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Schindler, Steffen; Bittmann, Felix

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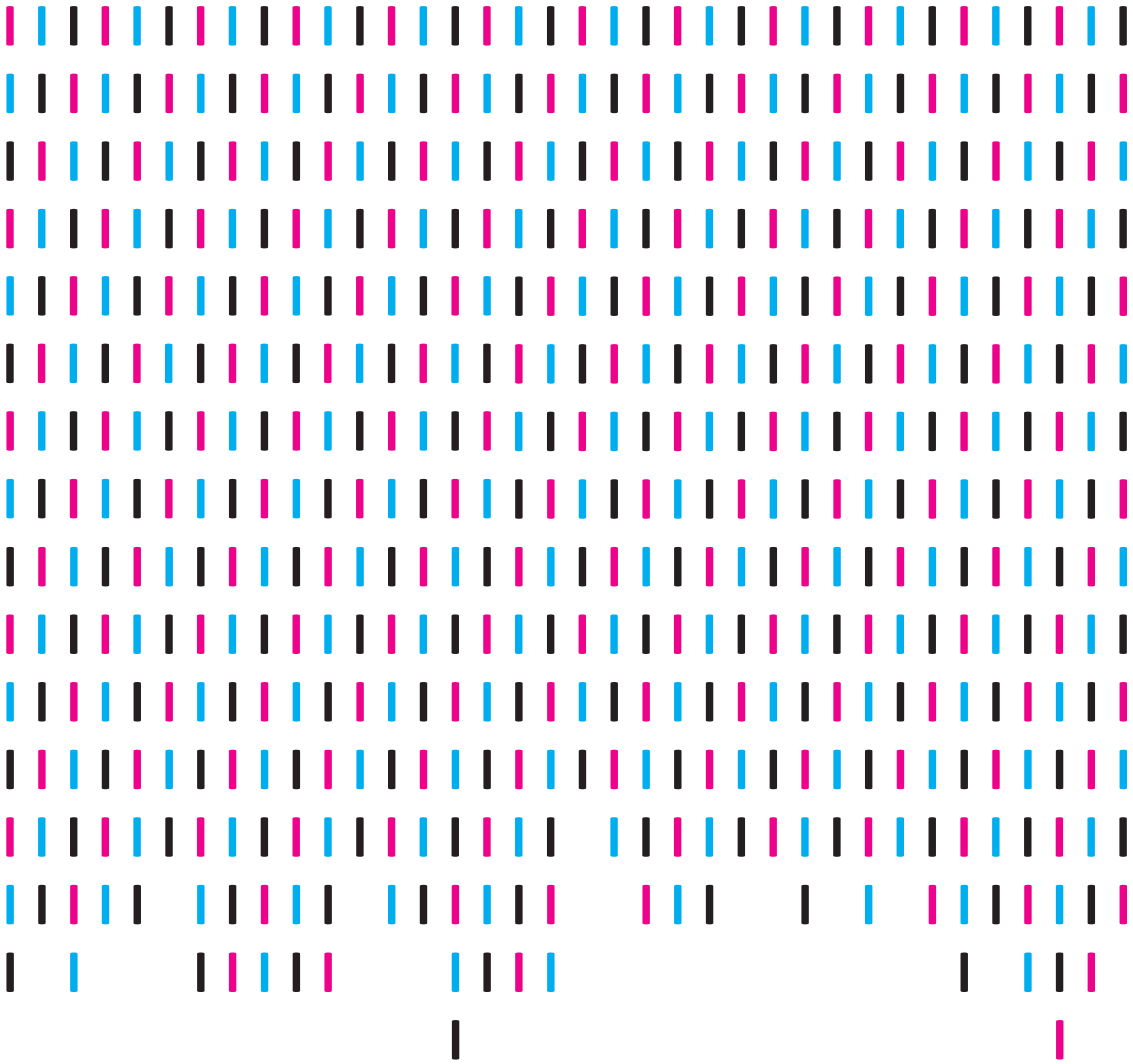

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Contact:
Leibniz Institute for Educational Trajectories
Wilhelmsplatz 3
96047 Bamberg
Germany
contact@lifbi.de

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Education, Educational Upgrading and Labor Market Outcomes

Descriptive Evidence by Social Background and Gender

Steffen Schindler, University of Bamberg
Felix Bittmann, Leibniz Institute for Educational Trajectories (LIfBi)

E-mail addresses:

steffen.schindler@uni-bamberg.de, felix.bittmann@lifbi.de

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Education, Educational Upgrading and Labor Market Outcomes – Descriptive Evidence by Social Background and Gender

Abstract

This paper provides descriptive evidence on formal educational attainment at different stages of the life course, educational upgrading processes and labor market outcomes at occupational maturity of the cohort born in the 1970s and living in Germany. It also considers the interrelatedness of these variables and differences by social origin and gender to provide evidence on two central dimensions of social inequality. With that, we want to address a gap in descriptive bookkeeping that can be observed in contemporary research on social inequalities in educational attainment and labor market outcomes. A specific focus is on formal educational upgrading processes of both school-leaving and vocational degrees before and after labor market entry. The analyses of labor market outcomes at occupational maturity consider occupational status and earnings at the age of 40. The paper draws on data from the adult cohort of the German National Educational Panel Study (NEPS).

Keywords

educational upgrading, social origin, gender, earnings, occupational status

Content

1. Introduction

The aim of this paper is to provide descriptive evidence on social inequalities in labor market outcomes. At the core of these descriptive analyses are dynamics with respect to formal education and their relationship with social origin and gender. The paper focusses on a cohort born in the 1970s and draws on data from the adult cohort of the German National Educational Panel Study (NEPS). This allows us to link information on educational and occupational trajectories to labor market outcomes observed at occupational maturity, i.e. when respondents are typically established in the labor market.

All analyses in this paper will be purely descriptive. With that, we want to address a striking neglect of descriptive bookkeeping that can be observed in contemporary research on social inequalities in educational attainment and labor market outcomes. While much research is focusing on the identification of (causal) effects or the isolation of social mechanisms, it is at times very hard to find comprehensive information on the phenomena to be explained (explanandum) or on the extent to which basic variables of interest are associated with each other. This is exactly what we want to provide with this paper.

We start out by describing univariate distributions of the variables of interest. We want to provide evidence on the distributions of key labor market indicators when the cohort born in the 1970s has reached occupational maturity, which we consider to be reached at the age of 40 in Germany. We consider the level of inequality in the distributions of occupational status and earnings. A specific focus of the paper will be on formal education and how its distribution changes across the life course through educational upgrading. We use the term “educational upgrading” to denote events when persons who already possess a formal educational degree obtain an additional and higher-level credential. Educational upgrading can occur before persons enter the labor market for the first time or even after they have entered the labor market. As these processes are an important but often neglected element of the German education system, we place a particular emphasis on educational upgrading in this publication. We want to provide evidence on the extent and patterns of educational upgrading in Germany.

A second part of our analyses is devoted to the association between education and labor market outcomes. Previous research has underlined the decisive role that formal educational credentials play in determining labor market outcomes in the German labor market (DiPrete et al., 2017; Müller & Shavit, 1998). With our descriptive analyses, we want to provide an update based on recent data from the NEPS. On the one hand, we want to show how formal educational credentials are associated with labor market outcomes. On the other hand, we want to provide evidence on the labor market premiums for persons who engage in educational upgrading.

A third part of our analyses is concerned with subgroup analyses by gender and social origin. As we know from decades of previous research on social mobility, education stands out as the key mediator of the association between social origin and social destination (cf. Goldthorpe, 2014). Yet, we still know little about the role that educational upgrading processes play in this respect. Regarding gender inequalities in the labor market, formal education serves less and less as an explanation as women have begun to surpass men in educational attainment in the cohorts under view in our study. Hence, factors other than formal education are responsible

for gender gaps in labor market outcomes (cf. Blau & Kahn, 2017; Weeden et al., 2016). This is reflected in differences in the associations between formal education and labor market outcomes between men and women (e.g. Brendemuehl & Jolly, 2021). However, gendered patterns of educational upgrading have not been in the focus of research so far. This holds true both with respect to participation in upgrading and with respect to labor market premiums of upgrading. For those reasons, we will provide descriptive evidence on the partial associations connecting gender or social origins with educational attainment, educational upgrading and labor market outcomes. As we barely have comprehensive empirical knowledge about differences in educational upgrading patterns across the life course by gender and social origin, our subgroup analyses will have a particular focus on it.

Before we engage in our analyses, we will provide a description of the German context, where we explicitly highlight the role of educational upgrading in the skill formation process. We also present a thorough discussion of our data source, the adult cohort of the German National Educational Panel Study (NEPS), and provide a description of our approach to handling this complex data.

2. The German context

2.1 Education system

When referring to Germany's education system, one has to consider two important facts. First, education is a domain that fully lies within the responsibility of the federal states. Hence, education systems vary across the 16 German federal states. Nevertheless, there is substantive coordination on the national level and the education systems of all federal states share very similar characteristics. Second, during the period between World War II and 1990, there were two very distinct approaches to organizing education between the Federal Republic of Germany (FRG, West Germany) and the German Democratic Republic (GDR, East Germany). This became most visible in the way the two states arranged the phase of secondary education. While the GDR established a comprehensive school system for students until the age of 16, the FRG opted for between-school tracking for students from the age of 10.

The subsequent analyses will be based on birth cohorts from the 1970s. This means that the sample includes both persons who went to school in the GDR and the FRG. Most persons in the sample, however, obtained their first school-leaving degree after or shortly before the German reunification in 1990. Hence, the subsequent activities in the education system took place when the East German education systems had converged to the West German model. For that reason, the following descriptions have a strong focus on characteristics of the German education system after 1990. In the following sections, we describe the main features of the school system, the system of vocational education and training and the options of formal educational upgrading before and after labor market entry. *Figure 1* provides a graphical representation of the German education system to contextualize these descriptions. For more detailed insights, we recommend the comprehensive description of the German education system by the Secretariat of the Standing Conference of the Ministers of Education and Cultural Affairs of the Länder in the Federal Republic of Germany (Kultusministerkonferenz, 2021) or the publication by Helbig & Nikolai (2015, in German). Throughout the remainder of this paper, we will use the original German labels for school

types or degrees. We will define them in this section. Since these labels are rather long, we will use abbreviations in some figures and tables. We provide a list of these abbreviations in *Table 1* at the end of this section.

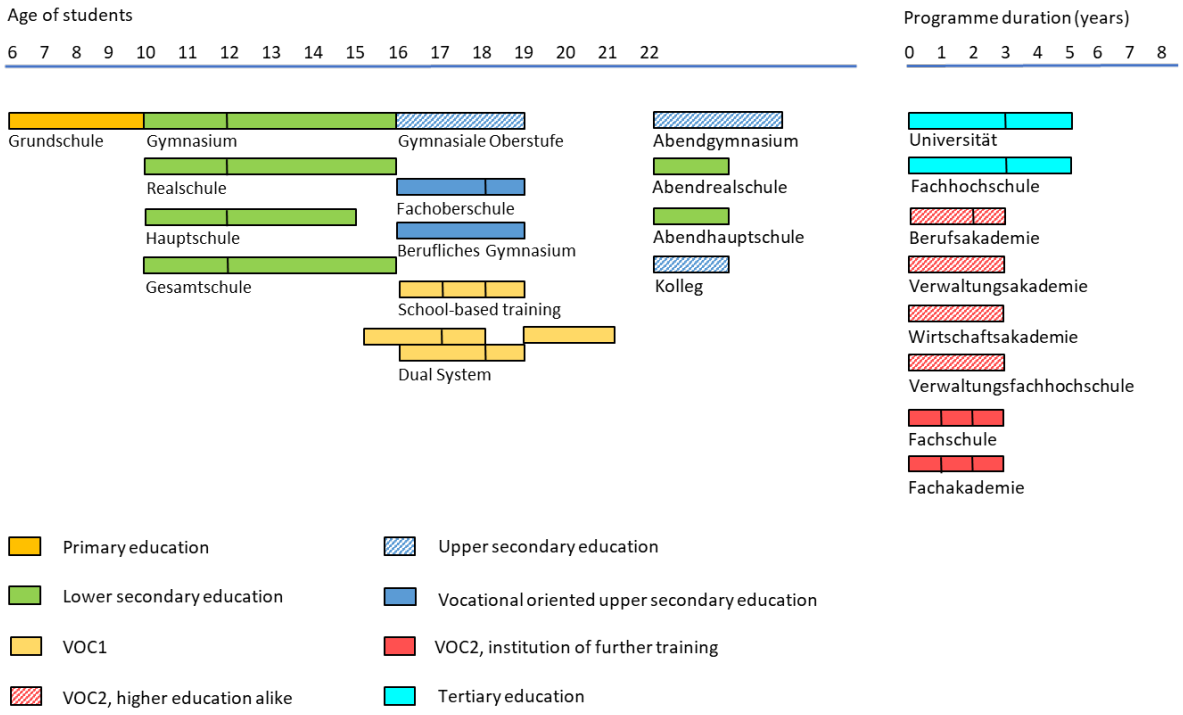

Figure 1. The German education system

2.1.1 School system

The traditional West German school system is characterized by four years of elementary education. After that, the phase of lower secondary education begins and students sort into three different school tracks, based on their academic ability. The tracks are represented by different school types, so that learning for students in the different tracks occurs in different locations and organizationally separate units. The school type representing the lowest track is called *Hauptschule*. It comprises additional five years of schooling in lower secondary education, after which successful students are awarded the school-leaving degree *Hauptschulabschluss*. The idea behind the *Hauptschule* is to equip students who possess rather practical talents with the prerequisites to enter vocational training for blue-collar occupations. The intermediate school track is hosted at schools called *Realschule*. It comprises six years of schooling in lower secondary education and successful students are awarded the degree *Mittlere Reife*. The *Realschule* is supposed to prepare students for vocational training in white collar occupations. The third school track, the *Gymnasium*, was designed for students at the upper part of the distribution of cognitive competences and is characterized by a dedicated academic curriculum. It comprises additional years of schooling, six of which are in lower-secondary education and three of which in upper secondary education. The school-leaving degree of the *Gymnasium* is called *Abitur*. It serves as formal access requirement for higher education. In the 1960s, reforms have been initiated to create more permeability between the school-tracks – either through improved possibilities to switch schools before graduation or through options to continue in a higher-level track after a first school-leaving degree. Some federal states have introduced comprehensive schools next to the tripartite

school system, where, depending on ability levels, all three school-leaving degrees can be obtained. In the course of these reforms, all federal states have introduced school-leaving certificates below the *Abitur*, which allow for access to higher education in certain areas. The most common type is the *Fachhochschulreife*. It allows for access to universities of applied sciences (*Fachhochschule*), which have been created as polytechnic institutions of higher education in addition to the universities. The *Fachhochschulreife* can be obtained at (mostly vocationally oriented) schools that can be accessed with a *Mittlere Reife*.

The East German school system (for a detailed description cf. Kerbel, 2016) was characterized by a strong emphasis on comprehensive schooling. All students were taught in the *Polytechnische Oberschule (POS)* until grade 10 (under certain circumstances, it was possible to leave after grade 8 and transition to vocational training). The school-leaving certificate of the *POS* can be considered equivalent to the West German *Mittlere Reife*. It provided access to vocational training or selected lower-tier institutions of higher education. A selective group of students could be admitted to the upper secondary school of the GDR, the *Erweiterte Oberschule (EOS)*. Until 1984, students transitioned after grade 8 of the *POS*, then after grade 10. Admission was based on performance and political criteria. The *EOS* ended after grade 12 with the *Abitur*. After 1990 and as a consequence of the German reunification, the East German federal states adapted their school systems to the West German model with some modifications (cf. Helbig & Nikolai, 2015). Four out of the six East German states maintained the acquisition of the *Abitur* after 12 years. Instead of establishing tripartite systems in secondary education, some East German states created two-tier systems. Those typically consist of a *Gymnasium* leading to the *Abitur*, on the one hand, and combined lower-level tracks, on the other, where students can acquire both the *Hauptschulabschluss* or the *Mittlere Reife*, and in some cases even the *Abitur*. More recent reforms include the switch from tripartite secondary school systems to those two-tier systems in West German federal states as well. For the cohort under view in the analyses of this paper, however, those reforms are of no relevance.

2.1.2 Vocational training system and higher education

Since the specifics of the East German vocational training and higher education system are not relevant for our sample, we focus on the description of the West German vocational training and higher education system that also persisted after reunification. The most important institutions of vocational training are school-based training, on the one hand, and training in the dual system, on the other. Both variants lead to a vocational qualification. A characteristic feature of the German vocational education and training system is that training programs prepare students for a specific occupation (occupational specificity). The content of the respective curricula is highly standardized nationwide. While in school-based training, students obtain their vocational skills at full-time schools, the dual system represents a mix of school-based education and on-the-job apprenticeship training in a firm. Depending on the training program, access to school-based training requires either a *Hauptschulabschluss* or a *Mittlere Reife*. The training period varies between one and three years. For the dual system, there are no formal access requirements. Since firms select the apprentices, the factual access requirement can however span from no school-leaving degree to *Abitur*, depending on the attractiveness of the respective occupation and/or firm. The training period in the dual system typically ranges between two and three years.

In this publication, we distinguish between lower-level vocational training (VOC1) and higher-level vocational training (VOC2). The former describes the standard types of vocational training that are accessible with a school-leaving degree – or, in the case of dual training, even without any formal school-leaving degree. Higher-level vocational training (VOC2) comprises vocational certificates that either have been obtained through advanced training programs or through further education programs for persons with lower-level vocational training who acquire a certification for a higher-level position in the same occupation. As advanced training programs, we consider training programs for technicians or programs in institutions that come close to institutions of higher education (e.g. *Berufsakademie*, *Verwaltungsakademie*, *Wirtschaftsakademie*, *Verwaltungsfachhochschule*). Typical further education programs leading to a higher-level vocational degree (VOC2) are programs leading persons with a journeyman certificate to a master craftsman certificate or similar training measures at institutions of vocational further education (*Fachschule*, *Fachakademie*). They describe common pathways of further qualification in the vocational training sector that are essential for career progression.

The German higher education system consists of two tiers. The traditional universities with their foundation in academic and basic scientific research constitute the first tier. With some exceptions, access to the universities requires the *Abitur*. Depending on the institution or field of study, additional selection criteria might apply. The universities of applied science (*Fachhochschulen*) constitute the second, more practically and application-oriented tier. Compared to the universities, they offer a more restricted selection of study programs. In addition to the *Abitur*, they can also be accessed with a *Fachhochschulreife*. Traditional academic professions (such as medical doctors or lawyers) require a degree from a university, other academic occupations (e.g. engineers) can be accessed with both types of degrees.

2.1.3 Educational upgrading

In this publication, we consider as educational upgrading all measures that result in the acquisition of a formal educational credential that is of a higher order than the credential previously held. This can refer to the school-leaving degree, the vocational degree or both. Compared to other educational systems, educational upgrading is an essential element in the German education system. As regards the upgrading of school-leaving degrees, the provision of options to obtain an additional higher-level credential after the acquisition of a first degree can be considered as counterbalancing the relatively strict and early educational sorting through the tracked secondary school system. While upgrading from one level to the next is always possible in the general school system whenever certain performance criteria are met, additional options have been implemented for specific target groups. In the vocational education system, vocationally oriented upper secondary schools have been created (e.g. *Berufliches Gymnasium*, *Fachoberschule, Kolleg*) that allow persons with a *Mittlere Reife* to obtain the *Abitur* or the *Fachhochschulreife* in three- or two-year programs. These institutions address persons that can engage in further full-time schooling. Those are either young persons that just completed their *Mittlere Reife* or older persons who interrupt their labor market participation for the sake of educational upgrading. Some vocational training programs even combine the acquisition of a higher-level school-leaving degree with the vocational training. For persons who are and want to remain active in the labor market, evening schools (*Abendhauptschule*, *Abendrealschule*, *Abendgymnasium*) provide opportunities to acquire any of the school-leaving degrees mentioned above.

As regards the upgrading of vocational degrees, we can distinguish two major scenarios. The first scenario refers to persons who want to improve their qualifications – and hence, labor market placement prospects – before they settle in the labor market. The second scenario refers to persons with labor market experience who decide to return to the education system to improve their labor market prospects. Due to the tight linkage between educational credentials and occupations such a career progression typically requires a formal upgrade of the vocational qualification in order to get access to other occupations or even higher hierarchy levels within occupations. All institutions of vocational training and higher education are open to persons of all ages in principle. A typical pattern of vocational upgrading is the upgrading from a lower-level to a higher-level vocational degree in the same occupation. This pattern is clearly envisaged in the institutionalized structure of vocational further education, e.g. through the existence of the *Fachschulen* or *Fachakademien*. While these institutions are open to persons at the beginning of their career, they explicitly address persons with some labor market experiences who want to proceed to the next hierarchy level in their occupation. Another common pattern is the upgrade from vocational training to higher education. It is reflected in the institutional structure of vocational education to the extent that manifold options exist in the vocational education system where persons with a *Mittlere Reife* or a vocational degree can acquire an entrance qualification for higher education in short-cycle programs (see descriptions above). In more recent developments, persons holding a higher-level vocational degree were granted access to higher education without *Abitur* or *Fachhochschulreife* (Kultusministerkonferenz, 2009). Above and beyond these institutional preconditions, the combination of vocational training and higher education has evolved as a common pattern of qualification even for persons holding a higher education entrance qualification. It is argued that completing a vocational training degree first provides a fallback option for risk-averse persons who want to start a higher education program (Hillmert & Jacob, 2003; Jacob, 2004).

