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School tracking, educational mobility and inequality in German secondary education: developments across cohorts

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ABSTRACT

Secondary education is associated with a comparatively high level of inequality in Germany. This has often been attributed to the early ability-based between-school tracking in the German school system. However, as yet there has been no empirical evaluation of the actual impact of initial track placement on social inequality in final school attainment. Since educational reforms in the 1960s increased educational mobility after track placement, it can be expected that initial track allocation has become less important for the process of secondary educational attainment and the inequalities therein. By drawing on longitudinal life-course data for different birth cohorts from the 1930s to the 1980s, this paper analyses temporal developments in the connections between track placement, educational mobility and social inequality in final school outcomes. The analyses reveal that the impact of track placement actually diminished for those cohorts exposed to the reformed school system. Instead, social inequalities in school attainment are increasingly influenced by processes of educational mobility after track allocation. Furthermore, the analyses show that developments in educational mobility have contributed more to declining inequalities in access to upper secondary education than changes of the selectivities in the transition to secondary education.

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1. Introduction

An important aspect of research on social stratification is the way in which educational systems are linked to social inequality in educational attainment. A pattern identified in comparative research seems to show that educational systems which pursue between-school tracking in secondary education tend to be associated with comparatively high levels of

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inequality in educational attainment (Bol and van de Werfhorst 2013; Brunello and Checchi 2007; Meghir and Palme 2005; Pfeffer 2008). The German education system is usually considered as the prime example of a tracked school system, and its early educational transition into tracked secondary schooling is often regarded as a key mechanism in the formation of educational inequality (cf. Blossfeld 1993; Gresch *et al.* 2010).

However, the German education system has undergone notable structural changes over the past few decades which are expected to have altered the relationship between tracking and inequality in school attainment. From the 1960s onwards educational reforms have gradually introduced more educational pathways that allow for corrections of the initial school track, and which aim to trigger educational upward mobility.[1] Hence, it can be expected that although tracking has formally remained in place, the transition into the tracked secondary school system has become less consequential for final school attainment.

This paper is devoted to the implications of this development for inequality in educational attainment, which will be illuminated from three perspectives. A first focus will be on the extent to which initial track placement in secondary education has become less predeterministic for inequality in final school attainment. A second part evaluates whether educational mobility after track placement amplifies or reduces the social inequality that is established through track placement. Finally, the third part assesses to what extent changes over cohorts in the overall level of inequality in school attainment can be ascribed to changes in either track placement or educational mobility after track placement.

The paper proceeds as follows: after a detailed description of the German school system and its structural changes, the three research questions will be discussed with reference to theoretical considerations and previous research and expectations will be formulated. This will be followed by the empirical analyses. The paper concludes with a discussion of the findings.

2. Institutional background and theoretical framework

2.1. The German education system and the reforms of the 1960s

The German school system can be seen as archetype of a selective, stratified system. Its most prominent feature is its early between-school

[1]The term 'educational mobility' refers to *intra*-generational mobility, i.e. when the final level of educational attainment is different from the level that would have corresponded to the initial secondary school track.

tracking after elementary school. Elementary school usually lasts for four years.[2] After that, around the age of 10, students proceed to secondary education, which traditionally comprises three different school types.[3] The lower secondary school (Hauptschule) is the least demanding option and finishes after the 9th grade. It aims at students with practical skills and prepares them for training programmes in blue-collar occupations. The intermediate secondary school (Realschule) finishes after the 10th grade and prepares students for vocational training in skilled white-collar or service occupations. The upper secondary school (Gymnasium) follows an academically oriented curriculum. It ends with the upper secondary qualification (Abitur) after the 12th or 13th grade, which is the entrance requirement for higher education. Admission to the different school types is based on school performance in elementary school. Various studies have shown that social inequalities in the transition to secondary education are quite pronounced, even in recent cohorts (Dollmann 2011; Neugebauer 2010). Given the high level of social inequality in this transition, and the strict hierarchical structure of tracking in secondary education, the claim has often been made that early stratification might be the major reason for Germany's comparably high level of inequality in later stages of educational attainment. This view presumes that the transition to secondary education is highly deterministic for the following life course, and that opportunities for mobility between educational pathways are rare.

