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Patterns of Social Inequalities in Access to Higher Education in France and Germany

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Abstract

This article explores social selectivity in access to tertiary education in France and Germany in the period from 1980 to 2000. Results of multinomial logistic regression models show that access to different postsecondary institutions is characterized by marked social background effects in both countries. Depending on the type of tertiary institution we consider in France or Germany, social selectivity into fields of study is also observed. Overall, there is no indication for substantial changes in the pattern of inequality in access to tertiary education in either country during the past two decades.

Key words: field of study • higher education • social inequality

INTRODUCTION

Both historical and cross-country comparisons provide heuristic opportunities to revisit sociological theories concerning the role of educational achievement for social reproduction. Such comparisons provide insight, because the education acquired by different social groups varies, according to period and/or country, both in quantity and quality. The expansion of tertiary education is an observable trend in most developed countries, and should provide opportunities for formerly excluded groups. At the same time, expansion has most often been accompanied by a trend towards more institutional differentiation. In this context, a popular hypothesis in social stratification research is that educational expansion, when it occurs through hierarchical differentiation, may be a process of diversion,

whereby members of the working class are diverted from elite opportunities and are instead channeled into second-tier institutions leading to positions of lower status (Brint and Karabel, 1989). However, in their comparative study of inequalities in access to higher education, Arum et al. (2007: 28) conclude that there is 'stronger evidence of inclusion than of diversion'. Nevertheless, obtaining a tertiary degree has become increasingly important in securing access to elite positions. Consequently, one can expect to observe socially differentiated strategies to obtain the most advantageous type of higher education. Therefore, it remains an open issue if expansion fosters inclusion or exclusion.

Beyond inter-institutional differentiation between postsecondary tracks, fields of study constitute a second 'axis of stratification' in higher education because they differ with respect to prestige and economic payoffs (Davies and Guppy, 1997). Consistent with the 'Effectively Maintained Inequality' perspective (Lucas, 2001), one might observe socially stratified field of study choices because the socio-economically advantaged usually seek out qualitative differences at every level of schooling and use their resources to gain access to the most lucrative fields. In Israel, the expansion of higher education reduced inequality in enrolment, but mainly in fields that carry limited advantages in the job market (Ayalon and Yogev, 2005). However, while analyses of field of study choices have recently received more attention in the literature (e.g. Davies and Guppy, 1997; De Graaf and Wolbers, 2003; Reimer and Pollak, 2005; van de Werfhorst et al., 2003), we did not find any study that systematically explored social selection in different postsecondary tracks that also considers field of study choices in a cross-national comparative framework.[1]

FRANCE AND GERMANY IN COMPARATIVE PERSPECTIVE

To determine whether expansion in access to tertiary education has been accompanied by a trend towards more 'diversion,' we focus on France and Germany for a cross-national comparison. In these countries, the educational structures, especially the degree of openness and differentiation, vary considerably. As noted by Müller and Karle (1993), differences in inequalities in educational attainment between nations are mainly produced by the survival pattern at the different transitions in every educational system. As a result, social inequalities in overall educational attainment are inversely correlated with the prevalence of tertiary education (Hout, 2007). In France, 37 percent of the population aged 25–34 have obtained a tertiary degree, but the corresponding figure is considerably smaller in Germany, at 22 percent (DEP – French Ministry of Education, 2006; Statistisches Bundesamt, 2006).

Here, we explore at which stage in the schooling career these differential patterns of social selectivity are generated. Apart from general survival rates, France and Germany also differ with respect to the educational paths leading to eligibility for tertiary education, as well as in the structure of available postsecondary choices. We attempt to outline how these structures might be empirically and

theoretically connected to inequalities in postsecondary educational choices, and consequently how they may result in unequal access to social positions.

Pathways to Tertiary Education

Beginning at the secondary level, the structures of the schooling systems in both countries are very different, with a common-core curriculum in the French *college* (lower-secondary school), and three distinct schooling tracks in Germany. In France, social selection takes place at a later point of the schooling career and is more continuous, but is also less marked than in Germany. Additionally, the odds to attain eligibility to higher education (*baccalauréat* in France; *Abitur* in Germany) between service-class and working-class offspring, for the cohorts we consider in the subsequent analyses,[2] are smaller in France, therefore the relative advantage of service-class children is less pronounced compared to Germany (the odds ratios shifted from 8.3 to 6.6, while for Germany, the corresponding figures are 11.2 and 10.2).[3]

Overall, assuming that expansion of an educational level increases inequalities in the subsequent transition, we expect that social inequality in the choice of postsecondary tracks should be larger in France than in Germany (*Hypothesis 1a*).

In France, the increasing proportion of students obtaining the upper secondary certificate, the *baccalauréat,* observed during the period under study, was accompanied by a strong diversification, with weaker and less privileged students over-represented in the technological and vocational types of *baccalauréat,* while the general *baccalauréat* is most prestigious type, with better opportunities for access to tertiary education. Therefore, while the dramatic increase in students obtaining the *baccalauréat* has resulted in a reduction of inequalities, it can be characterized as 'segregative democratization' (Merle, 2000) taking place within distinct tracks, with unequal opportunities for further schooling.

