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Wage Differentials by Field of Study – The Case of German University Graduates

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Katja Görlitz
Barbara S. Grave

Wage Differentials by Field of Study

The Case of German University Graduates

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Katja Görlitz and Barbara S. Grave[1]

Wage Differentials by Field of Study – The Case of German University Graduates

Abstract

Using data on German university graduates, this paper analyzes wage differentials by field of study at labor market entry and five to six years later. At both points in time, graduates from Arts and Humanities have lower average monthly wages compared to other fields of study. Blinder-Oaxaca decompositions show that these wage differentials are generated largely by different job and firm characteristics of graduates rather than individual or study-related characteristics. We also find evidence that the less favorable job and firm characteristics of Arts and Humanities graduates at labor market entry persist for (at least) the next five to six years.

JEL Classification: I23, J24, J31

Keywords: Wage decomposition; university graduates; field of study

February 2012

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1 Introduction

International empirical evidence suggests that the wages of university graduates are strongly determined by the field of study. In particular, it appears that graduates from Natural Sciences have the highest and graduates from Arts and Humanities have the lowest wages (e.g. Wahrenburg and Weldi, 2007 for Germany; Rumberger and Thomas, 1993, Arcidiacono, 2004 for the US; Bratti and Mancini, 2003 for the UK; Finnie and Frenette, 2003 for Canada; Boero et al., 2004, Di Pietro and Cutillo, 2006 for Italy; Chia and Miller, 2008 for Australia and Kelly et al., 2010 for Ireland). Wahrenburg and Weldi (2007) conclude, from an economic perspective, studying Arts and Humanities represents an unattractive investment.

However, a substantial share of all students is enrolled in low-earning fields like Arts/Humanities, e.g. in Germany, about 20% of all first-year students. This reveals that expected earnings (e.g. Arcidiacono et al., 2010, Berger, 1988, Montmarquette et al., 2002) are not the only relevant factor for students' decision on the field of study. On the one hand, comparative advantages (e.g. Paglin and Rufolo, 1990) or (nonmonetary) preferences (e.g. Blakemore and Low, 1984) may explain the pattern of enrolling in low-earning fields. People are not equally well equipped to study all fields and hence they self-select into fields where they have comparative advantages. For instance, people with high mathematical abilities prefer fields like Engineering or Economics, while people that have high verbal abilities choose Social Sciences or Humanities. In that case, the observed lower earnings in Arts/Humanities simply reflect the relative magnitudes of the supply of and demand for specific fields or skills, rather than a lack of ability.

On the other hand, it might also be the case that the least able students select into fields like Arts/Humanities since these fields are regarded as less challenging. Then, lower earnings after graduation would reflect the lower ability of these students. It will be difficult to disentangle these two mechanisms empirically. But such a snapshot perspective might be insufficient for understanding observed earnings differences by field of study anyway. In their choice of fields, students typically take a long-term perspective. For instance, Blakemore and Low (1984) find that women tend to choose fields that are less prone to atrophy and obsolescence if they intend to interrupt their participation in the labor market, e.g. for having children. Consequently, longitudinal evidence is needed to shed more light on this issue.

Using a German panel data set on university graduates, this paper takes such a longitudinal perspective. As a first contribution, we confirm the existing literature on field-specific wage differentials controlling for a rich set of individual, study-related, job and firm characteristics.[2] Moreover, we

[2]For instance, among the set of individual characteristics, gender is found to be important (e.g. Braakmann, 2008, Bredtmann and Otten, 2010 for Germany). Among study-related characteristics, the quality of university (e.g. Brewer et al., 1999, Dale and Krueger, 2002, Black and Smith, 2004, Brunello and Cappellari, 2008, Long, 2008) the type of university (e.g. Riphahn et al., 2010), the type of university degree (e.g. Kane and Rouse, 1995, 1999, Jaeger and Page, 1996), change of university (e.g. Holmlund and Regnér, 2009, Light and Strayer, 2004), time to obtain a degree (e.g.

characterize the nature of the wage gap by implementing a decomposition analysis as proposed by Blinder (1973) and Oaxaca (1973). More precisely, we disentangle the observed gap in wages at labor market entry and five to six years after graduation between graduates from Arts/Humanities and graduates from Social Science, from Natural Sciences and from Engineering, respectively.[3] This permits quantifying the amount of the gap that is due to differences in observed characteristics and the amount that remains unexplained. Additionally, we investigate which variables are most important in explaining the wage gap, i.e. whether differences in individual, study-related or job characteristics are most important.

For German students graduating in the years 1997 and 2001, we find substantial wage differentials by field of study. Graduates from Arts/Humanities earn less than graduates from Social Sciences, Natural Sciences and Engineering both at labor market entry and five to six years after graduation. However, the wage gap between Arts/Humanities graduates and graduates from Natural Sciences and from Engineering becomes smaller with increasing labor market experience. Decomposing the differential between Arts/Humanities and the other fields shows that a significant part of the wage gap can be attributed to differences in observables. Most importantly, differences in job characteristics explain the wage differential, while individual and study-related characteristics do not contribute significantly.

This result holds true regardless which of the three fields of study is compared to Arts/Humanities. In particular, full-time employment, industry, being employed in West Germany, overeducation and firm size contribute to the wage gap at both points in time. Five to six years after graduation, entry wages, the employment history and gender also contribute significantly to the gap. These results are suggestive evidence for the hypothesis that wage differentials are also driven by skill-specific labor markets or by (nonmonetary) preferences. However, it is important to note that we cannot control adequately for the students' (specific) ability since our only information on ability are final high school and university grades. Therefore, we cannot rule out that the observed lower earnings for graduates from Arts/Humanities reflect (at least partially) a lower ability of those graduates.

The remainder of the paper is organized as follows. The next section presents the data and the third section describes the empirical specification. Section 4 provides the regression and decomposition results. Section 5 concludes the study.

Brodaty et al., 2008) and working during study (e.g. Light, 2001, Hotz et al., 2002, Häkkinen, 2006) are important determinants of wages.

[3]Analyzing the wage differentials at labor market entry and five to six years after graduation provides a more complete picture. Empirical evidence suggests that the wage growth is highest in the first ten years of labor market participation (Topel and Ward, 1992). Moreover, with increasing labor market experience, information asymmetries decrease as employers gradually learn about the workers' true productive capability or ability (Farber and Gibbons, 1996, Altonji and Pierret, 2001).

2 Data

For the analysis, the "HIS panel survey of graduates" for the cohorts 1997 and 2001, which was conducted by the Higher Education Information System (Hochschul-Informations-System), is used.[4] The data set is a representative survey of German graduates who obtained their degree from a German university.[5] For each cohort, two interviews are carried out at different points in time. The first interview is conducted one to two years after graduation and the second five to six years after graduation. While the former collects information on the course of study and on the transition from university to the labor market, the latter concentrates on the employment biography since graduation. Information on socio-demographic factors, e.g., gender, age and family background, are also surveyed. The sampling design is clustered in the dimensions field of study, type of degree and university. Moreover, graduates from East German universities are oversampled. We account for this sampling design by using the weights provided in the data.

We consider only individuals who took part in both interviews, i.e. one year after graduation and after five to six years.[6] Teachers, medical scientists and lawyers are excluded from the sample because their labor market entry is highly regulated. Before entering the labor market, they have to complete a legal traineeship which is still part of their study, i.e. before finishing the traineeship they will not obtain the final degree. The wages obtained during the training period are not market-based and they often cover only the basic costs of living. Furthermore, persons who obtained their university entrance diploma under the German Democratic Republic (GDR) regime and graduates being 35 years or older are excluded. Persons with more than one employment at the time of the interview also have to be dropped, because their income information cannot be matched properly to the job characteristics. The final sample contains 4,521 graduates from previously 6,652 observations at labor market entry and 6,871 observations five to six years later.

The fields of study are defined in accordance with the literature (e.g. Grogger and Eide, 1995, Bratti and Mancini, 2003, Buonanno and Pozzoli, 2009). Four categories are distinguished: Arts/Humanities, Social Sciences, Natural Sciences and Engineering. A description of the categories and the numbers of observations are shown in Table 1.

The data contain a variety of individual, study and work-related characteristics. Individual characteristics used as covariates include gender, age, marital status and whether the graduates have children. The final high school grade and the final university grade are considered as well. The grades

[4] See Fabian and Minks (2006) for a documentation of the data. The scientific use file is distributed by the GESIS-ZA Central Archive for Empirical Social Science (GESIS-ZA Zentralarchiv für empirische Sozialforschung).

[5] In the German higher education system, a tertiary degree can either be attained at a traditional university or at a technical college (Fachhochschule). While the former focuses on the teaching of theoretical skills, the latter sets the focus on applied skills. If not indicated differently, both are referred to as universities.

[6] To test whether sample attrition causes a problem, we compare the distribution of the residuals from a wage regression including all graduates to the distribution of the residuals from a wage regression that includes only graduates that are observed at both points in time. The two distributions have a similar pattern and therefore do not yield evidence for a selection problem.

Table 1: Description of fields of study

Field of study	Description	Observations
Arts/Humanities	Philosophy, Linguistics, Literature, Education, Psychology, Sport Sciences, Arts and Land Management Engineering	635
Social Sciences	Economics, Sociology, Political Science and Nutrition Science	1,290
Natural Sciences	Math, Natural Science, Pharmacy, IT and Forestry	979
Engineering	Engineering, Architecture and Agronomy	1,617

are measured by a continuous variable with 1 as the best and 4 as the minimum passing grade. We consider the course of study by the continuous variable length of study and by binary variables indicating whether graduates have changed the field of study since enrollment, whether they graduated from a university (compared to a technical college) and whether they obtained more than one university degree.

Regarding firm and job characteristics, dummy variables are incorporated that indicate whether graduates are self-employed, employed in the civil service, in full-time employment and whether they work in West Germany. Additionally, binary variables are considered indicating whether the share of high skilled workers (i.e. with university degree) in a firm is low (<50%), medium (50-75%) or high (>75%), the industry and firm size. A proxy for overeducation also enters the regression that is obtained from the self-reported information whether a university degree is required in the current job. Whether graduates have completed an apprenticeship[7] before entering the university, whether they have worked in a study-related job during study and whether they study for a doctorate is indicated by binary variables. In the second interview, the employment history of the first five to six years in the labor market is available. In particular, actual work experience, duration of unemployment and tenure are included. Furthermore, whether graduates have changed their job at least once and whether they have obtained a doctoral degree are also accounted for.

