

## **Social origin and ‘delayed’ educational careers**

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### **Abstract**

As in other advanced societies, pathways to higher education in Germany have become more complex. A considerable number of school leavers from upper secondary schools does not go on to university immediately, but, for example, following vocational training or after an extended waiting period. This paper analyses the impact of social origin on such ‘delayed’ educational careers in West Germany. Not only final attainment, but also various transitions of school leavers can be related to their parents’ education. To get a clearer account of the dynamic structure of educational inequality, we look at both direct transitions after secondary school and ‘delayed’ transitions, i.e. university drop-outs and their following educational career and persons returning to education after having completed a first training successfully. We find evidence that especially in those delayed educational transitions social differences are remarkable. Along the life course, this results in a relatively constant level of educational inequality after the end of secondary school.

## **1 Introduction**

Like in many other industrialised countries, participation in upper secondary and higher education in Germany has increased markedly since the 1970s. Besides these changes in participation, individual pathways through the education and training system have changed, too. School leavers combine different types of training in a sequence, trainees switch between schemes, and university students change their major subject during their studies. Another empirical example we often find is the sequence of vocational training and university. More generally speaking, entering tertiary education has become a complex process rather than a singular event and individual routes to higher education may consist of several steps and ‘detours’.

In this paper we draw on this empirical observation of prolonged and complex educational pathways after general schooling and relate this to the question of social inequality in educational attainment. We look at the transition to higher education in a longitudinal perspective, i.e. taking different pathways on the route to university into account. Comparing the social distribution of students of the same birth cohort over time - is ‘initial’ social inequality of students maintained during all steps in this process or do differentials decrease or increase because some individuals enter university later on and some students drop out? What are the consequences of several steps into higher education for social differentials in educational attainment?

On the one hand, social inequality could decrease if the impact of social origin is relatively smaller for ‘delayed’ steps than for the earlier ones. On the other hand, inequality may also increase over the life course. If detours and delayed entries require strong encouragement and additional resources (from the parents), they may be strongly influenced by social origin, leading to increasing inequality in participation in higher education (see Hillmert & Jacob, forthcoming, for theoretical considerations).

Our analyses of educational inequality concentrate on school leavers with Abitur, who have got the formal prerequisite to enter all possible training alternatives. We begin by examining social differentials of the ‘early’ entrants who entered university immediately after having left school. We proceed by considering subsequent possibilities of entering university. To find an answer to the question if drop outs and late entrants actually matter for final inequality, we compare initial inequality, i.e., the social distribution of the ‘early’ university entrants, with the social distribution of all graduates, including both early and late (successful) entrants.

Our empirical analyses base upon recent German life-history data which allow us to study educational careers in detail. The analyses may help to complement our understanding of the dynamic nature of educational attainment in general.

## **2 Late transitions into higher education and educational inequality**

Following Boudon (1974) and Mare (1980), educational careers can be viewed as a sequence of transitions. In this model it is stressed that the impact of social origin cannot be thoroughly explained on the basis of the highest educational qualification that is achieved, but that educational transitions have to be investigated step-by-step. The step-by-step mode as it is used there assumes that individuals progress through the educational system in an irreversible sequential mode. However, this assumption has to be qualified in an educational system where parallel branches exist which may converge at a later stage. Therefore, if the effect of

social origin varies at different intermediate steps, the social composition of students or graduates in a particular track may change considerably due to late entrants.

With respect to the social composition of these late entrants, in principle both effects are theoretically plausible: the effect social origin may remain substantial and even increase, or social origin may be less important for these later entries.

## **2.1 Hypotheses (1): Social origin still matters**

Delayed entries may be still quite very selective as economic and social resources have to be mobilised which are unequally distributed (Hillmert & Jacob, forthcoming). For example, as entering university often requires parental financial support, late entrants, like early entrants, depend on their parents' (material) situation.