In Germany, where expansion of upper secondary qualifications has been more moderate, a decrease in inequalities leading to eligibility for tertiary education has been noted (Mayer et al., 2007). Nevertheless, no greater diversification has been visible, perhaps due to the moderate increase in the percentage of students attaining the *Abitur* level. Furthermore, students in Germany can obtain a 'restricted entrance qualification' (*Fachhochschulreife*) that enables them to study at the more practically oriented universities of applied sciences only (*Fachhochschule*), but not at traditional universities.[4] Even though the German type of entrance qualification does not have the same relevance for further schooling decisions in Germany as the French *baccalauréat*, our own unreported analyses demonstrate that working-class students obtain the restricted entrance qualification more often than their service-class peers. In order to understand how possible inequalities in the choice of postsecondary tracks or fields of study are generated, the different pathways to eligibility for tertiary education need to be taken into account.

We expect that social origin effects at the transition to tertiary education will be mediated by the type of upper secondary qualification in both countries.

However, given the greater diversification of the *baccalauréat* in France, the type of upper secondary qualification might play a greater role for further schooling choices than in Germany (*Hypothesis 1b*).

Postsecondary Institutions in Germany and France

In France and Germany, different institutional alternatives are available to tertiary-qualified students. France has a multi-track system of higher education. The very selective *Grandes Ecoles* constitute the first-tier elite sector, offering programs of study with a duration from about five to seven years. This is true also for medicine, even if it is located within universities, which is why we merge it with the *Grandes Ecoles* in our subsequent analyses into one 'Elite Track'. Universities require nearly the same duration of study as the elite schools, but are formally open to everyone. Students can also enroll in short vocational programs at the tertiary level (Brevet de Technicien Supérieur, 'BTS', and Diplôme Universitaire de Technologie, 'DUT'), which are moderately selective and require only two years of study. Finally, students can decide not to pursue further education and enter the labor market immediately. During the past two decades, the different postsecondary tracks expanded unequally. While the elite tracks limited student intake to prevent credential inflation, expansion of the tertiary level resulted entirely from the openness of the university.

In Germany, students who qualify to enroll in higher education can either study at a traditional university with a focus on scientific training and academic learning, or at a university of applied sciences that offers a limited selection of tertiary-level programs with a more practical orientation and shorter study times (about four to five years versus seven at university). Unlike France, Germany does not have elite institutions. Apart from enrolling at university, qualified students can choose to take up vocational training. The short duration of vocational training (usually two years for students with *Abitur*), a training salary, a comparatively early labor-market entry, and the high probability of being offered a job by the sponsoring apprenticeship firm ensure the attractiveness of this educational alternative, particularly for students from working-class backgrounds. Only a small and declining fraction of university-qualified students chooses not to pursue further education.

Thus, there is a clear vertical ranking between the different postsecondary tracks in both countries. In France, elite tracks lead to the most favorable occupational positions, while BTS-DUT graduate prospects are considerably lower and university graduates chances somewhere in the middle. In Germany, outcomes for university and university of applied sciences graduates are closer together with the latter group being comparable with university graduates in France and the former achieving slightly better outcomes though not as high as those from the elite tracks (see Müller et al., 2002). The different tracks are also more academically demanding and vary in duration and consequently costs. Following rational choice theory (Boudon, 1974; Breen and Goldthorpe, 1997),

the costs and benefits associated with the different tertiary alternatives, are differentially relevant for students from different social origins. Consequently, it can be expected that students from more privileged backgrounds will generally be overrepresented in the highest ranked track in each country because they have more financial and academic resources. Furthermore privileged students may strive to gain access to the most lucrative track in order to avoid downward social mobility (e.g. Breen and Goldthorpe, 1997). In addition to these rational choice arguments, cultural capital theory (e.g. Bourdieu, 1977) might offer additional insight in student decision-making processes. More privileged students will be better equipped to detect the best opportunities in a complex system of postsecondary choices, and may have distinct preferences for particular tertiary institutions or fields of study due to the cultural capital of their families.

For both countries, we expect that the most privileged students will try to gain access to the highest ranked postsecondary track in the specific institutional context they are in. In France, we expect to observe inequality between the selective elite schools and all other tracks. In Germany, we expect social inequalities to manifest themselves between tertiary studies as a whole and vocational training (*Hypothesis 2*).

Fields of Study in Diversified Higher Education Systems

While the different postsecondary tracks can be clearly vertically ranked, this is less evident for field of study choices, primarily because the choice of a field may result from preferences that are not related to social inequalities. However, fields of study can be ranked according to the more or less advantageous labor market outcomes they bring. Furthermore, if certain fields are also more academically demanding or more costly in terms of study length, social background effects are particularly likely. When comparing different fields of study in terms of their academic requirements and the labor market performance, in both countries a divide between the 'hard' fields such as math or physics and 'soft' fields such as the humanities (e.g. Biglan, 1973) can be observed. Thus, overrepresentation of more privileged students in the academically more demanding 'hard' fields could be expected in both countries. To gain a rough impression of the relative labor market position of these fields, we compare access to upper service class positions for the cohort born between 1960 and 1965 across fields, while disregarding the type of tertiary institution. In France, the percentage of graduates obtaining a service class position varies from 69 percent for the sciences field to 43 percent for culture/humanities field and 37 percent of graduates in the medical field (due to the inclusion of nurses in this broad field). In Germany, the percentage of graduates in upper service class positions varies from 88 percent for the medical field and 80 percent for the sciences to 58 percent in the culture/humanities field.[5] Beyond this broad dichotomy between 'hard' and 'soft' fields we might observe some country-specific peculiarities related to the relative ranking and appreciation of certain skills in the labor market. In France, the connection

between skills obtained in the education system and the labour market is less pronounced than in Germany (Maurice et al., 1982; Müller, 1998). Vertical ranking through unequal degree levels is generally more important than a close correspondence between a given qualification and jobs; the level rather than the specialty of the study has a very strong impact on the chances of obtaining an advantageous labor market position. This is different in Germany where the value of a credential derives from the specific skills the field of study represents and where most fields have a clear occupational orientation. Therefore, the hierarchy between fields is expected to be more marked in Germany.