Table 1

Abbreviations for Educational Degrees Used in This Publication

Degree	**Meaning**	**Abbreviations**
Hauptschulabschluss	School-leaving degree of the lowest secondary school track (Hauptschule)	Haupt
Mittlere Reife	School-leaving degree of the intermediate secondary school track (Realschule)	MR
Fachhochschulreife	Higher education eligibility restricted to access to universities of applied sciences (Fachhochschulen)	FH-Reife, FHR
Abitur	Full higher education eligibility	Abitur
Lower-level vocational degree	Degree certifying graduation from lower-level vocational training programs	VOC1
Higher-level vocational degree	Degree certifying graduation from higher-level vocational training programs	VOC2
Higher education degree	Degree certifying graduation from higher education	HE

2.2 Labor market

Germany's labor market can be considered as highly segmented. Following Sengenberger (1987), it comprises elements of firm internal labor markets (ILM), occupational labor markets (OLM) and a secondary labor market. The characterizing features, however, come from the dominant segments of the occupational labor market (Gangl, 2003; Sengenberger, 1987). Here, skill production is closely linked to occupations, which leads to a high degree of differentiation between training programs with occupation-specific curricula. Credentials serve as indicators of specific skills and are important criteria for access to occupations. Furthermore, collective bargaining plays an important role in the German labor market, which suggests that labor market returns are closely tied to occupations. The principle of the occupational labor markets suggests that much of the skill production process takes place before workers enter the labor market. As a consequence of all these features, the coupling between educational credentials and labor market outcomes is particularly tight in Germany (Müller & Shavit, 1998). This also suggests that formal educational upgrading should have a substantive influence on individual labor market outcomes.

3. Conceptual framework and research agenda

Figure 2 describes the conceptual framework of the following analyses. The dashed vertical line divides the processes that happen before labor market entry (left-hand side) from the processes that happen after labor market entry (right-hand side). In the top section, the graph describes the dynamic process of educational attainment. The following analyses will pay attention to four different stages of this process. The first stage is the first school-leaving degree (SD_1). The second stage is the moment when persons obtain their first vocational degree (VD_{voc1}). Between the first and the second stage, some persons might have upgraded their school-leaving degree (SD_{voc1}). The third stage in the process of educational attainment is the moment of labor market entry (lme). At that point in time, some persons might have upgraded their school-leaving degrees (SD_{lme}), their vocational degrees (VD_{lme}), or both. The fourth stage is occupational maturity (om), which we will measure at the age of 40. After labor market entry, some persons might have upgraded their school-leaving degrees (SD_{om}) and/or vocational degrees (VD_{om}) through further education.

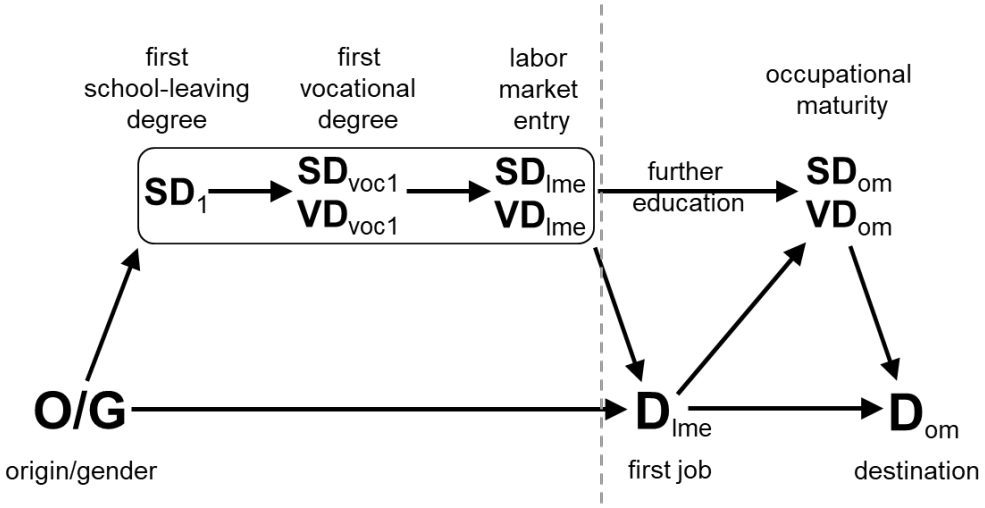

Figure 2. Conceptual framework of the analyses

In the lower part on the right-hand side of the figure, the graph describes two stages of destinations in the labor market: the first job after labor market entry and the job at occupational maturity. In the bottom left corner, the graph displays social origin and gender, which are known as variables that reflect differences both with regard to educational attainment and with regard to labor market outcomes. As a matter of fact, this framework resembles a path model that Müller (1972, 1977) already developed in the 1970s for Germany. While he applied it to mobility processes by social origins only and not to gender differences, another striking difference in our framework is the explicit consideration of educational upgrading processes before labor market entry, which have become much more relevant after his publication.

We will begin our descriptive analyses with a univariate consideration of central variables. We will look into the distribution of labor market outcomes (D_{lme} and D_{om}) to provide insights into the level of distributional inequality among persons born in the 1970s. To analyze to what extent the distribution of education changes across the life course, we will provide comparisons between the four stages of educational attainment. By delivering figures on the prevalence of educational upgrading before and after labor market entry, we will be able to determine how important these processes are empirically.

We will devote another set of analyses to the association between education and labor market outcomes. In international comparison, Germany is known as a country with a strong coupling of formal educational attainment and labor market outcomes – both at labor market entry and at occupational maturity (DiPrete et al., 2017; Gangl et al., 2003; Shavit & Müller, 1998). Previous research also documented that, in Germany, educational levels at labor market entry are highly predictive of the subsequent career and of long-term labor market inequalities by educational attainment (Allmendinger, 1989; Becker & Blossfeld, 2017; Blossfeld, 1985; Hillmert, 2011; Manzoni et al., 2014; Virdia & Schindler, 2019). Connecting to this research, our descriptive analyses will provide more recent figures for persons born in the 1970s about the strength of the association between education and labor market outcomes for different combinations of the timing of measurement of the former (SD_1, SD/VD_{voc1}, SD/VD_{lme}, SD/VD_{om}) and the latter (D_{lme}, D_{om}). Another aspect of the connection between education and labor market outcomes relates to the labor market premiums that persons who upgraded their educational level receive compared to persons who did not. There is surprisingly few research on this issue for Germany (e.g. Schuchart & Schimke, 2019). Our analyses will provide correlative figures between different types of educational upgrading and the associated gains in labor market outcomes.

Finally, we will show subgroup analyses by gender and social origins, connecting them to educational attainment, educational upgrading, and labor market outcomes. Previous research has documented that women have continuously improved their participation in higher segments of the education system and, starting with cohorts born in the 1970s, reached more favorable distributions of educational attainment than men (Becker & Müller, 2011). On the other hand, women still face disadvantages in labor market participation and labor market outcomes vis-à-vis men today (Bertelsmann Stiftung, 2024). The descriptive analyses in this paper will provide a comprehensive overview of gender inequalities in educational attainment and long-term labor market outcomes for persons born in the 1970s. While we do not know much about gendered patterns of educational upgrading processes yet, our descriptive analyses will also provide evidence on gender differences in educational upgrading patterns

and gender differences in the associations between educational upgrading and labor market outcomes. From decades of social mobility research, we know that the association between social origins and labor market outcomes is particularly strong in Germany (Ballarino & Bernardi, 2016; Breen & Luijkx, 2004; Breen & Müller, 2020). The same holds true for the association between social origins and educational attainment (Breen & Jonsson, 2005). The latter serves as an explanation of the former, since labor market outcomes strongly depend on educational attainment in Germany. In this paper, we provide descriptive evidence on the magnitude of both patterns of social inequality for the cohort born in the 1970s. In contrast to gender, there are many empirical studies that looked into differences in educational upgrading by social origins (e.g. Buchholz & Schier, 2015; Hillmert & Jacob, 2010; Jacob & Tieben, 2009; Kurz & Böhner-Taute, 2016; Schindler, 2015; Schindler & Bittmann, 2021). They show that the likelihood of educational upgrading is higher among children of privileged origin than among children of disadvantaged origin, but that these processes do not have a large influence on social inequalities in educational attainment. While most of these studies focus on upgrading to a higher education entrance qualification, our descriptive analyses will provide more comprehensive figures, including other school-leaving degrees, upgrades of vocational degrees, and differences in labor market premiums for upgraders.

4. Data

All analyses of this paper are based on the scientific use files of the NEPS starting cohort 6 (SC6), version 14.0.0 (NEPS Network, 2022). The NEPS SC6 is a sample of adults born between 1944 and 1986 and contains rich data on individual education and employment biographies and extensive sociodemographic information. It is based on respondents from the survey *Working and Learning in a Changing World* (*Arbeiten und Lernen im Wandel*, ALWA, cf. Kleinert et al., 2011), restricted to birth cohorts from 1956 to 1986. The subsequent NEPS wave in 2009 contained both a refreshment of this initial sample and an enhancement to birth cohorts from 1944 to 1955. After that, the study proceeded as an annual panel. A further refreshment of the sample took place in 2011. The sampling in ALWA and the enhancement and refreshments followed a two-stage selection procedure with municipalities as the primary sampling units and target persons within municipalities as the secondary sampling units. Information on education and employment histories has been collected retrospectively and updated with each panel wave. The retrospective data on employment trajectories contains rich information on job and employment characteristics, but not on income. Information on earnings has only been collected as part of the panel component, which means that earnings trajectories can only be followed for a time frame of about 15 years (from the first ALWA wave in 2007/08 to the most recent NEPS wave in 2021/22). Since the measurement of earnings characteristics is not entirely comparable between the ALWA and NEPS samples, the analyses in this paper only rely on earnings information from the NEPS waves. This reduces the time frame further to a theoretical maximum of 13 years.

The policy of the NEPS data providers is not to provide edited data as they want to leave it up to the users to take their own decisions in the data cleaning and recoding process. This means that the original scientific use files contain many systematic and unsystematic errors and inconsistencies. For that reason, the data used in the analyses of this paper underwent a comprehensive data cleaning process and extensive consistency checks with regard to the variables of interest. Schindler (2025) provides a documentation of this process. A further problem in the NEPS SC6 are missing data due to both item nonresponse and panel attrition.

In particular, this concerns earnings information. For that reason, the data have been imputed by multiple imputation by chained equations (MICE). *Section 4.2.1* below provides a description of the imputation process. All data handling for this paper including cleaning, variable recoding and analyses have been accomplished with the software Stata (MP, version 18). We provide a replication package with the complete syntax files for data preparation and data analysis on our website.[1]

We base our analyses on a subsample of persons born between 1970 and 1980. For these cohorts, we are able to observe labor market outcomes when they have reached occupational maturity, which we consider reached at the age of 40. Further, we exclude respondents from the sample who obtained their first school-leaving degree at a special needs school or who only possess educational credentials that they obtained abroad and which have not been recognized in Germany. We also exclude persons whose positions in the earnings distributions at age 40 are in the top or bottom 0.5 percentiles of either the net or gross distributions of hourly earnings. The final analytical sample comprises 2,135 observations.

4.1 Variables

4.1.1 Indicators of labor market outcomes

As indicators of labor market outcomes, the following analyses will comprise variables indicating labor market participation, the time of the first significant employment, occupational status and earnings.

The variable indicating *labor market participation* simply provides dichotomous information whether the person is active in the labor market or not. For each individual, the variable provides time-variant information from the age of 15 to the age of 40 and indicates whether the person was active in the labor market at least for some time during that year. We consider all kinds of employment irrespective of the type of job or the working hours.

The variable indicating the time of the *first significant employment* is important to mark the beginning of the period when persons transition to the labor market as their main activity. We define the first significant employment according to the following criteria: First, employment needs to be uninterrupted for at least one year without parallel activities in education, training, military service or parental leave. Second, the weekly working hours need to amount to at least 20 hours – irrespective of whether the working hours in one job or the cumulative working hours of several jobs surpass this threshold.

We measure *occupational status* based on the International Socio-Economic Index of Occupational Status (ISEI) as suggested by Ganzeboom et al. (1992). The ISEI is an indicator of the status position that persons possess in the society based on their occupation. It ranges

[1] The replication package is available at www.uni-bamberg.de/sozbalv/forschung/syntax/ or as add-on material on the LIfBi Working Paper website.

from 11 to 90, higher values indicating a higher status. The ISEI scores in our analyses correspond to the values of the 2008 version of the International Classification of Occupations (ISCO). In our analyses, we consider as labor market outcomes the ISEI values at labor market entry (first significant employment) and the ISEI values at age 40. Measuring ISEI at the age of 40 reflects the idea of measuring labor market outcomes at occupational maturity, when persons typically are established in the labor market.

For *earnings*, we employ different indicators. We provide analyses for both gross and net earnings and on a monthly and hourly basis each. To calculate hourly earnings, we have divided the monthly earnings by the actual monthly working hours. Gross monthly earnings contain the monthly earnings from gainful employment that have been reported by respondents for the previous month and the monthly average of any annual bonus payments that have been paid in the previous year. Net monthly earnings contain the reported actual net earnings from gainful employment of the previous month, including payments for overtime, but excluding any annual bonus payments. In our analyses, we will focus on gross hourly and net monthly earnings. These two indicators reflect two fundamentally different conceptions of earnings. Gross hourly earnings speak to the idea that differences in remuneration reflect a different value of labor or differences in productivity per time unit. Comparisons between persons or groups based on gross hourly earnings are net of differences in working hours and deductions or transfers. Net monthly earnings, in contrast, are more suited if one is interested in actual outcomes irrespective of the labor input. The focus is more on what persons actually have at their disposal. Comparisons between persons and groups show differences in actual outcomes without controlling for any intermediate explanations. Ideally, the measure of net monthly earnings should also include income from social transfers, such as unemployment benefits or social assistance. Unfortunately, the NEPS only asked for individual net income from gainful employment. Hence, the individual net earnings figures are only available for persons in employment. In our data, earnings for the cohorts born in the 1970s are only available when they have reached occupational maturity. Hence, all our earnings indicators refer to earnings at the age of 40. We provide inflation-adjusted values relating to prices of the year 2020.

4.1.2 Indicators of educational attainment

In our analyses, we use variables indicating participation in the education system, school-leaving degrees and vocational degrees. The variable indicating *participation in education* is a binary indicator that marks whether a person is participating in formal education or not. The variable is a time-variant indicator that shows for each age year whether the person spent at least some time in the formal education system during that year.

The variable indicating *school-leaving degrees* displays for each age between 15 and 40 the highest school-leaving degree that the persons possesses at that age. We will draw on this variable to indicate the first school-leaving degree (before labor market entry), the school-leaving degree at the time when persons obtained their first vocational degree (before labor market entry), the school-leaving degree at labor market entry and the school-leaving degree at the age of 40. The variable has the following categories: no school-leaving degree, *Hauptschulabschluss*, *Mittlere Reife*, *Fachhochschulreife*, *Abitur*.

The variable indicating *vocational degrees* follows the same time-variant logic and we will draw on it to indicate the first vocational degree (before labor market entry), the highest vocational degree at labor market entry and the highest vocational degree at the age of 40. We distinguish four categories: no vocational degree, lower-level vocational degree (VOC1), higher-level vocational degree (VOC2) and higher education (HE). For the assignment of vocational training degrees to either VOC1 or VOC2, we follow the principles described in *section 2.1.2*.

In some analyses, we also draw on variables that combine school-leaving and vocational degrees. In this case, the variable indicating the first degree before labor market entry combines the first vocational degree with the highest school-leaving degree of the respondent at the time when he or she acquired the first vocational degree. Hence, the school-leaving degrees in this variable do not necessarily reflect the first school-leaving degree.

As a derivative of the variables indicating educational attainment, we constructed an indicator of *educational upgrading*. This variable indicates whether a person obtained an additional formal educational credential. We distinguish educational upgrading before and after labor market entry. The variable indicates whether no upgrade took place or whether the school-leaving degree, the vocational degree or both types of degrees have been upgraded. In some selected analyses, we also provide a more detailed look at upgrading processes of the school-leaving degree before labor market entry. Here, we distinguish between upgrading before and after the first vocational degree.

4.1.3 Variables indicating subgroups

For the analyses of differences by gender or social origin, we draw on respective indicators. We distinguish between men and women according to respondents' self-report. We draw on the EGP class scheme (Erikson et al., 1979) to conceptualize social origin. Thereby, we use a three-category version distinguishing between the salariat classes, the intermediate classes and the working classes. We use information on both father's and mother's social class and consider the highest class category among the parents (dominance approach, cf. Erikson, 1984).

4.2 Multiple imputation, weights and sample selection

4.2.1 Multiple imputation

Accounting for missing data is a highly relevant, yet challenging aspect of the empirical analyses. Due to the long window of observation, panel attrition is a prevalent problem. This means that even if individuals participated at the beginning of the survey, especially information on outcome variables might be missing if they drop out later. *Table 2* provides an overview of the degree of missingness for key variables of our following analyses. Several of these variables show a substantive share of missing values. This creates two major problems. The first is a reduction in power of all analyses. If the outcome is missing, information for the entire individual is discarded. The second and even more severe issue is that dropout is often selective, which results in selective samples. A common example is that individuals with rather low incomes or difficult labor market outcomes might drop out more often than better-off individuals, since they are afraid of reporting their wages due to social desirability or being

ashamed. With such a biased sample, the computed results no longer hold for the initial sample population as the external validity is compromised. Therefore, imputing missing information based on modern statistical approaches is vital for high quality estimates in empirical surveys were missing values are practically unavoidable.

Table 2

Central Variables and Shares of Missingness

Variable	Percent missing values
Labor market outcomes	
Employment status age 40	22.7
Gross monthly earnings age 40*	34.9
Gross annual bonus payments age 40*	53.0
Net monthly earnings age 40*	34.8
Weekly working hours age 40*	33.5
Occupational status (ISEI) first significant job**	4.7
Occupational status (ISEI) age 40*	24.1
Educational attainment	
First school-leaving degree	3.4
Educational attainment at first vocational degree	7.4
Educational attainment at labor market entry	7.5
Educational attainment at age 40	32.3
Gender and social origin	
Gender	0.0
Parents' EGP class	6.6

Note: *Percentages comprise 22.7 percentage points of persons with missing values on employment status.
**Percentage comprises 2.0 percentage points of persons with missing values on employment status.

The most common approach to impute missing data based on multiple imputation with chained equations (MICE, cf. Allison, 2001) is available in Stata. However, building a powerful and sophisticated imputation model is difficult due to the number of variables involved and the long window of observation. To exploit the virtues of the approach and to take into account the longitudinal clustered data structures, we conduct our imputation in the wide data format. This means, for every time-varying variable (such as information on earnings), we created a new variable for each age year of the respondents. Information on earnings has been collected in the prospective panel study, but not retrospectively. This is why, in this study, we chose to focus on earnings at the age of 40 as indicator of monetary returns at occupational maturity. For the construction of monthly and hourly gross and net earnings, we draw on information on monthly gross and net earnings at the time of the interview, annual bonus payments and work hours (available as prospective information). To take advantage of the longitudinal information on these variables, we take into account information for age years 32 to 48 to impute earnings at the age of 40. This already requires 68 (17*4) variables for the imputation model. In addition, a large number of time-varying predictors that have been recorded either in the prospective panel study or retrospectively (such as information

on educational qualifications, labor market status or occupational status indicators) are part of the imputation model as they also have missing values. Since all those information have been recorded retrospectively, they cover a larger time window. In our imputation model, these variables cover information from age 15 to age 40. In addition, the imputation model covers time-constant predictor variables, such as gender or social origin. Finally, we added both time-varying and time-constant auxiliary variables to improve the general quality of the imputation process.

Time-varying independent variables are imputed using the autocorrelation rule: -10/-5/-3 years if they were measured at an age older than 30 and -7/-3/-1 years if they were measured at age 30 or younger. This means that the same variable is predicted by an earlier version of itself. We applied this procedure to the following time-varying variables: education status (binary variable indicating whether the person has attended formal education at the given age), employment status (binary variable indicating labor market participation at the given age), highest vocational degree at the given age, and highest school-leaving degree at the given age. Some variables have only been imputed if the person was employed at the respective age: working at least 20 hours, ISEI of the occupation, place of residence, public servant, number of months employed in the year, self-employment. When a variable of this list is the dependent variable in the imputation model and the predictor is a different time-varying variable (e.g. vocational degree is predicted by employment status), we use the predicting variable measured at -10, -1 and the same year if the age is above 30 and measured at -5, -1 and the same year if the age is 30 or younger.

Time-constant independent variables are time-invariant by nature. If variables that we use as predictors of a time-constant variable are time-varying (see above), we draw on multiple prediction values measured at different ages (at age 20, 30, and 40). Time-constant variables comprise the following indicators: parental EGP, parental CASMIN, parental ISEI, first vocational degree, first school leaving degree, and GPA of first school-leaving degree.

Outcome variables refer to labor market indicators at the age of 40. We impute the following outcome variables: individual monthly income from gainful employment (gross and net), individual gross annual bonus payments, and weekly working hours.

Auxiliary variables are time-constant and we only use them for prediction: wave of first survey participation, last wave of survey participation, total number of waves of survey participation, year of birth, gender, migration background, average earnings over all waves (gross and net), average annual bonuses over all waves (gross), average workhours over all survey waves.

In the end, the imputation model comprises hundreds of variables. This makes it computationally unfeasible to run a single large model where everything predicts everything else. Our solution to this challenge is to generate custom imputation equations for each variable. As this still requires the specification of hundreds of regression models, which results in thousands of lines of code, we have specified a set of general rules, which are transferred into Stata code by a Python script. Using this approach, we have arrived at a very large yet statistically computable imputation model that is well-suited for each individual variable and yet robust and precise. In the following, we outline the general rules for building the individual imputation models.