Another explanation of a strong effect of social origin on delayed entries into higher education is more direct and resembles the concept of counter mobility. Regarding aspirations, parents want to ensure that their children acquire the same level as the parents themselves (Breen & Goldthorpe 1997). In this case, social origin may even increase for delayed decisions, because especially parents with a higher educational level than their children encourage them for further advancement. If children have not succeeded to attain an academic degree in their first attempt (they failed at university or chose vocational training first) parents with an own university background encourage them to go on.

Therefore, children from higher social background still have a higher probability to enter university, and the effect of social origin may not change or increase.

## **2.2 Hypotheses (2): A 'second chance' for the disadvantaged**

For 'delayed' transitions to university, however, we may also expect different mechanisms. Individual decisions and efforts (independent of family resources) may play a greater role for the development of educational careers. If this is the case, delayed entries into higher education become less influenced from social origin and at least as much children from low educated parents as from highly educated parents would proceed entering university. As a result, this leads to decreasing social differentials in participation in higher education. In this respect, delayed entries are a compensatory process for failing to do the transition immediately.

Another mechanism leading to a compensatory process besides individual autonomous decisions follows from the concept of maximally maintained inequality (Raftery & Hout 1993) which in fact is no causal explanation of the process but refers to statistical distributions: After the first (direct) entries, enrolment of advantaged groups is already high. Hence, especially children from disadvantaged groups may take the 'second chance' and catch up with their (socially advantaged) peers, and, as a consequence, educational inequality decreases.

### **3 Data and Operationalisation**

#### **3.1 Data**

The analyses base upon recently collected German life-history data of the 1964 and 1971 birth cohorts in West Germany. The data are part of the German Life History Study located at the Max Planck Institute for Human Development. The current project on the two youngest cohorts (Corsten & Hillmert 2001) has directed its focus on transitions from school to work and early working careers of West German women and men born 1964 and 1971.

In respect of our research question, the data have the advantage that they provide detailed information about all training episodes ever begun up to age 27 (age of the birth cohort 1971 at the time of the interview) or 34 (age of the birth cohort 1964 at the time of the interview). This allows us to reconstruct complete educational histories from school to work for those two birth cohorts.

The analyses in this paper use data from 2878 respondents having completed general schooling. Among those, 783 respondents left school with Abitur, which entitles them to enter university.<sup>1</sup> Therefore, these school leavers can choose among a wide range of educational alternatives. At least three main tracks can be distinguished:

- vocational training, offered either as mainly firm-based training in the ‘Dual System’ or in vocational schools
- lower academic training at the ‘Fachhochschulen’ (polytechnics) and
- higher academic training at universities.

#### **3.2 Variables**

Our dependent variables are participation in higher education and attaining a university degree. As we consider the transition to university as a complex transition consisting of several possibilities of entering, we take into account different points of entry into higher education. Among all theoretically possible pathways, we concentrate on the three most important routes:

- first entry after having left school
- re-entry after a temporary dropout of university
- entry after completion of vocational training

The independent variable is a measure of social origin, which we restrict to the parents’ education. Parents’ education is measured on the basis of the highest completed qualification of either mother or father. For simplification, we distinguish only three qualificational levels for parents’ education: no training, vocational training (low qualification) and university education (high qualification).

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<sup>1</sup> It is quite a coming finding that attaining an Abitur correlates with social origin. In our data, 68% of children from a higher educational background (at least one parent has a university degree) achieved the Abitur, but only 21% of the children of parents with vocational training or no qualifications at all attained the formal university entitlement.

## 4 Empirical Results

### 4.1 Social origin and (first) entry into higher education

What is the effect of parents' education on entering higher education after having left school? The social distribution of participation in vocational training or tertiary higher education of school leavers with *Abitur* is shown in Table 1.