A description and summary statistics of all variables can be found in the Appendix in Tables A1 and A2, respectively. As the particular focus of this study is on describing differences in labor market entry and career progression by field of study, the summary statistics in Table A2 in the Appendix are also provided separately for each of the four fields. Without controlling for any covariates, it can be seen that wages of Arts/Humanities graduates are much lower than wages of other fields, i.e. Social Sciences, Natural Sciences and Engineering.[8] Significant differences are also apparent in socio-demographic characteristics. Compared to the other three fields, a smaller number of males graduate on average from Arts/Humanities and the graduates are older. Additionally, when entering

[7]The German apprenticeship is a training period of two to four years where apprentices acquire occupation-specific skills either full-time in vocational schools or partly in vocational schools and partly while working in a firm.

[8]To find out whether average characteristics differ at a statistically significant level across fields of study, we run t-tests. For reasons of clarity, the results are not shown in Table A2. However, the following discussion relies on these results.

the labor market they are more often married.

Regarding study-related characteristics, significant differences are also observable. Arts/Humanities graduates change their field of study more often and have better final university grades. However, differences in job characteristics are most pronounced. Graduates from Arts/Humanities are not only more often self-employed, they are additionally less often full-time employed or employed in large firms. Furthermore, when entering the labor market, the share of overeducated graduates from Arts/Humanities is higher than the share of overeducated graduates from other fields. Five to six years after graduation, significantly more graduates from Arts/Humanities are employed in the civil service. Regarding the employment history, graduates of Arts/Humanities have on average less work experience and a longer duration of unemployment.

3 Empirical strategy

First, we calculate wage differences by field of study while controlling for observable characteristics at labor market entry and five to six years afterwards. These estimates are based on a Mincer wage equation. In a second step, a decomposition analysis is applied to reveal the extent to which field-specific wage differentials can be explained by differences in observable characteristics. For all regressions, we pool the graduation cohorts 1997 and 2001 and use the weights provided in the data.

To give insights into wage differentials by field of study while controlling for a variety of observable characteristics, the following model is estimated:

$$\log(w_{it_1}) = \mathbf{F}_i'\delta_{t_1} + \mathbf{X}_{it_1}'\beta_{t_1} + \epsilon_{it_1} \quad (1)$$

$$\log(w_{it_2}) = \mathbf{F}_i'\delta_{t_2} + \mathbf{X}_{it_2}'\beta_{t_2} + \gamma_{t_2}\log(w_{it_1}) + \epsilon_{it_2}, \quad (2)$$

where $\log(w)$ is the logarithm of monthly gross real wages[9], i refers to the individual, t_1 to observations at the first labor market entry after graduation, t_2 to observations five to six years later and ϵ is the i.i.d. distributed error term. The vector $\mathbf{F}$ comprises dummy variables for the four fields of study Arts/Humanities, Social Sciences, Natural Science and Engineering. As a particular focus is set on comparing wages of Arts/Humanities graduates with wages of graduates from other fields, Arts/Humanities graduates are used as the reference group. $\mathbf{X}$ is a vector of covariates that contains all those variables described in the data section. In equation (2), we additionally include the log entry wage in the regression model. By using the lagged wage as covariate, we can assess how the determinants of wages have developed after five to six years while controlling for conditions at labor market entry. For reason of comparison, we also provide "raw wage differentials" by estimating

[9]The wages are expressed in constant 2005 Euros. Due to insufficient information on the hours worked, hourly wages cannot be used.

equations (1) and (2) without considering the vector of controls $\mathbf{X}$. Furthermore, we estimate an alternative specification of equation (2) by excluding the log entry wage from the covariates.

To reveal to which extent differences in observable characteristics account for wage differentials by field of study, a decomposition analysis proposed by Blinder (1973) and Oaxaca (1973) is applied. The following decomposition models are estimated:

$$\bar{w}_{O,t} - \bar{w}_{AH,t} = (\bar{X}_{O,t} - \bar{X}_{AH,t})\hat{\beta}_{AH,t} + (\hat{\beta}_{O,t} - \hat{\beta}_{AH,t})\bar{X}_{O,t} \tag{3a}$$

$$\bar{w}_{O,t} - \bar{w}_{AH,t} = (\bar{X}_{O,t} - \bar{X}_{AH,t})\hat{\beta}_{O,t} + (\hat{\beta}_{O,t} - \hat{\beta}_{AH,t})\bar{X}_{AH,t}, \tag{3b}$$

for $t = t_1, t_2$. $\bar{w}_{AH,t}$ equals the mean of log monthly wages at time t for Arts/Humanities (AH) and $\bar{w}_{O,t}$ is the respective wage measure for another field of study (O) which is either Social Sciences, Natural Sciences or Engineering.[10] $\bar{X}_{AH,t}$ and $\bar{X}_{O,t}$ refer to the averages of the control characteristics $\mathbf{X}$. Again, in $t = t_2$, we additionally estimate equations (3a) and (3b) without the log entry wage as control variable. $\hat{\beta}_{AH,t}$ and $\hat{\beta}_{O,t}$ denote the vectors of coefficients of the control variables $\mathbf{X}$ estimated from separate wage regressions for Arts/Humanities (AH) and the other field of study (O). The first term on the right hand side of equations (3a) and (3b) is the explained part of the wage differential that can be attributed to differences in endowments, i.e. observable characteristics. The second term contains the unexplained part. This part is often interpreted as differences in returns to observables. However, we cannot rule out that our regression model suffers from omitted variable bias (for instance, we do not observe an appropriate measure for ability or motivation) or from other misspecifications. In this case, we cannot give a proper interpretation of the unexplained part and therefore we will not interpret it in the following.

In principle, the decomposition can be implemented either by equation (3a) or by equation (3b). The only difference is that the observable characteristics are weighted either by the coefficients obtained from a wage regression for Arts/Humanities ($\hat{\beta}_{AH,t}$) or by the coefficients of a regression for the other field ($\hat{\beta}_{O,t}$). As the decomposition results can be sensitive to using different coefficient weights, we will check the robustness of our findings by comparing the decomposition results obtained by equation (3a) and (3b).

4 Results

Table 2 documents the results at labor market entry and after five to six years. Without controlling for observable characteristics, distinctive differences between Arts/Humanities and the other fields of study become apparent. The unconditional difference in entry wages is 36% compared to Social Sciences, 26% compared to Natural Science and 40% compared to Engineering (see column (1)). Five

[10] As we compare Arts/Humanities to three other fields of study, three different decompositions are conducted.

Table 2: Log monthly earnings - estimation results

	Entry wages		Wages after 5/6 years		
	(1)	(2)	(3)	(4)	(5)
Ref: Arts/ Humanities					
Social Sciences	**0.3575** (0.0256)	**0.1508** (0.0227)	**0.3357** (0.0239)	**0.1860** (0.0193)	**0.1461** (0.0190)
Natural Sciences	**0.2611** (0.0280)	**0.1458** (0.0240)	**0.3349** (0.0259)	**0.1286** (0.0223)	**0.0935** (0.0219)
Engineering	**0.3965** (0.0246)	**0.1357** (0.0251)	**0.3202** (0.0231)	**0.0774** (0.0210)	**0.0405** (0.0205)
Cohort Dummy	Yes	Yes	Yes	Yes	Yes
Controls	No	Yes	No	Yes	Yes
Log entry wage	-	-	No	No	Yes
R^2 adjusted	0.122	0.443	0.078	0.506	0.530
No. of observations	4,521	4,521	4,521	4,521	4,521
F	110.03	106.70	62.37	98.21	104.62

Notes: Robust standard errors in parentheses. - Significant coefficients are indicated in italics (10%-level) and boldface (5%-level). - For fields of study categorization see Table 1. - Controls include age, gender, marital status, having children, final high school grade, final university grade, length of study, change of field of study, graduation from a university, more than one degree, self-employment, civil service, full-time employment, employment in West Germany, share of high skilled workers, firm size, industry, work experience before and during study and study for a doctorate. After five to six years, doctoral degree, actual work experience, duration of unemployment, tenure and job change are also included.
Source: HIS panel of survey graduates 1997 and 2001, own calculations.

or six years after graduation, raw wage differences are still statistically and economically significant, ranging between 32% and 34% (see column (3)).

Including all control variables in $t = t_1$ (column (2)) and all but the log entry wage in $t = t_2$ (column (4)), reduces the raw wage differentials by more than one half. For entry wages, it is of similar size for all fields varying between 14% and 15%. After five to six years, differences between all fields are statistically significant and graduates from Social Sciences have on average 19%, Natural Scientists 13% and Engineers 8% higher wages than graduates from Arts/Humanities. When additionally including the log entry wage (column (5)), the wage differentials decrease further to 15% for Social Sciences, 9% for Natural Sciences and 4% for Engineering.[11] The full regression results are presented in Table A3 in the Appendix. For the set of variables controlling for socio-economic characteristics, the course of study, job characteristics and labor market experience, the signs of the coefficients are in line with the literature (see e.g. Rumberger and Thomas, 1993, Schweri, 2004).

Instead of assuming that field-specific wage differences can be captured by a constant term, we additionally allow the wage structure to differ by fields. Estimating the wage regression separately for each of the four fields of study is supported by a Chow-Test. For the sake of brevity, we only point out the most important results.[12] Table 3 presents the field-specific wage regressions for graduates from Arts/Humanities (columns (1), (3) and (5)) and from Social Sciences (columns (2), (4) and (6)). The results for the other fields of study are shown in Table A4 in the Appendix.

[11]For the sake of completeness, we also estimated a regression where the wage growth is the dependent variable. The results fit into the picture of decreasing wage advantages for Natural Sciences and Engineering over time.

[12]To test whether the differences between Arts/Humanities and the other fields are statistically significant, we interacted all variables with the field of study dummies. However, we do not present these results here but the following discussion relies on these results.