In this context, autoregressive means that a variable from an earlier or later point in time is allowed to predict missing values in the same variable at a given pint in time. For example, if employment status at age 33 is missing but available for age 32, this information can be used to predict the missing values. This is an efficient approach, since the correlation between the same variables from different points in time is usually very high. For the autocorrelation variables, we specify that the values from -10, -5 and -3 years are used for prediction if the target variable is measured at an age above 30 and from -7, -3 and -1 years if otherwise. This coding strategy is a consequence of the data structure, since variables tend to have a higher propensity to have missing values the longer the panel runs. Hence, it makes sense to include lagged variables from time points that are further away for these more recent survey waves. It is also a compromise, as including too many predictors overburdens the imputation model, given that the total number of available observations is not huge. By repeating these steps for all variables, every single variable in the model is imputed but will also be used to impute other values, following the logic of MICE. For example, if the employment status at age 27 is missing, the model uses information from age 20, age 24 and age 26 to predict this missing value. Later in the process, for example for the imputation of employment status at age 37, the model also utilizes information from the imputed variable at age 27. In addition, we have specified a conditional imputation. This means that we impute outcome variables such as earnings or bonuses only for individuals who report that they are active in the labor market at age 40. Finally, we also include auxiliary variables as specified above (in all imputation models; all time-constant and not part of the analytical model) to improve the prediction of missing values.

We have attempted to make the best of the available data and build imputation models based on theoretical assumptions. For example, since wages are highly dependent on educational qualifications, we rely on such predictors to impute wages. Since the total number of rules is large, we provide the complete Python script as part of our replication package. The logic specified there consists of less than 10kb of data yet produces Stata code of more than 800kb, which writing by hand is borderline impossible.

The imputation method we utilize for all variables is predictive mean matching (PMM). PMM is a robust and versatile approach. The core idea is to find for each individual with missing information on a specified variable a donor with complete information and substitute this information. As the two cases are similar with respect to all other specified variables, using this donor value appears a prudent choice. However, to generate enough random variation, multiple potential donors are selected by the algorithm and a single one of them is chosen at random. This avoids the pitfall of always using the same information for a given variable and individual. As a rule of thumb, the larger the sample size, the larger the number of potential donors should be. A common recommendation is using five donors (cf. Van Buuren, 2018). We have selected four as a compromise between bias and variance since our sample is large but not very large. We have chosen PMM as it offers various advantages. First, it is a comparatively fast algorithm and produces fine results for both continuous and binary variables (cf. Austin & Van Buuren, 2023). Second, it works best in large samples with many predictors, which clearly applies to our case. Third, it only imputes values that are available in the sample and does not make out of sample predictions (e.g. impossible values, such as negative income). We generate a total of 50 imputation datasets and specify a burn-in length of 20 cycles, which is the double of the Stata standard. Since no variable has a share of

missingness that reaches up to 50%, using this number of imputed datasets should facilitate stable and robust estimations.

After completion of the imputation process, the variables were inspected graphically. Distributions from the imputed individuals were compared to the individuals with available information to check for suspicious imputation patterns or strongly deviating results. However, also due to the PMM approach, the generated values were always in the expected range. We present some of these graphs exemplarily in *section 4.3*. Based on our inspections, we are confident that the imputed results are robust.

4.2.2 Weights and sample selection

The data in the analyses of this paper are weighted with a sample weight constructed by the data providers. We use a cross-sectional weight that has been constructed for wave 4, which is the last wave with a refreshment of the sample. It has been calibrated with the German Microcensus 2011 to align with several benchmark distributions (for details, see Hammon et al., 2016). Since we imputed all missing information, we do not have to adjust further for panel attrition in the subsequent waves.

To avoid potential bias through outliers on the earnings data, we exclude persons from the sample whose net or gross hourly earnings values in any of the imputed datasets lie either in the bottom or top 0.5 percentile of the respective earnings distribution.

4.3 Data inspection

4.3.1 Labor market outcomes at age 40

Labor market outcomes at the age of 40 constitute a central dependent variable of the following analyses. However, there are some important issues associated with the variables indicating those outcomes that need to be addressed. First, labor market outcomes can only be recorded for persons in the labor market. This means that indicators of labor market outcomes have missing values for persons who are not active in the labor market. What is more, some respondents have missing values on the variable indicating whether they are in the labor market or not. For that reason, the labor market status had to be imputed. That means further that, across the 50 imputed datasets, the number of persons estimated not to be in the labor market varies. The estimated numbers range between 282 and 372 respondents or 9.8 and 12.9 percent of the respondents, respectively.[2] A key question relates to whether non-employed persons should be part of the analyses if returns to education are to be estimated. The answer depends on the specific research interest. One solution would be to assign numerical values to missing data on labor market outcomes and hence to include

[2] These percentages lie slightly below the figures from official statistics of around 13-14 percent for the respective age group. However, the values from the imputed dataset are substantively closer to these figures than the values from the unimputed dataset of about 6.4 percent (cf. Statistisches Bundesamt, 2024).

respondents in the analyses that are not in employment. This solution is feasible only under certain preconditions. First, there should be a theoretical reason to include persons who are not in employment. Second, the numerical values assigned to those persons should reflect their positioning in the distribution of that variable and return valid and consistent results in all mathematical operations based on that variable. In the following analyses, earnings and social status will be two concepts that are affected by those issues. For those two concepts, one can make a strong case for also including persons in the analyses who are not part of the labor force, since the interest in associations with other variables concerns the whole population. Restricting the analyses to persons in employment might discard information and lead to biased conclusions due to selection effects into employment. As regards the numerical coding of missing values, an obvious solution for earnings would be to zero-code earnings for persons who do not receive any income from gainful employment. This would have a clear and theoretically meaningful interpretation and lead to consistent outcomes in mathematical operations. The same procedure would be less straightforward for social status, in particular for the ISEI measure (International Socio-Economic Index of Occupational Status) that will be applied in this paper. While assigning a social status to persons who are not in employment is desirable in principle, a zero-coding of persons who are not part of the labor force might be controversial. Theoretically, it would imply an absence of social status for any person not in employment. In a strict sense, ISEI is an indicator of *occupational* status, however. If ISEI is interpreted in that narrow way, a zero-coding indicating an absence of *occupational* status might even be justified.

Figure 3 shows the implications of these considerations for the empirical distributions of earnings. It displays the distributions of different indicators of earnings (gross and net, monthly and hourly) and by varying the mode of imputation and weighting. Scenario a) relies on the non-imputed and non-weighted dataset. Scenario b) applies the sample weights described in *section 4.2.2* on the non-imputed dataset. Scenarios a) and b) contain missing data on earnings both through non-response and through non-employment. In contrast, scenarios c) and d) are based on the imputed samples and do not contain any missing data through non-response. Both scenarios apply sample weights. In addition, missing data due to non-employment have been zero-coded. In scenario c), the sample weights have been set to zero for persons not in employment. This means that scenario c) resembles a sample that excludes persons who are not in employment and the zero-coding of their fictitious earnings does not influence the earnings distribution. In scenario d), the sample weights apply fully to persons who are not employed and who have zero-coded earnings. As a consequence of the imputation and weighting procedures, analyses of earnings based on scenarios a), b) and c) exclude persons who are not employed. Analyses based on scenario d) take persons who are not in employment into account and consider them as persons with zero earnings.

As depicted by the vertical lines in the four graphs of *Figure 3*, weighting leads to a minor reduction in the estimated average earnings vis-à-vis the unweighted version (scenario b vs. a). Comparing the imputed with the unimputed data (scenario c vs. b) reveals that the imputation procedure lowers the estimated average earnings further. This aligns with the conventional wisdom that persons with lower earnings are more likely to drop out of the survey, which the imputation would correct for. Obviously, the inclusion of zero-coded earnings for non-employed persons lowers the average earnings values further (scenario d vs. c) as the zero-values pull down the average. For all four earnings indicators shown in *Figure 3*, the differences between scenarios a) and d) are substantive. This is mainly due to the different

theoretical conceptions underlying the zero-coding or omission of non-employed persons. Differences are also visible within the three scenarios that exclude non-employed, but the distributions are still quite close to each other. A comparison of the average hourly and monthly gross earnings with the GENESIS database of the German Federal Statistical Office suggests that the NEPS estimates from scenarios a) to c) are somewhat lower but still provide an acceptable approximation to the results based on official statistics.[3]

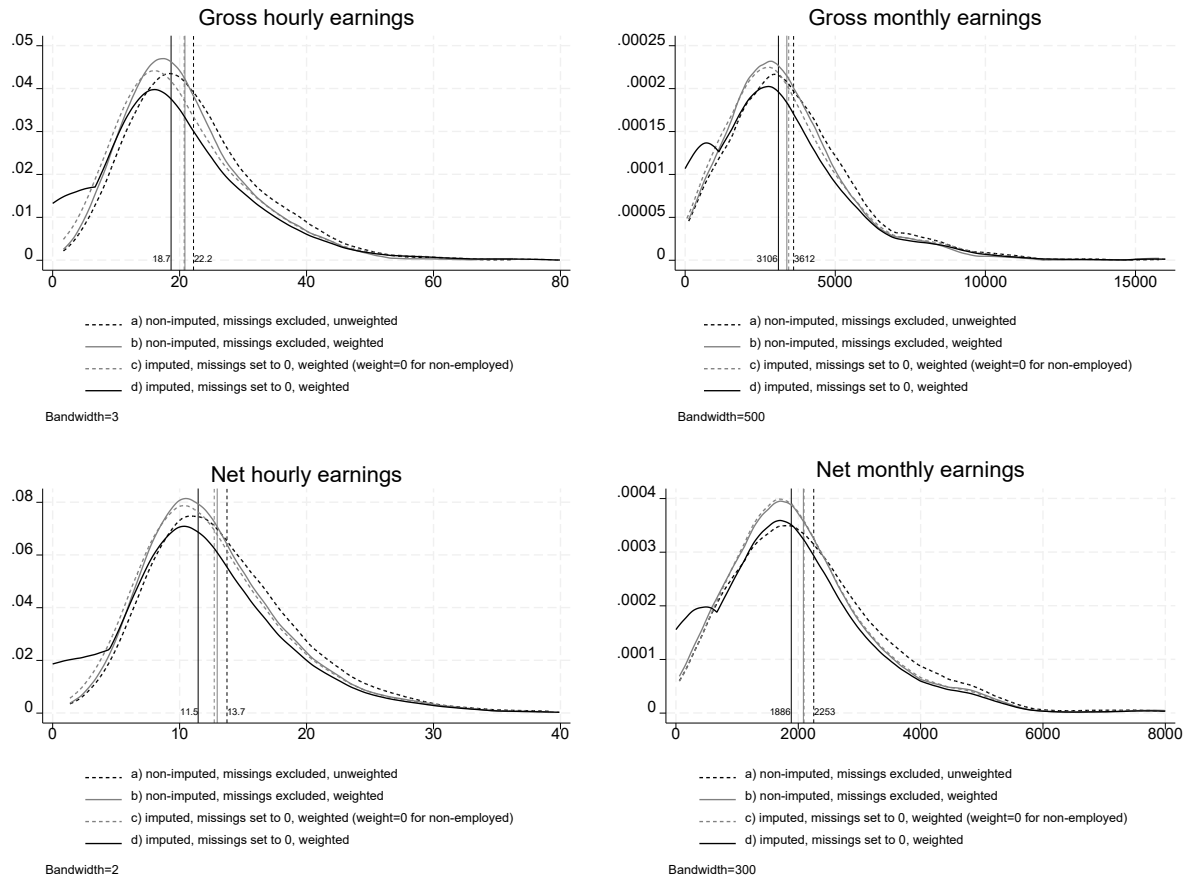

Figure 3. Distributions of earnings indicators at age 40 and variation across weighting and imputation. Notes: kernel density plots, vertical lines represent mean earnings.

Figure 4 shows the distributions of ISEI at labor market entry and at age 40 across the four specifications of imputation and weighting. Applying weights leads to a substantive reduction in the estimation of the average ISEI (scenario b vs. a). Imputation has hardly any influence on

[3] The samples are not strictly comparable. In the age group 35-44, hourly gross earnings without bonus payments show a median value of 21.82 EUR and a mean value of 23.09 EUR. The respective monthly gross earnings display a median of 3,335.30 EUR and a mean of 3,833.48 EUR. All values are inflation-adjusted to prices of 2020. Source: https://www-genesis.destatis.de/datenbank/online/statistic/62361/details (accessed 16/01/2025).

the distributions of ISEI (scenario c vs. b). The inclusion and zero-coding of non-employed persons does only lead to a substantive downward shift of the average ISEI at age 40, but not at labor market entry (scenario d vs. c).

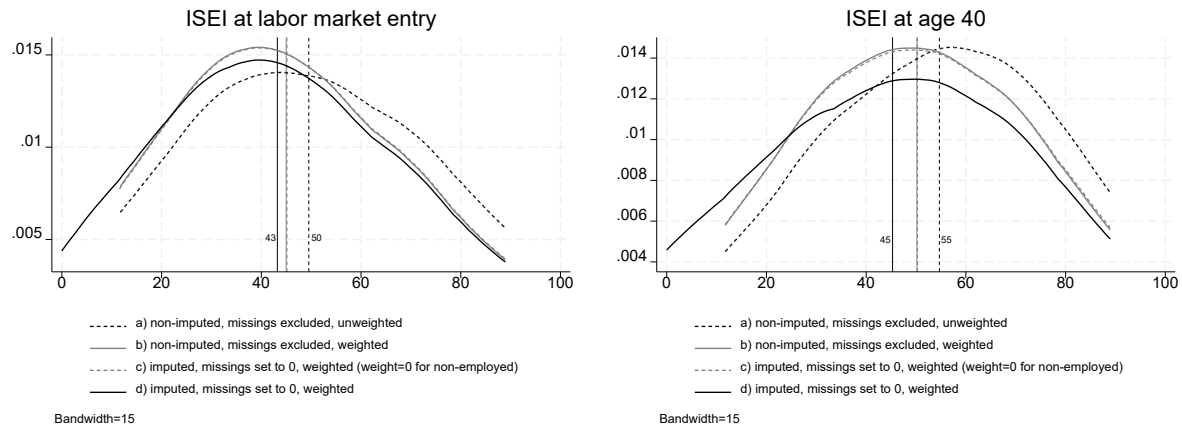

Figure 4. Distributions of ISEI and variation across weighting and imputation.

Taken together, the two approaches represented by scenarios c) and d) might provide viable solutions to handle varying samples across imputed datasets when analyzing labor market outcomes. The comparison of distributions does not suggest that these solutions will introduce substantive bias to the analyses. The choice between c) and d) depends on theoretical considerations, i.e. whether non-employed persons should be part of the sample and whether the zero-coding of their outcomes can be assumed to reflect a complete absence of the outcome. If included, they necessarily will have a downward weight on average outcomes.

4.3.2 Central predictors and mediators

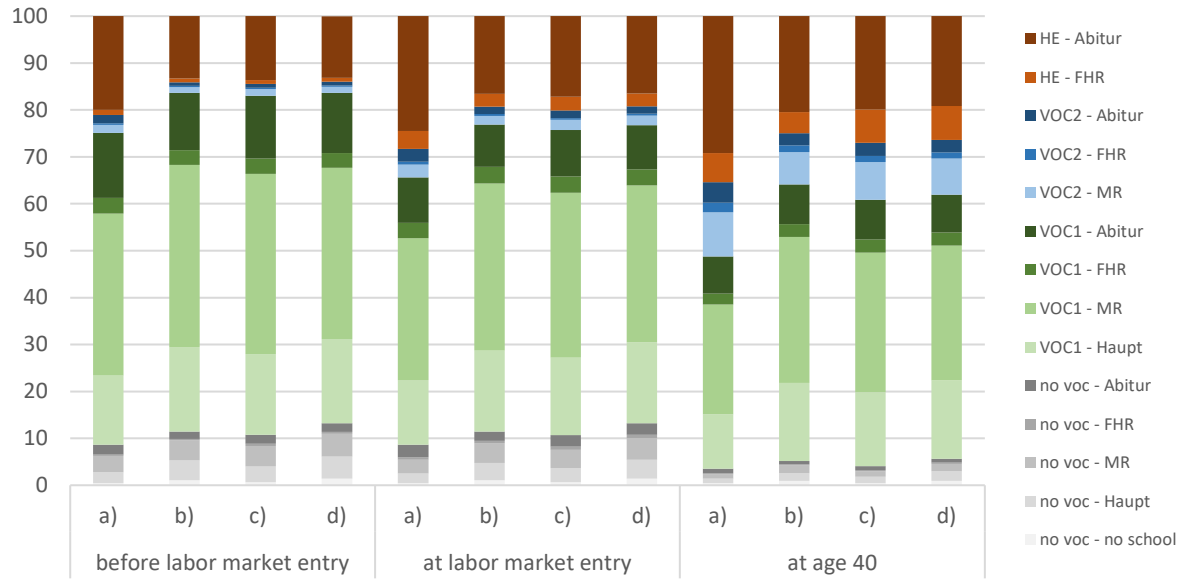

Figure 5. Distributions of education and variation across weighting and imputation.

Figure 5 displays the distributions of educational attainment under the four different imputation and weighting scenarios and at different milestones of the life course: the combination of school-leaving and vocational degrees when persons obtain their first vocational degree before labor market entry, educational attainment at labor market entry, and at the age of 40. Major changes of the distributions are only caused through weighting (scenario b vs. a). Imputation (scenario d) and the exclusion of non-employed persons in the imputed datasets do only lead to negligible distributional changes vis-à-vis the weighted non-imputed dataset.

Table 3

Distributions of Social Background and Gender and Variation across Weighting and Imputation

	a)	**b)**	**c)**	**d)**
EGP parents				
Salariat	47.3	42.5	43.9	42.2
Intermediate	21.3	22.0	21.8	21.8
Working	31.4	35.5	34.4	36.0
Gender				
Male	50.2	51.3	53.4	51.3
Female	49.8	48.7	46.5	48.7

A very similar pattern can be observed for the distributions of parents' highest EGP class and respondents' sex (cf. *Table 3*). The biggest differences appear between the unweighted and weighted data (scenarios a vs. b), imputation leads to negligible changes in the distributions (scenarios b vs. d) and omitting non-employed persons (scenario c) leads to only small changes. For example, and as can be expected, the omission of non-employed persons increases the proportion of men in the sample. With respect to those central predictor and mediator variables, we can conclude that scenarios c) and d) lead to distributions that lie within expected parameters and do not appear to introduce any substantive bias. We will base all following analyses on one of those two options, depending on the outcome of interest.

5. Univariate descriptive analyses

5.1 Participation in education and employment

Figure 6 describes participation rates in education and employment rates from age 15 to age 40. Both rates take into account persons who have been in education or employment for at least one month of the respective age year. Participation rates in education continuously decrease over the life course. This decline is steepest from age 17 to age 22, when the initial phases of vocational education typically end. Until the age of 27, participation rates in education still remain above 20 percent, which should mostly reflect persons in higher education. Until the age of 33, the rates drop further to 10 percent. Participation in education for these age groups might be due to a combination of persons still in higher education and persons engaging in further education measures. For the rest of the observation window, participation in education is only marginal and drops further to about 6 percent at the age of 40.

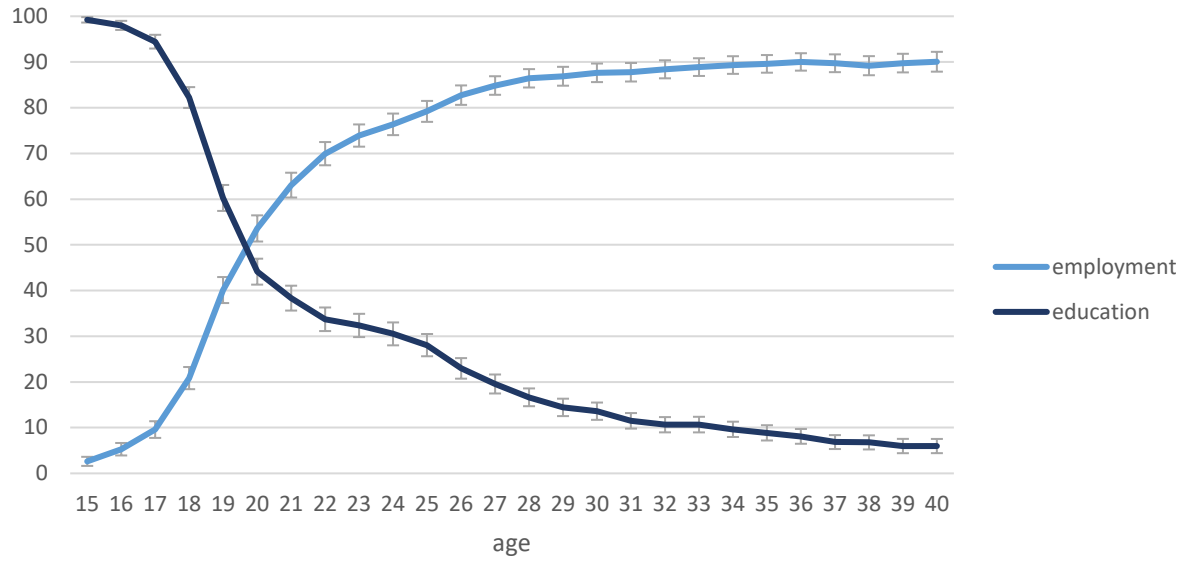

Figure 6. Participation rates in education and employment rates over the life course. Note: vertical lines indicate 95-percent confidence intervals.

Compared to participation in education, the progression of the employment curve more or less shows a reversed pattern. It shows a continuous increase, which is steepest between age 17 and age 22. At age 22, 70 percent of the cohort born in the 1970s participate in the labor market. After that, the increase of employment progresses less steep and reaches 85 percent at the age of 27. The increase levels off around age 34 and the employment rates remain at 90 percent until age 40.

5.2 Inequality in the distribution of labor market outcomes

Figure 7 displays the Lorenz curves of the earnings distributions at the age of 40. The x-axis refers to the cumulative share of the populations, sorted by earnings, the y-axis refers to cumulative earnings. The figure on the left-hand side only considers earnings inequality among persons in employment. The curves for gross hourly earnings and net monthly earnings

are almost identical. For example, the bottom 40 percent of the earnings distribution hold about 20 percent of the cumulative earnings, the top 20 percent of the earnings distribution hold about almost 40 percent of the cumulative earnings. The level of inequality is slightly higher when considering net monthly earnings (Gini index=.31) compared to gross hourly earnings (Gini index=.28).

