ISCED 5A/6 (20–39-year-olds), 2004/05[a]	Average adult (35–54-year-olds) unemployment rate for 2004/05[a]	OECD EPL Index, 2003, Version 2[b]	Average dispersion of fields of study across ISCO-88 occupations[a]
AT	0.08	0.05	2.2	0.83
BE	0.13	0.08	2.5	0.77
DE	0.10	0.11	2.5	0.80
DK	0.20	0.05	1.8	0.77
EE	0.14	0.09	2.7	0.83
ES	0.20	0.10	3.1	0.86
FI	0.15	0.09	2.1	0.77
FR	0.15	0.09	2.9	0.84
GR	0.13	0.10	2.9	0.73
HU	0.13	0.07	1.7	0.73
IE	0.18	0.05	1.3	0.83
IT	0.10	0.08	2.4	0.80
LT	0.12	0.10	2.8	0.84
LV	0.12	0.10	2.5	0.84
NL	0.23	0.05	2.3	0.83
NO	0.28	0.04	2.6	0.79
PL	0.14	0.19	2.1	0.75
PT	0.11	0.08	3.5	0.75
SE	0.17	0.07	2.6	0.78
SI	0.09	0.07	2.9	0.69
SK	0.09	0.17	2.0	0.78
UK	0.19	0.05	1.1	0.85
Average	0.15	0.09	2.39	0.79

Sources: [a]EULFS, own calculations; [b]OECD (2004); values for the Baltic countries taken from Buchen (2005), Eamets and Masso (2004) and Tonin (2005).

NOTES

1 Some authors differentiate between three fields only (Loury, 1997), while others use classifications with nine or more fields (Reimer and Steinmetz, 2007; Smyth, 2005). Furthermore, authors also differ in their choices about which fields to aggregate.

2 An exception is the study by Smyth (2005), who analyzes the role of field of study choices for gender differentiation in early labor market outcomes across 12 European countries.

3 In contrast, applicants from more applied fields like engineering, business, or law may require less investment in job-specific training compared to humanities graduates.

4 Here, we consider only graduates with ISCED 5A and ISCED 6 degrees as university graduates. See reasoning below.

5 As a reviewer pointed out to us, the more challenging fields could also have lowered their admission standards and begun to select less strongly on ability, but in response to a rising demand for graduates instead of a rising supply of applicants. Rising demand would, however, also result in rising rewards in these fields as well, which should attract more able students than before. Hence, there may be no net effect on the ability distribution in these fields. In control analyses (results available on

request), we could not find an effect of demand shifts due to technological change on relative differences in labor market outcomes.

6 This point was suggested to us by a reviewer.

7 We excluded Cyprus, Luxembourg, and Iceland because of small sample sizes and lack of indicators for EPL. The Czech Republic did not have data on field of study.

8 EUROSTAT uses standard ILO definitions for unemployment (ILO, 1990) and the International Standard Classification of Education (ISCED-97; see UNESCO, 1997) to measure highest level of education attained as well as field of study. For all analyses, the sampling weight provided by EUROSTAT is used.

9 The countries are: Austria (AT), Belgium (BE), Germany (DE), Denmark (DK), Estonia (EE), Spain (ES), Finland (FI), France (FR), Greece (GR), Hungary (HU), Ireland (IE), Italy (IT), Lithuania (LT), Latvia (LV), Netherlands (NL), Norway (NO), Poland (PL), Portugal (PT), Sweden (SE), Slovenia (SI), Slovakia (SK).

10 ISCED 5B programs are typically shorter than 5A programs and provide more applied, occupation-specific knowledge, and do not prepare for advanced research programs. This strong vocational character makes it rather difficult in practice to differentiate ISCED 5B from post-secondary ISCED level 4 vocational programs (Kogan, 2007). For example, ISCED 5B in Germany comprises master craftsmen ('Meister') and technician ('Techniker') degrees, as well as graduates from specific vocational schools. In addition, the ISCED 5B, is empty in some countries (PL, NO) and very small in others.

11 The only exception to this is service graduates from Norway, who obtain a socio-economic status slightly above average.

12 For the construction of the index, see Dekker et al. (2002) or Giesecke and Schindler (this issue).

13 For an application of the two-stage approach, see Huber et al. (2005) and other articles in the same issue of *Political Analysis*. Pooling the data from all countries and using a mixed model would have been a feasible estimation strategy. With a mixed model, estimating country-specific field of study coefficients would have required estimating seven random slope coefficients, which is computationally challenging, especially if the dependent variable is binary. Hence, we opted for the two-step approach, which was feasible given that our large sample sizes within countries allowed us to calculate efficient estimates for the field of study coefficients for each country.