Overall, we expect social inequalities in field of study choices to be more likely in Germany due to the higher relevance of special skills as opposed to the vertical ranking of degree levels (*Hypothesis 3a*).

Finally, one should note that the labor market benefits and content of a given field may vary according to the institutions that offer it. In France and Germany, the full range of academic disciplines is offered at the university level, while other educational tracks concentrate on a more limited set of disciplines. The elite tracks in France mostly offer courses in engineering, sciences, and economics; medical training is organized both in elite tracks (selective universities) and short vocational ones (for paramedical assistants) engineering as well as economics can also be studied in the BTS-DUT short vocational tracks. In Germany, the university of applied sciences only offers applied fields and no medical sciences as the latter is restricted to university courses leading to a degree as medical doctor. It follows that when assessing social selectivity in access to different fields, the type of tertiary institution has to be taken into account, especially in a comparative framework. Furthermore, when after a strong academic and social selection, only few students enter a particular track, they will be relatively homogenous with respect to socio-demographic as well as academic variables. This makes further social differentiation between fields of study at this level relatively unlikely. In France, given the strong intake restrictions at the elite track, we expect to observe a lower degree of social differentiation between fields of study at that level. At the level of the less selective university, which absorbs about a third of all students in the youngest cohort (see Table 1), more differentiation can be expected. In Germany, where almost half of all students in the younger cohort we consider enter the traditional university (see Table 2) there is more room for social differentiation.

In sum, we expect to observe inequalities in the choice of field of study only if there has not been strong previous social selection into a particular tertiary track. It follows that we anticipate social selectivity into fields of study at the level of university in Germany because of the relatively large proportion of students choosing to continue to this level. Due to social selection into the more differentiated set of postsecondary options in France, we generally expect to observe fewer inequalities in field of study choices. However, inequality in the choice of fields seems to be more likely to occur at the level of universities than at the elite tracks (*Hypothesis 3b*).

DATA AND VARIABLES

Datasets

For France, we make use of the most recent FQP Survey (2003) on education, training, and occupations carried out by the French National Institute of Statistics and Economic Studies (INSEE). This is a retrospective survey containing detailed information on education and training achieved. Unfortunately, there is not a comparable data-base for Germany, so we utilize data from surveys conducted by the German Institute for Higher Education Research (HIS).[6] In order to be able to make a comparison over time in both countries, we pool data from the 1983 and 1999 German HIS surveys and compare results with data for two *cohorts* in the French FQP data.[7] Respondents born between 1962 and 1967 comprise the first cohort (*baccalauréat* obtained around 1983), and respondents born between 1975 and 1980 constitute the second cohort (*baccalauréat* obtained around 1995). The two cohorts have been chosen because both countries experienced rapid expansion of upper-secondary qualifications in the time frame considered.

Variables

In both France and Germany, we consider only the students' first postsecondary educational choice. We distinguish two dependent variables: first, the type of postsecondary track, that is, the *vertical* choices of an institution, and second, the *horizontal* choices in higher education in terms of the field of study chosen within the postsecondary institution. We had to generate a field of study classification consisting of five broad fields in order to achieve comparison between countries and institutional levels. Unfortunately, the social science field had to be collapsed with the law and business category, as it was too sparsely populated in the French data. Our five categories are Sciences, Culture/Humanities, Medical Sciences, Business/Law/Social Sciences and Engineering.

Concerning the independent variables, we consider information from both parents in order to capture effects of social origin. Following the basic idea of the EGP class scheme, we distinguish between four categories of fathers' class: 'upper service class' (EGP I), 'lower professionals' combined with 'other nonmanual employees' (EGP II/III), 'small proprietors' (EGP IV), and 'working class' (EGP V-VII). The measure for parent-educational attainment follows the CASMIN educational classification (Müller, 2000). We include a four-category version for the father ('primary', 'lower secondary', 'upper secondary' and 'tertiary education') and a dummy variable for the mother ('tertiary' versus 'less than tertiary education'), which turned out to be the most parsimonious coding.

We tried to measure academic achievement prior to the transition, thus capturing primary effects of social origin (e.g. Boudon, 1974). In France, we were only able to differentiate between good grades versus average ones (*mention/no mention*) obtained in the *baccalauréat*; in the German data, the continuous

measure for grades was dichotomized into good versus average grades to achieve better comparability. In both countries we also take into account age at graduation as a further indicator of academic ability with younger graduation age an indicator for higher academic skills. In Germany, we also distinguish between individuals with a 'full' versus those with a 'restricted entrance qualification', while in France, we distinguish between the three main types of *baccalauréat*: general, technological, and vocational. For the analysis of field study however, this variable was dichotomized (general versus rest) due to small *N*. Finally, we take into account gender and year of survey, or cohort, in both countries. In Germany, we additionally control for prior vocational training.[8]

THE CHOICE OF A POSTSECONDARY TRACK

Tables 1 and 2 reveal that access to postsecondary tracks is unequal in both France and Germany. We only consider the choices of upper service-class compared to working-class offspring in order to obtain an intuitive overview of the overall level of inequalities at this level.