Table 3: Log monthly wages - estimation results, Arts/ Humanities and Social Sciences

					After 5/6 years							
	Labor market entry				w/o log entry wage				with log entry wage			
	Arts/ Humanities		Social Sciences		Arts/ Humanities		Social Sciences		Arts/ Humanities		Social Sciences	
	(1)		(2)		(3)		(4)		(5)		(6)	
Male	0.0576	(0.0411)	**0.1235**	(0.0221)	**0.1132**	(0.0354)	**0.0929**	(0.0206)	**0.1027**	(0.0329)	**0.0661**	(0.0200)
Age	0.0823	(0.0767)	**0.1079**	(0.0535)	-0.0026	(0.0835)	0.0243	(0.0588)	-0.0225	(0.0698)	0.0036	(0.0484)
Age, squared	-0.0012	(0.0012)	**-0.0018**	(0.0009)	0.0001	(0.0011)	-0.0003	(0.0008)	0.0004	(0.0011)	0.0000	(0.0008)
Married	*0.0833*	(0.0438)	*0.0606*	(0.0317)	*0.0586*	(0.0331)	-0.0000	(0.0207)	*0.0549*	(0.0332)	0.0015	(0.0200)
Children	**-0.1469**	(0.0611)	0.0344	(0.0397)	0.0228	(0.0384)	0.0260	(0.0232)	0.0150	(0.0385)	0.0096	(0.0226)
Final high school grade	-0.0261	(0.0346)	-0.0196	(0.0203)	-0.0434	(0.0271)	-0.0010	(0.0183)	-0.0400	(0.0252)	0.0034	(0.0178)
Final university grade	-0.0218	(0.0374)	0.0038	(0.0222)	-0.0063	(0.0317)	-0.0283	(0.0176)	-0.0019	(0.0297)	*-0.0304*	(0.0171)
Length of study	-0.0051	(0.0072)	-0.0035	(0.0057)	-0.0051	(0.0073)	-0.0043	(0.0045)	-0.0040	(0.0073)	-0.0029	(0.0045)
Change of field of study	*-0.0768*	(0.0395)	**-0.0793**	(0.0316)	0.0027	(0.0361)	0.0148	(0.0249)	0.0134	(0.0347)	0.0325	(0.0238)
University	**0.1939**	(0.0543)	**0.0630**	(0.0243)	0.0520	(0.0462)	**0.1200**	(0.0223)	0.0305	(0.0463)	**0.1010**	(0.0217)
More than 1 degree	*-0.1104*	(0.0612)	0.0380	(0.0551)	0.0596	(0.0631)	**0.1428**	(0.0434)	0.0669	(0.0601)	**0.1287**	(0.0415)
Self-employed	**-0.2491**	(0.0527)	**-0.2019**	(0.0625)	-0.0484	(0.0753)	0.0464	(0.0763)	-0.0218	(0.0738)	0.0513	(0.0760)
Employment in civil service	0.0441	(0.0391)	**-0.2634**	(0.0279)	0.0309	(0.0350)	**-0.2006**	(0.0254)	0.0366	(0.0335)	**-0.1594**	(0.0248)
Full-time employment	**0.4083**	(0.0401)	**0.4750**	(0.0434)	**0.4109**	(0.0405)	**0.5275**	(0.0381)	**0.4011**	(0.0407)	**0.5022**	(0.0382)
Employed in West Germany	**0.1107**	(0.0422)	**0.1297**	(0.0298)	**0.1450**	(0.0423)	**0.0591**	(0.0288)	**0.1273**	(0.0402)	0.0454	(0.0278)
Share high skilled workers >75%	0.0502	(0.0429)	**0.0606**	(0.0273)	0.0357	(0.0450)	**0.0574**	(0.0263)	0.0303	(0.0435)	*0.0469*	(0.0253)
Share high skilled workers 50-75%	0.0479	(0.0487)	0.0446	(0.0295)	0.0344	(0.0394)	**0.0554**	(0.0228)	0.0385	(0.0389)	**0.0472**	(0.0221)
Overeducation	**-0.1374**	(0.0398)	**-0.0921**	(0.0254)	**-0.1046**	(0.0360)	**-0.1032**	(0.0210)	**-0.0978**	(0.0361)	**-0.0998**	(0.0199)
Apprenticeship	**0.1306**	(0.0512)	0.0373	(0.0256)	0.0008	(0.0442)	0.0344	(0.0243)	-0.0243	(0.0454)	0.0218	(0.0243)
Study related student job	**0.1092**	(0.0390)	**0.0752**	(0.0218)	**0.0738**	(0.0359)	**0.0607**	(0.0199)	*0.0610*	(0.0343)	**0.0476**	(0.0192)
Study for a doctorate	**-0.1840**	(0.0567)	-0.0094	(0.0603)	-0.1346	(0.0921)	0.0098	(0.0832)	-0.1051	(0.0905)	0.0242	(0.0801)
Doctoral degree					-0.0735	(0.0840)	**0.1071**	(0.0521)	-0.0434	(0.0812)	**0.1498**	(0.0496)
Actual experience					**0.0046**	(0.0015)	**0.0073**	(0.0012)	**0.0040**	(0.0015)	**0.0066**	(0.0012)
Duration of unemployment					**-0.0083**	(0.0041)	**-0.0082**	(0.0028)	**-0.0097**	(0.0041)	**-0.0069**	(0.0026)
Tenure current job					**0.0019**	(0.0009)	0.0005	(0.0005)	**0.0017**	(0.0008)	0.0005	(0.0005)
Job change					0.0497	(0.0364)	-0.0015	(0.0196)	0.0550	(0.0354)	0.0085	(0.0192)
Log entry earnings									**0.1557**	(0.0355)	**0.1977**	(0.0272)
Constant	**5.4397**	(1.1755)	**5.3581**	(0.7869)	**7.0991**	(1.5007)	**6.6228**	(1.0113)	**6.3080**	(1.0779)	**5.5838**	(0.7407)
R^2 adjusted	0.354		0.478		0.419		0.550		0.443		0.578	
No. of observations	635		1,290		635		1,290		635		1,290	
F	13.878		45.271		14.296		46.314		15.737		48.550	

Notes: Robust standard errors in parentheses. - Significant coefficients are indicated in italics (10%-level) and boldface (5%-level). - For fields of study categorization see Table 1. - All regressions include dummy variables for year, firm size and industry.
Source: HIS panel of survey graduates 1997 and 2001, own calculations.

For almost all fields of study, a gender gap in entry wages is observable. Five to six years later, this gender wage gap is still apparent, even after controlling for entry wages. Having graduated from a university compared to a technical college is positively and significantly associated with entry wages for Arts/Humanities while for engineers such a correlation becomes evident only after five to six years. A contrary result emerges for Natural Sciences graduates where entry wages of university graduates are lower. While engineers have a wage premium when holding more than one university degree, the opposite is true for graduates from Arts/Humanities.

Being self-employed at labor market entry is negatively correlated with wages for graduates from Arts/Humanities only. Five to six years after graduation, being self-employed pays off only for Natural Scientists as wages are on average higher compared to employees. Except for Arts/Humanities, wages of civil servants are lower at both points in time. For full-time employment, the wage premium at labor market entry is similar for all fields. However, five to six years after graduation, the wage premium for Social Sciences, Natural Sciences and Engineering is significantly higher than that for Arts/Humanities. Having obtained an apprenticeship degree yields a positive and significant estimate for Arts/Humanities only. Studying for a doctorate is negatively correlated with wages for graduates from Arts/Humanities and Natural Sciences at labor market entry.

In terms of work history since graduation different patterns by field of study are only observed for tenure and job change. While tenure is positively associated with higher wages for Arts/Humanities, having changed the job at least once is negatively correlated with wages for graduates from Engineering. For log entry wages, a similar pattern is apparent for all fields. The coefficient has a positive sign at a statistically significant level which could point at some path dependence between entry wages and wages later on. However, the relatively small magnitude of the coefficient indicates that there is only a weak correlation between early career wages. Comparing the results of the specification with the log entry wage to those of the specification without the log entry wage confirms this result since there are only slight differences apparent.

The previous regressions reveal that there are indeed differences between the wage structure of graduates from Arts/Humanities and the other fields. However, they do not answer the question to which extent differences in observable characteristics can explain the observed wage gap. They do also not provide evidence which particular variables are relevant for explaining the wage gap. In the following, results of the decomposition analyses are shown comparing graduates from Arts/Humanities with Social Scientists (see Panel A in Table 4), with Natural Scientists (see Panel B in Table 4) and with Engineers (see Panel C in Table 4). Detailed decomposition results are shown in the Appendix in Tables A5, A6 and A7. As already mentioned, results differ in terms of which weighting scheme is used.[13] Therefore, we provide for all decompositions the results for both weighting schemes and only

[13]The variation is much larger than it is usually observed in the decomposition of gender wage differential (e.g. Braakmann, 2008, Bredtmann and Otten, 2010). This emerges because the processes determining wages differ to a large extent between fields of study as has already been shown in Tables 3 and A4. The more the wage processes differ

interpret results that are statistically significant in both schemes.

At labor market entry, the total wage gap between Arts/Humanities and Social Sciences graduates is 35%, of which 42% to 65% can be explained by differences in observable characteristics (Panel A in Table 4).[14] After five to six years, the wage gap is of similar size (34%) and the extent of the gap that can be attributed to differences in endowments ranges between 45% and 46% for the specification without the log entry wage and between 54% and 56% when also including the log entry wage as a covariate.

The most important variable for explaining differences in entry wages by field of study is full-time employment (see Table A5 in the Appendix). If Arts/Humanities graduates had full-time jobs as often as Social Science graduates, the entry wage differential would be approximately 25% lower. In addition, the industry, firm size and self-employment also explain a large part of the differential, i.e. Arts/Humanities graduates are less often employed in large firms that usually pay higher wages and are more often self-employed, which is associated with lower wages at labor market entry (see Table 3). To a smaller extent, differences in being employed in West Germany and overeducation also explain the entry wage difference. In contrast, some characteristics work in the opposite direction such as graduating from a university (compared to a technical college) and to a smaller extent also having worked in a study-related job during study. In particular, if Arts/Humanities graduates had graduated from a university or if they had worked in a study-related job as little as graduates from Social Science, the raw difference in entry wage would even be larger.

After five to six years, the importance of full-time employment, firm size, industry and being employed in West Germany in explaining the wage difference remains. However, differences in log entry wages are even more important in explaining wage differentials after five to six years. Other variables that also contribute significantly to the wage gap include male and actual experience. As for entry wages, having graduated from a university works in the opposite direction.

While at labor market entry, the overall wage gap between Arts/Humanities and Natural Sciences (25%) as well as the part of the wage gap that can be explained by differences in observables (between 17% and 31%) is smaller, for wages five to six years after graduation a similar picture emerges (Panel B in Table 4).[15] The gap in wages increases to 34%, of which 55% to 56% can be attributed to observables when estimating the specification without the log entry wage. Including the log entry wage as a control variable increases the explained part further to a share ranging between 62% and

between groups, the more the results will differ.