However, this view neglects the developments in the institutional structure of the German secondary school system that have taken place in the past 50 years. The period following the 1950s was characterized by educational reforms all across Europe. Several countries, such as the UK or Sweden, have transferred their formerly stratified secondary school systems into comprehensive systems (Leschinsky and Mayer 1999). The introduction of a comprehensive secondary school system has been discussed in Germany as well – not least with the intention to make participation in education less socially stratified. However, German educational policies have followed a different approach. While the between-school tracking in secondary education has been retained, additional educational institutions have been established whose role is to enable educational upward mobility after completion

[2]Except for Berlin and Brandenburg, where it comprises 6 years.
[3]In Eastern German states the secondary education system traditionally comprises two tracks: one academic and one non-academic track. Only recently have some Western German states started to adopt this model.

of the lower secondary tracks. This has been accomplished by the creation of different kinds of vocational upper secondary schools. Most of these schools are designed to allow students with an intermediate school qualification to obtain an upper secondary education through two-to-three-year programmes – either immediately following the end of intermediate schooling or after a period of vocational training. Many of these programmes award a restricted upper secondary qualification, which only grants access to the lower tier institutions of higher education (universities of applied science), but not to traditional universities. In addition to the introduction of new programmes, mobility between the school tracks has been facilitated. Conceptually, this means that sequential elements have been added to the tracked school system that allow for corrections of initial track placement, while the former dead-end character of the school tracks has been attenuated. In some federal states comprehensive schools have been introduced in addition to the three traditional school tracks. While all of the three traditional qualifications can be obtained in these schools, access is not based on elementary school performance. However, most of these comprehensive schools pursue within-school tracking using ability-grouping for access to courses.

Figure 1 summarizes the main features of the German education system. The dashed lines represent the new institutions, which were introduced in the 1970s and have gradually expanded since.

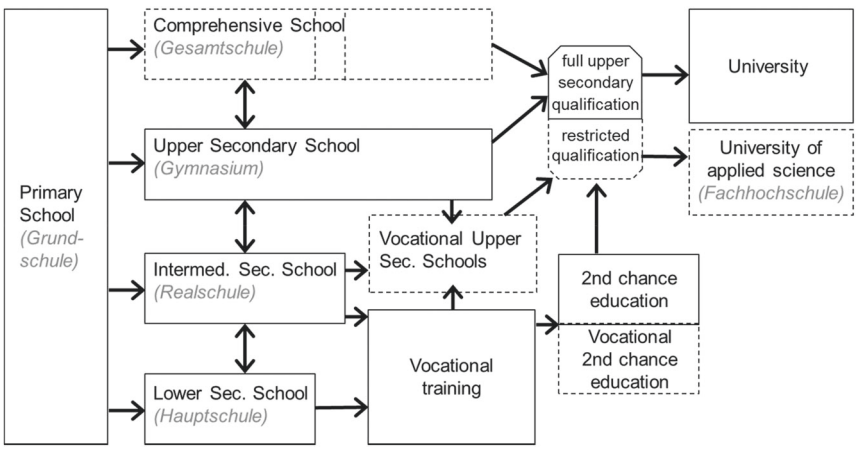

Figure 1. The German education system.

Note: Dashed lines indicate institutions that were introduced by reforms in the 1970s.

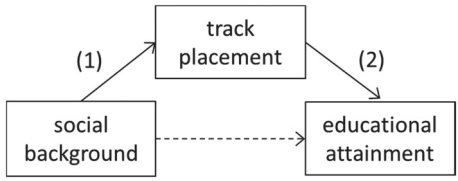

Figure 2. Association between social background and educational attainment, mediated by track placement.

2.2. Theoretical considerations

Conceptually, the role of between-school tracking in the formation of inequalities can be understood as a mediator of the association between social background and educational attainment (cf. Figure 2).

Tracking is connected to high levels of inequality in educational attainment if both inequality in initial track placement is high (association 1), and track placement is strongly related to final educational attainment (association 2). Regardless of the changes in the strength of association 1, which concerns the initial *level* of inequality, the *role* of tracking in the process of inequality formation is determined by association 2. As a consequence of the educational reforms, the strength of the latter association is likely to have waned since the 1970s due to enhanced educational mobility after track placement. With respect to the first research question, it can thus be expected that inequality in track placement has become less predictive of inequality in educational attainment. Instead, the formation of inequality in educational attainment should be more influenced by processes that happen after track placement.