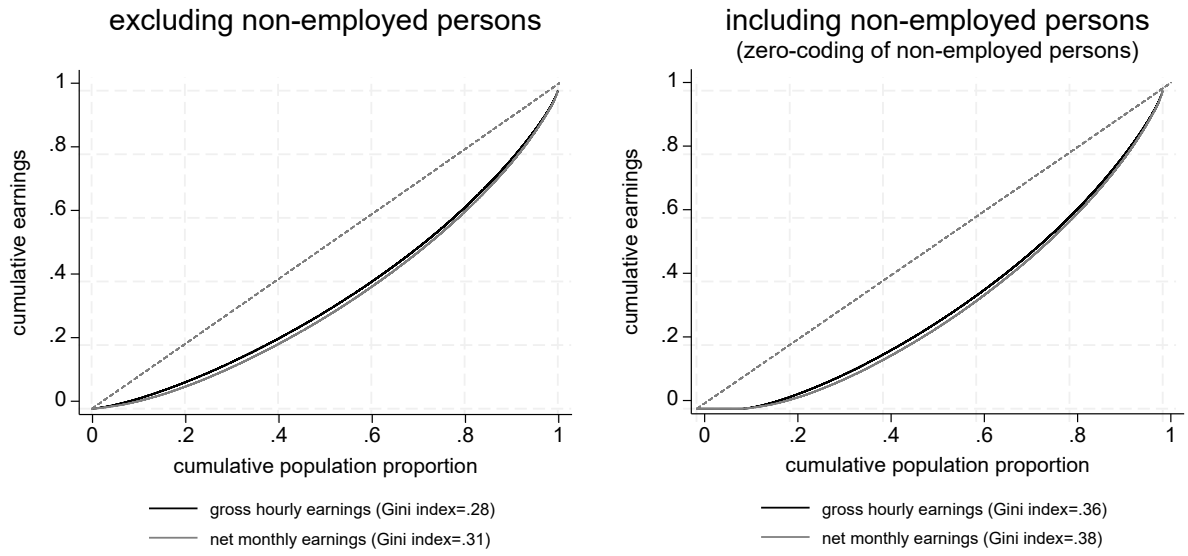

Figure 7. Lorenz curves of the earnings distributions at age 40.

The figure on the right-hand side also includes persons not in employment with a zero-coding of their earnings values. The inclusion of non-employed persons increases the resulting level of inequality in the earnings distribution. The Gini values amount to .36 for gross hourly earnings and .38 for net monthly earnings. Note that income from social transfers is not included, so the zero-coding for non-employed persons tends to exaggerate the level of inequality.

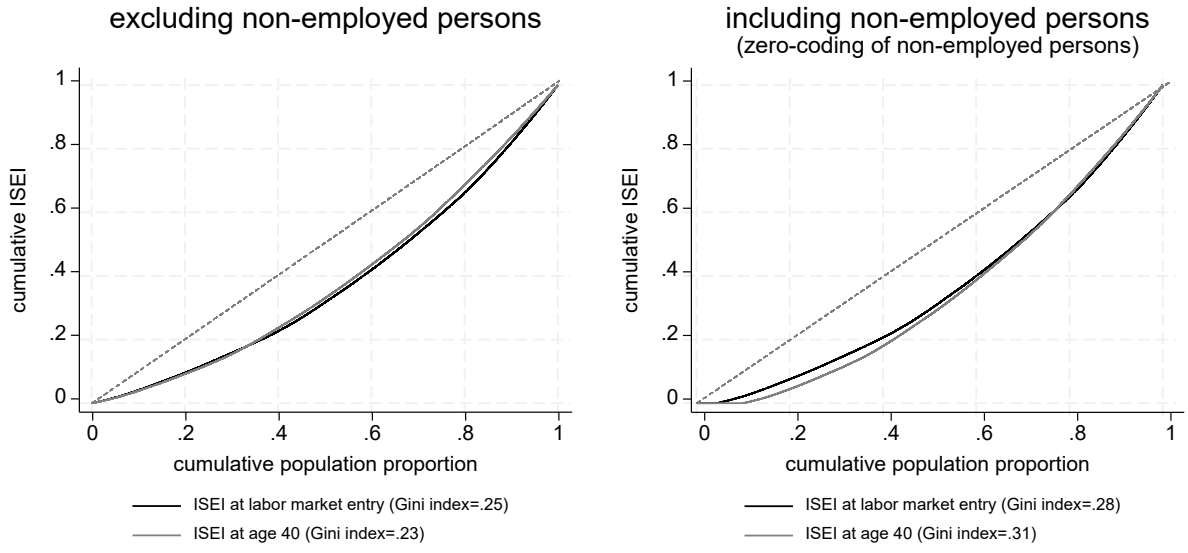

Figure 8. Lorenz curves of the ISEI distributions at labor market entry and age 40.

Figure 8 repeats the same exercise but considers ISEI as the dependent variable instead of earnings. In contrast to the earnings analyses, the ISEI curves reflect both the distributions at labor market entry and at the age of 40. Again, the left-hand side of the figure only considers the distribution of ISEI among persons in employment. The two curves are very close to each other with a slightly higher Gini index of .25 at labor market entry compared to a Gini index of .23 at the age of 40.

The right-hand side of the figure includes persons not in employment and with a zero-coding of their ISEI values. This leads to an increase of the Gini values to .28 at labor market entry and .31 at the age of 40. While in both samples, the Gini values at labor market entry and at the age of 40 are very close to each other, they show a minor decrease over the life-course when only including persons in employment, but a minor increase when including non-employed persons. This is due to the fact that the percentage of non-employed persons at age 40 is higher than the percentage of persons who never had a significant job. A comparison of the earnings analyses with the ISEI analyses shows that the level of inequality with respect to earnings is somewhat higher than the level of inequality with respect to occupational status.

5.3 Changes in the distribution of education

Table 4 displays the distribution of school-leaving and vocational degrees at four different time points of the life course: the first school-leaving degree (before labor market entry), the first vocational degree (before labor market entry), at labor market entry, and at age 40.

Table 4

Distribution of School-Leaving and Vocational Degrees at Different Stages of the Life Course

School-leaving degrees	**First school degree before LM entry**	**First voc. degree before LM entry**	**At labor market entry**	**At age 40**
Abitur	21.6	28.6	30.0	30.7
FH-Reife	0.9	4.6	7.2	11.6
Mittlere Reife	48.9	42.7	40.1	38.0
Haupt	27.3	22.7	21.3	18.8
No degree	1.4	1.4	1.4	0.9
Vocational degrees	**First school degree before LM entry**	**First voc. degree before LM entry**	**At labor market entry**	**At age 40**
Higher education	-	14.0	19.3	26.4
VOC2	-	2.4	2.0	11.7
VOC1	-	70.5	63.6	56.3
No degree	-	13.2	13.2	5.7

The upper panel of the table depicts school-leaving degrees and the first column refers to the first degree that has been obtained before labor market entry. Here, the most common degrees are those that can be obtained at the end of the three traditional school tracks: almost half of the persons born in the 1970s obtain the intermediate degree (*Mittlere Reife*) as their first school-leaving certificate, about 27 percent obtain the lower-level degree (*Hauptschulabschluss*), and about 22 percent obtain the full higher education entrance

qualification (Abitur). Less than 1 percent obtain the restricted version of the higher education entrance qualification (*Fachochschulreife*) and 1.4 percent do not obtain any formal school-leaving degree before they enter the labor market. With regard to the school-leaving degrees, one can observe an expansion of the degrees providing access to higher education (*Abitur* and *Fachhochschulreife*) and, relatedly, diminishing rates of persons holding not more than an intermediate degree (*Mittlere Reife*) across the life course. Between the first school-leaving degree and the degree at age 40, the share of persons holding an *Abitur* increases by about 9 percentage points. The share of persons holding a *Fachhochschulreife* increases by about 11 percentage points. Most of these upgrades are accomplished before labor market entry.

The lower panel of the table refers to vocational degrees. With more than 70 percent, lower-level vocational degrees (VOC1) are the predominant initial degree type before labor market entry. Higher education degrees make up 14 percent and higher-level vocational degrees (VOC2) are rather uncommon at this stage (2.4 percent). About 13 percent do not obtain any vocational degree before labor market entry. In the further progress, one can observe an increase of higher education degrees of more than 12 percentage points between the initial vocational degree and the vocational degree at age 40. A bit less than half of this increase happens before labor market entry and a bit more than half is accomplished after labor market entry. Higher-level vocational degrees (VOC2) increase by almost 10 percentage points over the life course, while most of those upgrades happen after labor market entry.

Figure 9. Distribution of educational attainment at different stages of the life course after labor market entry.

Figure 9 provides an overview of the changes in the combined distributions of school-leaving and vocational degrees over the life course. The first bar describes the combination of school-leaving and vocational degrees at the point in time when persons received their first vocational degree. It only refers to degrees that have been obtained before labor market entry. The indicated school-leaving degree is not necessarily the first school-leaving degree as this could have been upgraded before obtaining the first vocational degree. Only for persons who never obtained any vocational degree, the school-leaving degree is identical with the first

school-leaving degree. The same logic will apply to all subsequent analyses of the first combined school-leaving and vocational degree. The second bar describes the combination of school-leaving and vocational degrees at the point in time when persons started their first significant job. The third bar describes the combination of school-leaving and vocational degrees at the age of 40. This graphical representation again highlights the pronounced increases in persons holding higher education and higher-level vocational degrees. It also shows that the fraction of persons not holding any vocational degree substantively decreases after labor market entry.

5.4 Educational upgrading

Table 5 provides an overview of the prevalence of formal educational upgrading, broken down by whether it occurs before or after labor market entry. About 61 percent of the population do not engage in any formal upgrading, which means that about 39 percent of the population show at least one upgrading activity up to the age of 40. By summarizing the values of the marginal distributions, one can deduct that about 21 percent of the population upgrade their education degrees before labor market entry and about 21 percent upgrade their degrees after labor market entry. Hence, the prevalence of upgrading is quite equally distributed across the periods before and after labor market entry. The two percentages add up to more than 39 percent because about 4 percent of the population show upgrading activities both before and after labor market entry. Before labor market entry, upgrading of school-leaving degrees dominates (about 14 percent), while upgrades of vocational degrees are less common (about 3 percent). Upgrades of both school and vocational degrees make up 4 percent. After labor market entry, upgrades of school-leaving degrees are negligible (about 1 percent). The most common upgrades are upgrades of vocational degrees (about 14 percent) or the upgrading of both school and vocational degrees (about 6 percent).

Table 5

Prevalence of Educational Upgrading

Before labor market entry	**After labor market entry**				
	No upgrade	**School degree**	**Voc. degree**	**Both**	**Total**
No upgrade	60.96	1.02	10.59	5.99	78.57
School degree	10.97	0.01	3.15	0.36	14.49
Voc. degree	2.74	0.00	0.04	0.03	2.82
Both	4.08	0.00	0.02	0.03	4.13
Total	78.75	1.03	13.80	6.42	100.00

Table 6 lists the conditional upgrading rates by previous degree. The upper two panels of the table display upgrading of school-leaving degrees, the lower panel displays upgrading of vocational degrees. The upmost panel of the table describes upgrading between the first school-leaving degree and labor market entry. The first column shows the distribution of first school-leaving degrees that have been obtained before labor market entry. These figures are identical to those shown in Table 3.

Table 6

Conditional Upgrading Rates by School-Leaving and Vocational Degrees

First school degree		**Degree at first vocational degree**					**Degree at labor market entry**				
		Percent upgrade to					Percent upgrade to				
	Distr.	Haupt	MR	FHR	Abitur	**Distr.**	Haupt	MR	FHR	Abitur	**Distr.**
No degree	**1.4**	-	-	-	-	**1.4**	-	-	-	-	**1.4**
Haupt	**27.3**	-	*11.8*	*2.3*	*2.8*	**22.7**	-	*4.9*	*0.7*	*0.6*	**21.3**
Mittlere Reife	**48.9**		-	*6.4*	*12.8*	**42.7**		-	*5.6*	*3.0*	**40.1**
FH-Reife	**0.9**			-	*0.5*	**4.6**			-	*0.0*	**7.2**
Abitur	**21.6**				-	**28.6**				-	**30.0**
Total	**100.0**	-	*3.2*	*3.8*	*7.1*	**100.0**	-	*1.1*	*2.6*	*1.4*	**100.0**

First school degree		**Degree at labor market entry**					**Degree at age 40**				
		Percent upgrade to					Percent upgrade to				
	Distr.	Haupt	MR	FHR	Abitur	**Distr.**	Haupt	MR	FHR	Abitur	**Distr.**
No degree	**1.4**	-	-	-	-	**1.4**	*28.0*	*1.0*	*5.6*	*0.0*	**0.9**
Haupt	**27.3**	-	*14.2*	*4.4*	*3.6*	**21.3**	-	*9.0*	*4.7*	*0.1*	**18.8**
Mittlere Reife	**48.9**		-	*10.5*	*15.3*	**40.1**		-	*8.3*	*1.8*	**38.0**
FH-Reife	**0.9**			-	*0.5*	**7.2**			-	*0.0*	**11.6**
Abitur	**21.6**				-	**30.0**				-	**30.7**
Total	**100.0**	-	*3.9*	*6.3*	*8.5*	**100.0**	*0.4*	*1.9*	*4.4*	*0.7*	**100.0**

First voc. degree		**Degree at labor market entry**				**Degree at age 40**			
		Percent upgrade to				Percent upgrade to			
	Distr.	VOC1	VOC2	HE	**Distr.**	VOC1	VOC2	HE	**Distr.**
No degree	**13.2**	-	-	-	**13.2**	*39.1*	*5.1*	*13.0*	**5.7**
VOC1	**70.5**	-	*2.4*	*7.4*	**63.6**	-	*11.4*	*8.2*	**56.3**
VOC2	**2.4**		-	*1.9*	**4.0**		-	*5.9*	**11.7**
HE	**14.0**			-	**19.3**			-	**26.4**
Total	**100.0**	-	*1.7*	*5.3*	**100.0**	-	*7.9*	*7.1*	**100.0**

Note: values in italics describe conditional upgrading rates by education category (row percentages), bold values describe distributions over education categories (column percentages).

The second set of columns contains the upgrading rates before the obtainment of the first vocational degree. For example, among those who obtained a *Hauptschulabschluss* as their first school-leaving degree, 11.8 percent have upgraded to *Mittlere Reife* when they obtained their first vocational degree. Upgrading to *Fachhochschulreife* (2.3 percent) or to *Abitur* (2.8 percent) is less common in this category. In total, 16.9 percent of those with a *Hauptschulabschluss* as their first school-leaving degree do upgrade their school-leaving degree before obtaining their first vocational degree. Among persons with a *Mittlere Reife* as their first school-leaving degree, the total upgrading rate amounts to 19.2 percent, while upgrades to the *Abitur* (12.8 percent) are somewhat more common than upgrades to the *Fachhochschulreife* (6.4 percent). Among the few persons with a *Fachhochschulreife* as their

initial degree, it is very uncommon to upgrade to the *Abitur* before obtaining the first vocational degree (0.5 percent).

The last row of the upper panel contains the respective figures for the total population. Accordingly, most upgrades before the first vocational degree are upgrades to the *Abitur* (7.1 percent), while upgrades to *Fachhochschulreife* (3.8 percent) and *Mittlere Reife* (3.2 percent) are somewhat less common. In total, about 14 percent of the students upgrade their school-leaving degree before their first vocational degree. The last column of this section contains the resulting distribution of school-leaving degrees at the first vocational degree. Again, it resembles the distribution shown in *Table 4*. The third set of columns in the upper panel shows the conditional upgrading rates between the first vocational degree and labor market entry. The rates after the first vocational degree are somewhat lower than the rates before the first vocational degree. Overall, about 5 percent upgrade their school-leaving degree between the first vocational degree and labor market entry. Typically, the most frequent upgrades are those that raise the level of the school-leaving degree by one category.

The center panel of *Table 6* widens the time horizon and presents conditional upgrading rates between the first school-leaving degree and the age of 40. The first column is identical to the first column of the upmost panel and shows the distribution of first school-leaving degrees. Now, the second set of columns spans upgrading between the first school-leaving degree and labor market entry. Accordingly, the distribution shown in the final column of this set is identical to the distribution in the last column of the upmost section of the table. The third set of columns shows the upgrading rates after labor market entry by degrees at labor market entry. For example, among those without any school-leaving degree at the time of labor market entry, 28 percent upgrade to *Hauptschulabschluss* before they turn 40. Again, the most frequent upgrades after labor market entry are those that raise the level of the school-leaving degree by one category. As already described in *Table 5*, upgrading of school-leaving degrees is less common after labor market entry than before labor market entry.

The lower panel of *Table 6* describes the conditional upgrading rates of vocational degrees. Only about 10 percent of those who obtained a lower-level vocational degree (VOC1) as their first vocational degree engage in vocational degree upgrading before they enter the labor market. Within this group, it is more common to upgrade to a higher education degree than to a higher-level vocational degree (VOC2). Among persons who obtained a higher-level vocational degree (VOC2) as their first vocational credential, less than 2 percent upgrade to higher education before labor market entry. As can be seen on the right hand side of the table, upgrades of vocational degrees are more common after labor market entry. Among those who entered the labor market without any vocational degree, about 57 percent possess a vocational degree at the age of 40. Most of them upgraded to a lower-level vocational degree (VOC1). After labor market entry, about 11 percent of those with a lower-level vocational degree (VOC1) upgrade to a higher-level vocational degree (VOC2). This percentage is considerably higher than the corresponding figure before labor market entry, which might be partly due to the fact that several further education programs leading to VOC2-degrees require some labor market experience. About 8 percent among those with a VOC1-degree and about 6 percent of those with a VOC2-degree upgrade to a higher education degree.

Table 7

Typical Patterns of Educational Upgrading

Before labor market entry (school-leaving degrees only)			
Rank	**Upgrading from**	**Upgrading to**	**Percent of upgrades**
1	MR	Abitur	40.1
2	MR	FHR	27.4
3	Haupt	MR	20.7
4	Haupt	FHR	6.4
5	Haupt	Abitur	5.3
Before labor market entry (after first vocational degree)			
Rank	**Upgrading from**	**Upgrading to**	**Percent of upgrades**
1	Abitur – VOC1	Abitur – HE	31.3
2	MR – VOC1	FHR – HE	15.1
3	Haupt – no voc	MR – no voc	6.8
4	MR – no voc	Abitur – no voc	6.8
5	MR – VOC1	FHR – VOC1	6.5
After labor market entry			
Rank	**Upgrading from**	**Upgrading to**	**Percent of upgrades**
1	MR – VOC1	MR – VOC2	18.6
2	MR – no voc	MR – VOC1	10.2
3	MR – VOC1	FHR – HE	10.0
4	Abitur – VOC1	Abitur – HE	7.3
5	Haupt – no voc	Haupt – VOC1	6.4

Table 7 lists the most common types of educational upgrades. The upper panel of the table refers to school-leaving degrees only and depicts typical patterns of upgrading before labor market entry.4 The most common types are upgrades from the intermediate degree (Mittlere Reife) to either Abitur or Fachhochschulreife. Those upgrades make up about 40 (Abitur) and 28 percent (Fachhochschulreife) of all upgrades of school-leaving degrees. These high shares reflect the dominant role of the Mittlere Reife as first school-leaving degree covering almost 50 percent of the cohort (cf. Table 6). They also reflect the existence of institutionalized pathways that have been established in the 1960s with the very aim to lead students with an intermediate degree to higher education eligibility (cf. Schindler & Bittmann, 2021). Another

[4] The rank orders in the patterns of upgrading of school-leaving degrees between the first school-leaving degree and the first vocational degree and between the first vocational degree and labor market entry are provided in the appendix, *Table AT7.1*.

common type up school-leaving degree upgrade is the upgrade from Hauptschulabschluss to Mittlere Reife, which comprises about 21 percent of all school-leaving degree upgrades before labor market entry. Upgrades from Hauptschulabschluss to Fachhochschulreife or Abitur cover around 7 and 5 percent. As there is no direct pathway from the Hauptschulabschluss to these two qualifications for higher education, such upgrades imply the obtainment of a Mittlere Reife in between.

The center panel of *Table* 7 depicts upgrading patterns before labor market entry for combinations of school-leaving and vocational degrees. Here, the most frequent pattern is the upgrade from the combination of *Abitur* and lower-level vocational training (VOC1) to the combination of *Abitur* and higher education. About 31 percent of all upgrades before labor market entry follow this pattern. This might reflect the well-known safety net function of the German vocational training system (Büchel & Helberger, 1995; Hillmert & Jacob, 2003): risk-averse persons secure a vocational degree first before they engage with the more risky endeavor of enrolling in higher education. The second most common upgrade before labor market entry is the upgrade from *Mittlere Reife* and lower-level vocational training (VOC1) to *Fachhochschulreife* and higher education, which makes up about 15 percent. The next three ranks with percentages of around 7 percent are: upgrades from *Hauptschulabschluss* to *Mittlere Reife* and from *Mittlere Reife* to *Abitur* among persons without any vocational degree and upgrades from *Mittlere Reife* to *Fachhochschulreife* among persons with lower-level vocational training (VOC1).

The lower panel of *Table* 7 lists the most common upgrading patterns after labor market entry. Here, the most common type is the upgrade from lower-level vocational training (VOC1) to higher-level vocational training (VOC2) among persons with *Mittlere Reife*. Almost 19 percent of all upgrades after labor market entry follow this pattern. The next two common patterns make up around 10 percent: upgrades from no formal vocational training degrees to lower-level vocational degrees (VOC1) among persons with *Mittlere Reife* and upgrades from the combination of *Mittlere Reife* and lower-level vocational training (VOC1) to the combination of *Fachhochschulreife* and higher education. Upgrades from *Abitur* with lower-level vocational training (VOC1) to *Abitur* with higher education rank fourth and make up around 7 percent. Upgrades from no vocational degree to a lower-level vocational degree (VOC1) among persons with a *Hauptschulabschluss* rank fifth and make up a bit more than 6 percent of all upgrades after labor market entry.