[14] The detailed decomposition results show that these differences in the explained part are mainly driven by different $\hat{\beta}$'s for the variables male, change of field of study, university, employment in the civil service, apprenticeship and study for a doctorate. For example, being employed in the civil service contributes only significantly to the entry wage gap when using $\hat{\beta_{SS}}$ as weight. This is because employment in the civil service has a large and significant coefficient only in the wage regression for Social Science while it is small and insignificant for Arts/Humanities.

[15] As in the case of the wage decomposition for Arts/Humanities and Social Sciences, the discrepancy in the amount of the gap that can be explained by differences in endowments results from differences in the wage structure. The main differences between Arts/Humanities and Natural Sciences are found for the variables male, self-employment and industry.

Table 4: Monthly log wages, decomposition results

Panel A: Arts/ Humanities (AH) and Social Sciences (SS)

			After 5/6 years			
	Labor market entry		w/o log entry wage		with log entry wage	
	$\hat{\beta}_{SS}$ as weight	$\hat{\beta}_{AH}$ as weight	$\hat{\beta}_{SS}$ as weight	$\hat{\beta}_{AH}$ as weight	$\hat{\beta}_{SS}$ as weight	$\hat{\beta}_{AH}$ as weight
Total Difference	**0.3536** (0.0226)	**0.3536** (0.0220)	**0.3395** (0.0201)	**0.3395** (0.0198)	**0.3395** (0.0207)	**0.3395** (0.0202)
	[100.00%]	[100.00%]	[100.00%]	[100.00%]	[100.00%]	[100.00%]
Explained	**0.2303** (0.0219)	**0.1473** (0.0256)	**0.1521** (0.0204)	**0.1570** (0.0249)	**0.1891** (0.0206)	**0.1834** (0.0260)
	[65.14%]	[41.66%]	[44.80%]	[46.26%]	[55.72%]	[54.04%]
Unexplained	**0.1233** (0.0260)	**0.2063** (0.0276)	**0.1874** (0.0208)	**0.1824** (0.0233)	**0.1503** (0.0208)	**0.1560** (0.0251)
	[34.86%]	[58.34%]	[55.20%]	[53.74%]	[44.28%]	[45.96%]

Panel B: Arts/ Humanities (AH) and Natural Sciences (NS)

			After 5/6 years			
	Labor market entry		w/o log entry wage		with log entry wage	
	$\hat{\beta}_{NS}$ as weight	$\hat{\beta}_{AH}$ as weight	$\hat{\beta}_{NS}$ as weight	$\hat{\beta}_{AH}$ as weight	$\hat{\beta}_{NS}$ as weight	$\hat{\beta}_{AH}$ as weight
Total Difference	**0.2511** (0.0239)	**0.2511** (0.0247)	**0.3388** (0.0204)	**0.3388** (0.0210)	**0.3388** (0.0210)	**0.3388** (0.0210)
	[100.00%]	[100.00%]	[100.00%]	[100.00%]	[100.00%]	[100.00%]
Explained	*0.0434* (0.0264)	**0.0784** (0.0258)	**0.1851** (0.0210)	**0.2186** (0.0220)	**0.1901** (0.0256)	**0.2086** (0.0271)
	[17.30%]	[31.22%]	[54.63%]	[56.11%]	[64.51%]	[61.55%]
Unexplained	**0.2076** (0.0300)	**0.1727** (0.0284)	**0.1537** (0.0234)	**0.1203** (0.0244)	**0.1487** (0.0266)	**0.1303** (0.0270)
	[82.70%]	[68.78%]	[45.37%]	[43.89%]	[35.49%]	[38.45%]

Panel C: Arts/ Humanities (AH) and Engineering (E)

			After 5/6 years			
	Labor market entry		w/o log entry wage		with log entry wage	
	$\hat{\beta}_{E}$ as weight	$\hat{\beta}_{AH}$ as weight	$\hat{\beta}_{E}$ as weight	$\hat{\beta}_{AH}$ as weight	$\hat{\beta}_{E}$ as weight	$\hat{\beta}_{AH}$ as weight
Total Difference	**0.3961** (0.0207)	**0.3961** (0.0207)	**0.3142** (0.0186)	**0.3142** (0.0184)	**0.3142** (0.0190)	**0.3142** (0.0194)
	[100.00%]	[100.00%]	[100.00%]	[100.00%]	[100.00%]	[100.00%]
Explained	**0.2080** (0.0224)	**0.1726** (0.0339)	**0.2129** (0.0203)	**0.2490** (0.0213)	**0.2371** (0.0316)	**0.2607** (0.0356)
	[52.52%]	[43.58%]	[67.74%]	[75.45%]	[79.23%]	[82.97%]
Unexplained	**0.1881** (0.0274)	**0.2235** (0.0360)	**0.1014** (0.0216)	**0.0653** (0.0222)	**0.0771** (0.0297)	0.0535 (0.0352)
	[47.48%]	[56.42%]	[32.26%]	[24.55%]	[20.77%]	[17.03%]

Notes: Bootstrapped standard errors with 1,000 repetitions are shown in round parentheses. - Significant coefficients are indicated in italics (10%-level) and boldface (5%-level). - For fields of study categorization see Table 1. - The share is shown in square parentheses.
Source: HIS panel of survey graduates 1997 and 2001, own calculations.

65%.

When looking at entry wages, overeducation yields the highest contribution to explaining the wage differential between Arts/Humanities and Natural Sciences graduates (see Table A6 in the Appendix). Employment in West Germany and firm size also explain the wage gap. However, studying for a doctorate contributes strongly in the opposite direction. If graduates from Natural Sciences studied to the same (low) extent for a doctorate as graduates from Arts/Humanities, the wage gap would even be higher. After five to six years, full-time employment is one of the most important variables explaining the wage gap. In a similar magnitude, the share of males among graduates from Arts/Humanities and Natural Sciences matters. Other important factors are log entry wages, firm size and industry as well as overeducation and, to a much smaller extent, also the actual labor market experience. After five to six years, there is no longer a significant opposite contribution of studying for a doctorate which is because the share of Natural Scientists studying for a doctorate is as high as the share of their counterparts from Arts/Humanities.

The observed wage gap between graduates from Arts/Humanities and Engineering is 40% for entry wages, and in contrast to the other fields decreases to 32% for wages five to six years after graduation (Panel C in Table 4). While at labor market entry between 44% and 53% of the gap can be explained by differences in endowments, after five to six years almost the whole wage gap (between 68% and 76% for the specification without the log entry wage and between 79% and 83% for specification including the log entry wage) can be attributed to differences in observable characteristics.

Regarding entry wages, full-time employment explains the largest part of the wage difference (see Table A7 in the Appendix). Industry, overeducation, firm size and employment in West Germany contribute to a smaller extent. After five to six years, differences in full-time employment still explain a large part of the wage gap. Differences in the industry, log entry earnings and male are also of high importance. To a smaller extent firm size, overeducation, actual experience and being employed in West Germany also contribute significantly to explaining the wage gap. However, for graduation from a university an opposite effect is apparent.

5 Conclusion

Using data on German university graduates, this paper investigates wage differences between graduates from Arts/Humanities and graduates from other fields of study. When entering the labor market, the raw wage gap of Arts/Humanities compared to Social Sciences is 36%, compared to Natural Sciences it is 26% and compared to Engineering it is 40%. Five to six years after graduation, the wage difference is of a similar size ranging between 32% and 34%. When including controls, e.g. individual, study-related, job and firm characteristics, the wage differential decreases substantially to 14% to 15% for entry wages and to 4% to 15% for wages after five to six years.

When decomposing the wage gap, at least 17% and at most 65% of the entry wage gap can be

explained by differences in observable characteristics, depending on which field of study is compared to Arts/Humanities. After five to six years, the explained part is even higher (at least 54% and at most 83%). The particular characteristics explaining wage differentials are very similar regardless of which of the three considered fields of study are compared to Arts/Humanities. The lower shares of Arts/Humanities graduates that are employed in West Germany and employed in large firms and the higher share of overeducated Arts/Humanities graduates play an important role for entry wages. When comparing Arts/Humanities graduates with Social Scientists or Engineers, differences in industry and full-time employment also contribute significantly to explaining the wage gap at labor market entry. Compared to Social Scientists, differences in self-employment additionally account for the gap.

After five to six years, the wage gap can again be attributed to differences in full-time employment and to a smaller extent also to firm size and industry. Furthermore, overeducation plays a role when comparing Arts/Humanities graduates with Natural Scientists or Engineers as does being employed in West Germany when comparing Arts/Humanities with Social Sciences and Engineering. This is suggestive evidence that the less favorable job and firm characteristics of Arts/Humanities graduates at labor market entry persist for (at least) the next five to six years. Besides these characteristics that were already found to explain a substantial part of the gap in entry wages, there are some additional characteristics explaining the wage gap after five to six years. Most importantly, differences in entry wages matter. In addition, the lower share of males among Arts/Humanities graduates explains some part of the wage gap after five to six years while it does not contribute to explaining entry wages. This is because the positive correlation between males and wages becomes stronger with labor market experience. To a smaller extent, differences in actual experience also explain the wage gap after five to six years.

In conclusion, our results suggest that differences in job, firm and labor market characteristics can explain the wage gap to a much larger extent than individual or study-related characteristics. Hence, it seems that wage differences are, at least partially, driven by skill-specific labor markets (as job markets may differ by occupation) or by (nonmonetary) preferences. It should be noted, however, that further research is needed to analyze whether and how much these results are biased by a selection of individuals with different ability into fields of study.