Table 1 Choice of postsecondary track in France by father's class ($N = 4565$)

First postsecondary education	Cohort	Service class I	Workers	Total (all classes)	Odds Ratios
Elite	1962–67	23.7	7.3	12.1	3.9
	1975–80	22.1	5.6	10.7	4.8
University	1962–67	29.1	26.8	27.3	1.1
	1975–80	36.7	28.6	32.6	1.4
BTS-DUT	1962–67	29.5	37.1	35.8	0.7
	1975–80	33.4	40.3	38.3	0.7
No tertiary	1962–67	17.6	28.8	24.7	0.5
	1975–80	7.7	25.5	18.3	0.2

Table 2 Choice of postsecondary track in Germany by father's class (N = 16,286)

First postsecondary education	Cohort	Service class I	Workers	Total (all classes)	Odds ratios
University	1983	56.6	30.5	45.1	3.0
	1999	62.3	33.8	50.2	3.2
University of applied sciences	1983	10.9	25.2	16.7	0.4
	1999	12.6	22.4	16.2	0.5
Vocational sciences	1983	29.8	36.7	33.9	0.7
	1999	24.2	40.8	31.9	0.5
No tertiary	1983	2.7	7.6	4.3	0.4
	1999	0.9	3.0	1.7	0.3

In France, as expected, upper service-class students are overrepresented in the elite track and, to a lesser extent, also at the level of university while working-class students are overrepresented in the vocational track (BTS-DUT) and more often decide to not pursue further education. Furthermore, expansion of tertiary education does not seem to have reduced inequalities. If anything, access to the elite tracks seems to be more socially selective for the second cohort.

In Germany, upper service-class students more often choose the traditional university, while the universities of applied sciences are more popular among working-class offspring. The preferred programs for working-class students, however, are vocational training programs. More often, working-class students also choose not to pursue further education than their more privileged peers. In Germany, it seems, there has not been a dramatic change over time in social inequality in the choice of different postsecondary tracks.

Multivariate Analysis

In order to assess the impact of social origin and its change at this transition net of primary effects and other important factors, such as gender and cohort, we turn to discrete choice multinomial logistic regression models. Identification of the multinomial logistic model requires that the coefficients of the reference category are constrained to zero. In our view, the vocational track seems to be the best substantive choice (e.g. Long, 1997) as reference category in both countries: even though the BTS-DUT track in France is not fully equivalent to vocational training in Germany, it can be considered as functionally equivalent since it is the shortest (two years) possibility and the most vocationally oriented one, and so the most similar to the apprenticeship in Germany. Furthermore, in both countries the risk attached to this choice is also the lowest. The coefficient estimates indicate the log-odds effects of the independent variables on the contrast of one alternative compared to the reference category. We estimate two models that both include a product term between social class and cohort (year) in order to capture change in social inequalities over time. In Model 1, we do not control for the primary effect of social origin and leave out grades and the type of secondary degree as well as age at graduation (all of which are added in Model 2) in order to capture gross changes in social-class effects over time.

Table 3 reports log-odds for the independent variables on the polytomous postsecondary track variable (BTS-DUT is the comparison group). We see that in France, the choice for the elite tracks is marked by inequalities: upper service-class students are significantly more likely to choose the elite track over BTS than working-class students. Also, *ceteris paribus*, female students are less likely to choose the elite track. Furthermore, having parents with tertiary education is a highly significant predictor for the choice between the elite and BTS-DUT. When taking into account the type of secondary degree (recall that the general type is the most prestigious), the grade achieved as well as age at graduation in Model 2, fathers' class becomes insignificant and the impact of parental education

Table 3 Multinomial logit regression of type of post-secondary track on social origin in France. Reference: BTS-DUT ($N = 4565$)

	University/BTS		Elite/BTS		No further/BTS	
Variable	**M1**	**M2**	**M1**	**M2**	**M1**	**M2**
Father's class						
Father I: Upper service class	.056	−.122	.532**	.380	.054	.126
Father II/III: Lower prof. & employ.	−.057	−.255	−.087	−.300	−.075	.144
Father IV: Small proprietors	−.192	−.259	.008	−.085	−.129	−.116
Father V/VII: Working class (Ref.)						
Parents' education						
Father: Tertiary edu.	.363**	.154	1.079***	.705***	−.497**	−.167
Father: Full secondary edu.	.044	−.037	.425*	−.002	−.584***	−.084
Father: Secondary interm. edu.	.006	−.088	.154	.261	−.101	−.368*
Father: Comp. edu. (Ref.)						
Mother: Tertiary (Ref. all other deg.)	.240*	.129	.589***	.338*	−.933***	−.783***
Attributes of secondary degree.						
Grade (Mention, Ref. No mention)		.039		1.191***		−.538***
Type of sec. degree (bac.)						
Technological		.182		.056		−1.614***
General		1.563***		3.127***		−2.349***
Vocational (Ref.)						
Age at graduation		.028		−.457***		−.094*
Other independent variables						
Sex (Ref. Male)	.318***	.136	−.503***	−.822***	.017	.288**
Cohort (Ref. 1962–67)	−.021	.057	−.385	−.398	−.114	−.487***
Interactions						
Cohort * Father I	.041	.017	.033	.002	−.789**	−.539*
Cohort * Father II/III	.247	.335	.140	.153	−.11	−.177
Cohort * Father IV	.166	.032	.139	.063	−.135	.043
Constant	−.578***	−1.987**	−1.534***	4.170***	−.151	3.017***
Pseudo-R^2	.05	0.21				

*** $p < .001$; ** $p < .01$; * $p < .05$.

is reduced. Therefore, as expected, inequalities are transmitted through the attributes of the secondary degree.