6. Association between education and labor market outcomes

6.1 Education and labor market outcomes

The following analyses show the relationship between education and two different measurements of earnings. The left-hand side of *Figure 10* shows average gross hourly earnings at age 40 by educational attainment. The light colored bars indicate mean earnings when education is measured at labor market entry, the dark colored bars when education is measured at age 40. The sample excludes persons who are not in employment at age 40. With this, the analyses approximates the idea of measuring the average monetary return to an hour of work for persons with different levels of education. For some combinations of school-leaving and vocational degrees, the 95-percent confidence intervals around the point estimates are quite large. This reflects comparatively small case numbers for these categories. As a result, the confidence intervals for most comparisons between categories overlap and the differences in average earnings cannot be considered to reach a satisfactory level of statistical significance. This is true for most of the following interpretations.

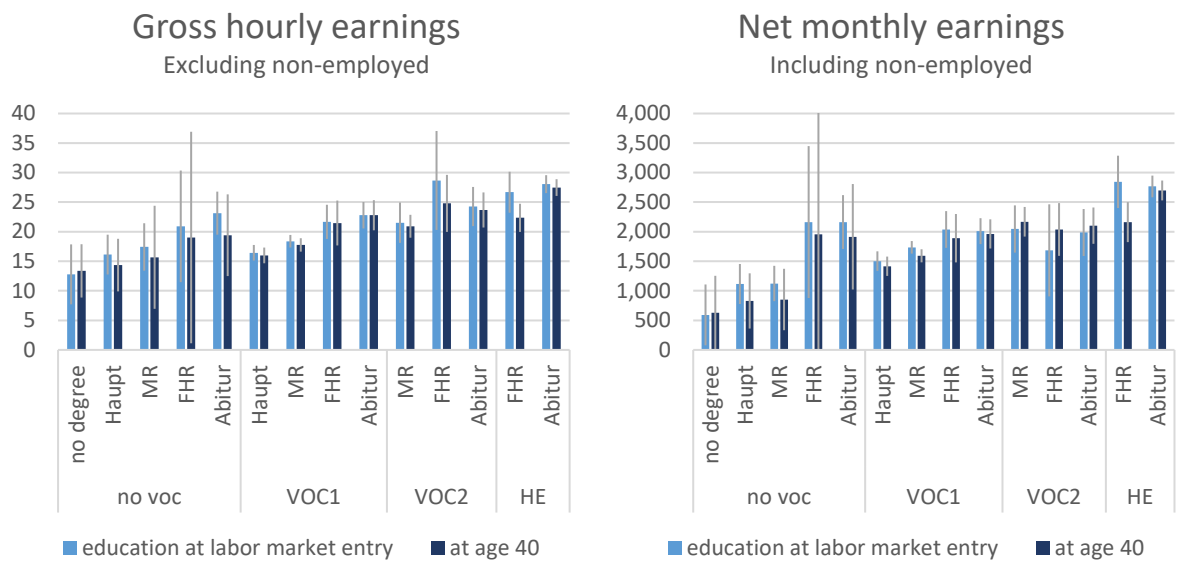

Figure 10. Association between education and earnings at age 40.

Disregarding these issues of statistical significance, a mere comparison of the average earnings values reveals the following patterns. First, in particular when considering the measurement of education at age 40, higher levels of vocational degrees tend to be associated with higher earnings. However, this is only true for comparisons within categories of school-leaving degrees. For example, the average earnings for persons with *Mittlere Reife* increase from no vocational degree over lower-level vocational degrees (VOC1) to higher-level vocational degrees (VOC2). With some exceptions, the same pattern appears for other school-leaving degrees as well. Second, school-leaving degrees make a difference within categories of vocational training. The higher the school-leaving degrees, the higher are the average earnings. This variation within categories of vocational degrees might reflect heterogeneity in vocational training programs and their related occupations. For example, the fact that *Abitur*-holders with lower-level vocational training (VOC1) earn more, on average, than persons with *Mittlere Reife* and higher-level vocational training (VOC2) might be due to selection into

different occupations based on the school-leaving degree, e.g. through access requirements for the respective training programs. Third, measuring education at labor market entry typically leads to higher average earnings per education category than measuring education at age 40. This might reflect two processes. On the one hand, persons who reach their educational degree at age 40 through educational upgrading after labor market entry are likely to earn less than persons who already possessed the same degree at labor market entry. Potential reasons for this earnings gap can be seniority or experience effects or differences in personal characteristics (e.g. cognitive competences) that are correlated with selection into the initial educational degree at labor market entry. On the other hand, with regard to characteristics that are positively correlated with earnings, persons who engage in educational upgrading are likely to be positively selected compared to persons with the same initial degree who do not engage in upgrading. Educational upgrading means that these positively selected persons do no longer influence the average earnings in the respective education category measured at the age of 40, which therefore tend to decrease compared to the measurement at labor market entry.

The right-hand side of *Figure 10* shows average net monthly earnings by education. This analysis includes persons who are not in employment with a zero-coding of their earnings. In contrast to the analyses of gross hourly earnings among employed persons, this perspective asks for the actual average disposable income from gainful employment for all persons with a given educational credential. It takes into account that employment rates and work hours differ between education categories. Hence, the average earnings of education categories with low employment rates or low average work hours are systematically weighted in downward direction. This works in addition to any differences in the average monetary return to an hour of work between persons with different education degrees. Overall, the patterns in this analysis are quite similar to the ones that appeared for gross hourly earnings. A notable difference appears in the category of persons without any vocational degree. Here, we can observe an earnings gap between persons holding a *Mittlere Reife* or less and persons holding a *Fachhochschulreife* or *Abitur*. The higher earnings among the latter might reflect the existence of lucrative labor market opportunities for persons with a higher education entrance qualification that do not require formal vocational training. Such opportunities hardly exist for persons holding a lower-level degree. It can be expected that persons with those degrees predominantly end up in unqualified jobs or not in employment. Another difference appears among persons with higher-level vocational training (VOC2). In contrast to the analyses of gross hourly earnings, the comparison between the two measurement points of education reveals higher average earnings values for the measurement at age 40. Hence, the processes described above most likely interact with selection processes out of employment.

Figure 11 shows average ISEI values by education category. The left-hand side of the figure refers to ISEI at labor market entry, the right-hand side to ISEI at age 40. For the analyses on the left-hand side, educational attainment has been measured at labor market entry. The light colored bars show mean ISEI values including non-employed persons whose ISEI scores have been zero-coded. The dark colored bars show mean ISEI values excluding non-employed persons. Except for persons without any vocational degree at labor market entry, the results do not differ substantively across the two samples (due to larger non-employment rates, differences between samples including and excluding non-employed persons are more pronounced when considering ISEI at age 40, cf. *Table AF11* in the appendix). We can observe a similar pattern as with the earnings analysis. Within vocational degrees, average ISEI values

increase with school-leaving degrees and within school-leaving degrees, average ISEI values increase with vocational degrees.

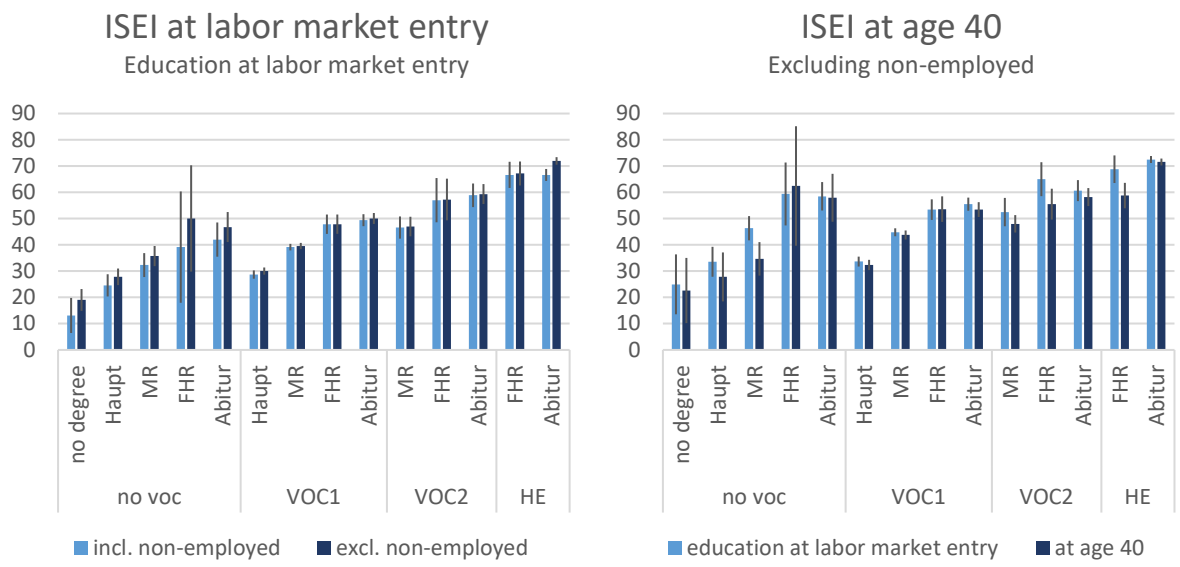

Figure 11. Association between education and ISEI.

The analysis shown on the right-hand side of the figure excludes non-employed persons. The light colored bars depict average ISEI values when measuring educational attainment at labor market entry, the dark colored bars when measuring education at the age of 40. The overall patterns of the average ISEI ranks resemble the ones in the analyses of ISEI at labor market entry. One can also observe the pattern that appeared in the earnings analysis: for some education categories, average ISEI values tend to be somewhat larger when measuring education at labor market entry. Again, this is assumed to reflect selection processes in the movements between education categories through educational upgrading. When measuring educational attainment at the age of 40, we can again observe a gap between the ISEI values of those holding a *Mittlere Reife* or less and those holding a *Fachhochschulreife* or *Abitur* among persons without any formal vocational degree. Supposedly, this reflects the comparatively better market value of the latter school-leaving degrees and the related access to occupations of higher status.

As a final analysis of the association between education and labor market outcomes, *Table 8* presents how much of the variance in the different measures of labor market outcomes can be explained with educational attainment at different stages of the life course. The table displays adjusted R^2 values from linear regressions predicting the respective outcome variable with the education variable indicated in the column headers. The second column indicates whether the analytical sample contains non-employed persons or not.

Regarding the gross hourly earnings at the age of 40, the first school-leaving degree accounts for 9 percent of its variance, education at the first vocational degree accounts for 12 percent of its variance and education measured at labor market entry or at the age of 40 explains 14 percent of the variance (excluding persons who are non-employed at the age of 40). The figures are almost identical when considering net monthly earnings at the age of 40 and including non-employed persons with a zero-coding of their earnings. The explained variance

is substantively higher when considering ISEI as outcome variable. This holds true irrespective of the measurement at labor market entry or at the age of 40. The explained variance is larger when excluding non-employed persons, which largely follows from the zero-coding of the ISEI values of non-employed persons. The comparison between earnings and ISEI suggests that, within educational levels, earnings variation is more pronounced than the variation of occupational status as reflected in the ISEI values. For all labor market outcomes, the explained variance increases the closer the measurements of education and labor market outcomes are.

Table 8

Variance in Labor Market Outcomes Explained by Education at Different Stages of the Life Course (adjusted R^2 values)

Outcome variable	Non-employed persons	First school-leaving degree	School-leaving and vocational degree at		
			first voc. degree	labor market entry	age 40
Gross hourly earnings age 40	excl.	0.09	0.12	0.14	0.14
Net monthly earnings age 40	incl.	0.08	0.12	0.14	0.14
ISEI first job	excl.	0.30	0.46	0.53	-
	incl.	0.24	0.35	0.41	-
ISEI age 40	excl.	0.25	0.37	0.42	0.43
	incl.	0.22	0.31	0.33	0.32

6.2 Educational upgrading and labor market outcomes

In addition to the general association between educational attainment and labor market outcomes, the following analyses show – conditional on initial educational degrees – whether educational upgrading is associated with higher labor market returns. The analyses are purely descriptive, which means that differences between persons who do and do not upgrade their credentials cannot be interpreted as causal effects of upgrading. Such differences can also be the result of selection effects, for example, when persons with higher earning potentials self-select into educational upgrading. Further, it is unlikely that educational upgrading per se has a direct effect, in particular on long-term labor market outcomes. Rather, upgrading is likely to be associated with further career trajectories that are connected to labor market outcomes. Nevertheless, such analyses provide first hints whether and which types of educational upgrading are worth further consideration and call for the exploration of the underlying mechanisms.

Table 9 displays labor market outcomes by first school-leaving degrees and shows the differences between persons who did or did not upgrade them before they obtained their first vocational degrees. As upgrades of school-leaving degrees before vocational training are a way to improve access to vocational training or higher education opportunities and their related occupations, much the observed differences in the labor market outcomes most likely stem from these different labor market trajectories.

Table 9

Earnings at Age 40 and ISEI at Labor Market Entry by Initial School-Leaving Degrees and Upgrades before First Vocational Degrees (Standard Errors in Brackets)

Initial degree	Upgrade to	Gross hourly earnings (excl. non-employed)		Net monthly earnings (incl. non-employed)		ISEI first job (incl. non-employed)	
none	none	12.78	(2.55)	592.40	(262.29)	13.13	(3.40)
Haupt	none	16.64	(0.62)	1,426.55	(71.51)	28.44	(0.74)
	MR	18.41	(1.80)	1,628.84	(187.55)	43.13	(2.51)
	FHR	26.33	(4.63)	1,876.09	(531.26)	54.33	(4.68)
	Abitur	22.65	(3.70)	2,064.43	(381.28)	55.09	(4.75)
MR	none	19.05	(0.50)	1,767.57	(51.68)	40.35	(0.64)
	FHR	23.29	(1.40)	2,334.03	(149.63)	51.66	(2.16)
	Abitur	24.08	(1.12)	2,313.09	(130.24)	57.30	(1.85)
FHR	none	22.47	(3.71)	2,269.54	(529.98)	46.36	(8.49)
Abitur	none	26.42	(0.74)	2,497.54	(81.15)	59.81	(1.01)

Empirically, upgrades of school-leaving degrees before the obtainment of the first vocational degree can be observed for persons holding a *Hauptschulabschluss* or *Mittlere Reife* as their first school-leaving degree (due to negligible case numbers, upgrades from *Fachhochschulreife* to *Abitur* are not displayed in the table). To allow for comparisons, we also display the labor market outcomes of persons holding no school-leaving degree, a *Fachhochschulreife* or an *Abitur* as their first degree, but who do not upgrade their credential before they obtain a vocational degree. Irrespective of the labor market outcome, persons who do upgrade their credential show, on average, higher levels of earnings at the age of 40 or higher ISEI values at labor market entry. For both dependent variables indicating earnings at age 40, the standard errors in the categories with *Hauptschulabschluss* as initial degree are quite large, so that differences between upgraders and non-upgrades are not statistically significant based on conventional criteria. For all other comparisons between upgraders and non-upgraders, the differences can be considered as statistically significant at the 95-percent criterion.

Figure 12 presents analyses on the association between educational upgrading after the first vocational degree and average gross hourly earnings at the age of 40. They are based on the sample excluding non-employed persons. The left-hand side of the figure refers to upgrading between the first vocational degree and labor market entry, the right-hand side to upgrading after labor market entry. The bars only display empirically existing combinations of initial educational degrees and types of upgrading, which is why the categories differ between graphs. To allow for comparisons, the graphs also display average earnings for categories of initial degrees that do not show any upgrades empirically (for example, persons who already possess higher education degrees). The light colored bars refer to persons who do not upgrade their initial degrees, the dark colored bars to persons who engage in educational upgrading. For upgrades before labor market entry, the gross hourly earnings of persons who upgrade their initial degree are typically higher than those of persons who do not upgrade their degrees. For the few initial degrees that show different types of upgrades empirically, upgrades of vocational degrees are associated with higher earnings than upgrades of school-

leaving degrees. Note however, that upgrades of school-leaving degrees before the acquisition of the first vocational degree are not covered by this analysis. Furthermore, the 95-percent confidence intervals around the mean values overlap in almost all cases, so that, under conservative standards, the differences cannot be considered as statistically significant. This is due to small case numbers for the different combinations of initial degrees and upgrading. One exception appears for persons with lower-level vocational training (VOC1) and *Mittlere Reife*. Here, gross hourly earnings of persons who upgrade both their school-leaving and vocational degree are substantively larger (26.8 Euros) than those of persons who do not engage in upgrading (18.3 Euros). The picture is more diffuse for educational upgrades after labor market entry. For most combinations of initial degrees, upgrading is associated with higher earnings than non-upgrading. For others, mostly among the higher levels of initial education, upgrading is even associated with lower earnings. Again, the mean values for most categories rest on very low case numbers and the 95-percent confidence intervals around the means are large and overlap between the upgrading types. Hence, the differences can only be interpreted with caution.

The basic patterns are very similar when considering net monthly earnings instead of gross hourly earnings. *Figure 13* presents the respective analysis. Here, non-employed persons are included and their earnings are zero-coded. Again, within categories of initial education, the 95-percent confidence intervals around the mean earnings values overlap in almost all instances, so that differences cannot be considered statistically significant.

Figure 14 presents differences in mean ISEI scores between persons who do and do not upgrade their education degrees. The analyses are based on the sample including non-employed persons with a zero-coding of their ISEI values. The left-hand side of the figure displays the educational upgrading status before labor market entry and ISEI values at labor market entry. For most initial degrees, persons who upgrade their credential show markedly higher ISEI scores than persons who do not upgrade their credentials. For the few initial degrees where different types of upgrades can be observed empirically, upgrading both the school-leaving and vocational degrees is associated with the highest ISEI scores. Consider again, that this analysis does not cover upgrades of school-leaving degrees before the acquisition of the first vocational degree. The 95-percent confidence intervals around the mean values overlap except for the differences between upgrades for persons with a lower-level vocational degree (VOC1). Overall, the analysis of differences in ISEI at labor market entry shows somewhat clearer patterns than the analysis of differences in earnings at the age of 40. The right-hand side of the figure shows the educational upgrading status after labor market entry and ISEI values at the age of 40. For most educational degrees at labor market entry, educational upgrading is associated with higher ISEI scores than non-upgrading. Some exceptions appear, however, where upgrading is associated with lower ISEI scores. For all comparisons, the 95-percent confidence intervals around the means overlap, so that the differences cannot be considered as statistically significant. Hence, the ISEI differences through upgrading after labor market entry show less clear patterns than the differences through upgrading before labor market entry.

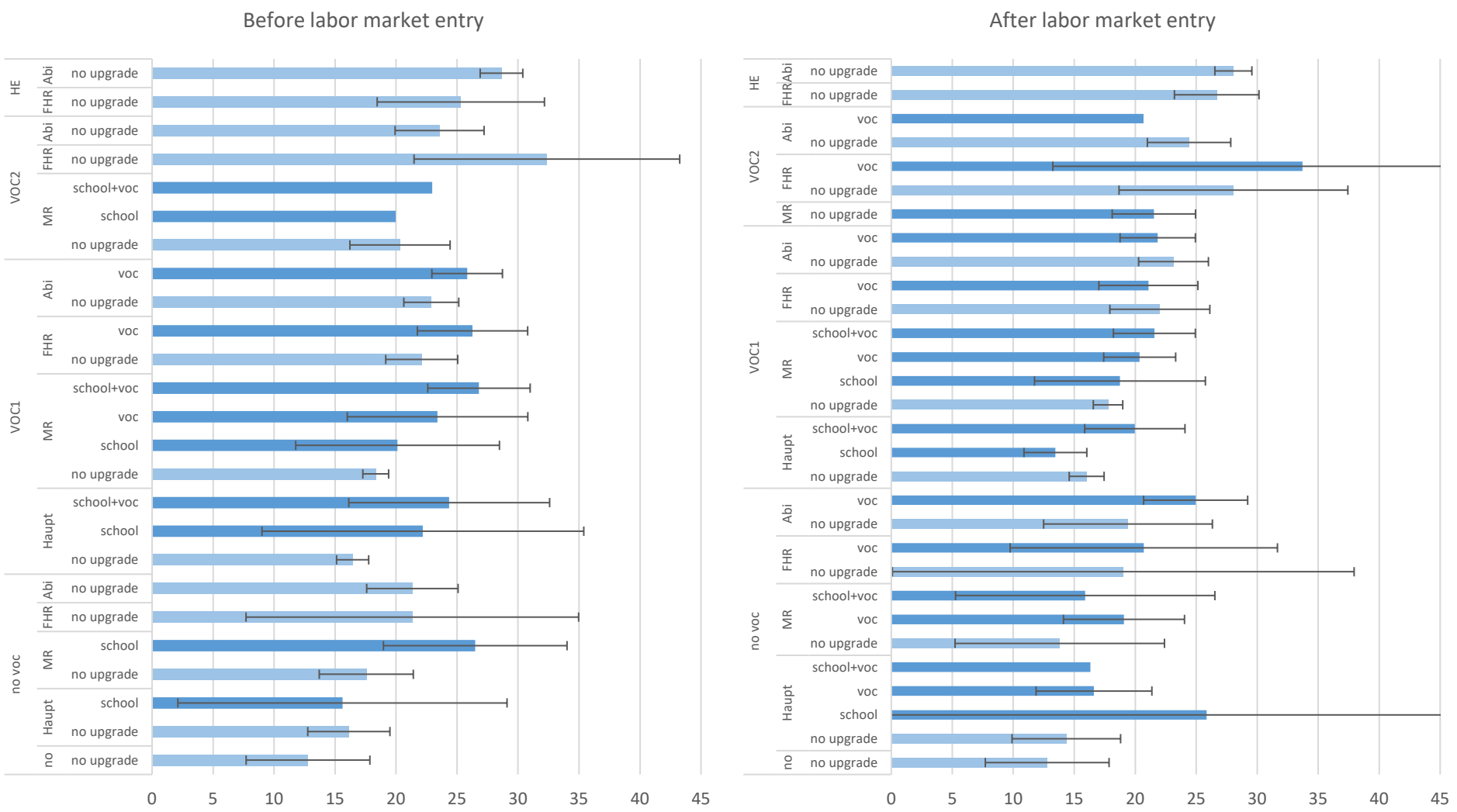

Figure 12. Gross hourly earnings at age 40 by initial educational degree and upgrading status (excluding non-employed persons). Note: Mean values and 95-percent confidence intervals. Missing confidence intervals reflect case numbers that are too low to calculate standard errors.