The second research question is devoted to the *contribution* of educational mobility to the overall level of inequality in final school attainment. The central interest relates to whether educational mobility compensates for inequality in track placement or instead amplifies it further in the life course. A behavioural argument that has been put forward in this respect stems from relative risk-aversion theory (Breen and Goldthorpe 1997). It suggests that students of privileged social origin have a comparatively higher incentive to pursue upward educational mobility (given that they are not in the upper track already), which is triggered by the motive of avoiding social demotion (Hillmert and Jacob 2010).[4] Indeed, all empirical evidence shows that, among those who are 'at risk' of pursuing upward educational mobility, students

[4]In contrast, downward educational mobility is not assumed to be socially selective.

of privileged social origin always display the highest chances to do so (cf. Buchholz and Schier 2015; Schindler 2015). However, the overall contribution of educational mobility to inequality in educational attainment is not only determined by these *conditional* mobility rates. It is also a function of the group sizes of those who are at risk (Buis 2015). Due to social selectivities in initial track placement, the share of students of disadvantaged social origin in the risk set is usually much larger than the share of students of privileged social origin. Whether, in total, the contribution of educational mobility to inequality in educational attainment is of a compensatory or amplifying nature thus depends on the group-specific combinations of numbers of students at risk and their conditional mobility rates.

Temporal changes in this contribution then depend on how these two factors develop for different social origin groups. Considering the conditional upward mobility rates of those who are not in the academic track already, the institutional reforms have generally opened up opportunities that are available for students of all social strata. On the one hand, one would expect that this mainly benefits students of privileged social background, given their generally higher incentives for educational upward mobility due to status maintenance ambitions. On the other hand, by establishing more sequential elements in the education system, the reforms have created opportunity structures that, in particular, have an impact on decision processes of students of disadvantaged social origin. Sequential decision points allow for a repeated reassessment of the costs, benefits and success probabilities associated with higher-level educational qualifications. Factors, which influence this assessment negatively, such as risk-aversion, information constraints or opportunity costs, are likely to diminish in the course of an individual's educational career (cf. Müller and Karle 1993). Since these factors should be less relevant for students of privileged origin (cf. Breen *et al.* 2014), the introduction of sequential decision points should in particular affect the upward mobility behaviour of students of disadvantaged social background. This could be even reinforced by feedback effects that the extension of sequential educational opportunities can have on initial track placement: able students of disadvantaged social origin, who would have chosen an upper secondary track, might be diverted into a more risk-averse strategy of choosing the intermediate track first and then obtaining the upper secondary degree successively. While this process increases the conditional educational mobility rates among students of disadvantaged background, it can also influence the share of this group at risk by attenuating any potential decrease in social selectivities in initial transitions to upper secondary

school. In which way all these processes cumulatively impact the overall contribution of educational mobility to inequality in final secondary educational attainment for different cohorts can hardly be derived theoretically. It has to be left for empirical assessment.

Finally, the third research question connects the previous two parts to the long-term development in the overall level of inequality in educational attainment. As previous research has documented, inequality in upper secondary educational attainment has declined over successive birth cohorts throughout the past decades in Germany (Klein *et al.* 2009; Mayer *et al.* 2007; Müller and Haun 1994). This could either be a consequence of diminishing social selectivity in initial secondary track placement, or of an increasing inequality-compensating contribution of educational mobility after track placement. Which of the two processes has been more influential for the reduction of educational inequality has yet to be ascertained. Previous studies have primarily provided arguments for why the transition into secondary schooling should have become more equal (Klein *et al.* 2009; Müller and Haun 1994): higher-level schools have become more accessible as a consequence of better coverage in rural areas, direct schooling costs have been abolished and improved living standards allow even less affluent families to bear the indirect costs associated to higher-level educational pathways. But they also provide a more general argument: students of lower socioeconomic background have increasingly stronger incentives to invest in higher levels of education due to enhanced educational requirements in the labour market (also cf. Mayer *et al.* 2007). In this respect, the institutional reforms in upper secondary education could be conceived of as providing alternative and potentially less risky ways to achieve the educational levels suited for the reproduction of their parents' occupational status. Again, this process should have attenuated the reduction of social selectivities in the transition to the upper secondary school. Instead, the reforms should have diverted students from disadvantaged backgrounds aspiring to upper secondary education into the indirect and more vocationally oriented pathways. Overall, this should lead to the observable pattern that the reduction of social inequality in upper secondary educational attainment was primarily channelled through increasing educational mobility rates among students of disadvantaged social background and less so through increasing transition rates to the upper secondary school.[5]

[5]This process should also lead to the emergence of a new qualitative dimension of inequality within upper secondary education: direct and academic pathways to upper secondary qualification vs. indirect and vocationally oriented pathways to (restricted) upper secondary qualifications.

Hence, the contribution of the latter process to a reduction of the overall level of educational inequality should be smaller than commonly expected.