**Table 1: Transitions after leaving general schooling with *Abitur* by social origin (parents' education)**

	Parents' educational level								Total	
	No training		Vocational training		University education		Other			
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
No training	4	11,1	23	4,8	15	6,4	1	3,6	43	5,5
Vocational training	13	63,1	194	40,1	57	24,3	9	32,1	273	35,0
(Lower) academic training	1	2,8	65	13,4	20	8,5	3	10,7	89	11,4
(Higher) academic training	18	50,0	202	41,7	143	60,9	15	53,6	379	48,6
Total	36	100,0	484	100,0	235	100,0	28	100,0	780	100,0

Source: Own calculations (German Life History Study, cohorts 1964/1971)

Both the school leavers with highly educated backgrounds and the other school leavers meet the formal requirements for entering academic training, but while 61% of the former enter universities, only 42% of the latter do so.<sup>2</sup>

As a measure of social inequality (SI), we calculate the relative risk of a transition to university (vs. no transition to university) of children of university educated parents compared to the relative risk of children of parents with no or vocational training (Odds Ratio).

At the first transition after leaving the general school system, 1.6 times as many children from highly educated backgrounds go to university as do not go to university. For the children from less educated backgrounds, this ratio is much smaller. There were more children going to polytechnics or vocational training - or choosing no training at all - than entering university (0.73).

To measure social inequality as defined above as the odds ratio of both relative risks, we calculate  $1.6 / 0.73$  and find:

**SI<sub>1</sub> = 2.12** (birth cohorts 1971/1964)

As we will refer to social inequality (beyond age 27) in the birth cohort 1964 later on, we give this measure of SI for this cohort separately.

**SI<sub>1</sub> = 2.24** (birth cohort 1964)

<sup>2</sup> Children of parents with vocational qualification or no qualification, however, are relatively more likely to study at polytechnics (13%). For children of university educated parents, this alternative is less relevant (9%).

However, not all of these first training episodes have actually been completed successfully. About one fifth of all these episodes has been terminated before completion, and this mainly applies to university courses (37%), but much less to courses at polytechnics (13%).

As a result of this, the social distribution with respect to completed first training episode (Table 2) differs significantly from the initial social distribution at the transition to this first training episode (Table 1).

**Table 2: Completion of first training episode by social origin (parents' education)<sup>3</sup>**

	Parents' educational level								Total	
	No training		Vocational training		University education		Other			
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
Training not successfully completed	9	29,0	91	19,8	60	27,4	7	25,9	167	22,7
Vocational training	12	38,7	182	39,6	51	23,3	9	33,3	254	34,4
(Lower) academic training	1	3,2	58	12,6	16	7,3	2	7,4	77	10,4
(Higher) academic training	9	29,0	129	28,0	92	42,0	9	33,3	239	32,4
<b>Total</b>	<b>31</b>	<b>100,0</b>	<b>460</b>	<b>100,0</b>	<b>219</b>	<b>100,0</b>	<b>27</b>	<b>100,0</b>	<b>737</b>	<b>100,0</b>

Source: Own calculations (German Life History Study, cohorts 1964/1971)

If we calculate the relative risks (odds ratio) of attaining a university degree - with the first episode - for the groups of social origin, we now get a value of 1.78 which is considerably lower than the initial value (access to university at the first transition) which was 2.24.

Does this mean that educational inequality has decreased over the life course?

In fact, the process of transition to university has not finished yet. For example, it is possible to change courses or return to university after dropping out (cf. Section 4.2), or school leavers with Abitur who have completed vocational training in the first place may start to study at university afterwards (cf. Section 4.3).

In our data, we find various pathways of (re-)entering university (see Table 3).

About one third of all transitions to university happens after one or more preceding training episodes. The most frequent pathways are re-entering university after dropping out; moving on to university after completing vocational training; and starting another episode of academic training after completing academic training.

<sup>3</sup> Predictions for birth cohort 1971 beyond age 27 are based on cohort 1964.

**Table 3: Inflow of university entrants**

Entering university after ...	Count	Percent
general schooling	379	65.4
dropout of vocational training	5	0.9
completed vocational training	58	10.0
dropout of lower academic training	7	1.2
completed lower academic training	5	0.9
dropout of higher academic training	68	11.8
completed higher academic training	57	9.9
	579	100,0

Of course, such ‘delayed’ transitions to university may also be selective in terms of social origin. Is it mainly children from families with low qualified parents who use these pathways as a ‘second chance’? Or do rather more children of highly qualified parents enter university after a number of ‘detours’? And what are the consequences of these delayed transitions for the final (social) composition of university graduates?