Concerning the choice of the university track versus BTS, the only factors which prove to be significant in Model 1 are the parents' level of education and gender, the choice of university being more frequent among the most educated parents' children and among female students. In Model 2 we see that this is due to the fact that these students more often possess a general *baccalauréat*. Overall, it is striking that once we control for academic factors, there is neither a significant effect of paternal class nor parental education.

Finally, with respect to the alternative of no further education versus BTS-DUT, we see that students with more educated parents are significantly more likely to choose the latter. Male students are more likely to choose no further education over short vocational studies. A large part of this effect is mediated through the specialization of the *baccalauréat* and the grade obtained. Possessing

a general or technological *baccalauréat* makes the choice of the 'no further education' category very unlikely.

The interaction coefficients between father's class and cohort reveal that we observe hardly any significant change over time – with or without control of primary effects. The exception is the last contrast between no further education and BTS-DUT; here students with upper-service class fathers increasingly choose this short vocational track over no further education, which points to more inequality. Furthermore, all interaction coefficients for the first two contrasts are positive, which suggests increasing inequalities between working-class students and the other classes.

Table 4 reports results for Germany, where vocational training is the comparison group. We see that students from the most privileged social groups choose university over vocational training. The effects of both paternal class and parental are significant and do only slightly diminish when one takes into account primary effects. Academic factors are also relevant as students with better grades, a full entrance qualification and prior vocational training are significantly more

Table 4 Multinomial logit regression of type of postsecondary track in Germany; reference: Vocational Training ($N = 16{,}286$)

	University/Voc.		Univ. of appl. sci./Voc.		No further/Voc.	
Variable[a]	**M1**	**M2**	**M1**	**M2**	**M1**	**M2**
Fathers' class						
Father I: Upper service class	.338***	.297***	−.528***	−.042	−.583***	.074
Father II/III: Lower prof. & employ.	.294***	.273***	−.303***	.104	−.458***	.100
Father IV: Small proprietors	.094	.044	−.177	.147	−.444**	−.025
Father V/VII: Working class (Ref.)						
Parents' education						
Father: Tertiary edu.	.714***	.673***	.052	.305***	−.190	.205
Father: Full secondary edu.	.234**	.213*	−.186	.072	−.150	.167
Father: Secondary interm. edu.	.105	.099	−.210**	−.033	−.335*	−.049
Father: Comp. edu. (Ref.)						
Mother Tertiary (Ref. all other)	.677***	.550***	−.039	.093	−.420	−.156
Attributes of secondary degree						
Grade		1.132***		.464***		.211
Prior vocational training		1.864***		−.183***		3.215***
Full entrance qualification		2.346***		−.977***		−.385**
Age at graduation		0.082***		.049*		.166***
Other independent variables						
Sex (Ref. Male)	−.777***	−.797***	−1.294***	−.991***	−.990***	−.467***
Year (Ref. 1983)	.057	.048	.073	.502***	−.713**	−.248
Interactions						
Year * Father I	.167	.131	.472**	.136	.039	−.308
Year * Father II/III	−.103	−.094	.194	−.094	.103	−.194
Year * Father IV	.134	.154	.167	−.076	.559	.248
Constant	−.387*	− 4.394***	−.873***	−1.804***	−3.083***	−7.098***
Pseudo-R^2	.06	.20				

***$p < .001$; **$p < .01$; *$p < .05$.
[a] not reported are the coefficients for German citizenship.

likely to choose university over vocational training. Contrary to our expectation, being older at graduation leads to a preference of university, over vocational training. Furthermore, net of other factors, female students are significantly less likely than male students to attend university compared to vocational training. Overall results of the model reveal that female students in Germany have a general preference for vocational training.[9]

Regarding the choice between the university of applied sciences and vocational training we observe that with the exception of the variable for father's education none of the social origin variables are significant net of primary effects. Interestingly however, students from more privileged class backgrounds, at least those in the older cohort, reveal a preference for vocational training when not controlling for primary effects. The academic variables also lead to a preference of the university of applied sciences over vocational training. The exception is the variable indicating that students obtained a full entrance qualification which, net of other variables, leads to a preference of vocational training over the university of applied sciences.

Finally, inspecting the alternative of no further education versus vocational training reveals that students from more privileged backgrounds seem to prefer vocational training. All the social background variables turn insignificant however, once we control for primary effects.

Regarding change over time, a similar picture emerges in Germany as in France. None of the interactions between year of survey and paternal class are significant when the variables capturing primary effects of social class are included in the model. The sole exception is the interaction between the dummy variable for paternal class (I) and year for the contrast between university of applied sciences and vocational training, which is significant in the first model indicating that the tendency of working-class students to prefer the university of applied sciences versus vocational training is restricted to the older cohort.

Overall, it seems that contrary to Hypothesis 1a, social inequalities in post-secondary choices are not more pronounced in France than in Germany. Rather, we seem to observe a differential pattern of inequality in access to tertiary education. In France, social origin mainly affects access to elite schools compared to all the other tracks. Here, privileged students, when they do not gain access to elite schools, do not seem to prefer university over the vocational track. Maybe as a consequence of the existence of the elite track, social inequality between universities and the vocational track is reduced. In Germany, social origin variables mainly affect the choice of university and vocational training, which only partially confirms Hypothesis 2, as the university of applied sciences does not emerge as being particularly socially selective compared to vocational training. So while the university is favored by more privileged students in Germany, this is not the case in France. Furthermore, it appears that in accordance with Hypothesis 1b, social inequalities in access to tertiary education in France are mediated through the different types of *baccalauréat* whereas the type of upper secondary degree,

though significant, does not mediate inequalities to the same extent in Germany. Finally, with the exception of the contrast between no further education and the vocational track in France, there seems to be no significant change over time with respect to the student's social class origin.[10]