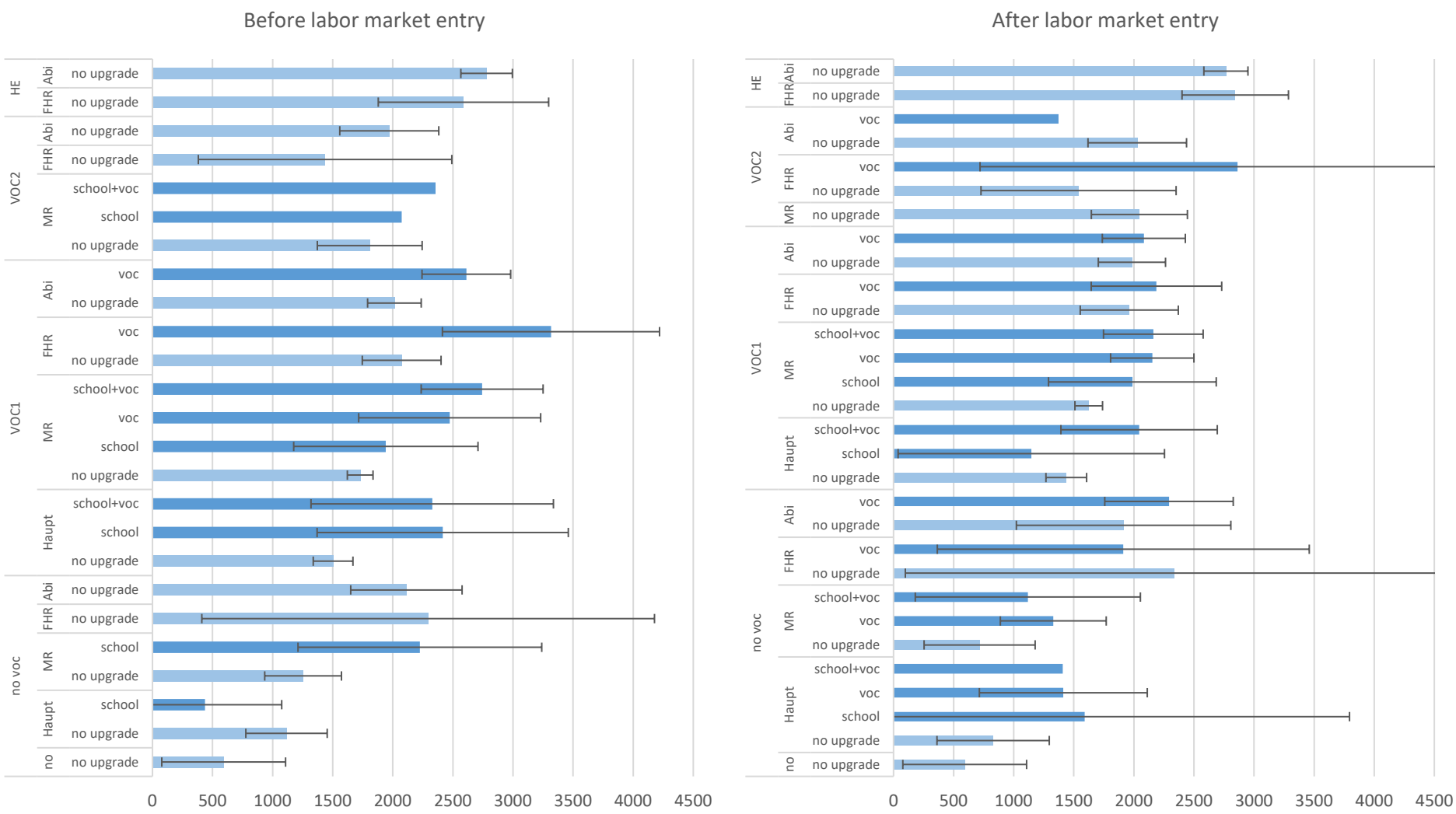

Figure 13. Net monthly earnings at age 40 by initial educational degree and upgrading status (including non-employed persons). Note: Mean values and 95-percent confidence intervals, zero-coding of earnings values for non-employed persons. Missing confidence intervals reflect case numbers that are too low to calculate standard errors.

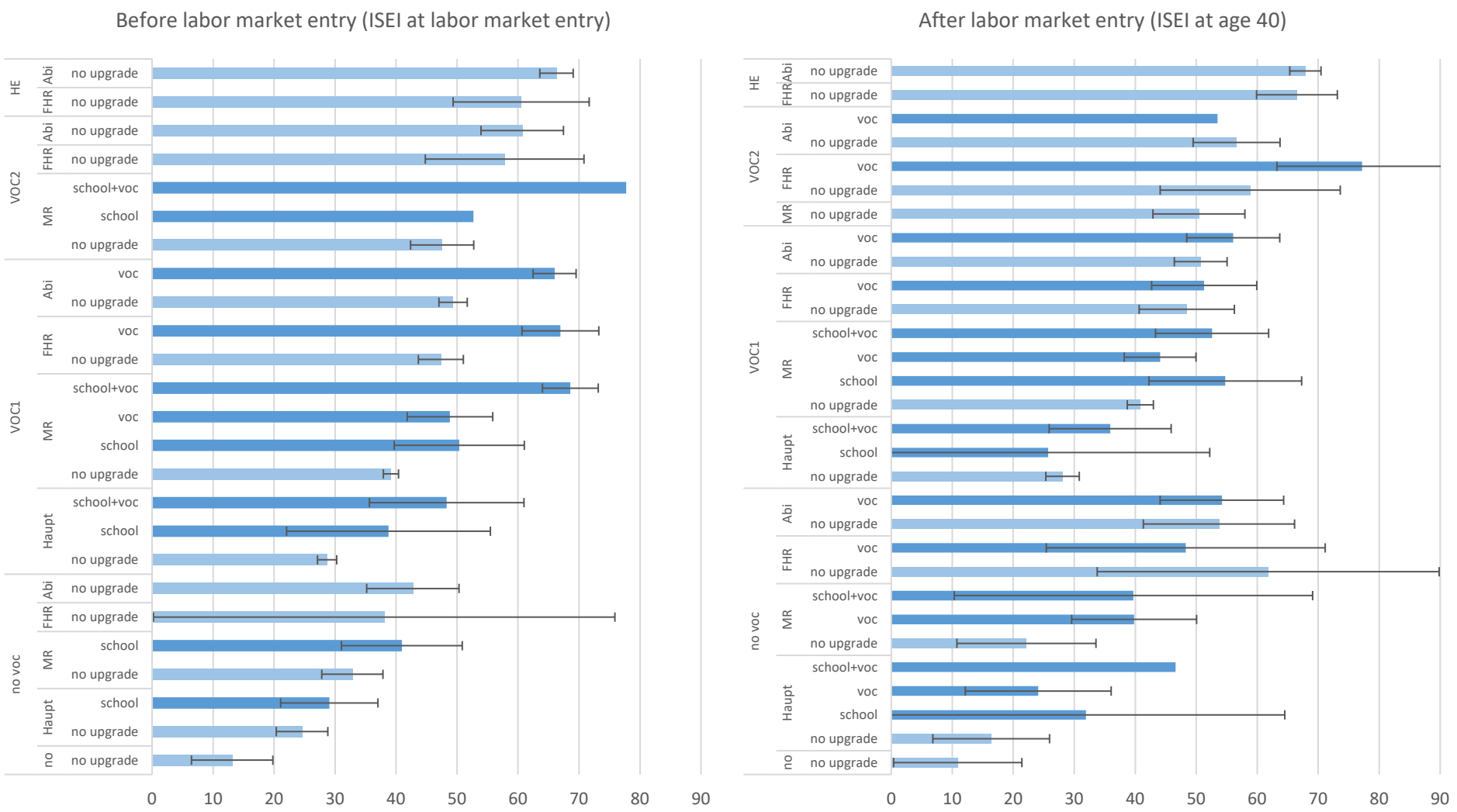

Figure 14. ISEI by initial educational degree and upgrading status (including non-employed persons). Note: Mean values and 95-percent confidence intervals, zero-coding of ISEI values for non-employed persons. Missing confidence intervals reflect case numbers that are too low to calculate standard errors.

As the previous analyses do not consider the specific destinations of educational upgrading, *Table 10* presents a more refined analysis. It shows for the most typical types of educational upgrading (cf. *Table* 7) the differences in labor market outcomes to persons with the same initial degree who did not engage in upgrading. The underlying OLS regressions do not control for any confounders, so that the values in the table refer to the gross differences between upgraders and non-upgraders. The upper section of the table refers to upgrading of school-leaving degrees before labor market entry. It just refers to the snapshot between the first school-leaving degree and labor market entry. Both upgraders and non-upgraders might have engaged in educational upgrading after labor market entry, which could have influenced labor market outcomes at age 40. The comparison also disregards the vocational degrees that upgraders and non-upgraders have obtained before labor market entry. Across all four labor market outcomes displayed in the table, upgrades to school-leaving degrees allowing access to higher education (*Abitur* and *Fachhochschulreife*) are associated with the largest premiums.

Table 10

Labor Market Premiums to Typical Patterns of Educational Upgrading

Before labor market entry (school-leaving degrees only)

Rank	Upgrading from	Upgrading to	Earnings at age 40		ISEI	
			Gross hourly	Net monthly	LM entry	Age 40
1	MR	Abitur	6.3***	643.9***	19.6***	17.3***
2	MR	FH-Reife	5.9***	738.5***	17.9***	17.2***
3	Haupt	MR	2.8	74.7	10.9***	15.7***
4	Haupt	FH-Reife	7.2*	570.0	28.7***	23.4***
5	Haupt	Abitur	5.5	547.9	28.0***	23.5***

Before labor market entry (after first vocational degree)

Rank	Upgrading from	Upgrading to	Earnings		ISEI	
			Gross hourly	Net monthly	LM entry	Age 40
1	Abitur - VOC1	Abitur – HE	3.5	758.5**	18.6***	14.5**
2	MR - VOC1	FHR – HE	9.1***	1,103.7***	31.3***	26.7***
3	Haupt - no voc	MR – no voc	-2.0	-796.8	4.4	-11.6
4	MR - no voc	Abitur – no voc	11.0*	1,072.2*	7.2	4.8
5	MR - VOC1	FHR – VOC1	1.4	182.9	11.0	12.0

After labor market entry

Rank	Upgrading from	Upgrading to	Earnings		ISEI	
			Gross hourly	Net monthly	LM entry	Age 40
1	MR – VOC1	MR – VOC2	2.6	528.6**	-	3.2
2	MR – no voc	MR – VOC1	4.5	467.6	-	16.7*
3	MR – VOC1	FHR – HE	2.5	453.1	-	10.4
4	Abitur – VOC1	Abitur – HE	-1.7	28.4	-	6.5
5	Haupt – no voc	Haupt – VOC1	2.3	584.2	-	7.7

Note: Estimates for gross hourly earnings are based on sample excluding non-employed persons, estimates for net monthly earnings and ISEI are based on sample including non-employed persons with zero-coding of their values. Figures indicate premiums compared to non-upgraders form the same initial category. LM=labor market. Levels of statistical significance: ***p<0.001, **p<0.01, *p<0.05.

An upgrade from *Hauptschulabschluss* to *Mittlere Reife* is associated with strikingly lower monetary premiums, which are not statistically significant according to conventional standards. Further, the premiums in occupational status are lower than for the other upgrades, in particular at labor market entry.

The center section of *Table 10* displays the labor market premiums associated with upgrades between the first vocational degree and labor market entry. Substantive wage and status differences appear for upgrades from lower-level vocational training (VOC1) to higher education. The premiums are even larger for persons who also upgrade their school-leaving degree from *Mittlere Reife* to *Fachhochschulreife* than for persons holding an *Abitur*. This might reflect differences in the labor market returns of the respective reference categories. Occupations that can be accessed with the combination of *Abitur* and lower-level vocational training (VOC1) tend to provide more beneficial labor market returns, on average, than occupations that are typically accessed with the combination of *Mittlere Reife* and lower-level vocational training (VOC1). Upgrading of the school-leaving degree from *Hauptschulabschluss* to *Mittlere Reife* among persons without vocational training even yields negative returns, on average. However, the differences are not statistically significant according to conventional standards. On the other hand, upgrades from *Mittlere Reife* to *Abitur* among persons without vocational training are associated with particularly high monetary premiums.

The bottom section of *Table 10* displays the premiums associated with typical upgrading patterns after labor market entry. Most of the upgrades are associated with moderate to solid premiums, however they are only statistically significant according to conventional standards in two instances. The table allows for a comparison of two upgrade paths before and after labor market entry. Upgrades from *Mittlere Reife* and lower-level vocational training (VOC1) to *Fachhochschulreife* and higher education as well as upgrades from lower-level vocational training (VOC1) to higher education among *Abitur*-holders are associated with higher returns at age 40 if the happen before labor market entry.

7. Gender inequalities

In this section, we provide descriptive evidence on gender inequalities. We start with gender differences in educational and labor market participation and then proceed with inequalities in labor market outcomes, differences in educational attainment and differences in educational upgrading behavior.

7.1 Gender differences in educational and labor market participation

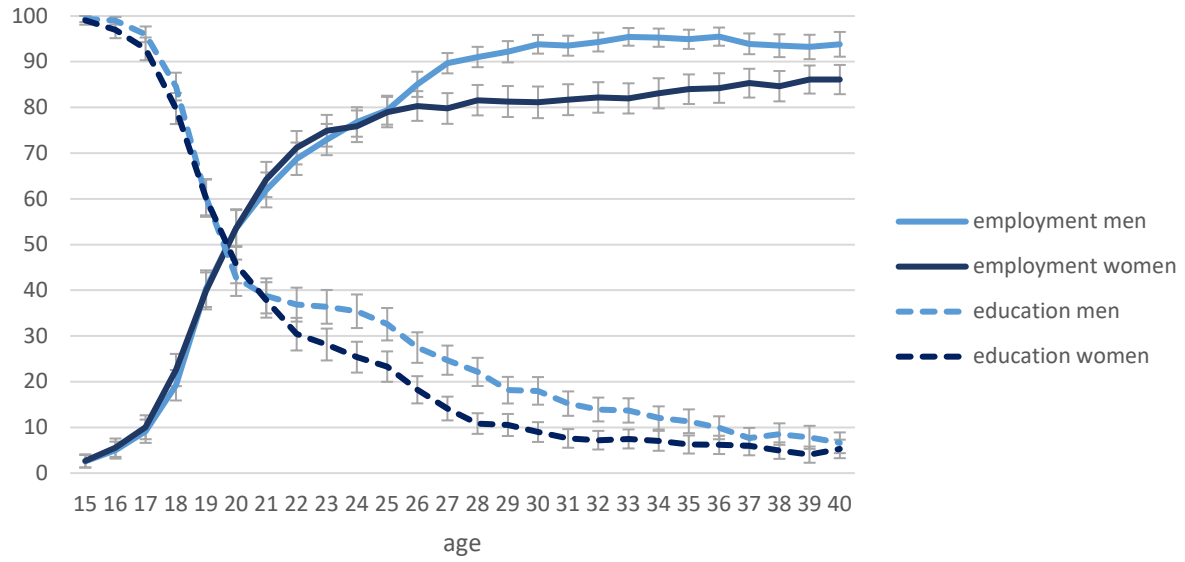

Figure 15. Participation rates in education and employment rates over the life course by gender.

Figure 15 displays participation rates in education and employment rates by gender and over age. As in *Figure 6*, the rates take into account persons that have been in education or employment for at least one month during the respective age year. Until the age of 21, participation rates in education do not differ between men and women. Afterwards and until the age of 35, men show markedly higher participation rates. Gender differences in employment rates evolve after the age of 25. Men show significantly higher rates than women. While for men throughout their 30s, employment rates lie well above 90 percent, women's rates tend to be more than 10 percentage points lower. Only from age 37 to 40, the gap gets somewhat narrower.

7.2 Gender inequalities in labor market outcomes

Figure 16 shows gender differences in earnings at the age of 40. The left-hand side of the figure refers to gross hourly earnings, the right-hand side to net monthly earnings. The analyses show results for both the sample including non-employed persons and the sample excluding non-employed persons.

When excluding non-employed persons, the average gross earnings amount to 22.41 Euros for men and to 18.77 Euros for women. This translates into a non-adjusted gender pay gap of

3.64 Euros or 16 percent.[5] When including non-employed persons with a zero-coding of their earnings, the averages are 21.02 Euros for men and 16.16 for women. Since non-employment rates at the age of 40 are somewhat higher for women, their average earnings are impacted more by the zero-coding than those of men. When including non-employed persons, the gender pay gap amounts to 4.86 Euros or 23 percent.

The right-hand side of *Figure 16* repeats the same exercise for net monthly earnings. Since this analysis is not adjusted for working hours, the differences between men and women look even more drastic than in the analysis based on gross hourly earnings. In the sample excluding non-employed persons, the average net monthly earnings amount to 2,586 Euros for men and to 1,529 Euros for women. This translates into a non-adjusted pay gap of 1,057 Euros or 41 percent. In the sample including non-employed persons, men earn 2,426 Euros, on average, and women 1,316 Euros. In this case, the gender pay gap amounts to 1,110 Euros or 46 percent.

Figure 16. Average gross hourly and net monthly earnings at age 40 by gender.

Gender differences in occupational status (ISEI) are displayed in *Figure 17*. The left-hand side of the figure refers to average ISEI scores in the first job, the right-hand side to average ISEI scores at age 40. Compared to earnings, the gender differences in occupational status are

[5] While an exact comparison with official statistics is not possible due to differences in categorizations, the estimated gender pay gap in gross hourly wages is very close to approximately comparable statistics. Even though our estimates for gross hourly wages slightly underestimate the official values for both men and women, our estimate of the unadjusted gender pay gap of 16 percent lies between two reference values provided by the German Federal Statistical Office. For April 2022, they identify a gender wage gap of 15 percent in the age group 35-39 and a wage gap of 18 percent in the age group 40-44. Source: https://www-genesis.destatis.de/datenbank/online/statistic/62361/table/62361-0047 (accessed 17/02/2025).

much less pronounced. In the sample excluding non-employed persons, men have an average ISEI score of 44 at labor market entry and women have a slightly higher average score of 47. In the sample including non-employed persons with zero-coded ISEI values the respective scores are 43 for men and 44 for women. At the age of 40, average ISEI scores are somewhat higher overall. In the sample excluding non-employed persons, men have an average value of 50 and women an average value of 51. In the sample including non-employed persons, the zero-coding again influences women's average score (44) more than men's (47) due to their higher non-employment rates.

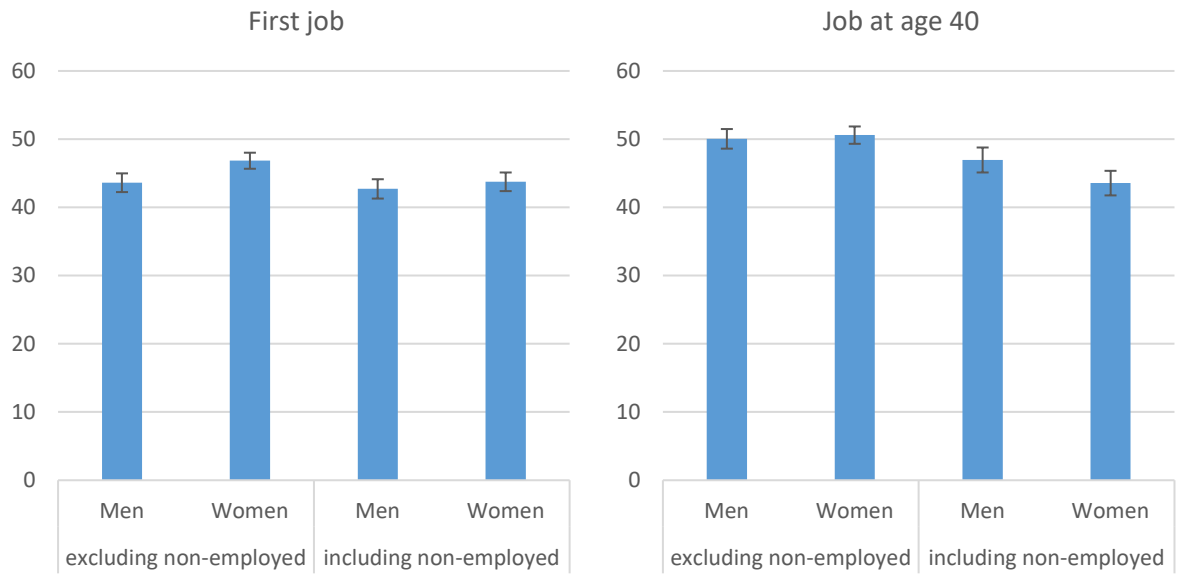

Figure 17. ISEI at first job and at age 40 by gender.

7.3 Gender inequalities in educational attainment

Figure 18 shows the distributions of school-leaving degrees by gender and across different stages of the life course. Overall, women show a slightly more beneficial distribution of educational attainment then men. This conforms to a pattern that we know from other sources (e.g. Becker & Müller, 2011): the 1970s cohort represents a turning point in West Germany, when women started to overtake men in educational attainment. In *Figure 18*, this is already visible in the first school-leaving degrees, where women's rates of *Abitur* and *Mittlere Reife* are somewhat higher than men's. The same holds true for the school-leaving degrees at the time when men and women obtain their first vocational degree. However, we can observe an expansion of *Abitur* and *Fachhochschulreife* for both genders. The latter is slightly more pronounced among men. The distributions of school-leaving degrees do not change much further between the obtainment of the first vocational degree and labor market entry. One exception is a further expansion of the shares holding a *Fachhochschulreife* among men, which leads to visible gender differences (9.4 vs. 4.8 percent). As a consequence, men and women possess equal shares of school-leaving degrees that allow access to higher education. The *Fachhochschulreife* is the only school-leaving degree that shows a further expanse until the age of 40 for both men and women while the gender gap in the rates remains.