In our further analysis we will focus on two selected subgroups of ‘delayed’ university entrants: Those who re-entered university after failing at their first attempt at university and those who completed vocational training first and entered university later.

## 4.2 Social origin and delayed entry into higher education

### 4.2.1 Re-entry after university dropout

32% of the students with university educated parents did not complete their first university successfully, and 35% of all other students. Thus, parents’ education does not correlate with the probability of university failure and dropout.

Following the university dropouts to the next step in their educational career, we find that the next step varies with their parents’ education. 64% out of the 45 dropouts whose parents are highly qualified, continue their studies (58% at universities, 7% at polytechnics). The proportion of students with low qualified parents continuing their studies is much less (54%) and if so, they decide more often to change to polytechnics (41% continue at universities, 13% at polytechnics).

The observed failure at the first academic course of students of university educated parents rather is a temporary stopping out, because the majority continues with another field of study, moves to another university etc. In contrast to that, a dropout of students of low qualified parents often involves an individual educational descent: They leave university, enrolling in a lower academic track or beginning a vocational training; and some quit their education and training altogether.

The relative risk of students of highly educated parents of continuing at university course (vs. not continuing) relative to the risk of all other students to do so, is 1.97.

The ‘competitive advantage’ of students with university educated parents (i.e. their higher relative risk of continuing) at this step is not much higher than the relative risks of access to

university after having left school, which was 2.12. As both odds ratios do not much differ, we conclude that there is at least no additional effect of social origin.

What are the effects of re-entries for educational inequality at large?

Let us consider the possible effects of this particular process on inequality analytically, neglecting all other possible in- and outflows of university students. Because re-entering university after failing at first attempt is highly selective, one may intuitively expect that inequality is going to increase considerably.

After re-entering university there are 124 university students of highly educated backgrounds (= 143 direct entrants - 45 dropouts + 26 delayed entrants) and 174 students of low qualified backgrounds (220 - 78 + 23). In this case, the relative risks (odds ratios) of attaining a university degree for the groups of social origin is 2.22. Compared to the initial value of  $SI_1=2.12$ , this is a moderate increase.

To be able to rate this magnitude, we calculate a reference value: We calculate the relative risks of re-entries (vs. actual dropout) in both social groups holding inequality *constant* (i.e. producing the initial value,  $SI_1=2.12$ ).

98 students out of all direct entrants from highly educated backgrounds remain at university (= 143 direct entrants - 45 dropouts) und 142 students of parents with no or vocational training (= 220 direct entrants - 78 dropouts) . How many re-entries of children of university educated parents (denoted x) and how many re-entries of children of less qualified parents (denoted y) would be necessary to result in an odds ratio of 2.12?

We calculate

$$2.12 = \frac{(98 + x) : (235 - (98 + x))}{(142 + y) : (520 - (142 + y))}$$

Using our data by taking the 26 children with university educated parents re-entering university as given, 37 children of vocationally trained parents would have to re-enter university as well, to get the same odds ratio as before. In this case, social inequality would remain the same, unaltered by delayed entries.

In this hypothetical case of  $x=26$  and  $y=37$  the odds ratio of re-entering university between both social groups is 1.52, which is our reference value. In other words, initial inequality remains constant, if the relative risk of re-entries (vs. actual dropout) is 1.52.

This value is quite remarkable: In spite of social selectivity of re-entering university (an odds ratio greater than 1), initial inequality does *not* increase but remains constant. This effect is due to the unequal distribution resulting from the first transition to university.

The reference value also reveals that initial inequality may decrease, even if the delayed entrants are socially selective and the relative risk of continuing at university is greater for the children of highly educated parents than for all other dropouts. If the odds ratio of delayed entrants is between 1 and 1.5, we observe social selectivity of re-entrants and at the same time decreasing inequality.

Measuring social inequality by odds ratios, educational equality is achieved if the relative participation in university is the same in both social groups and the respective odds ratio in this case is 1. Under given conditions would it be possible that initial inequality could be levelled out by delayed entrants?