THE CHOICE OF A FIELD OF STUDY

Next, we turn to the analysis of field of study choices, considering only the subset of students that chooses some form of tertiary education. Different analytical strategies can be followed when exploring whether fields of study constitute a further dimension of social stratification in higher education. Some authors analyze determinants of field of study without taking into account the particular type of tertiary institution in which the field is offered. Another approach is to find out whether the existence of social selection into different types of tertiary institutions (for example lower tier versus higher tier universities) is restricted to particular fields that do not offer equivalent content at the different tertiary institutions (e.g. Ayalon and Yogev, 2005). Finally, one can compare social selection into different fields of study separately within each tertiary institution. Given the institutional setup of tertiary education in France and Germany we opt for the latter analytical strategy to determine whether there is social inequality in the choice of fields after considering the previous selection processes into tertiary institutions.

Social Selection into Different Fields of Study within Different Tertiary Institutions

To test our hypothesis regarding the differential selectivity into fields of study we compute separate multinomial logistic regression models on field of study choices within each tertiary track in France and Germany. As in the previous multivariate analyses, we ran models with and without taking primary effects of social origin into account. In order to find out whether our central independent variables affect field of study choices at different tertiary institutions we conduct Wald tests to test the hypothesis that one or more coefficients in the multinomial model are simultaneously different from zero. In a second step, we present individual coefficients in those models in which social origin variables significantly influence field of study choices, net of other covariates.

Table 5 reports the results of Wald tests computed on the basis of multinomial logistic regression models on field of study choices within the elite tracks, universities and the BTS-DUT track in France.[11]

In all models gender as well as academic factors influence field of study choices. Interestingly, grade only influences field choices in the elite track while the type of *baccalauréat* affects the choice of field of study at each level. Social origin seems to play only a minor role and none of the interactions between father's class and cohort affect field of study choices. However, father's education at the level of university has significant effects, which is in line with our expectation given the lesser extent of previous selection at that level. Furthermore, father's

Table 5 Results of Wald tests based on multinomial logistic regression analyses of field of study choices at different tertiary tracks in France

		Elite		University		BTS-DUT	
	Degrees of freedom	M1	M2	M1	M2	M1	M2
Father's class	12	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Class*cohort	24[1]	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Father's education	4	n.s.	n.s.	*	*	*	n.s.
Mother's education	4	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Gender	4	***	***	***	***	***	***
Grade	4	–	**	–	n.s.	–	n.s.
Type of Bac.	4	–	***	–	***		***
Age at graduation	4	–	n.s.	–	n.s.		*
Pseudo R^2		.06	.08	.05	.06	.13	.16
N		836		2289		3077	

***$p < .001$; **$p < .01$; *$p < .05$.
Note: In every field of study model an additional middle cohort (born between 1968–1974) was inserted to obtain sufficient case numbers.

education significantly influences field choice at the level of BTS-DUT when not controlling for primary effects. An inspection of the individual coefficients from this model (available upon request) reveals that this is due to a preference of the sciences field over every other field at that level for students whose father have a tertiary degree. Furthermore, the significant gender effect at all levels stems for a general preference of female students for the culture/humanities field over sciences and engineering while those students with the more prestigious general *baccalauréat* generally prefer sciences over culture/humanities at every level.

Next we inspect the individual coefficients from the multinomial regression model of field of study at university in France, given that we discovered some social selectivity here even after controlling primary effects. We present results from the multinomial model using the sciences field as reference category as it emerged as the most lucrative field in our descriptive analysis.

Table 6 reveals that net of other factors, children of upper service-class fathers are more likely to choose the sciences over the culture/humanities field compared to their working-class peers. They also seem to prefer sciences over the law, business and social sciences field even if the coefficient estimate does not reach statistical significance. The coefficients for father's education point in the same direction as having a father with tertiary education also leads to a preference of sciences over the culture/humanities and law/business/social science field even if only the former contrast is significant again. While mother's education does not influence the choice of field of study, the academic variables are important predictors that affect field choices in a similar way as the student's social origin. Having obtained the more prestigious general compared to the vocational *baccalauréat*, makes the choice of sciences over culture/humanities and

Table 6 Multinomial regression analysis of field of study choice at university in France; reference: sciences ($N = 2289$)

	Medical Sciences		Culture/Humanities		Law/Econ/Social		Engineering	
Variable	**M1**	**M2**	**M1**	**M2**	**M1**	**M2**	**M1**	**M2**
Father's class								
I: Upper serv. class	.186	.215	−.849*	−.740*	−.444	−.290	.219	.371
II/III: Lower prof. & empl.	.022	.007	−.684*	−.636	−.622	−.548	.029	.136
IV: Small proprietors	.158	.179	−.862*	−.796*	−.191	−.101	.617	.687
V/VII: Work. Class (Ref.)								
Parents' education								
Father: Tertiary	−.770	−.760	−.234	−.210	−.288	−.251	.129	.179
Father: Full secondary	.010	.017	−.358	−.300	−.592**	−.514*	.177	.254
Father: Secondary interm.	−.182	−.160	−.747***	−.700***	−.424*	−.359	.00	.080
Father: Comp. (Ref.)								
Mother: Tert. (Ref. other)	.500	.541	−.042	.002	.047	.120	.353	.403
Attributes of sec. degree								
Grade (Ref. no 'mention')		−.444		−.189		−.287*		−.232
General bac (Ref. all other)		.001		−.846***		−1.073***		-.946*
Age at graduation		−.056		.128*		.125*		−.015
Other Variables								
Sex (Ref. Male)	.799**	.806**	1.287***	1.328***	.392***	.440***	−.920**	−.895**
Cohort (Ref. 62–67) 1	−.974	−.948	−.823**	−.759**	−.790**	−.707*	.498	.568
Interactions								
Cohort * Father I	.681	.666	.974*	.910*	.659	.573	−.465	−.556
Cohort * Father II/III	.367	.406	.786*	.779	.760	.747	−.547	
Cohort * Father IV	−.016		1.178*		.251		−12.621	
Constant	−2.117***	−1.012	.660**	−1.017	.819**	−.660	−2.301**	−1.342
Pseudo-R^2	.04	.05						