3. Data

The analyses draw on retrospective life-course data from various cohort studies that follow a similar design and contain detailed information on educational careers. The main data sources are different issues of the German Life History Study (GLHS, cf. Mayer 2008). The first source is the GLHS-I (doi:10.4232/1.2645), which was conducted from 1981 to 1983 as a face-to-face survey of a sample of West German inhabitants. While initially three birth cohorts between 1929 and 1951 were sampled, the analyses in this paper only draw on two of them, namely those born between 1939 and 1941 ($N = 928$), and between 1949 and 1951 ($N = 1023$). Results based on the 1939–1941 cohort may have to be interpreted with caution, as educational outcomes in this generation are likely to be influenced by a period effect stemming from the conditions in the aftermath of the Second World War. The second source is the GLHS-III (doi:10.4232/1.2648), which was conducted from 1988 to 1989 as a telephone survey of West German inhabitants born either between 1954 and 1956 ($N = 1836$), or between 1959 and 1961 ($N = 2097$). The third source is the GLHS-West-64/71 (doi:10.4232/1.3927), conducted from 1998 to 1999 as CATI or CAPI interviews of a sample of West German inhabitants born in either 1964 ($N = 1474$) or 1971 ($N = 1435$). The fourth source is the Transition Study (doi:10.4232/1.10099), conducted by the Federal Institute for Vocational Education and Training (Bundesinstitut für Berufsbildung, BIBB) in 2006. The BIBB Transition Study is a CATI survey of German inhabitants born between 1982 and 1988 ($N = 7230$). The BIBB respondents were interviewed when they were 24 years old or younger. In order to ensure that most respondents have completed secondary education, those younger than 20 years have been excluded from the sample. Since the GLHS covers West Germany only, the same regional restriction has been applied to the BIBB data. Results based on the full sample do not differ substantially. All analyses are based on samples after listwise deletion. The number of cases in the analytic samples will be reported in the tables.

The following central variables will be used in the analyses. The first is a measure of social origin. Social origin is conceptualized by a threefold collapse of the EGP class schema, distinguishing the salariat classes (I/II) from the intermediate classes (IIIa/IV/V) and the working classes (IIIb/

VI/VII), based on the highest class position among the parents. The second is a variable indicating the school type attended initially in secondary education. The four categories comprise upper, intermediate and lower secondary and comprehensive schools. The third is a variable indicating final secondary attainment. Since German education reforms were primarily targeted at the upper secondary level, the binary variable distinguishes whether any kind of upper secondary qualification has been obtained or not at any point in the life course. This includes qualifications that have been obtained during regular schooling as well as those obtained through second chance education. Since respondents in the BIBB data are only observed up to the age of 24, this can lead to some minor undercoverage of students that obtained their highest educational qualification later in life. This has to be considered when comparing the results to the GLHS, which is not affected by this problem.[6] A table with sample descriptives is provided in the supplement (Table S1).

4. Analyses

4.1. The timing of institutional differentiation

Figure 3 gives an impression on how the institutional structure of the most important school types that lead to upper secondary qualifications has developed since the 1960s in West Germany. The graph displays the absolute number of schools. The boxes at the bottom of the figure indicate approximately when the cohorts under investigation enter the 9th grade. This is the grade after which the lower secondary school usually ends. For students who have reached this grade, it should make a difference for educational attainment whether or not institutions exist that allow for a continuation of the educational career.

The most obvious temporal change is the appearance of vocational upper secondary and comprehensive schools in the official statistics at the beginning of the 1970s.[7] While the number of comprehensive schools shows a rather even growth, the number of vocational schools mainly increased during the first half of the 1970s, and then again at the end of the 2000s. For the cohort comparisons this means that those born in the two oldest cohorts could not take advantage of the

[6]Checks with the National Educational Panel Study (NEPS) do not indicate that this causes a serious bias.
[7]Some vocational upper secondary schools have evolved out of precursor institutions that existed even before the 1970s, e.g. schools for engineers etc., which also awarded upper secondary qualifications. But many of the vocational schools have been founded as new institutions.

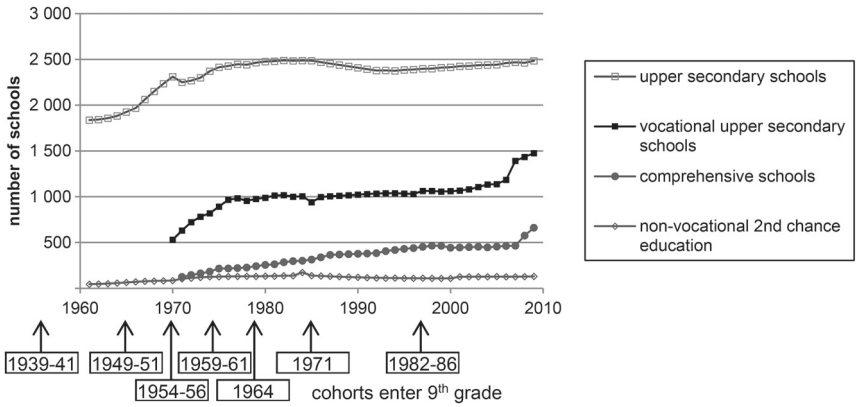

Figure 3. Development of upper secondary school types in secondary education.
Data: Official school statistics, German Federal Statistical Office.