Taking the re-entering students with highly qualified parents as given ( $x=26$ ) a correction of inequality by delayed entrants is not possible, if all 78 dropouts of low qualified backgrounds had continued their studies. To



solve the equation for an odds ratio of 1, one would need  $y=132$  children of parents with no or vocational training. Only if none of the dropouts of highly educated parents re-entered ( $x=0$ ), but almost all of the other dropouts ( $y=75$ ) continued their studies, could initial inequality be levelled out.

Additionally, when referring to social selectivity of re-entries and social inequality at large a positive and a negative interpretation in a more qualitative sense are possible. When interpreting re-entries (changes of subjects etc.) as a possibility of reorientation and broadening individual knowledge, one would regard re-entering as an additional advantage of students from highly educated backgrounds, and social selectivity of re-entrants would increase social inequality even more than the actually measured relative risks. When, on the other hand, emphasising aspects of efficiency, then children of lower qualified parents who finally attain a university degree would be relatively advantaged as less of them have re-entered university.

#### **4.2.2 Late entry after completion of vocational training**

After completing successfully the first episode of training, either vocational or academic training, more than one third continues the educational career.<sup>4</sup> Again we find: The higher the parents' training, the higher the participation in further education and training. For example, 78% of vocational trainees with highly educated parents begin another training, whereas 58% of all other trainees.

The parents' education does not only correlate with participation in further training but also with the qualificational level of the 'second' training: 71% of trainees of highly educated backgrounds decide to continue their training chose an academic training (41% at universities, 30% at polytechnics), whereas 53% of the second training episodes of trainees with less educated parents result in an academic qualification (25% at universities, 28% at polytechnics).

Social inequality, measured as odds ratios, is the highest for this transition after completed vocational training to university: Calculating the relative risks for entering university after completion vocational training (vs. not entering university) in both social groups, we get 2.72. Therefore, access to university after vocational training is socially even more selective than re-entering university after failing in the first attempt. How great is the effect of those 'detours' to university via vocational training for social inequality?

Again, we can calculate hypothetically the change in social inequality by this process of delayed entries, neglecting all other in- and outflows of university students. We add the 16 resp. 30 delayed entrants to the 143 resp. 220 direct entrants and get an odds ratio of 2.26. As before, social inequality is (at least analytically) increased by this process of entering university after completion of vocational training.

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<sup>4</sup> We consider only institutionalised vocational or academic training. Participation education and further training would be much higher, if we would include e.g. non-institutionalised, not certified or employer provided further training. Another restriction in respect to ongoing educational careers is that we observe cohort 1971 only up to age 27.

Again, we can calculate a reference value to evaluate the change in social inequality. How many trainees have to decide to enter university so that initial inequality remains constant?

We solve the following equation:

$$2.12 = \frac{(143 + x) : (235 - (143 + x))}{(220 + y) : (520 - (220 + y))}$$

Given the 16 trainees of highly educated backgrounds entering university after vocational training, 38 trainees of low qualified parents would have to enter university to maintain initial inequality. The odds ratio of delayed entrance in this case is 2.04. As discussed above, again we get a counterintuitive result that under given conditions, even if delayed entries are socially selective (odds ratios up to 2), this does not necessarily result in increased social inequality.

To change social inequality into equality (i.e. to get the same relative risks in both social groups) given the number of trainees of highly qualified parents ( $x=16$ ), two thirds of the trainees of less qualified parents had to enter university as well ( $y=132$ , out of 198 trainees).

Summing up our results, parents education matters not only for entering to university directly but also for later steps. Re-entering in case of failure and delayed entries after vocational training are socially selective and do not (at least hypothetically) reduce initial inequality.

### 4.3 Social inequality and educational attainment

So far, we have considered the two most important processes of delayed entries into higher education, but these are nevertheless a selection from all possible pathways. So we could only speculate about the effect of delayed entries for educational attainment at large. Including all dropouts, re-entrants and delayed entrants, we calculated social inequality of university students over time (only for birth cohort 1964). The odds ratios of attending university at any given age are given in Figure 1 in the appendix and the relative risks of university 'experience' in both social groups in Figure 2 in the appendix.