$p < .001$; **$p < .01$; *$p < .05$; $p < .001$; **$p < .01$; *$p < .05$.

Note: Not reported are the coefficients for an additional cohort of students born between 1968–1974 well as interactions between this cohort and father's class.

law/business/social sciences more likely. Similarly, good grades lead to a preference of sciences over the law/business/social sciences field. The same applies to age at graduation; being younger when graduating also leads to a preference of sciences over both the humanities and the social sciences fields. Not surprisingly, women are less likely than men to choose the sciences field over all other fields with the exception of engineering which men, compared to women, prefer over sciences. As could be expected from the Wald tests there is no noticeable change over time with the exception of the interaction between upper service class and the youngest cohort which indicates that the younger upper class children are no longer more likely to choose culture/humanities over sciences.

Next we turn to the results of the multinomial logistic regression models of fields of study within university and university of applied sciences in Germany.

In Table 7 we see that all variables capturing social origin significantly affect the choice of field of study at university even when controlling for primary effects. At the university of applied sciences however, only mother's education has significant impact on field of study choices. Here the coefficient estimates from the multinomial logit model (available on request) indicate that students with a mother with tertiary education, compared to a lower degree, prefer the sciences field over all other fields. All variables related to the type of upper secondary degree and age at graduation as well as gender are significant predictors for the choice of a field of study in Germany at both tertiary institutions. There seems to be no significant change over time in the class coefficients at either institution.[1 2]

Table 7 Results of Wald tests based on multinomial logistic regression analyses of field of study choices at different tertiary tracks in Germany

		University		Univ. of applied sciences	
	Degrees of freedom[a]	M1	M2	M1	M2
Father's class	12(9)	*	*	n.s.	n.s.
Class*cohort	12(9)	n.s.	n.s.	n.s.	n.s.
Father's educ	12(9)	**	**	n.s.	n.s.
Mother's educ	4(3)	***	***	**	*
Gender	4(3)	***	***	–	***
Grade	4(3)	–	***	–	***
Prior voc. train.	4(3)	–	**	–	***
Restr. entr. qual.[b]	3	–	–	–	***
Age at graduation	4(3)	–	***		***
Pseudo-R^2		.04	.06	.12	.14
N		7365		2682	

***$p < .001$; **$p < .01$; *$p < .05$.

[a]One degree of freedom less at Fachhochschule because no medical sciences are offered at this institution.

[b]Restricted entrance qualification is not included in university models because a full entrance qualification is the prerequisite for university attendance.

As in the case of France we inspect the coefficient estimates at the level of university only as social origin seems to have the most impact at that level. We present results using sciences as reference category in the multinomial logit model to achieve better comparability with the results for France.

In Table 8 we see that net of other covariates few of the class and education coefficients are significant but small proprietors' children prefer medical sciences and law/business and social sciences over sciences. Also, having a mother with tertiary education leads to a preference of medical sciences and culture/humanities over the sciences field. The latter effect is probably interpretable as direct 'horizontal transmission' of preferences as students' mothers very often acquired a tertiary degree in a humanities related field. Furthermore, better grades lead to a preference of sciences over all other fields with the exception of medical sciences where the opposite applies. Overall the inclusion of academic variables leads to surprisingly small change in the class and education coefficients as none of the coefficients turns insignificant in Model 2. As in France, gender emerges as a strong determinant of field choices with men being more likely to choose sciences over every other field than women with the exception of engineering which men, compared to women, prefer over sciences.

While the academic variables indicate that medical science is the most selective field, the direction for the social origin variables are less clear cut. To gain more clarity we computed an additional model with medical science as reference (results available on request) which also emerged as the most rewarding field in our previous descriptive analyses. Net of other variables, having a father with tertiary education (compared to compulsory education) significantly affects the choice of medical science over culture/humanities and the law/business/social sciences field. Furthermore, having a mother with tertiary education leads to a preference of medical sciences over engineering.

Overall results of the Wald tests indicate that in line with Hypothesis 3a, social origin seems to be generally more influential for field of study choices in Germany compared to France. Furthermore, we are more likely to observe social selectivity into fields when there is more room for horizontal stratification due to less stringent previous selection processes. Net of primary effects, social origin influences the choice of fields of study at university in France and Germany but not or to a lesser extent at other tertiary institutions, which supports Hypothesis 3b. Another interesting observation relates to the relative ranking of fields in both countries. Fields of study which on average lead to the best prospects of attaining an upper service-class position are also the ones that attract the more privileged students. In Germany, this applies to the medical sciences and in France to the sciences field. Furthermore, gender is significantly associated with the choice of fields at every level. In this respect, our results for both countries agree with previous findings (e.g. De Graaf and Wolbers, 2003) showing that field of study choices depend less on social background and more on gender.