opportunities that were introduced by the reforms. Those born between 1954 and 1961 already had access to these institutions, but the introduction of new school types was still in an early phase. Cohorts born between 1964 and 1986 faced quite similar situations as regards the supply of vocational upper secondary schools, while the supply of comprehensive schools almost doubled during that time span.

Given these developments, the differences related to the impact of track placement are expected to be most pronounced between the two oldest and the two youngest cohorts, while the differences between the cohorts born after 1961 should be rather minor.

4.2. The relevance of track placement for inequality in upper secondary attainment

The first analysis is devoted to the question of whether initial track placement has lost its capacity to account for social inequality in final upper secondary attainment as a consequence of enhanced educational mobility after track placement. As has been argued above, the role of tracking in the process of inequality formation is determined by the association between initial track placement and final educational attainment. For that reason, Table 1 lists the rates of those who finally reached an upper secondary qualification, conditioned on the secondary school track they initially attended (more comprehensive tables on educational mobility development are provided in the supplement, Tables S2 and S3). As of the 1954–1956 cohort, even those tracks which do not lead to an upper

Table 1. Upper secondary attainment rates, by initial secondary school track and cohort (percent).

Initial secondary school track	1939–1941	1949–1951	1954–1956	1959–1961	1964	1971	1982–1986
Upper secondary school	48.2	79.3	81.2	83.0	80.1	84.4	83.4
Intermediate secondary school	4.4	17.6	33.9	27.4	23.6	30.8	35.9
Lower secondary school	0.8	2.2	10.1	8.4	7.5	9.1	11.1
Comprehensive school	–	–	66.7	40.7	24.4	50.0	48.3
Total	7.1	17.9	32.9	34.4	32.5	42.4	50.6
N	662	672	930	890	1134	1127	2701

Data: German Life History Study, BIBB Transition Study 2006.

secondary qualification, namely intermediate and lower secondary schools, show elevated upper secondary attainment rates. In addition, this cohort is the first cohort with students that obtained upper secondary qualifications at comprehensive schools, that is, outside the tracked system. This indicates that track placement has become less consequential for students exposed to the reformed school system.

To analyse how this has impacted the role of track placement in the process of inequality formation, the extent to which track allocation accounts for inequality in final school attainment is compared between older and younger cohorts. This is done by a simple mediation analysis as depicted in Figure 2 above. For each separate cohort, the association between social background and upper secondary attainment is decomposed into a part that runs through track placement and a residual part, which reflects mobility after track allocation. Technically, this is accomplished by regressing a binary dependent variable indicating upper secondary attainment on EGP class of origin. The part of this association which is mediated through initial track placement is singled out by comparing the coefficient of social origin in a reduced regression model (no control variables) to the respective coefficient in a model controlling for initial track placement (the four school types shown in Figure 1). The relative reduction of the social origin coefficient between the two models indicates which part of the social inequality in school attainment can be ascribed to inequality in track placement. In order to account for scaling effects, the analyses follow the KHB-method (Karlson *et al.* 2012).[8] Table 2 summarizes the results. A table of the underlying regressions can be found in the supplement (Table S4).

[8]The analyses were conducted with the Stata ado 'khb' by Ulrich Kohler and Kristian Karlson.

Comparing the impact of track placement on inequality in upper secondary attainment for the salariat and the two other social classes, a declining trend emerges. A comparison for intermediate and working classes reveals no such decline. The most obvious pattern evolves for the contrast between the salariat and intermediate classes. While track placement accounts for about 80% of the social difference in educational attainment in the two oldest cohorts, its relevance declines to roughly 50% in the youngest cohorts. This means that the transition into secondary education remains an important factor for generating educational inequality. However, it also means that inequality in secondary attainment tends to be less defined by track placement in the youngest cohorts than it used to be in older cohorts.

The analytic approach of this section has addressed the question of to what extent inequality in school attainment is predetermined by track placement. This tells us whether the set of persons that defines inequality in track placement is different from the set of persons that defines inequality in final educational attainment. This picture does not deliver information on how educational mobility after track placement impacts the *level* of inequality. This will be accomplished in the next section.