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Appendix

Table A1: Description of variables

Variables	Description
Log entry wages	Logarithm of gross monthly real wages at labor market entry
Log wages after 5/6 yrs.	Logarithm of gross monthly real wages 5/6 years after graduation
Arts/ Humanities	Dummy variable: 1 for graduation in Arts/ Humanities, 0 otherwise
Social Sciences	Dummy variable: 1 for graduation in Social Sciences, 0 otherwise
Natural Sciences	Dummy variable: 1 for graduation in Natural Sciences, 0 otherwise
Engineering	Dummy variable: 1 for graduation in Engineering, 0 otherwise
Male	Dummy variable: 1 for males, 0 otherwise
Age	Age in years
Age squared	Age in years squared
Married	Dummy variable: 1 for married, 0 otherwise
Children	Dummy variable: 1 for having children, 0 otherwise
Final high school grade	Final high school grade from 1 (best) to 4 (worst)
Final university grade	Final university grade from 1 (best) to 4 (worst)
Length of study	Study-related semester
Change of field of study	Dummy variable: 1 for change of field of study, 0 otherwise
University	Dummy variable: 1 for graduation from a university, 0 for graduation from a technical college
More than 1 degree	Dummy variable: 1 for having more than 1 degree, 0 otherwise
Self-employed	Dummy variable: 1 for self-employed graduates, 0 otherwise
Employment in civil service	Dummy variable: 1 for employees in civil service, 0 otherwise
Full-time employment	Dummy variable: 1 for full-time employees, 0 otherwise
Employed in West Germany	Dummy variable: 1 for employees in West Germany, 0 otherwise
Share high skilled workers >75%	Dummy variable: 1 for a share of workers with tertiary degree higher than 75% within the firm, 0 otherwise; self-reported by the graduates
Share high skilled workers 50-75%	Dummy variable: 1 for a share of workers with tertiary degree between 50 and 75% within the firm, 0 otherwise
Share high skilled workers <50%	Dummy variable: 1 for a share of workers with tertiary degree lower than 50% within the firm, 0 otherwise
Overeducation	Dummy variable: 1 if a tertiary degree is not required in the job, 0 otherwise; self-reported by the graduates
Primary/ manufacturing sector (NACE A-F)	Dummy variable: 1 for primary/ manufacturing sector, 0 otherwise
Service sector (NACE G-N)	Dummy variable: 1 for service sector, 0 otherwise
Public sector/ others (NACE O-U)	Dummy variable: 1 for public sector/ others, 0 otherwise
Firm Size (<20)	Dummy variable: 1 for firms with less than 20 employees, 0 otherwise
Firm Size (20-100)	Dummy variable: 1 for firms with 20 to 100 employees, 0 otherwise
Firm Size (100-500)	Dummy variable: 1 for firms with 100 to 500 employees, 0 otherwise
Firm Size (>500)	Dummy variable: 1 for firms with more than 500 employees, 0 otherwise
Study related student job	Dummy variable: 1 for graduates that worked in a study related job during study, 0 otherwise
Apprenticeship	Dummy variable: 1 for graduates with apprenticeship, 0 otherwise
Study for a doctorate	Dummy variable: 1 for PhD Students, 0 otherwise
Doctoral degree	Dummy variable: 1 for graduates with doctoral degree, 0 otherwise
Actual experience	Actual experience (in months)
Duration of unemployment	Duration of unemployment (in months)
Tenure current job	Tenure in current job (in months)
Job change	Dummy variable: 1 for graduates that changed the job, 0 otherwise
Cohort 2001	Dummy variable: 1 for graduates of cohort 2001, 0 for graduates of cohort 1997

Table A2: Summary Statistics: Mean of variables by field of study

	All fields		Arts/ Humanities		Social Sciences		Natural Sciences		Engineering	
	Labor market entry	After 5/6 years	Labor market entry	After 5/6 years	Labor market entry	After 5/6 years	Labor market entry	After 5/6 years	Labor market entry	After 5/6 years
Arts/ Humanities	0.140	0.140								
Social Sciences	0.285	0.285								
Natural Sciences	0.217	0.217								
Engineering	0.358	0.358								
Log entry earnings	7.546	7.546	7.250	7.250	7.603	7.603	7.501	7.501	7.646	7.646
Log earnings after 5/6 yrs.		8.101		7.818		8.157		8.157		8.132
Male	0.575	0.575	0.296	0.296	0.510	0.510	0.618	0.618	0.710	0.710
Age	28.455	33.393	28.998	33.932	28.476	33.420	28.299	33.221	28.318	33.265
Married	0.146	0.432	0.194	0.392	0.125	0.434	0.147	0.431	0.144	0.446
Children	0.079	0.324	0.090	0.329	0.070	0.322	0.070	0.282	0.087	0.349
Final high school grade	2.201	2.201	2.257	2.257	2.231	2.231	1.956	1.956	2.304	2.304
Final university grade	1.893	1.893	1.718	1.718	2.091	2.091	1.659	1.659	1.945	1.945
Length of study	11.158	11.158	12.083	12.083	10.519	10.519	11.796	11.796	10.920	10.920
Change of field of study	0.161	0.161	0.306	0.306	0.186	0.186	0.138	0.138	0.097	0.097
University	0.620	0.620	0.841	0.841	0.619	0.619	0.842	0.842	0.400	0.400
More than 1 degree	0.046	0.046	0.066	0.066	0.033	0.033	0.091	0.091	0.020	0.020
Self-employed	0.065	0.053	0.156	0.087	0.065	0.049	0.032	0.046	0.050	0.048
Employment in civil service	0.300	0.242	0.414	0.427	0.249	0.236	0.451	0.243	0.205	0.175
Full-time employment	0.819	0.889	0.663	0.769	0.872	0.887	0.700	0.885	0.910	0.941
Employed in West Germany	0.800	0.791	0.750	0.742	0.812	0.795	0.807	0.772	0.806	0.818
Share high skilled workers >75%	0.372	0.279	0.359	0.291	0.309	0.243	0.532	0.346	0.330	0.262
Share high skilled workers 50-75%	0.190	0.214	0.206	0.250	0.157	0.187	0.207	0.238	0.199	0.208
Share high skilled workers <50%	0.438	0.507	0.435	0.458	0.534	0.571	0.260	0.416	0.471	0.530
Overeducation	0.244	0.205	0.364	0.276	0.313	0.280	0.143	0.140	0.202	0.158
Primary/ manufacturing sector (NACE A-F)	0.279	0.317	0.091	0.065	0.216	0.240	0.142	0.243	0.486	0.521
Service sector (NACE G-N)	0.454	0.477	0.509	0.557	0.598	0.592	0.402	0.516	0.348	0.330
Public sector/ others (NACE O-U)	0.267	0.206	0.400	0.378	0.186	0.167	0.456	0.241	0.166	0.149
Firm Size (<20)	0.263	0.185	0.380	0.293	0.191	0.140	0.241	0.169	0.287	0.187
Firm Size (20-100)	0.205	0.175	0.235	0.222	0.175	0.172	0.215	0.158	0.210	0.169
Firm Size (100-500)	0.176	0.182	0.159	0.175	0.201	0.181	0.182	0.168	0.160	0.195
Firm Size (>500)	0.357	0.458	0.227	0.310	0.433	0.506	0.363	0.506	0.343	0.448
Apprenticeship	0.364	0.364	0.265	0.265	0.458	0.458	0.196	0.196	0.430	0.430
Study related student job	0.710	0.710	0.717	0.717	0.661	0.661	0.744	0.744	0.727	0.727
Study for a doctorate	0.154	0.060	0.132	0.074	0.065	0.040	0.380	0.078	0.098	0.061
Doctoral degree		0.103		0.063		0.037		0.317		0.041
Actual experience		63.599		60.550		63.476		63.721		64.822
Duration of unemployment		2.071		2.795		1.922		1.696		2.134
Tenure current job		35.109		31.789		34.080		32.794		38.635
Job change		0.591		0.608		0.614		0.579		0.573
Cohort 2001	0.483	0.483	0.546	0.546	0.443	0.443	0.503	0.503	0.477	0.477
N. of observation	4,521	4,521	635	635	1,290	1,290	979	979	1,617	1,617

Source: HIS panel of survey graduates 1997 and 2001, own calculations.

Table A3: Log monthly earnings - estimation results

	Labor market entry		After 5/6 years		
	(1)	(2)	(3)	(4)	(5)
Ref: Arts/ Humanities					
Social Sciences	**0.3575** (0.0256)	**0.1508** (0.0227)	**0.3357** (0.0239)	**0.1860** (0.0193)	**0.1461** (0.0190)
Natural Sciences	**0.2611** (0.0280)	**0.1458** (0.0240)	**0.3349** (0.0259)	**0.1286** (0.0223)	**0.0935** (0.0219)
Engineering	**0.3965** (0.0246)	**0.1357** (0.0251)	**0.3202** (0.0231)	**0.0774** (0.0210)	**0.0405** (0.0205)
Male		**0.1003** (0.0141)		**0.1151** (0.0127)	**0.0958** (0.0121)
Age		**0.0704** (0.0322)		0.0750 (0.0541)	0.0481 (0.0435)
Age, squared		**-0.0011** (0.0005)		-0.0010 (0.0008)	-0.0007 (0.0007)
Married		**0.0589** (0.0190)		*0.0229* (0.0123)	*0.0199* (0.0120)
Children		-0.0436 (0.0267)		-0.0046 (0.0142)	-0.0103 (0.0138)
Final high school grade		-0.0107 (0.0113)		-0.0097 (0.0121)	-0.0104 (0.0118)
Final university grade		-0.0006 (0.0120)		-0.0122 (0.0111)	-0.0108 (0.0106)
Length of study		-0.0019 (0.0033)		*-0.0051* (0.0027)	-0.0043 (0.0027)
Change of field of study		**-0.0507** (0.0191)		0.0000 (0.0164)	0.0101 (0.0158)
University		**0.0639** (0.0156)		**0.0844** (0.0149)	**0.0723** (0.0145)
More than 1 degree		0.0457 (0.0329)		**0.0715** (0.0295)	**0.0624** (0.0278)
Self-employed		**-0.1663** (0.0343)		*0.0787* (0.0428)	**0.0833** (0.0417)
Employment in civil service		**-0.1209** (0.0175)		**-0.1176** (0.0167)	**-0.0945** (0.0161)
Full-time employment		**0.4188** (0.0211)		**0.4784** (0.0232)	**0.4658** (0.0229)
Employed in West Germany		**0.1429** (0.0176)		**0.0910** (0.0198)	**0.0734** (0.0196)
Share high skilled workers >75%		**0.0599** (0.0164)		**0.0324** (0.0150)	*0.0262* (0.0146)
Share high skilled workers 50-75%		**0.0442** (0.0172)		0.0009 (0.0165)	-0.0023 (0.0164)
Overeducation		**-0.1052** (0.0163)		**-0.1189** (0.0166)	**-0.113** (0.0164)
Service sector (NACE G-N)		**-0.0432** (0.0160)		**-0.0508** (0.0156)	**-0.0497** (0.0152)
Public sector/ others (NACE O-U)		**-0.1308** (0.0252)		**-0.1560** (0.0227)	**-0.1454** (0.0220)
Firm Size (20-100)		**0.0504** (0.0193)		**0.0773** (0.0234)	**0.0730** (0.0227)
Firm Size (100-500)		**0.0905** (0.0195)		**0.1184** (0.0220)	**0.1029** (0.0216)
Firm Size (>500)		**0.1428** (0.0174)		**0.1823** (0.0200)	**0.1599** (0.0197)
Apprenticeship		**0.0399** (0.0155)		0.0001 (0.0153)	-0.0094 (0.0150)
Study related student job		**0.0644** (0.0129)		**0.0527** (0.0119)	**0.0433** (0.0115)
Study for a doctorate		**-0.1264** (0.0278)		*-0.0553* (0.0313)	-0.0333 (0.0307)
Doctoral degree				0.0052 (0.0244)	**0.0689** (0.0242)
Actual experience				**0.0056** (0.0007)	**0.0046** (0.0007)
Duration of unemployment				**-0.0096** (0.0018)	**-0.0094** (0.0018)
Tenure current job				-0.0000 (0.0003)	0.0000 (0.0003)
Job change				-0.0011 (0.0123)	0.0084 (0.0120)
Log entry earnings					**0.1719** (0.0149)
Constant	**7.1735** (0.0227)	**5.7333** (0.4773)	**7.8063** (0.0210)	**5.6829** (0.9208)	**5.1160** (0.6380)
Cohort Dummy	Yes	Yes	Yes	Yes	Yes
R^2 adjusted	0.122	0.443	0.078	0.530	0.506
No. of observations	4,521	4,521	4,521	4,521	4,521
F	110.03	106.70	62.37	104.62	98.21

Notes: Robust standard errors in parentheses. - Significant coefficients are indicated in italics (10%-level) and boldface (5%-level). - For fields of study categorization see Table 1.
Source: HIS panel of survey graduates 1997 and 2001, own calculations.