Given these results concerning access to university: How do social differentials in educational attainment (i.e. actually graduating) develop over the life course of a birth cohort?

We started with the observation of a decrease of social inequality looking at the educational attainment after the first training episode: The odds ratios decreased from 2.12 for the relatives risks of directly entering university to 1.78 for completing the first training episode. Our subsequent analyses already gave hints, however, that this decrease of inequality may only be temporary, and even more, that final inequality may even be greater than the initial inequality over time.

Re-entries and delayed entries after vocational training proved to be socially selective with a higher relative risks of students with highly educated backgrounds to enter university. The analytically calculated change in social inequality for each of these processes showed each an increase of inequality. Do these and other processes of delayed entry actually change social inequality over time?

To answer this question we look at the highest educational attainment of school leavers with Abitur of cohort 1964 (Table 4).

**Table 4: Highest successfully completed training episode at time of interview (approx. age 34) by social origin (parents' education), cohort 1964**

	Parents' educational level								Total	
	No training		Vocational training		University education		Other			
	Count	Percent	Count	Percent	Count	Percent	Count	Percent	Count	Percent
No training successfully completed	5	22,7	20	9,6	13	14,4	2	13,3	39	11,7
Vocational training	7	31,8	82	39,6	18	20,0	8	53,3	115	34,4
(Lower) academic training	4	18,2	44	21,3	14	15,6	3	20,0	65	19,5
(Higher) academic training	6	27,3	61	29,5	45	50,0	2	13,3	115	34,4
<b>Total</b>	<b>22</b>	<b>100,0</b>	<b>207</b>	<b>100,0</b>	<b>90</b>	<b>100,0</b>	<b>15</b>	<b>100,0</b>	<b>334</b>	<b>100,0</b>

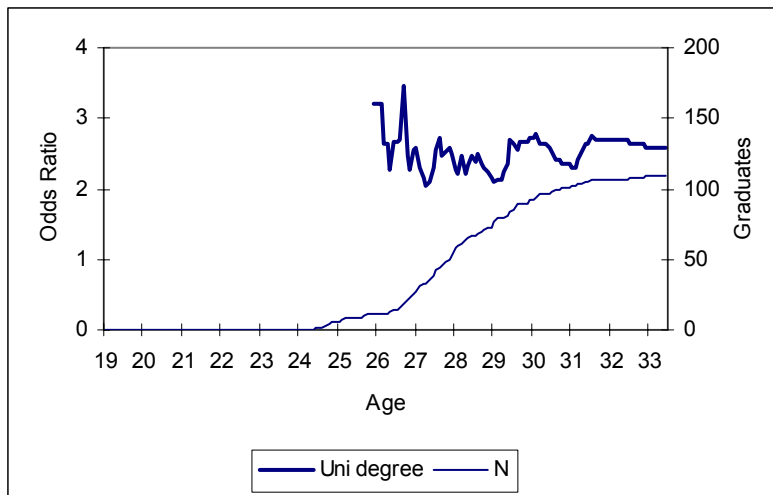
Source: Own calculations (German Life History Study, cohorts 1964/1971)

At the age of 34, 50% of the (upper secondary) school leavers from highly educated backgrounds (i.e. parents endowed with university degree) have finally attained a university degree. Only 29% from low educated backgrounds (i.e. parents with no or vocational training) have done so. At the end of all transitions to and out of university, social inequality measured as the odds-ratio ( $SI_2$ ) is now:

$$SI_2 = 2.42$$

As can be seen from Figure 3, social selectivity with respect to university degrees seems to increase moderately (apart from fluctuations due to small case numbers at younger ages) with the age of the cohort. Note that our reference has been social inequality at the transition to university after leaving general secondary school ( $SI_1=2.12$ ).

**Figure 3: Odds Ratios of educational attainment (university degree), cohort 64**



Odds ratio (graduating at university vs. not graduating) between children of parents with and without (at least one) university degree.