4.3. The impact of educational mobility on the level of inequality

Figure 4 displays the development of educational inequality between salariat and working classes over cohorts (the underlying tables as well as figures of other class contrasts are provided in the supplement). The hollow triangles represent inequality in initial placement in the upper secondary track, indicated by odds ratios between the two classes. The solid squares represent inequality in attaining an upper secondary qualification anytime in the life course.

If the squares are located below the triangles it indicates that the level of inequality in final school attainment is lower than the level of inequality in track placement, or in other words, that educational mobility after track placement plays a compensating role in a cohort's process of inequality formation. In contrast, if the squares are located above the triangles it indicates that educational mobility strengthens educational inequality.

Only in the cohorts 1949–1951 and 1971 does inequality in final attainment appear to be higher than in the transition to upper secondary school. In all other cases (except for 1964 where the odds ratios are identical) the triangles are situated below the squares. This means that in these cohorts

Table 2. Percentage of inequality in secondary educational attainment as accounted for by initial school track.

	1939–1941	1949–1951	1954–1956	1959–1961	1964	1971	1982–1986
Salariat vs. working class	84.7	61.2	62.1	57.1	56.8	56.2	58.3
Salariat vs. intermediate class	79.9	78.6	63.8	55.3	64.4	50.1	53.7
Intermediate vs. working class	99.0	43.5	59.0	59.7	48.5	65.7	62.0

Data: German Life History Study, BIBB Transition Study 2006.

educational upward mobility contributes to a decline in the level of inequality between track placement and final attainment. From a developmental point of view, it is interesting to see that there is no clear trend across cohorts in the way that educational mobility contributes to a reduction or strengthening of inequality levels between track placement and final attainment. Instead, there seem to be specific phases (1949–1951, 1964, 1971) when educational mobility does not reduce inequality.

4.4. The process of inequality reduction over cohorts

Considering the development of overall inequality in final school attainment (solid squares in Figure 4) reveals a remarkable reduction over cohorts. This replicates the findings from previous research. The final analysis evaluates whether this reduction was more influenced by the declining inequality in track placement, or by the developments in educational mobility after track placement. To this end, Table 3 exemplifies

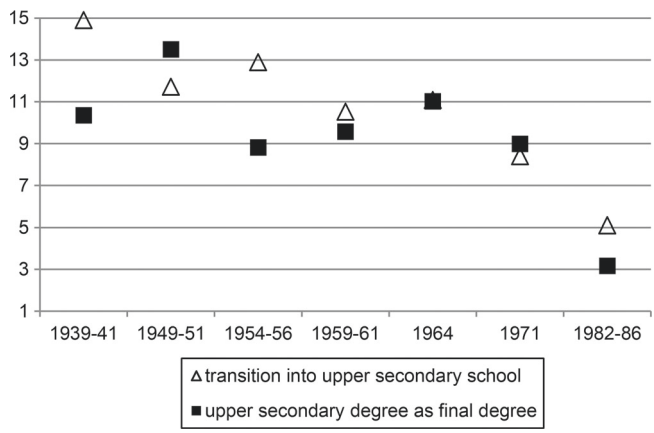

Figure 4. Odds ratios between salariat and working class students.
Data: German Life History Study, BIBB Transition Study 2006.

a simple simulation exercise. The first two columns display factual figures for the 1949–1951 and 1982–1986 cohorts by social background. The first lines list the final upper secondary attainment rates broken down into the shares that come from those starting secondary education in upper secondary school and those who obtained this qualification via educational mobility (a graphical representation for all cohorts is provided in the supplement). The second lines list the total upper secondary attainment rates as the sum of the two previous figures. The third and the fourth columns contain simulated figures. The third column simulates a situation in which the share of qualifications 'directly' obtained through the upper secondary track remains constant between the cohorts, while the share of qualifications obtained through upward mobility or comprehensive schools changes as it has in the real world. The fourth column reflects a scenario in which the share of qualifications obtained through mobility remains the same, but the share of qualifications obtained via the upper secondary track changes.

As can be noted from the table, the contribution of changes in either educational mobility or track placement differs by social background. While the total upper secondary attainment rates of salariat class students have profited more from increasing transition rates into upper secondary school than from extended upward mobility, working class students show the opposite pattern. The gain in upper secondary degrees that has been achieved through mobility after track placement is higher than the gain achieved by direct transitions into upper secondary school. This is also reflected by the odds ratios displayed in the last column of the table:

Table 3. Decomposition of inequality reduction between 1949–1951 and 1982–1986 cohorts.