14 For estimation and construction of the weights, we follow Huber et al. (2005).

15 Norway was dropped from the multivariate analyses because it was a strong outlier with respect to educational expansion. However, even if it is included, the results and significance levels (except in one instance) are not substantially altered. Furthermore, Poland and Slovakia are also outliers with respect to their high adult unemployment rate. Dropping these countries changes the business cycle estimates in case of relative unemployment risks: the effect of the business cycle on the technical field becomes insignificant (Table 3). However, dropping Poland and Slovakia does not lead to significant differences with regard to our main variables of interest. Finally, we remain cautious of potential problems caused by non-comparability of the education fields (see above), but neither dropping FR, IT, or BE alters our results for the education coefficients substantially.

16 While this is sometimes not made explicit, we certainly share these problems with much sociological research using multilevel designs seeking to draw inferences at the macro-level or estimating macro-micro interactions with cross-sectional datasets such as the European Social Survey or PISA.

REFERENCES

Allmendinger, J. (1989) 'Educational Systems and Labor Market Outcomes', *European Sociological Review* 5(3): 231–50.

Arcidiacono, P. (2004) 'Ability Sorting and the Returns to College Major', *Journal of Econometrics* 121(1–2): 343–75.

Biglan, A. (1973) 'Characteristics of Subject Matter in Different Academic Areas', *Journal of Applied Psychology* 57(3): 195–203.

Bobbitt-Zeher, D. (2007) 'The Gender Income Gap and the Role of Education', *Sociology of Education* 80: 1–22.

Breen, R. (2005) 'Explaining Cross-national Variation in Youth Unemployment – Market and Institutional Factors', *European Sociological Review* 21(2): 125–34.

Buchen, C. (2005) 'East European Antipodes: Varieties of Capitalism in Estonia and Slovenia', paper presented at pre-publication Conference 'Varieties of Capitalism in Post-Communist Countries', Paisley University, Scotland, UK.

Clark, B.R. (1978) 'Academic Differentiation in National Systems of Higher-Education', *Comparative Education Review* 22(2): 242–58.

Coleman, J.S. (1991) 'Matching Processes in the Labor Market', *Acta Sociologica* 34(1): 3–12.

Daymont, T.N. and Andrisani, P.J. (1984) 'Job Preferences, College Major, and the Gender Gap in Earnings', *Journal of Human Resources* 19(3): 408–28.

Dekker, R., de Grip, A. and Heijke, H. (2002) 'The Effects of Training and Overeducation on Career Mobility in a Segmented Labour Market', *International Journal of Manpower* 23(2): 106–25.

Eamets, R. and Masso, J. (2004) 'Labour Market Flexibility and Employment Protection Regulation in the Baltic States', IZA Discussion Paper No. 1147.

Eurostat (2005) *Labour Force Survey – Anonymized Data Sets*. Luxembourg: Eurostat.

Gangl, M. (2003) 'The Only Way is Up? Employment Protection and Job Mobility among Recent Entrants to European Labour Markets', *European Sociological Review* 19(5): 429–49.

Ganzeboom, H.B.G. and Treiman, D.J. (1996) 'Internationally Comparable Measures of Occupational Status for the 1988 International Standard Classification of Occupations', *Social Science Research* 25(10): 201–39.

Gebel, M. and Pfeiffer, F. (2007) 'Educational Expansion and its Heterogeneous Returns for Wage Workers', ZEW Discussion Paper No. 07–010.

Gerhart, B. (1990) 'Gender Differences in Current and Starting Salaries – The Role of Performance, College Major and Job Title', *Industrial and Labor Relations Review* 43(4): 418–33.

Glebbeek, A., Wim, N. and Schakelaar, R. (1989) 'The Labor-Market Position of Dutch Sociologists – An Investigation Guided by a Theoretical Model', *Netherlands Journal of Social Sciences* 25(2): 57–74.

Grogger, J. and Eide, E. (1995) 'Changes in College Skills and the Rise in the College Wage Premium', *Journal of Human Resources* 30(2): 280–310.

Hansen, M.N. (2001) 'Education and Economic Rewards. Variations by Social-Class Origin and Income Measures', *European Sociological Review* 17(3): 209–31.

Huber, J.D., Kernell, G. and Leoni, E.L. (2005) 'Institutional Context, Cognitive Resources and Party Attachments across Democracies', *Political Analysis* 13(4): 365–86.