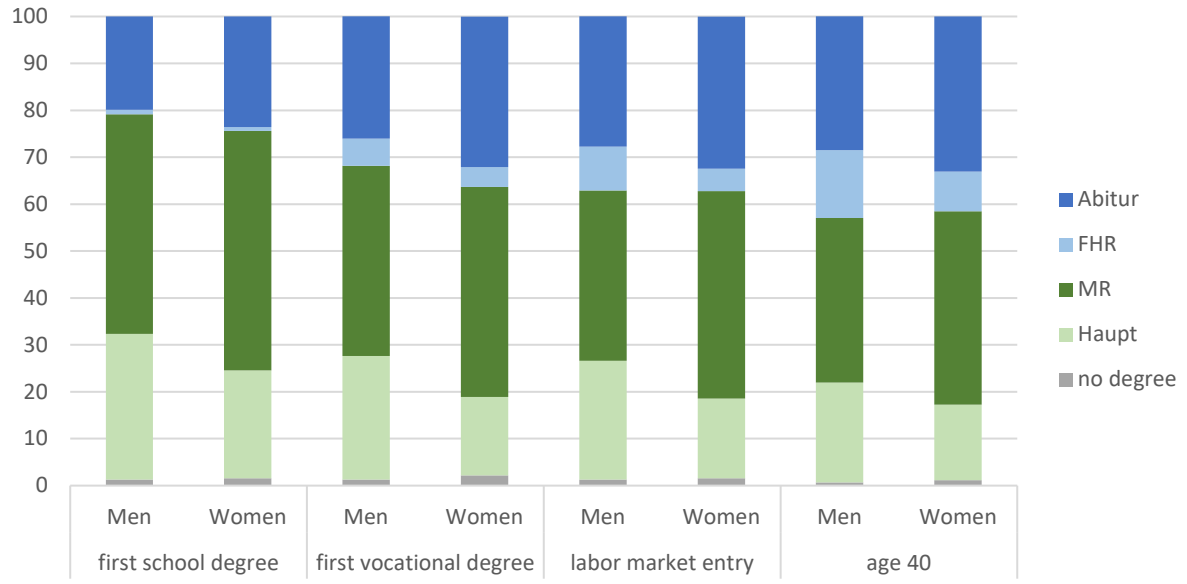

Figure 18. Distribution of school-leaving degrees at different stages of the life course by gender.

Figure 19 shows the distribution of vocational education by gender and at different stages of the life course. The first bars refer to the combination of school-leaving and vocational degrees at the point in time when the first vocational degree has been obtained. It only refers to degrees that have been obtained before labor market entry. For persons who never obtained any vocational degree, the bars show the first school-leaving degree. Men and women differ only slightly with respect to the distribution of their first vocational degree. Women show a somewhat higher rate of persons without vocational degrees than men (14.9 vs. 11.6 percent) and a somewhat lower rate of persons with lower-level vocational training (VOC1, 17.0 vs. 18.2 percent). Among persons with lower-level vocational training (VOC1), the distribution of school-leaving degrees is more beneficial for women. They combine lower-level vocational training (VOC1) more often with a *Fachhochschulreife* or *Abitur* (18.2 vs. 14.0) and less often with a *Hauptschulabschluss* (13.7 vs. 22.1 percent) than men. Even though higher-level vocational training (VOC2) is not very widespread at this stage of the career, women's shares are about twice as large as men's (3.2 vs. 1.5). There are no noteworthy gender differences in higher education attainment rates at this stage.

At labor market entry, the gender differences have become a little bit more pronounced at the top of the distributions. Both genders have expanded attainment rates at higher-level vocational training (VOC2) and higher education, but women more so for the former and men for the latter. The shares of the combination of *Abitur* and higher education are about the same for men and women (around 16.5 percent) and, compared to the first vocational degree, they roughly increase to the extent that the shares of the combination of *Abitur* and lower-level vocational training (VOC1) decrease. Compared to women, men show a higher share of the combination of *Fachhochschulreife* and higher education (1.1 vs. 4.2 percent). This might reflect the fact that several male-dominated fields of vocational training that can be accessed with a *Mittlere Reife* also open up pathways to related study programs at universities of applied science (*Fachhochschulen*) via the uprade to *Fachhochschulreife*.

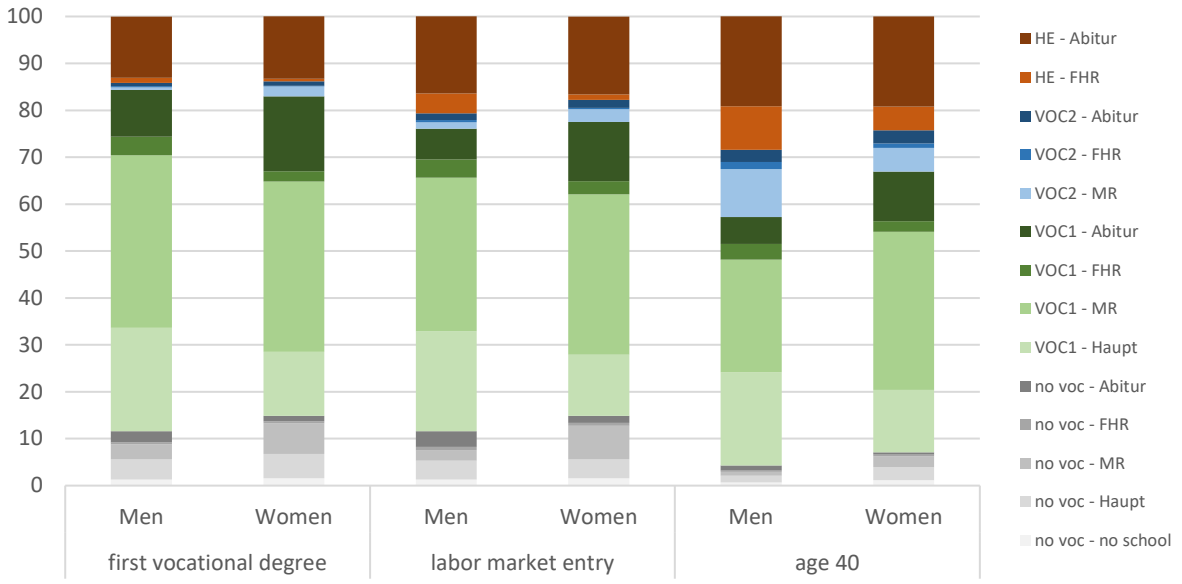

Figure 19. Distribution of vocational educational attainment at different stages of the life course by gender.

At the age of 40, gender differences have become more pronounced. While at labor market entry, the combined shares of higher-level vocational training (VOC2) and higher education have been more or less identical for men and women, they have expanded more for men than for women. On the one hand, this is due to differences in higher education attainment. While the combination of *Abitur* and higher education still shows equal shares for men and women (19.2 vs. 19.1 percent), the gender gap with respect to the combination of *Fachhochschulreife* and higher education has become somewhat larger (5.0 percent for women vs. 9.3 for men). Again, this might reflect the fact that universities of applied science (*Fachhochschulen*) are offering more study programs in male dominated than in female dominated fields. On the other hand, while the gender gap between the comparatively small shares of higher-level vocational training (VOC2) at labor market entry was in favor of women, the shares have not only expanded substantively, but also men's shares have become larger than women's (14.3 vs. 8.9 percent). This might to some extent be the result of typical further education activities in crafts occupations, where men are typically overrepresented, e.g. from journeyman (*Geselle*) to master craftsman (*Meister*). Correspondingly, one can observe a large increase of the combination *Mittlere Reife* and higher-level vocational training (VOC2) to the expense of the combination *Mittlere Reife* and lower-level vocational training (VOC1) among men between labor market entry and the age of 40.

Table 11 presents some metrics about gender inequality in educational attainment across the different stages of the life course. Considering the combined indicator of school-leaving and vocational degrees, the distribution of men and women across the different categories becomes more segregated over the life course. This is reflected in the values of the index of

dissimilarity[6] shown in the first line of the table. With regard to the first combined school-leaving and vocational degree, 12.5 percent of the men (or women) would have to change their education in order to make to distributions of educational attainment equal for men and women. At age 40, this percentage increases to 18.4.

Table 11

Indicators of Gender Inequality in Educational Attainment at Different Stages of the Life Course

	First school degree	First voc. degree	Labor market entry	Age 40
Combined school and voc. degrees				
Index of dissimilarity		12.5	14.8	18.4
School-leaving degrees				
Index of dissimilarity	7.9	13.3	12.9	11.1
Odds ratio (men/women)				
Hauptschulabschluss or less	1.4	1.6	1.6	1.3
Mittlerer Reife or more	0.7	0.6	0.6	0.7
Fachhochschulreife or Abitur	0.8	1.0	1.0	1.1
Abitur	0.8	0.8	0.8	0.8
Vocational degrees				
Index of dissimilarity		5.0	4.7	9.7
Odds ratio (men/women)				
No vocational degree		0.8	0.8	0.6
VOC1		1.3	1.1	0.8
VOC2		0.5	0.7	1.7
VOC2 or more		0.9	1.1	1.5
Higher education		1.0	1.2	1.2

Regarding the distribution of school-leaving degrees, the index of dissimilarity has a value of 7.9 for the first school-leaving degree, increases to 13.3 at the time of obtainment of the first vocational degree and then drops again to 12.9 at labor market entry and 11.1 at the age of 40. Below the index of dissimilarity, the table also displays the odds ratios for selected outcomes of educational attainment. The odds ratio shows the ratio between men's and women's chances of reaching a given educational degree. For example, compared to women, the chances to reach a *Fachhochschulreife* or *Abitur* as first school-leaving degree are only 0.8 times as high for men. At the time of obtainment of the first vocational degree and at labor

[6] The index of dissimilarity D is defined as $D = \frac{1}{2}\sum_{i=1}^{N}\left|\frac{a_i}{A} - \frac{b_i}{B}\right|$ with a_i/b_i = the number of persons from group A/B in category *i*; A/B = the total number of persons in group A/B.

market entry, the chances are the same for men and women (odds ratio=1.0). At the age of 40, the chances for men are 1.1 times higher than the chances of women. Overall, changes in the odds ratios between men and women across the life course with respect to school-leaving degrees are rather small.

The bottom part of the table displays inequality indicators for vocational degrees (without further differentiating by school-leaving degrees). The index of dissimilarity only slightly decreases between the first vocational degree and the vocational degree at labor market entry. It shows a sharp increase between labor market entry and the age of 40, which corresponds to the impression from *Figure 19*. As the odds rations indicate, in particular the chances of reaching a higher-level vocational (VOC2) or higher education degree increase for men compared to women over the life course. Conversely, the initially higher chances of men to obtain a lower-level vocational training (VOC1) have turned into higher chances for women by the age of 40. This is mostly due to the fact that outflow rates from VOC1 to higher-level degrees are larger among men than among women.

7.4 Gender and educational upgrading

7.4.1 Gender differences in educational upgrading

Figure 20 presents the differences in educational upgrading between men and women. Overall, men engage more in educational upgrading until the age of 40 than women (44 vs. 33 percent). This is mostly due to higher upgrading rates after labor market entry among men (26 vs. 17 percent), while upgrading rates before labor market entry are more similar (22 vs. 20 percent). The differences predominantly arise from more upgrading of vocational degrees or upgrading of both school-leaving and vocational degrees.

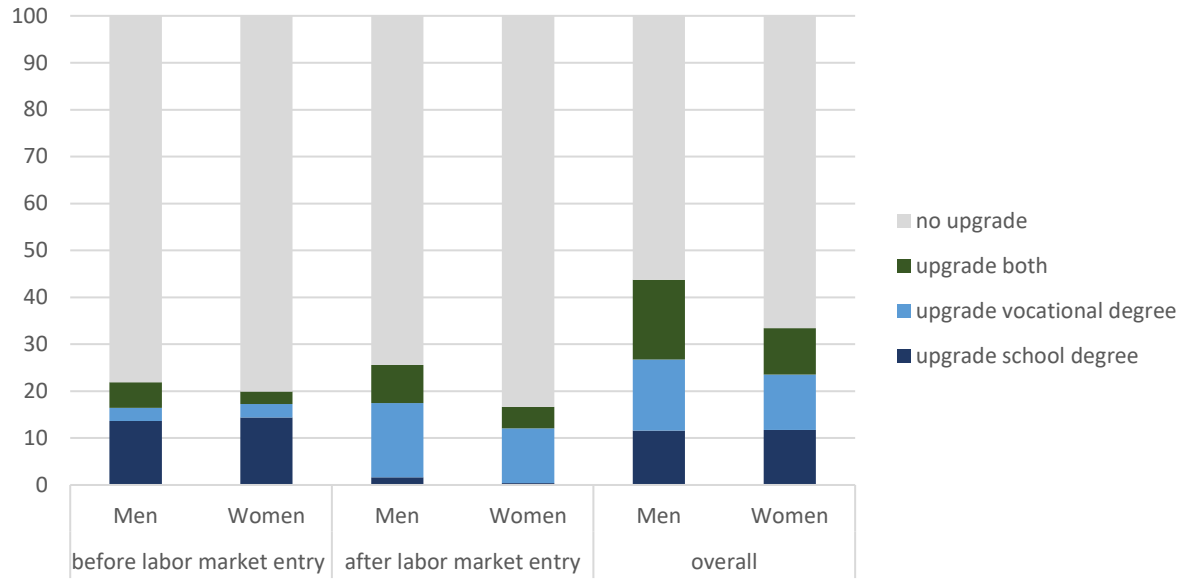

Figure 20. Educational upgrading rates by gender

Table 12

Conditional Upgrading Rates by School-Leaving Degrees and Gender

First school degree		Degree at first vocational degree					Degree at labor market entry				
		Percent upgrade to					Percent upgrade to				
	Distr.	Haupt	MR	FHR	Abitur	**Distr.**	Haupt	MR	FHR	Abitur	**Distr.**
Men											
No degree	**1.3**	-	-	-	-	**1.3**	-	-	-	-	**1.3**
Haupt	**31.1**	-	*10.5*	*2.7*	*2.0*	**26.4**	-	*3.1*	*0.4*	*0.5*	**25.3**
Mittlere Reife	**46.8**		-	*8.6*	*11.8*	**40.5**		-	*8.6*	*3.8*	**36.3**
FH-Reife	**1.0**			-	*0.0*	**5.8**			-	*0.0*	**9.4**
Abitur	**19.9**				-	**26.1**				-	**27.7**
Women											
No degree	**1.6**	-	-	-	-	**1.6**	-	-	-	-	**1.6**
Haupt	**23.4**	-	13.6	1.9	4.0	**18.8**	-	7.4	1.1	0.8	**17.0**
Mittlere Reife	**51.0**		-	4.2	13.8	**45.0**		-	2.7	2.2	**44.2**
FH-Reife	**0.8**			-	1.0	**3.3**			-	0.0	**4.8**
Abitur	**23.3**				-	**31.3**				-	**32.4**

First school degree		Degree at labor market entry					Degree at age 40				
		Percent upgrade to					Percent upgrade to				
	Distr.	Haupt	MR	FHR	Abitur	**Distr.**	Haupt	MR	FHR	Abitur	**Distr.**
Men											
No degree	**1.3**	-	-	-	-	**1.3**	*39.9*	*0.6*	*4.6*	*0.0*	**0.7**
Haupt	**31.1**	-	*10.6*	*5.5*	*2.4*	**25.3**	-	*13.4*	*4.6*	*0.1*	**21.3**
Mittlere Reife	**46.8**		-	*14.3*	*14.6*	**36.3**		-	*10.6*	*2.1*	**35.1**
FH-Reife	**1.0**			-	*0.0*	**9.4**			-	*0.0*	**14.5**
Abitur	**19.9**				-	**27.7**				-	**28.5**
Women											
No degree	**1.6**	-	-	-	-	**1.6**	*17.9*	*1.4*	*6.4*	*0.0*	**1.2**
Haupt	**23.4**	-	*18.3*	*2.7*	*4.9*	**17.0**	-	*2.1*	*4.8*	*0.0*	**16.1**
Mittlere Reife	**51.0**		-	*6.6*	*15.1*	**44.2**		-	*6.3*	*1.4*	**41.2**
FH-Reife	**0.8**			-	*1.0*	**4.8**			-	*0.0*	**8.5**
Abitur	**23.3**				-	**32.4**				-	**33.1**

Note: values in italics describe conditional upgrading rates by education category (row percentages), non-italic values describe distributions over education categories (column percentages).

Table 12 provides a closer inspection of the gendered upgrading patterns. It displays the conditional upgrading rates by initial school-leaving degrees, separately for men and women and breaking down the destinations of the upgrades. The table follows the same logic as *Table 6* for the full population. In the upper section of the table, the center columns show upgrading rates between the first school-leaving degree and the school degree at obtainment of the first vocational degree. The columns on the right-hand side of the table show conditional

upgrading rates between the first vocational degree and labor market entry. The lower section of the table contains the conditional upgrading rats between the first school-leaving degree and the first vocational degree in the center part and the conditional upgrading rates between labor market entry and the age of 40 at the right-hand side. The last column of each section always displays the distributions of school-leaving degrees of the respective stages.

Considering upgrading activities until the first vocational degree in the top center section, we only see minor gender differences. The conditional upgrading rates appear to be slightly higher for women, except for the upgrades to *Fachhochschulreife*, which are higher for men. The conditional upgrading rates between the first vocational degree and labor market entry (top right section) are higher for women if they originate from a *Hauptschulabschluss*, but higher for men if they originate from *Mittlere Reife*. For both men and women, the conditional upgrading rates are higher for upgrades before than after the first vocational degree in all corresponding categories.

Considering all upgrades between the first school-leaving degree and labor market entry (lower center section), we see again that the conditional upgrading rates are higher for women except for upgrades to the *Fachhochschulreife*. After labor market entry, men tend to upgrade their school-leaving degrees more often than women. In particular, this applies to degrees at the bottom of the distribution (upgrades from *no degree* and upgrades from *Hauptschulabschluss*), but also to some extend to upgrades from *Mittlere Reife*. As a result, men decrease their shares of persons at the lower part of the distribution of school-leaving degrees more than women do. As we could see in *Figure 20*, most of these persons with upgrades of school-leaving degrees after labor market entry also upgrade their vocational degrees.

Table 13

Conditional Upgrading Rates by Vocational Degrees and Gender

First voc. degree		**Degree at labor market entry**				**Degree at age 40**			
		Percent upgrade to				Percent upgrade to			
	Distr.	VOC1	VOC2	HE	**Distr.**	VOC1	VOC2	HE	**Distr.**
Men									
No degree	**11.6**	-	-	-	**11.6**	*42.3*	*6.3*	*14.3*	**4.3**
VOC1	**72.8**	-	*2.5*	*9.0*	**64.5**	-	*16.4*	*9.2*	**52.9**
VOC2	**1.5**		-	*1.9*	**3.3**		-	*6.5*	**14.3**
HE	**14.1**			-	**20.7**			-	**28.4**
Women									
No degree	**14.9**	-	-	-	**14.9**	36.4	4.2	11.9	**7.1**
VOC1	**68.1**	-	*2.3*	*5.7*	**62.6**	-	6.0	7.1	**59.8**
VOC2	**3.2**		-	*1.9*	**4.7**		-	5.4	**8.9**
HE	**13.8**			-	**17.8**			-	**24.2**

Note: values in italics describe conditional upgrading rates by education category (row percentages), non-italic values describe distributions over education categories (column percentages).

Table 13 repeats the same analysis for upgrades of vocational degrees. Before labor market entry, a minor gender difference appears for upgrades from lower-level vocational training (VOC1) to higher education (9.0 percent for men vs. 5.7 percent for women). More pronounced differences evolve after labor market entry, where upgrading rates are always higher for men in each category. Among persons who do not possess any vocational degree at labor market entry, the total upgrading rate amounts to about 63 percent for men and around 53 percent for women. In this category, upgrades to a lower-level vocational degree (VOC1) are the most common option for both genders. For persons with a lower-level vocational degree (VOC1) at labor market entry, upgrades to a higher-level vocational degree (VOC2) show the most pronounced gender differences (16.4 percent for men vs. 6.0 percent for women).

Table 14

Typical Patterns of Educational Upgrading by Gender

Before labor market entry (school-leaving degrees only)						
	Men			**Women**		
Rank	**From**	**To**	**Percent**	**From**	**To**	**Percent**
1	MR	Abitur	36.1	MR	Abitur	44.8
2	MR	FH-Reife	34.5	Haupt	MR	25.3
3	Haupt	MR	16.9	MR	FH-Reife	19.1
4	Haupt	FH-Reife	8.7	Haupt	Abitur	7.0
5	Haupt	Abitur	3.8	Haupt	FH-Reife	3.7
Before labor market entry (after first vocational degree)						
	Men			**Women**		
Rank	**From**	**To**	**Percent**	**From**	**To**	**Percent**
1	Abitur – VOC1	Abitur – HE	27.9	Abitur – VOC1	Abitur – HE	36.2
2	MR – VOC1	FHR - HE	22.0	Haupt – no voc	MR – no voc	13.1
3	MR – no voc	Abitur – no voc	8.7	MR – VOC1	MR – VOC2	7.2
4	MR – VOC1	FHR – VOC1	6.0	MR – VOC1	FHR – VOC1	7.2
5	FHR – VOC1	FHR – HE	5.4	Abitur – VOC1	Abitur – VOC2	6.6
After labor market entry						
	Men			**Women**		
Rank	**From**	**To**	**Percent**	**From**	**To**	**Percent**
1	MR – VOC1	MR – VOC2	24.1	MR – no voc	MR – VOC1	20.3
2	MR – VOC1	FHR - HE	10.7	Abitur – VOC1	Abitur - HE	10.7
3	Haupt – VOC1	MR – VOC2	9.1	MR – VOC1	MR – VOC2	9.7
4	Haupt – no voc	Haupt – VOC1	6.8	MR – VOC1	FHR - HE	9.0
5	Abitur – VOC1	Abitur - HE	5.3	Abitur – VOC1	Abitur – VOC2	6.5

Table 14 lists the typical patterns of educational upgrading, separately by men and women. The top section of the table refers again to upgrading of school-leaving degrees before labor market entry.[7] While the most common pattern of upgrading is the same for men and women (from *Mittlere Reife* to *Abitur*), it makes up about 45 percent of all upgrades before labor market entry for women, but only about 36 percent for men. As was already apparent in the previous analyses, upgrades from *Mittlere Reife* to *Fachhochschulreife* play a bigger role for men (about 35 percent and second rank) than for women (about 19 percent and rank 3). Instead, upgrades from Hauptschulabschluss to Mittlere Reife are more important for women (about 25 percent and rank 2) than for men (about 17 percent and rank 3).