	1949–1951 factual		1982–1986 factual		Direct degrees as in 1949–1951		Mobility degrees as in 1949–1951	
Initial track	Upper sec.	Other	Upper sec.	Other	Upper sec.	Other	Upper sec.	Other
Salariat class								
upper sec. attainment rate	40.5	6.9	53.7	16.0	40.5	16.0	53.7	6.9
sum	47.5		69.7		56.5		60.6	
Working class								
upper sec. attainment rate	4.8	1.5	17.5	24.4	4.8	24.4	17.5	1.5
sum	6.3		42.0		29.2		19.0	
Odds ratio salariat vs. working	13.5		3.2		3.1		6.6	

Data: German Life History Study, BIBB Transition Study 2006.

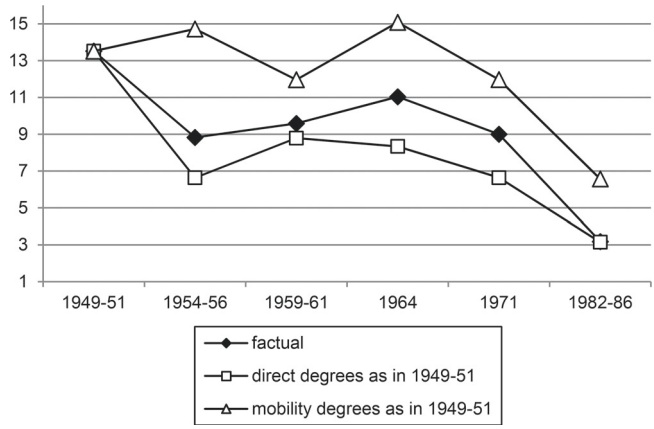

Figure 5. Odds ratios between salariat and working class students in upper secondary attainment (simulation).
Data: German Life History Study, BIBB Transition Study 2006.

isolating the changes in educational mobility yields a more drastic decline in the inequality level than isolating the changes in track placement patterns.

The same decomposition has also been conducted for the other cohorts. In each case the 1949–1951 cohort serves as the reference. The results are displayed in Figure 5.

The upper curve describes a scenario in which the development of inequality exclusively depends on changes in the rates of qualifications obtained through the direct pathway. This scenario does not lead to a noticeable reduction of inequality except for the youngest cohort. On the other hand, isolating the changes in the rates of qualifications obtained via educational upward mobility reduces inequality levels already for the 1954–1956 cohort. In all cohorts, the curve representing the latter scenario runs below the curve representing the former scenario. Thus, it seems that changes in educational mobility patterns had a greater impact on the decline in inequality in final school attainment than changes in track placement.

5. Summary and discussion

The German school system is known both for its comparatively high levels of inequality in educational attainment and for early between-school tracking in secondary education. There are good reasons to believe that both aspects are related. Unlike other European countries, tracking

survived the era of educational reforms in the 1960s, and has persisted as a core element of schooling until today. However – and this is not always made explicit in studies on educational inequality in Germany – there have been reforms that have altered the impact of track placement on final educational attainment. Students who do not enter the upper secondary school track at the beginning of secondary education have many more chances to eventually obtain an upper secondary qualification today than students had 50 years ago. The aim of this paper was to explore the implications that this development has for the formation of social inequality in formal school attainment.

A first implication is that track placement has lost its powerful predetermining role. Inequality in educational attainment today is much more the result of processes that happen after track placement. Nonetheless, track placement is still highly predictive of eventual inequality, accounting for more than half of the inequality in final upper secondary attainment.

A second implication is that enhanced educational mobility in, or after, secondary education has the potential to alter the inequality levels that are created through initial track placement. From an intra-cohort perspective the most obvious question in this respect relates to whether educational mobility amplifies or compensates inequality. An interesting finding of this paper is that it depends on the cohort. For students born between the mid-1950s and the early 1960s, or for students born in the 1980s, educational mobility seems to contribute to a reduction of inequality levels. For students born around 1950 or at the beginning of the 1970s, educational mobility instead intensifies the level of educational inequality compared to the selectivities in track allocation. While these developments have not been analysed over such a broad range of cohorts before, they are in line with findings from studies on particular cohorts (Henz 1997; Hillmert and Jacob 2010; Schindler 2014). The results clearly call for the consideration of contextual circumstances if one is interested in finding out why educational mobility reduces overall inequality levels in some cohorts but not in others. At any rate, they imply that opening up ways for educational upward mobility is a policy measure which does not necessarily lead to a compensation of inequality levels.