Table A4: Log monthly wages - estimation results, Arts/Humanities and Natural Sciences, Engineering

				After 5/6 years					
	Labor market entry			w/o log entry wage			with log entry wage		
	Arts/ Humanities	Natural Sciences	Engineering	Arts/ Humanities	Natural Sciences	Engineering	Arts/ Humanities	Natural Sciences	Engineering
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Male	0.0576 (0.0411)	**0.0603** (0.0292)	**0.0794** (0.0248)	**0.1132** (0.0354)	**0.1142** (0.0256)	**0.1196** (0.0234)	**0.1027** (0.0329)	**0.1080** (0.0250)	**0.1020** (0.0226)
Age	0.0823 (0.0767)	0.0785 (0.0573)	0.0258 (0.0568)	-0.0026 (0.0835)	0.0095 (0.0680)	0.1437 (0.0912)	-0.0225 (0.0698)	-0.0154 (0.0550)	*0.1226* (0.0701)
Age, squared	-0.0012 (0.0012)	-0.0012 (0.0009)	-0.0005 (0.0010)	0.0001 (0.0011)	-0.0001 (0.0009)	-0.0021 (0.0013)	0.0004 (0.0011)	0.0003 (0.0009)	*-0.0020* (0.0012)
Married	*0.0833* (0.0438)	0.0378 (0.0385)	0.0461 (0.0345)	*0.0586* (0.0331)	**0.0803** (0.0259)	0.0142 (0.0196)	*0.0549* (0.0332)	**0.0754** (0.0256)	0.0124 (0.0193)
Children	**-0.1469** (0.0611)	-0.0305 (0.0511)	-0.0426 (0.0480)	0.0228 (0.0384)	**-0.0730** (0.0346)	-0.0092 (0.0214)	0.0150 (0.0385)	**-0.0737** (0.0341)	-0.0111 (0.0210)
Final high school grade	-0.0261 (0.0346)	**-0.0491** (0.0226)	0.0227 (0.0163)	-0.0434 (0.0271)	-0.0008 (0.0228)	-0.0020 (0.0199)	-0.0400 (0.0252)	0.0036 (0.0223)	-0.0081 (0.0195)
Final university grade	-0.0218 (0.0374)	0.0042 (0.0236)	**-0.0435** (0.0170)	-0.0063 (0.0317)	*-0.0446* (0.0244)	-0.0095 (0.0175)	-0.0019 (0.0297)	*-0.0467* (0.0242)	-0.0014 (0.0175)
Length of study	-0.0051 (0.0072)	0.0073 (0.0061)	-0.0017 (0.0055)	-0.0051 (0.0073)	-0.0030 (0.0062)	-0.0025 (0.0038)	-0.0040 (0.0073)	-0.0030 (0.0061)	-0.0023 (0.0037)
Change of field of study	*-0.0768* (0.0395)	0.0128 (0.0376)	-0.0604 (0.0374)	0.0027 (0.0361)	-0.0076 (0.0380)	-0.0117 (0.0296)	0.0134 (0.0347)	-0.0034 (0.0383)	-0.0068 (0.0293)
University	**0.1939** (0.0543)	**-0.0959** (0.0383)	0.0353 (0.0251)	0.0520 (0.0462)	-0.0589 (0.0406)	**0.0885** (0.0218)	0.0305 (0.0463)	-0.0467 (0.0407)	**0.0789** (0.0216)
More than 1 degree	*-0.1104* (0.0612)	-0.0109 (0.0497)	**0.1897** (0.0782)	0.0596 (0.0631)	-0.0016 (0.0493)	*0.1434* (0.0758)	0.0669 (0.0601)	-0.0016 (0.0483)	*0.1232* (0.0732)
Self-employed	**-0.2491** (0.0527)	-0.0318 (0.1138)	0.0076 (0.0712)	-0.0484 (0.0753)	**0.2957** (0.1176)	0.0975 (0.0752)	-0.0218 (0.0738)	**0.2919** (0.1172)	0.0903 (0.0726)
Employment in civil service	0.0441 (0.0391)	-0.0358 (0.0451)	*-0.0536* (0.0323)	0.0309 (0.0350)	**-0.1197** (0.0440)	**-0.1217** (0.0342)	0.0366 (0.0335)	**-0.1006** (0.0438)	**-0.1118** (0.0334)
Full-time employment	**0.4083** (0.0401)	**0.3208** (0.0400)	**0.4419** (0.0445)	**0.4109** (0.0405)	**0.5285** (0.0515)	**0.4483** (0.0556)	**0.4011** (0.0407)	**0.5195** (0.0514)	**0.4524** (0.0544)
Employed in West Germany	**0.1107** (0.0422)	**0.0804** (0.0330)	**0.1957** (0.0315)	**0.1450** (0.0423)	0.0417 (0.0369)	**0.1055** (0.0353)	**0.1273** (0.0402)	0.0377 (0.0375)	**0.0824** (0.0358)
Share high skilled workers >75%	0.0502 (0.0429)	0.0427 (0.0364)	**0.0589** (0.0273)	0.0357 (0.0450)	0.0232 (0.0286)	0.0099 (0.0220)	0.0303 (0.0435)	0.0236 (0.0287)	0.0046 (0.0214)
Share high skilled workers 50-75%	0.0479 (0.0487)	-0.0027 (0.0373)	**0.0585** (0.0271)	0.0344 (0.0394)	-0.0525 (0.0339)	-0.0310 (0.0310)	0.0385 (0.0389)	-0.0528 (0.0337)	-0.0342 (0.0310)
Overeducation	**-0.1374** (0.0398)	**-0.1400** (0.0412)	**-0.1102** (0.0293)	**-0.1046** (0.0360)	**-0.1405** (0.0404)	**-0.1288** (0.0325)	**-0.0978** (0.0361)	**-0.1350** (0.0402)	**-0.1216** (0.0320)
Apprenticeship	**0.1306** (0.0512)	0.0255 (0.0347)	0.0017 (0.0222)	0.0008 (0.0442)	-0.0228 (0.0424)	-0.0008 (0.0225)	-0.0243 (0.0454)	-0.0215 (0.0410)	-0.0082 (0.0221)
Study related student job	**0.1092** (0.0390)	**0.0555** (0.0270)	0.0298 (0.0202)	**0.0738** (0.0359)	*0.0504* (0.0303)	*0.0315* (0.0186)	*0.0610* (0.0343)	0.0443 (0.0302)	0.0290 (0.0181)
Study for a doctorate	**-0.1840** (0.0567)	**-0.1868** (0.0515)	0.0263 (0.0551)	-0.1346 (0.0921)	**-0.1351** (0.0502)	-0.0417 (0.0385)	-0.1051 (0.0905)	**-0.1141** (0.0505)	-0.0284 (0.0386)
Doctoral degree				-0.0735 (0.0840)	-0.0556 (0.0346)	*0.0878* (0.0490)	-0.0434 (0.0812)	-0.0108 (0.0370)	**0.1145** (0.0483)
Actual experience				**0.0046** (0.0015)	**0.0036** (0.0010)	**0.0053** (0.0014)	**0.0040** (0.0015)	**0.0032** (0.0010)	**0.0040** (0.0014)
Duration of unemployment				**-0.0083** (0.0041)	**-0.0102** (0.0044)	**-0.0096** (0.0033)	**-0.0097** (0.0041)	**-0.0095** (0.0044)	**-0.0100** (0.0033)
Tenure current job				**0.0019** (0.0009)	-0.0007 (0.0007)	*-0.0007* (0.0004)	**0.0017** (0.0008)	-0.0008 (0.0007)	-0.0006 (0.0004)
Job change				0.0497 (0.0364)	0.0082 (0.0292)	**-0.0410** (0.0183)	0.0550 (0.0354)	0.0147 (0.0287)	*-0.0312* (0.0182)
Log entry earnings							**0.1557** (0.0355)	**0.1026** (0.0330)	**0.1391** (0.0249)
Constant	**5.4397** (1.1755)	**6.0279** (0.8652)	**6.5925** (0.8333)	**7.0991** (1.5007)	**7.3261** (1.1865)	**4.6733** (1.5407)	**6.3080** (1.0779)	**7.0240** (0.8316)	**4.3549** (1.0147)
R^2 adjusted	0.354	0.568	0.345	0.419	0.480	0.477	0.443	0.487	0.495
No. of observations	635	979	1,617	635	979	1,617	635	979	1,617
F	13.878	62.859	24.953	14.296	17.675	30.970	15.737	17.582	33.260

Notes: Robust standard errors in parentheses. - Significant coefficients are indicated in italics (10%-level) and boldface (5%-level). - For fields of study categorization see Table 1. - All regressions include dummy variables for year, firm size and industry.
Source: HIS panel of survey graduates 1997 and 2001, own calculations.