Kalmijn, M. and Van der Lippe, T. (1997) 'Type of Schooling and Sex Differences in Earnings in the Netherlands', *European Sociological Review* 13(1): 1–15.
Katz-Gerro, T. and Yaish, M. (2003) 'Higher Education: Is More Better? Gender Differences in Labour Market Returns to Tertiary Education in Israel', *Oxford Review of Education* 29(4): 571–92.
Kerckhoff, A.C. (1995) 'Institutional Arrangements and Stratification Processes in Industrial Societies', *Annual Review of Sociology* 21: 323–47.
Kim, A. and Kim, K.-W. (2003) 'Returns to Tertiary Education in Germany and the UK: Effects of Fields of Study and Gender', Mannheimer Zentrum für Europäische Sozialforschung Working Paper No. 62.
King, G., Keohane, R.O. and Verba, S. (1994) *Designing Social Inquiry. Scientific Inference in Qualitative Research*. Princeton, NJ: Princeton University Press.
Kogan, I. (2007) Evaluation of the International Standard Classification of Education (ISCED-97) for Comparative Research, Report of EDUC Research Group.
Loury, L.D. (1997) 'The Gender Earnings Gap among College Educated Workers', *Industrial and Labour Relations Review* 50(4): 580–93.
Machin, S. and Puhani, P.A. (2003) 'Subject of Degree and the Gender Wage Differential: Evidence from the UK and Germany', *Economics Letters* 79(3): 393–400.
Marini, M.M. and Fan, P.-L. (1997) 'The Gender Gap in Earnings at Career Entry', *American Sociological Review* 62(4): 588–604.
Müller, W. and Shavit, Y. (1998) 'The Institutional Embeddedness of the Stratification Process', in Y. Shavit and W. Müller (eds) *From School to Work: A Comparative Study of Educational Qualifications and Occupational Destinations*, pp. 1–48. Oxford: Clarendon Press.
Müller, W. and Wolbers, M.H.J. (2003) 'Educational Attainment in the European Union: Recent Trends in Qualification Patterns', in W. Müller and M. Gangl (eds) *Transitions from Education to Work in Europe: The Integration of Youth into EU Labour Markets*, pp. 23–62. Oxford: Oxford University Press.
OECD (2004) *Employment Outlook*. Paris: OECD.
Paul, J.-J. and Murdoch, P. (2007) 'Study Content and Process, Competences Upon Graduation and Employment', in U. Teichler (ed.) *Careers of University Graduates: Views and Experiences in Comparative Perspectives*, pp. 41–54. Dordrecht: Springer.
Reimer, D. and Steinmetz, S. (2007) 'Gender Differentiation in Higher Education: Educational Specialization and Labour Market Risks in Spain and Germany', Mannheimer Zentrum für Europäische Sozialforschung Working Paper No. 99.
Shwed, U. and Shavit, Y. (2005) 'Occupational and Economic Attainment of College and University Graduates in Israel', *European Sociological Review* 22(4): 431–42.
Smyth, E. (2005) 'Gender Differentiation and Early Labour Market Integration across Europe', *European Societies* 7(3): 451–79.
Sorensen, A.B. (2000) 'Toward a Sounder Basis for Class Analysis', *American Journal of Sociology* 105(6): 1523–58.
Spence, M. (1973) 'Job Market Signaling', *Quarterly Journal of Economics* 87: 355–74.
Tonin, M. (2005) 'Updated Employment Protection Legislation Indicators for Central and Eastern European Countries', manuscript, Institute for International Economic Studies, Stockholm University.
UNESCO (1997) *International Standard Classification of Education (ISCED)*. Paris: UNESCO.

van de Werfhorst, H.G. (2002) 'Fields of Study, Acquired Skills and the Wage Benefit from a Matching Job', *Acta Sociologica* 45(4): 287–303.
van de Werfhorst, H.G. (2004) 'Systems of Educational Specialization and Labor Market Outcomes in Norway, Australia, and The Netherlands', *International Journal of Comparative Sociology* 45(5): 315–35.
van de Werfhorst, H.G. and Kraaykamp, G. (2001) 'Four field-related Educational Resources and Their Impact on Labor, Consumption, and Sociopolitical Orientation', *Sociology of Education* 74(4): 296–317.
van der Ploeg, S. (1994) 'Educational Expansion and Returns on Credentials', *European Sociological Review* 10(1): 63–78.
van der Velden, R.K.W. and Wolbers, M.H.J. (2007) 'How Much Does Education Matter and Why? The Effects of Education on Socio-economic Outcomes Among School-leavers in the Netherlands', *European Sociological Review* 23(1): 65–80.
Walker, J.R. and Zhu, Y. (2005) 'The College Wage Premium, Overeducation, and the Expansion of Higher Education in the UK', IZA Discussion Paper (No. 1627).
Weeden, K.A. (2002) 'Why Do Some Occupations Pay More than Others? Social Closure and Earnings Inequality in the United States', *American Journal of Sociology* 108(1): 55–101.
Wolbers, M.H.J. (2003) 'Job Mismatches and their Labour-Market Effects among School-leavers in Europe', *European Sociological Review* 19(3): 249–66.
Wolbers, M.H.J. (2007) 'Patterns of Labour Market Entry: A Comparative Perspective on School-to-Work Transitions in 11 European Countries', *Acta Sociologica* 50(3): 189–210.

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