A third implication concerns the decreasing overall level of inequality in secondary attainment across cohorts and the reasons behind it. Previous considerations have very much concentrated on decreasing social selectivity in track placement as an explanation. Empirical evidence for this has not been available so far. The analyses presented here might, however, indicate that educational mobility after track placement plays

a much more important role for that development than was expected. For working class students in particular, educational upward mobility seems to have become the main road into upper secondary education. From this point of view, the educational reforms initiated in the 1960s were not only successful in extending educational opportunities, but also in contributing to more equal access to upper secondary education.

In light of these findings, a number of remarks might be in order. The first concerns the validity of the results. The analyses presented in this paper are based on a compilation of different life-course data sets. Especially with regard to the older cohorts, this comes at the price of relatively low case numbers. Therefore, the exact figures that arise from the analyses have to be interpreted with caution. Nonetheless, the overall picture reveals patterns that reasonably justify the above conclusions.

A second remark relates to potential causal claims that can be derived from the findings. It might be obvious that all analyses refer to factual observations only. Therefore, any genuine causal effects that might be ascribed to the reforms have to carefully take into account both their feedback effects on track placement patterns and their embeddedness into particular structural conditions.

A third remark concerns the conceptualization of inequality in this paper. While it has not been the focus of this paper, the investigation of inequality in secondary education could also take into account processes of differentiation within the upper secondary level. When upper secondary education is further divided into full and restricted qualifications, findings from other studies show that gains among working class students over cohorts are primarily due to careers of educational mobility which end with a restricted qualification (cf. Schindler 2014). Hence, declining inequalities in access to upper secondary education are accompanied by an evolving qualitative dimension of inequality. As a test whether the results of this paper change if this is taken into account, the analyses have been replicated by looking at access to a full upper secondary degree instead of any upper secondary degree. The analyses are displayed in an extension of the supplement and can be summarized as follows: tracking has become less predictive of final secondary attainment even when full and restricted upper secondary degrees are differentiated (Tables E1 and E2). In cohorts where educational mobility leads to a compensation of inequalities in access to upper secondary education over the life course, this compensation is either less pronounced or turns into an amplification of inequality if only access to full upper secondary degrees is considered (Figure E2). The decrease of inequality over cohorts is

somewhat less pronounced if only full degrees are considered. But even then seem changes in educational mobility to have contributed more to the declining inequalities than changes in the initial transition to secondary education. However, the differences in the contributions are notably smaller than those found by considering all types of upper secondary degrees (Figure E3 and Table E3).

A forth remark relates to the specific educational episode that has been under investigation in this paper. While access to upper secondary education has become more equal, the subsequent transition into higher education has become more selective (Mayer *et al.* 2007). At this point, it might be desirable to extend analyses of the impact of track allocation to subsequent educational outcomes or even labour market rewards (a first attempt has been presented by Dustmann *et al.* 2014).

In spite of these potential limitations, this paper makes several contributions to the field of research. In the context of research on the connection between educational institutions and educational inequality, this paper provides some interesting insights. While it has often appeared that tracked education systems per se tend to produce high levels of inequality in educational attainment (e.g. Brunello and Checchi 2007), the analyses presented here have documented that an education system which has retained between-school tracking in secondary education throughout the whole observation period, shows remarkable variation in the levels of inequality that result. As has been argued above, the inequality-generating potential of tracking greatly depends on the extent to which tracking actually determines later educational outcomes.

As a pointer for further research on the German education system, the findings of this paper have revealed that the transition into secondary education is still a major determinant of educational inequalities in the German school system. This justifies the relevance of continued research on inequality in track allocation and the social mechanisms behind it. On the other hand, the weakening role of track placement in the inequality-generating process calls for an intensified orientation towards social selectivities in the educational careers after or beyond track allocation. In this context – and which has only been marginally dealt with in this paper – another task for further research would be to direct attention to the increasing importance of comprehensive schools and their impact on social inequality in educational outcomes. An idiosyncratic feature of the German education system is the coexistence of comprehensive and tracked schools in some federal states. This opens the way for assessments of comprehensive schools' impact on social inequality. Finally, with regard

to more recent cohorts, Germany might remain an interesting case for the analyses of between-school tracking. Many federal states are currently in a process of pursuing additional secondary education reforms, with a tendency to change from a three-track structure to a two-track system. In many federal states, the two-track system consists of a traditional upper secondary school as a first tier and a comprehensive track as a second tier. This is likely to reduce the impact of the first transition tracking on final educational attainment even further.

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