Table A5: Monthly log wages, decomposition results: Arts/ Humanities and Social Sciences

					After 5/6 years			
	Labor market entry				w/o log entry wage		with log entry wage	
	$\hat{\beta}_{SS}$ as weight		$\hat{\beta}_{AH}$ as weight		$\hat{\beta}_{SS}$ as weight	$\hat{\beta}_{AH}$ as weight	$\hat{\beta}_{SS}$ as weight	$\hat{\beta}_{AH}$ as weight
Total Difference	**0.3536**	(0.0226)	**0.3536**	(0.0220)	**0.3395** (0.0201)	**0.3395** (0.0198)	**0.3395** (0.0207)	**0.3395** (0.0202)
	[100.00%]		[100.00%]		[100.00%]	[100.00%]	[100.00%]	[100.00%]
Explained	**0.2303**	(0.0219)	**0.1473**	(0.0256)	**0.1521** (0.0204)	**0.1570** (0.0249)	**0.1891** (0.0206)	**0.1834** (0.0260)
	[65.14%]		[41.66%]		[44.80%]	[46.26%]	[55.72%]	[54.04%]
Unexplained	**0.1233**	(0.0260)	**0.2063**	(0.0276)	**0.1874** (0.0208)	**0.1824** (0.0233)	**0.1503** (0.0208)	**0.1560** (0.0251)
	[34.86%]		[58.34%]		[55.20%]	[53.74%]	[44.28%]	[45.96%]
Explained								
Male	**0.0298**	(0.0055)	0.0077	(0.0084)	**0.0215** (0.0046)	**0.0266** (0.0072)	**0.0151** (0.0042)	**0.0260** (0.0068)
Age	0.0003	(0.0035)	-0.0070	(0.0053)	-0.0031 (0.0027)	-0.0049 (0.0041)	-0.0040 (0.0027)	-0.0045 (0.0040)
Married	*-0.0042*	(0.0023)	-0.0034	(0.0033)	-0.0003 (0.0010)	0.0014 (0.0018)	-0.0003 (0.0010)	0.0014 (0.0016)
Children	-0.0005	(0.0011)	0.0026	(0.0023)	-0.0002 (0.0008)	-0.0003 (0.0012)	-0.0001 (0.0006)	-0.0002 (0.0011)
Final high school grade	0.0009	(0.0013)	0.0009	(0.0014)	0.0002 (0.0007)	0.0010 (0.0014)	0.0000 (0.0006)	0.0010 (0.0014)
Final university grade	0.0020	(0.0074)	-0.0022	(0.0126)	**-0.0134** (0.0064)	-0.0124 (0.0106)	**-0.0141** (0.0062)	-0.0120 (0.0101)
Length of study	0.0074	(0.0087)	0.0051	(0.0114)	0.0086 (0.0073)	0.0098 (0.0095)	0.0060 (0.0070)	0.0080 (0.0094)
Change of field of study	**0.0103**	(0.0041)	0.0069	(0.0045)	-0.0014 (0.0029)	-0.0016 (0.0038)	-0.0037 (0.0028)	-0.0028 (0.0038)
University	**-0.0141**	(0.0055)	**-0.0342**	(0.0110)	**-0.0279** (0.0051)	**-0.0200** (0.0091)	**-0.0238** (0.0048)	*-0.0172* (0.0094)
More than 1 degree	-0.0005	(0.0018)	*0.0045*	(0.0026)	**-0.0045** (0.0021)	-0.0014 (0.0018)	**-0.0042** (0.0021)	-0.0017 (0.0019)
Self-employed	**0.0168**	(0.0060)	**0.0225**	(0.0060)	-0.0018 (0.0031)	0.0026 (0.0028)	-0.0017 (0.0031)	0.0018 (0.0028)
Employment in civil service	**0.0373**	(0.0069)	-0.0006	(0.0058)	**0.0350** (0.0062)	-0.0030 (0.0062)	**0.0277** (0.0053)	-0.0054 (0.0060)
Full-time employment	**0.0976**	(0.0136)	**0.0726**	(0.0103)	**0.0609** (0.0108)	**0.0486** (0.0093)	**0.0585** (0.0104)	**0.0485** (0.0093)
Employed in West Germany	**0.0096**	(0.0037)	**0.0069**	(0.0033)	**0.0048** (0.0023)	**0.0075** (0.0034)	*0.0036* (0.0019)	**0.0070** (0.0033)
Share high skilled workers	-0.0037	(0.0025)	-0.0066	(0.0044)	**-0.0062** (0.0026)	-0.0033 (0.0036)	**-0.0052** (0.0025)	-0.0035 (0.0035)
Overeducation	*0.0054*	(0.0029)	*0.0059*	(0.0033)	-0.0004 (0.0022)	-0.0004 (0.0023)	-0.0004 (0.0022)	-0.0004 (0.0020)
Industry	**0.0260**	(0.0081)	**0.0302**	(0.0103)	**0.0392** (0.0076)	**0.0460** (0.0110)	**0.0318** (0.0074)	**0.0397** (0.0115)
Firm size	**0.0294**	(0.0070)	**0.0245**	(0.0090)	**0.0180** (0.0060)	**0.0434** (0.0078)	**0.0137** (0.0054)	**0.0411** (0.0078)
Apprenticeship	0.0052	(0.0049)	*0.0190*	(0.0104)	0.0043 (0.0041)	-0.0056 (0.0072)	0.0018 (0.0041)	-0.0070 (0.0075)
Study related student job	**-0.0049**	(0.0024)	*-0.0054*	(0.0030)	*-0.0028* (0.0015)	-0.0026 (0.0021)	-0.0020 (0.0013)	-0.0022 (0.0021)
Study for a doctorate	-0.0006	(0.0039)	**0.0096**	(0.0043)	-0.0003 (0.0023)	0.0045 (0.0028)	-0.0010 (0.0022)	0.0041 (0.0027)
Doctoral degree					-0.0020 (0.0017)	0.0028 (0.0024)	*-0.0032* (0.0018)	0.0024 (0.0022)
Actual experience					**0.0218** (0.0053)	**0.0161** (0.0052)	**0.0193** (0.0048)	**0.0146** (0.0051)
Duration of unemployment					**0.0073** (0.0031)	0.0050 (0.0035)	**0.0063** (0.0030)	0.0055 (0.0035)
Tenure current job					0.0003 (0.0011)	0.0023 (0.0021)	0.0004 (0.0011)	0.0021 (0.0020)
Job change					0.0000 (0.0005)	0.0001 (0.0009)	0.0001 (0.0006)	0.0002 (0.0010)
Log entry earnings							**0.0692** (0.0103)	**0.0405** (0.0107)
Cohort 2001	**-0.0192**	(0.0050)	**-0.0120**	(0.0045)	**-0.0054** (0.0023)	-0.0052 (0.0032)	-0.0008 (0.0019)	-0.0035 (0.0032)

Notes: Bootstrapped standard errors with 1,000 repetitions are shown in round parentheses. - Significant coefficients are indicated in italics (10%-level) and boldface (5%-level). - For fields of study categorization see Table 1. - The share is shown in square parentheses.
Source: HIS panel of survey graduates 1997 and 2001, own calculations.

Table A6: Monthly log wages, decomposition results: Arts/ Humanities and Natural Sciences

					After 5/6 years			
	Labor market entry				w/o log entry wage		with log entry wage	
	$\hat{\beta}_{NS}$ as weight		$\hat{\beta}_{AH}$ as weight		$\hat{\beta}_{NS}$ as weight	$\hat{\beta}_{AH}$ as weight	$\hat{\beta}_{NS}$ as weight	$\hat{\beta}_{AH}$ as weight
Total Difference	**0.2511**	(0.0239)	**0.2511**	(0.0247)	**0.3388** (0.0204)	**0.3388** (0.0210)	**0.3388** (0.0210)	**0.3388** (0.0210)
	[100.00%]		[100.00%]		[100.00%]	[100.00%]	[100.00%]	[100.00%]
Explained	*0.0434*	(0.0264)	**0.0784**	(0.0258)	**0.1851** (0.0210)	**0.1901** (0.0256)	**0.2186** (0.0220)	**0.2086** (0.0271)
	[17.30%]		[31.22%]		[54.63%]	[56.11%]	[64.51%]	[61.55%]
Unexplained	**0.2076**	(0.0300)	**0.1727**	(0.0284)	**0.1537** (0.0234)	**0.1487** (0.0266)	**0.1203** (0.0244)	**0.1303** (0.0270)
	[82.70%]		[68.78%]		[45.37%]	[43.89%]	[35.49%]	[38.45%]
Explained								
Male	**0.0267**	(0.0084)	0.0116	(0.0119)	**0.0335** (0.0074)	**0.0401** (0.0103)	**0.0300** (0.0073)	**0.0391** (0.0105)
Age	-0.0048	(0.0052)	-0.0102	(0.0071)	-0.0060 (0.0052)	-0.0075 (0.0057)	-0.0057 (0.0051)	-0.0064 (0.0056)
Married	-0.0010	(0.0017)	-0.0023	(0.0024)	0.0029 (0.0022)	0.0013 (0.0017)	0.0026 (0.0020)	0.0013 (0.0016)
Children	0.0009	(0.0013)	0.0025	(0.0023)	0.0039 (0.0024)	-0.0018 (0.0020)	0.0039 (0.0025)	-0.0016 (0.0020)
Final high school grade	*0.0104*	(0.0060)	0.0099	(0.0088)	0.0042 (0.0056)	*0.0121* (0.0069)	0.0031 (0.0055)	0.0112 (0.0069)
Final university grade	0.0001	(0.0014)	0.0004	(0.0021)	0.0029 (0.0020)	0.0020 (0.0020)	0.0030 (0.0021)	0.0019 (0.0020)
Length of study	-0.0019	(0.0021)	0.0009	(0.0024)	0.0016 (0.0019)	0.0018 (0.0021)	0.0017 (0.0021)	0.0015 (0.0021)
Change of field of study	0.0045	(0.0053)	0.0096	(0.0064)	0.0014 (0.0054)	-0.0023 (0.0051)	0.0004 (0.0052)	-0.0039 (0.0054)
University	-0.0001	(0.0017)	0.0001	(0.0031)	-0.0000 (0.0009)	0.0001 (0.0018)	-0.0000 (0.0008)	0.0001 (0.0017)
More than 1 degree	0.0002	(0.0014)	-0.0033	(0.0027)	-0.0000 (0.0012)	0.0011 (0.0016)	-0.0001 (0.0012)	0.0013 (0.0018)
Self-employed	0.0038	(0.0123)	**0.0308**	(0.0071)	**-0.0111** (0.0052)	0.0028 (0.0030)	**-0.0111** (0.0053)	0.0019 (0.0028)
Employment in civil service	-0.0010	(0.0021)	0.0001	(0.0016)	**0.0205** (0.0076)	-0.0029 (0.0060)	**0.0174** (0.0076)	-0.0052 (0.0059)
Full-time employment	0.0124	(0.0087)	0.0127	(0.0083)	**0.0628** (0.0118)	**0.0477** (0.0093)	**0.0612** (0.0115)	**0.0475** (0.0092)
Employed in West Germany	**0.0059**	(0.0028)	**0.0064**	(0.0032)	0.0019 (0.0017)	0.0043 (0.0035)	0.0016 (0.0015)	0.0040 (0.0033)
Share high skilled workers	0.0074	(0.0055)	0.0110	(0.0072)	0.0021 (0.0016)	0.0019 (0.0024)	0.0021 (0.0017)	0.0019 (0.0024)
Overeducation	**0.0395**	(0.0093)	**0.0256**	(0.0086)	**0.0188** (0.0052)	**0.0132** (0.0048)	**0.0177** (0.0054)	**0.0123** (0.0047)
Industry	**-0.0180**	(0.0082)	0.0004	(0.0047)	**0.0246** (0.0069)	**0.0385** (0.0102)	**0.0267** (0.0069)	**0.0331** (0.0096)
Firm size	**0.0164**	(0.0049)	**0.0167**	(0.0069)	**0.0188** (0.0055)	**0.0408** (0.0077)	**0.0167** (0.0050)	**0.0387** (0.0075)
Apprenticeship	-0.0021	(0.0024)	-0.0067	(0.0042)	0.0021 (0.0028)	0.0020 (0.0027)	0.0023 (0.0027)	0.0025 (0.0029)
Study related student job	0.0016	(0.0016)	0.0026	(0.0025)	0.0011 (0.0012)	0.0013 (0.0016)	0.0009 (0.0011)	0.0011 (0.0014)
Study for a doctorate	**-0.0477**	(0.0113)	**-0.0354**	(0.0132)	-0.0004 (0.0017)	-0.0005 (0.0020)	-0.0003 (0.0013)	-0.0004 (0.0019)
Doctoral degree					**-0.0175** (0.0075)	-0.0276 (0.0181)	-0.0027 (0.0078)	-0.0234 (0.0183)
Actual experience					**0.0123** (0.0041)	**0.0174** (0.0057)	**0.0099** (0.0035)	**0.0158** (0.0056)
Duration of unemployment					**0.0081** (0.0040)	0.0063 (0.0045)	*0.0073* (0.0041)	0.0069 (0.0043)
Tenure current job					-0.0001 (0.0008)	0.0010 (0.0016)	-0.0002 (0.0008)	0.0009 (0.0015)
Job change					-0.0005 (0.0009)	-0.0007 (0.0012)	-0.0007 (0.0010)	-0.0008 (0.0014)
Log entry earnings							**0.0318** (0.0074)	**0.0288** (0.0082)
Cohort 2001	*-0.0099*	(0.0059)	-0.0051	(0.0034)	-0.0023 (0.0017)	-0.0022 (0.0020)	-0.0009 (0.0011)	-0.0015 (0.0016)