Table 8 Multinomial regression analysis of field of study choice at university in Germany; reference: sciences ($N = 7365$)

	Medical Sciences		Culture/Humanities		Law /Econ/Social		Engineering	
Variable[a]	**M1**	**M2**	**M1**	**M2**	**M1**	**M2**	**M1**	**M2**
Father's class								
I: Upper serv. class	.258	.233	.118	.151	.154	.207	.064	.069
II/III: Lower prof. & empl.	.100	.0824	.023	.052	−.090	−.044	−.173	−.165
IV: Small proprietors	.665**	.655*	.304	.322	.324*	.353*	.293	.292
V/VII: Work. Class (Ref.)								
Parents' education								
Father: Tertiary	.257	.249	−.199	−.168	−.181	−.137	.050	.070
Father: Full secondary	.187	.208	.157	.165	.163	.171	−.101	−.108
Father: Secondary interm.	.134	.151	.043	.050	.168	.176	.112	.108
Father: Comp. (Ref.)								
Mother: Tert. (Ref. other)	.511***	.442***	.365***	.434***	.165	.268**	.043	.103
Attributes of sec. degree								
Grade		.898***		−.445***		−.693***		−.564***
Prior vocational training		−.857**		−.639*		−.918***		−.147
Age at graduation		.214***		.131**		.187***		−.005
Other Variables								
Sex (Ref. Male)	.445***	.461***	1.336***	1.349***	.520***	.538***	−.871***	−.873***
Cohort (Ref. 62–67)	.092	.102	.016	−.012	.473*	.436*	−.232	−.247
Interactions								
Cohort * Father I	.094	.014	−.008	−.00	.015	.025	.070	.111
Cohort * Father II/III	−.312	−.382	−.041	−.036	−.166	−.160	.290	.310
Cohort * Father IV	−.483	−.496	.038	.032	−.300	−.308	.306	.320
Constant	−.360	−4.990***	.476	−1.963*	.471	−3.000***	−1.511**	−1.198
Pseudo-R^2	.04	.06						

***$p < .001$; **$p < .01$; *$p < .05$; ***$p < .001$; **$p < .01$; *$p < .05$.
[a]The coefficients for German citizenship are not reported.

CONCLUSION

The expansion of tertiary education which occurred in the period studied here has not lead to increasing inequalities with respect to the choice of post-secondary tracks or fields of study. Nevertheless, some of our findings, especially in France, point in the direction of more social selectivity, which we may not have captured sufficiently due to the short time-span considered. Furthermore, in order to understand social inequalities in diversified higher education systems, one needs to take into account the specific institutional configuration of tertiary education in each country as well as the different pathways leading to eligibility. In France, where tertiary institutions are strongly differentiated, we observe social inequalities mainly between the choice of elite compared to all other tracks. In Germany, inequalities are mainly observed with respect to the choice of university versus vocational training.

Fields of study are embedded within these different tertiary institutions and, as expected, significant differences between different social strata in the choice of fields are most likely to occur if the previous selection processes leave room for horizontal stratification. As a result, we note most differentiation in field of study choice at the level of university in Germany, where all variables capturing social origin had significant effects even after controlling for academic ability. In France, however, student's social origin mainly affects the choice of different postsecondary tracks. Nevertheless, at the level of university, there is evidence for some social selectivity as father' education significantly influences field of study choices.

Overall these results illustrate that considering horizontal differentiation is essential in comparative work on inequality in educational attainment. Disregarding the qualitative differences that exist between tertiary institutions in France and Germany might lead to biased conclusions regarding inequality in access to higher education and field of study choices.

NOTES

1 In the most recent study on the development of stratification in higher education in 13 countries (Arum et al., 2007) field of study choices are not considered.
2 For France, cohorts born 1962–1967 and 1975–1980, before and after the most recent expansion of *baccalauréat,* for Germany, HIS-panels 1983 and 1999.
3 Sources: FQP 2003 Survey for France, and a dataset of merged population surveys for Germany (see Mayer et al., 2007), own calculations.
4 In 1983, about 18% of all tertiary-qualified students in Germany obtained a restricted entrance qualification compared to 16.2% in 1999 (source: HIS-panels from 1983 and 1999, own calculations).
5 Results based on FQP Survey 2003 for France and on Mikrozensus 2004 for Germany. These numbers do not account for important compositional differences between fields related to ability or social origin. Nevertheless, we believe that the relative ranking of fields we found here would most likely be reproduced even when these variables would be controlled for.

6 We would like to thank HIS for granting us access to the data. One drawback of this data source is that they are mail surveys with low response rates. However, given that we are able to control for various important variables such as grades and social origin, we believe that a non-response bias will not drastically bias our results, even though it is likely that less academically inclined students did not take part in the study.
7 In order to achieve better comparability over time we excluded students who earned their *Abitur*-degree in East Germany in 1999 because the 1983 survey was conducted in West Germany only.
8 Descriptive statistics are available on request.
9 This is especially true for the later point in time. Nowadays, even though females still choose vocational training more often than males, the gender difference regarding the choice of a postsecondary track has considerably decreased (Reimer and Pollak, 2005).
10 For both countries we computed additional models with interactions between year*education (available on request) which proved to be insignificant as well.
11 For the analysis of field of study choices in France we had to insert a middle cohort (born between 1968 and 1974) in order to avoid problems with the computation of the models due to small *N*. Nevertheless, results were very similar whether or not this cohort was considered.
12 Again, in additional analyses interactions for cohort/year*parent's education were also tested for both countries but did not reach statistical significance in neither France nor Germany.

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