Source: Own calculations (German Life History Study, cohorts 1971/1964)

## **5 Summary: educational inequality and ‘delayed’ transitions to higher education**

The results of our analyses can be summed up as follows:

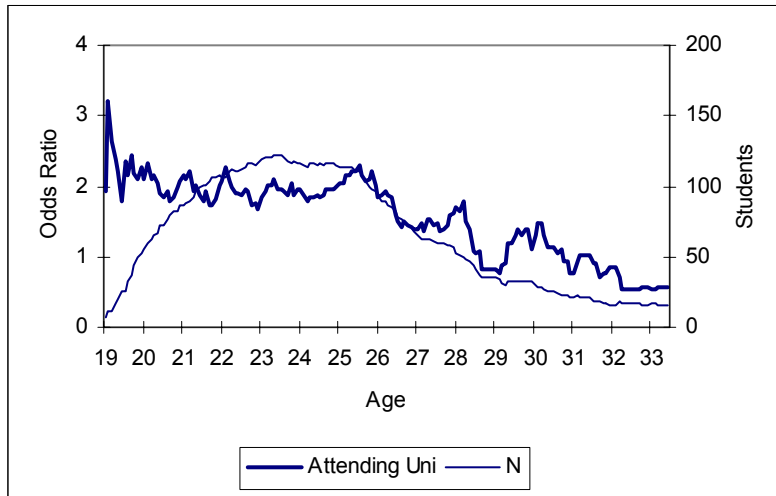
- (1) Consistent with many other studies, we find that children with highly educated parents tend to study at university more frequently than other children.
- (2) However, post-secondary educational careers can be rather complex. Social selectivity at various transitions may change the overall level of educational inequality. We have looked at two transitions in greater detail:
  - (a) Dropping out of university has different consequences for children from highly educated and low qualified backgrounds. The former group is more likely to begin another course at university (to change the subject) while the latter group is less likely to return to university.
  - (b) After completing an episode of (vocational) training, children of parents who themselves hold a university degree are relatively more likely to go on to university than children of parents with no or vocational qualification.
- (3) As a result of these and other processes, overall social inequality in higher education is rather increasing along the life course. As ‘detours’ to university are still a minority, this effect is rather moderate. In any case, however, it seems evident they do not lead to a compensation of the selective access to university at the end of secondary school.

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## Appendix

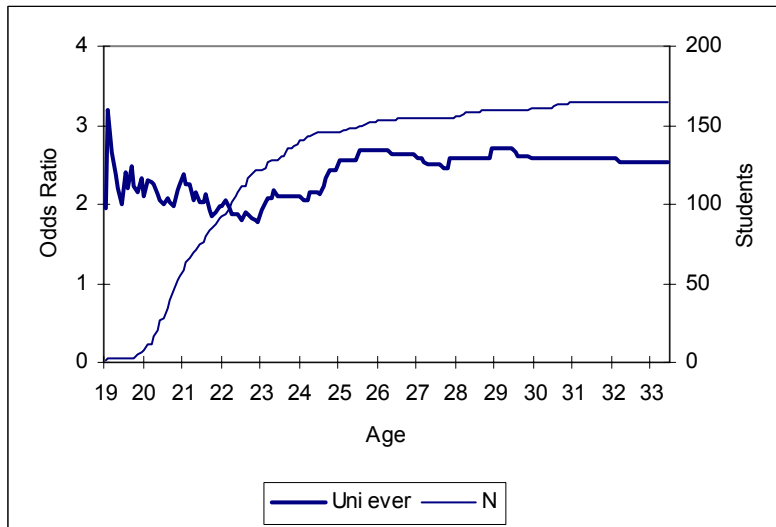
**Figure 1: Odds Ratios of attending university, cohort 64**



Odds ratio (attending university vs. not attending) between children of parents with and without (at least one) university degree

Source: Own calculations (German Life History Study, cohorts 1964/71)

**Figure 2: Odds Ratios of having ever attended university, cohort 64**



Odds ratio (attending university vs. not attending) between children of parents with and without (at least one) university degree

Source: Own calculations (German Life History Study, cohorts 1964/71)