Notes: Bootstrapped standard errors with 1,000 repetitions are shown in round parentheses. - Significant coefficients are indicated in italics (10%-level) and boldface (5%-level). - For fields of study categorization see Table 1. - The share is shown in square parentheses.
Source: HIS panel of survey graduates 1997 and 2001, own calculations.

Table A7: Monthly log wages, decomposition results: Arts/ Humanities and Engineering

			After 5/6 years			
	Labor market entry		w/o log entry wage		with log entry wage	
	$\hat{\beta}_E$ as weight	$\hat{\beta}_{AH}$ as weight	$\hat{\beta}_E$ as weight	$\hat{\beta}_{AH}$ as weight	$\hat{\beta}_E$ as weight	$\hat{\beta}_{AH}$ as weight
Total Difference	**0.3961** (0.0207)	**0.3961** (0.0207)	**0.3142** (0.0186)	**0.3142** (0.0190)	**0.3142** (0.0184)	**0.3142** (0.0194)
	[100.00%]	[100.00%]	[100.00%]	[100.00%]	[100.00%]	[100.00%]
Explained	**0.2080** (0.0224)	**0.1726** (0.0339)	**0.2129** (0.0203)	**0.2371** (0.0316)	**0.2490** (0.0213)	**0.2607** (0.0356)
	[52.52%]	[43.58%]	[67.74%]	[75.45%]	[79.23%]	[82.97%]
Unexplained	**0.1881** (0.0274)	**0.2235** (0.0360)	**0.1014** (0.0216)	**0.0771** (0.0297)	**0.0653** (0.0222)	0.0535 (0.0352)
	[47.48%]	[56.42%]	[32.26%]	[24.55%]	[20.77%]	[17.03%]
Explained						
Male	**0.0294** (0.0091)	0.0150 (0.0155)	**0.0435** (0.0075)	**0.0515** (0.0129)	**0.0385** (0.0074)	**0.0503** (0.0124)
Age	-0.0003 (0.0037)	-0.0091 (0.0070)	0.0034 (0.0039)	-0.0063 (0.0050)	0.0023 (0.0040)	-0.0059 (0.0050)
Married	-0.0029 (0.0018)	-0.0025 (0.0024)	0.0004 (0.0009)	0.0018 (0.0019)	0.0003 (0.0010)	0.0018 (0.0019)
Children	0.0001 (0.0007)	0.0003 (0.0019)	-0.0002 (0.0005)	0.0008 (0.0014)	-0.0002 (0.0006)	0.0007 (0.0013)
Final high school grade	0.0004 (0.0008)	-0.0016 (0.0020)	0.0000 (0.0007)	-0.0019 (0.0017)	-0.0002 (0.0007)	-0.0018 (0.0016)
Final university grade	**-0.0136** (0.0040)	-0.0014 (0.0076)	**-0.0077** (0.0034)	-0.0075 (0.0068)	*-0.0058* (0.0033)	-0.0073 (0.0063)
Length of study	-0.0023 (0.0048)	0.0038 (0.0088)	-0.0013 (0.0042)	0.0073 (0.0069)	-0.0012 (0.0042)	0.0060 (0.0072)
Change of field of study	0.0108 (0.0069)	0.0120 (0.0080)	-0.0007 (0.0054)	-0.0028 (0.0066)	-0.0018 (0.0051)	-0.0048 (0.0067)
University	-0.0127 (0.0103)	**-0.0679** (0.0226)	**-0.0400** (0.0087)	**-0.0397** (0.0180)	**-0.0370** (0.0085)	*-0.0342* (0.0187)
More than 1 degree	-0.0044 (0.0036)	*0.0061* (0.0032)	**-0.0052** (0.0026)	-0.0020 (0.0024)	*-0.0047* (0.0027)	-0.0024 (0.0025)
Self-employed	0.0025 (0.0072)	**0.0262** (0.0066)	-0.0045 (0.0030)	0.0026 (0.0028)	-0.0042 (0.0028)	0.0018 (0.0028)
Employment in civil service	*0.0136* (0.0072)	-0.0007 (0.0075)	**0.0333** (0.0076)	-0.0040 (0.0083)	**0.0318** (0.0074)	-0.0071 (0.0083)
Full-time employment	**0.1109** (0.0134)	**0.0857** (0.0118)	**0.0798** (0.0118)	**0.0709** (0.0095)	**0.0796** (0.0118)	**0.0708** (0.0098)
Employed in West Germany	**0.0101** (0.0037)	*0.0063* (0.0033)	**0.0075** (0.0025)	**0.0107** (0.0039)	**0.0061** (0.0023)	**0.0100** (0.0038)
Share high skilled workers	-0.0016 (0.0014)	-0.0023 (0.0022)	-0.0009 (0.0014)	-0.0021 (0.0026)	-0.0006 (0.0013)	-0.0022 (0.0023)
Overeducation	**0.0209** (0.0051)	**0.0187** (0.0063)	**0.0101** (0.0028)	**0.0115** (0.0041)	**0.0096** (0.0030)	**0.0107** (0.0042)
Industry	**0.0429** (0.0132)	**0.0589** (0.0234)	**0.0406** (0.0101)	**0.0856** (0.0221)	**0.0366** (0.0102)	**0.0730** (0.0230)
Firm size	**0.0162** (0.0042)	**0.0110** (0.0055)	**0.0309** (0.0054)	**0.0309** (0.0064)	**0.0292** (0.0052)	**0.0293** (0.0062)
Apprenticeship	-0.0006 (0.0035)	*0.0162* (0.0087)	-0.0011 (0.0029)	-0.0048 (0.0063)	-0.0016 (0.0030)	-0.0060 (0.0063)
Study related student job	0.0002 (0.0005)	0.0010 (0.0022)	0.0003 (0.0008)	0.0005 (0.0011)	0.0003 (0.0008)	0.0004 (0.0011)
Study for a doctorate	-0.0008 (0.0018)	0.0049 (0.0031)	0.0006 (0.0008)	0.0018 (0.0019)	0.0004 (0.0008)	0.0016 (0.0018)
Doctoral degree			-0.0007 (0.0010)	0.0023 (0.0021)	-0.0013 (0.0011)	0.0020 (0.0019)
Actual experience			**0.0250** (0.0056)	**0.0235** (0.0075)	**0.0208** (0.0052)	**0.0212** (0.0069)
Duration of unemployment			**0.0063** (0.0029)	0.0038 (0.0029)	**0.0063** (0.0027)	0.0042 (0.0028)
Tenure current job			-0.0040 (0.0025)	0.0070 (0.0051)	-0.0032 (0.0023)	0.0064 (0.0048)
Job change			0.0011 (0.0009)	-0.0008 (0.0014)	0.0008 (0.0008)	-0.0009 (0.0013)
Log entry earnings					**0.0504** (0.0092)	**0.0454** (0.0121)
Cohort 2001	**-0.0110** (0.0040)	**-0.0081** (0.0036)	**-0.0038** (0.0017)	-0.0035 (0.0025)	*-0.0022* (0.0013)	-0.0023 (0.0023)

Notes: Bootstrapped standard errors with 1,000 repetitions are shown in round parentheses. - Significant coefficients are indicated in italics (10%-level) and boldface (5%-level). - For fields of study categorization see Table 1. - The share is shown in square parentheses.
Source: HIS panel of survey graduates 1997 and 2001, own calculations.