The center section of the table displays combinations of school-leaving and vocational degrees and upgrades between obtaining the first vocational degree and labor market entry. Again, the most common upgrading pattern is the same for men and women: upgrades from lower-level vocational training (VOC1) to higher education among persons with *Abitur*. Another common pattern is the upgrade from *Mittlere Reife* to *Fachhochschulreife* among persons with lower-level vocational training (VOC1), ranking fourth for both men and women. All other patterns differ between the genders. Upgrades comprising *Fachhochschulreife* and higher education as destinations are more common among men, while upgrades to higher-level vocational training (VOC2) are more popular among women.

After labor market entry, the most common upgrade for men is the upgrade from lower-level vocational training (VOC1) to higher-level vocation training (VOC2) among persons with *Mittlere Reife*. The same pattern ranks on third position for women. Instead, the most popular upgrade for women is among persons with *Mittlere Reife* without any vocational training to *Mittlere Reife* with lower-level vocational training (VOC1). The second most common upgrades for men and women are upgrades to higher education. However, for men, this comes in the shape of an upgrade from *Mittlere Reife* and lower-level vocational training (VOC1) to *Fachhochschulreife* and higher education. For women, it represents an upgrade among *Abitur* holders from lower-level vocational training (VOC1) to higher education. Both genders have in common that most of the dominant upgrading patterns after labor market entry start from lower-level vocational training (VOC1) and either lead to higher-level vocational training (VOC2) or higher education.

7.4.2 Gender differences in the returns to educational upgrading

In addition to the previous examinations of differences in upgrading patterns between men and women, the following analyses are devoted to gender differences in the "returns" to educational upgrading. As in the analyses presented in *section 6.2*, differences in labor market outcomes between upgrading status cannot be interpreted as causal effects. Rather, the

[7] The rank orders in the patterns of upgrading of school-leaving degrees between the first school-leaving degree and the first vocational degree and between the first vocational degree and labor market entry are provided in the appendix, *Table AT14.1*.

analyses should help to point out where differences between men and women appear and indicate where inspections of the underlying mechanisms are in order.

Figure 21 displays average earnings premiums (in gross hourly earnings) at the age of 40 for persons who engaged in educational upgrading. The analysis is based on the sample excluding non-employed persons. The bars represent coefficients from linear regression models that were conducted separately for men and women. They indicate the earnings differences of educational upgraders compared to persons who did not upgrade their credentials. In the regression models, the level of education before upgrading was held constant. This means that the earnings premiums shown in the bars of the figure indicate average premiums net of the earnings associated with the initial level of education. However, gender differences in the premiums can still be due to gender differences in the distribution over initial levels of education or gender differences in the destinations of upgrading.

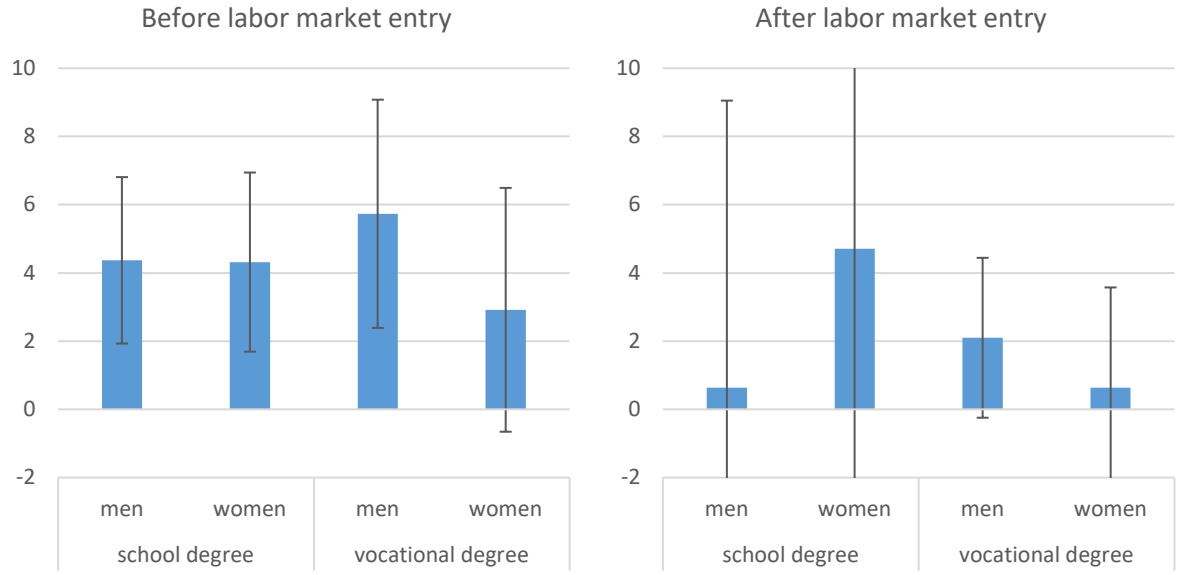

Figure 21. Gross hourly earnings premiums by type of educational upgrading and gender (excluding non-employed).

The left-hand side of *Figure 21* refers to upgrading before labor market entry. Upgrades of the school degree refer to upgrading between the first school-leaving degree and the school-leaving degree at obtainment of the first vocational degree. During this period, most of the upgrades of school-leaving degrees before labor market entry take place (cf. *Table 12*). The underlying regression models (cf. *Table AF21* in the appendix) control for the first school-leaving degree. For both genders, upgrading of school-leaving degrees before vocational training is associated with gross hourly earnings premiums at the age of 40 (4.4 Euros for men and 4.3 Euros for women). The premiums are statistically significant on the 95-percent criteria according to conventional standards, but do not differ between men and women. Upgrades of vocational degrees refer to upgrades between the first vocational degree and labor market entry. The underlying regression models control for a variable indicating the combined school-leaving and vocational degrees at obtainment of the first vocational degree. For men, an upgrade of the vocational degree, on average, is associated with a gross hourly earnings premium at the age of 40 of 5.7 Euros, which is statistically significant at the 95-percent level.

For women, the premium is smaller (2.9 Euros) and not statistically significant according to those conventional criteria.

The right-hand side of *Figure 21* refers to upgrading after labor market entry. The underlying regression models control for school-leaving and vocational degrees at labor market entry. The premiums estimated for upgrades of school-degrees derive from a comparison between persons who do not engage in any upgrading after labor market entry and persons who upgrade their school-leaving degrees only. These estimates indicate a larger premium for women (4.7 Euros) than for men (0.6 Euros), but none of these estimates are statistically significant according to conventional criteria. The premiums estimated for upgrades of vocational degrees are based on a comparison of persons who upgrade their vocational degree with persons who do not engage in any upgrading after labor market entry. Here, the estimates indicate larger premiums for men (2.1 Euros) than for women (0.6 Euros), but, again, none of them is statistically significant based on conventional criteria.

Figure 22 repeats the same analysis for net monthly earnings at the age of 40, including non-employed persons with a zero-coding of their earnings (for the underlying regression models, cf. *Table AF22* in the appendix). The patterns are similar to those found for gross hourly earnings, with just some minor deviations. First, while for the analyses of upgrading before labor market entry, all estimated premiums are significantly different from zero on the 95-percent level, the gap between men and women for upgrades of the vocational degree appears smaller than in the previous analyses. Yet, neither for upgrades of school-leaving degrees nor for upgrades of vocational degree do we observe any statistically significant gender differences according to conventional criteria. Second, for upgrades of school-leaving degrees after labor market entry, we observe a negative estimate for men. But like in the previous analysis, none of the estimates for upgrades after labor market entry is statistically significantly different from zero based on conventional standards.

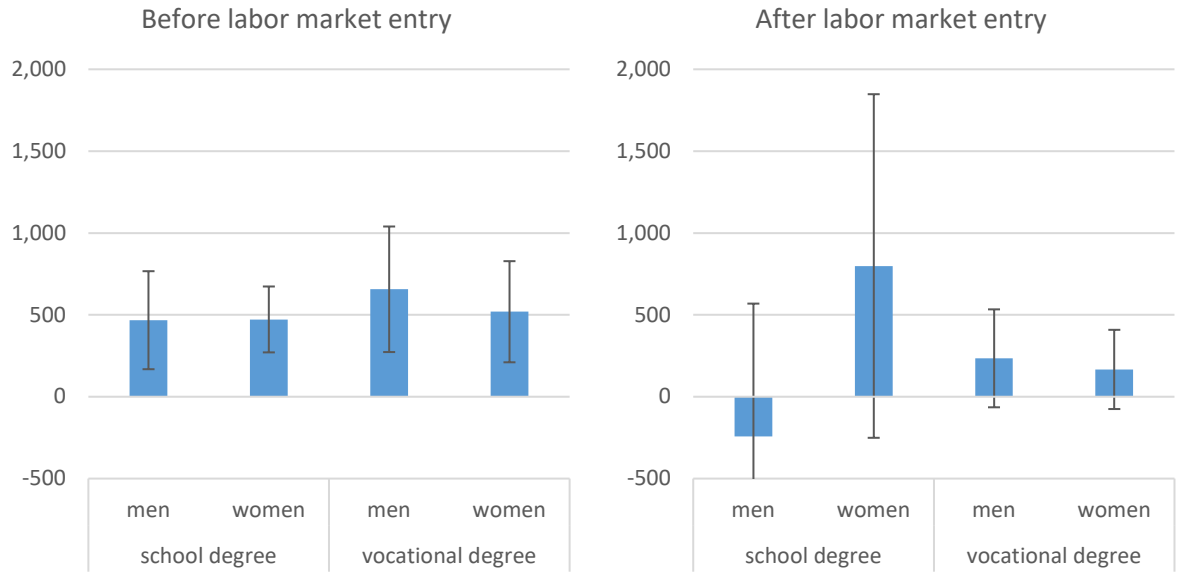

Figure 22. Net monthly earnings premiums by type of educational upgrading and gender (including non-employed).

Finally, *Figure 23* shows the same analysis, but with ISEI scores as the dependent variable (for the underlying regression models, cf. *Table AF23* in the appendix). The analysis of upgrading before labor market entry considers the ISEI value of the significant first job as dependent variable, while the analysis of upgrading after labor market entry considers ISEI at the age of 40.

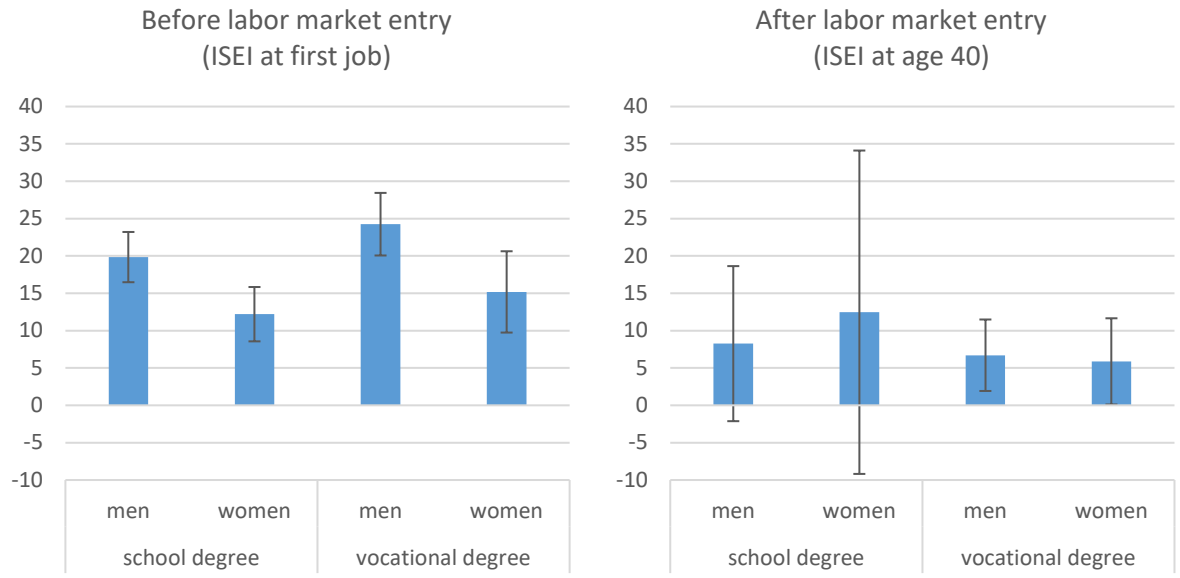

Figure 23. ISEI premiums by type of educational upgrading and gender (including non-employed).

Like in the analysis of net monthly earnings, both upgrading of school-leaving and vocational degrees before labor market entry is, on average, associated with higher ISEI values compared to persons who do not upgrade their credentials. In both instances, we see larger premiums for men than for women. For upgrading after labor market entry, the estimates of the ISEI premiums are comparatively smaller and more evenly distributed over genders. The differences are not statistically significant according to conventional criteria. For both genders, the estimated premiums of upgrades of school-leaving degrees are not statistically significantly different from zero according to conventional criteria, but the premiums associated to upgrades of vocational degrees are.

8. Inequalities by social origin

This section presents analyses with regard to social inequalities by social origin. The section is structured identically to the previous section on gender inequalities. First, we provide descriptive evidence on the associations between social origins on the one hand and educational and labor market participation on the other. We then proceed with inequalities in labor market outcomes, differences in educational attainment and differences educational upgrading behavior.

8.1 Differences in educational and labor market participation by social origin

Figure 24 displays participation rates in education and employment rates by age and social origin. Again, the rates take into account persons that have been in education or employment for at least one month during the respective age year.

Figure 24. Participation rates in education and employment rates over the life course by social origin.

The left-hand side of the figure shows the development of participation in education over the life course. Differences by social origin start to emerge at the age of 20. While participation in education drops sharply around that age for persons from intermediate and working classes, about half of the offspring of salariat class families are still in education. This is most likely due to social differences in the participation rates in higher education. For persons in their 20s, participation in education remains substantively higher for persons from salariat class families than for persons from the other two classes. In that age group, only minor differences appear between persons from working and intermediate classes, with the latter showing slightly higher rates. After the age of 35, participation rates in education converge between the three classes below 10 percent.

The right-hand side of *Figure 24* displays the development of employment rates over the life course. Between the age of 19 and the age of 25, persons from the salariat classes show somewhat lower employment rates compared to the other two classes. This reflects the fact

that they remain in the education system longer. After the age of 27, salariat class offspring shows the highest employment rates with values above 90 percent. Working class offspring shows the lowest rates with values between 80 and 90 percent. Persons from intermediate classes range in-between with values close to 90 percent. These employment gaps most likely arise from differences in unemployment and family- and care-related non-employment or other differences in breadwinner models.

8.2 Inequalities in labor market outcomes by social origin

Figure 25 gives an overview of average earnings at the age of 40 by social origin. As in the analysis of gender inequalities, the left-hand side of the figure refers to gross hourly earnings and the right-hand side to net monthly earnings. Both indicators show clear differences between social origins. The 95-percent confidence intervals only overlap for the comparisons between intermediate and working classes, but not for the other contrasts. Excluding non-employed persons, the mean gross hourly earnings amount to 22.76 Euros for persons from the salariat classes, 19.88 Euros for persons from the intermediate classes and 18.63 Euros for persons from the working classes. Between persons from the salariat and working classes, this translates into a pay gap of 4.13 Euros or about 18 percent, which is even slightly higher than the gender pay gap of 16 percent (cf. section 7.2). Including non-employed persons with a zero-coding of their earnings values results in mean values of 21.30 Euros (salariat classes), 17.86 Euros (intermediate classes) and 16.03 (working classes) and a pay gap between salariat and working classes of 5.27 Euros (25 percent).

Figure 25. Average gross hourly and net monthly earnings at age 40 by social origin.

Excluding non-employed persons, the mean net monthly earnings amount to 2,229 Euros for persons from the salariat classes, 2,023 Euros for persons from the intermediate classes and 1,826 Euros for persons from the working classes. The pay gap between persons from salariat and working classes amounts to 403 Euros or 18 percent. When including non-employed persons with a zero-coding of their earnings, the figures are as follows: 2,189 (salariat), 1,818 (intermediate) and 1,571 (working class) with a pay gap of 618 Euros (28 percent).

Figure 26 shows differences in ISEI by social origin. The left-hand side of the figure refers to average ISEI values related to the first significant job. Including non-employed persons with a zero-coding of their ISEI values leads to only marginally lower average ISEI values for all social classes compared to the sample excluding non-employed persons. Persons from the salariat classes show substantively higher average ISEI scores than the other two classes. When excluding non-employed persons, the mean values of the three classes are as follows: 51.9 (salariat), 40.7 (intermediate) and 37.8 (working). The 95-percent confidence intervals around the mean ISEI values of the intermediate and working classes overlap. This can hint at lacking statistical significance of the differences in their mean values, while we can assume statistical significance for all other contrasts. The respective values in the sample including non-employed persons with a zero-coding of their ISEI values are: 50.8 (salariat), 40.4 (intermediate) and 36.0 (working). Here, the confidence intervals do not overlap for any of the contrasts.

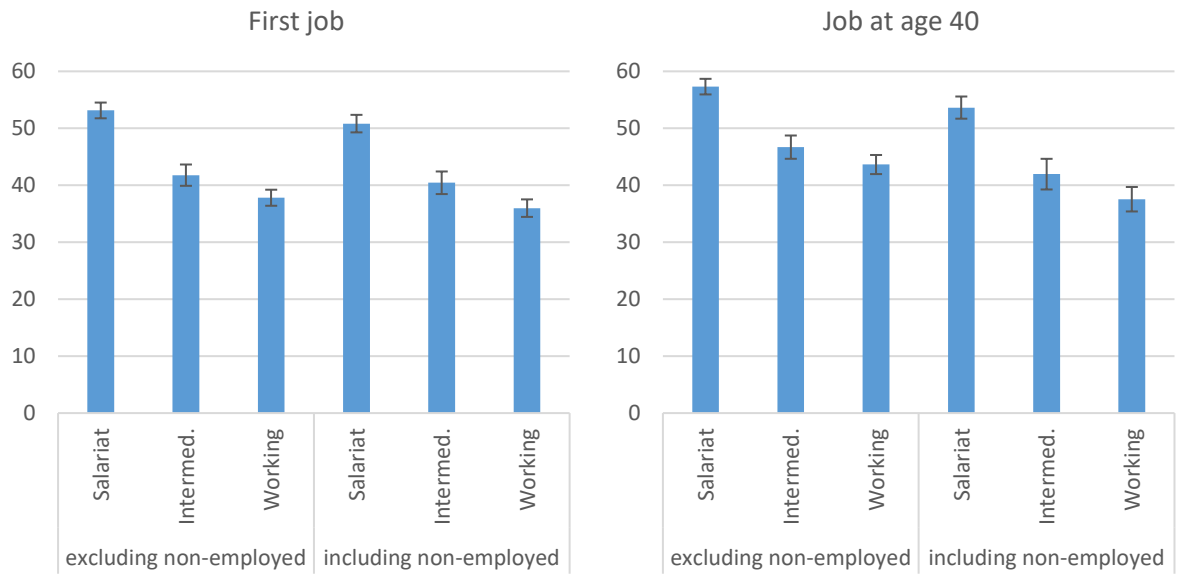

Figure 26. ISEI at first job and at age 40 by social origin.

At age 40, the average ISEI values for all classes are markedly higher than at labor market entry. Again, persons from the salariat classes stand out with the highest average scores. The differences in the samples excluding and including non-employed persons are more pronounced compared to labor market entry. In the sample excluding non-employed persons, persons from the salariat classes have an average ISEI score of 57.3, persons from the intermediate classes a score of 46.7 and persons from the working classes a score of 43.6. In the sample including non-employed persons with a zero-coding of their ISEI scores, the respective figures are as follows: 53.6 (salariat), 42.0 (intermediate) and 37.5 (working). In both samples, the 95-percent confidence intervals around the average scores only overlap for the comparison between intermediate and working classes.

8.3 Inequalities in educational attainment by social origin

Figure 27 shows the distributions of school-leaving degrees by social origin and across different stages of the life course. The first set of bars displays the first school leaving degrees that have been obtained before labor market entry. It exemplifies the high degree of social

inequality in the attainment of the *Abitur*. While about 36 percent of the persons with salariat class background receive an *Abitur* as their first school-leaving degree, the rates are only 13 and 10 percent for persons from intermediate or working classes. Likewise, around 42 percent of the persons with working class background receive a school-leaving degree from the *Hauptschule*, while the corresponding rate of salariat class offspring amounts to only 14 percent. Around 3 percent of persons from the working classes enter the labor market without any degree, while the corresponding figures are negligible for persons with salariat (0.6 percent) or intermediate class (0.3 percent) background. When persons obtain their first vocational degree, one can observe upgraded distributions of school-leaving degrees for all classes, but the high levels of inequality in educational attainment remain. The distributions do not change much afterwards at labor market entry and the age of 40, except that persons from the intermediate and working classes show some upward shifts in the shares of higher education entrance qualifications, in particular regarding the *Fachhochschulreife*. Among these two groups, we can also observe a small further reduction in the shares of persons holding a degree from *Hauptschule* or less.

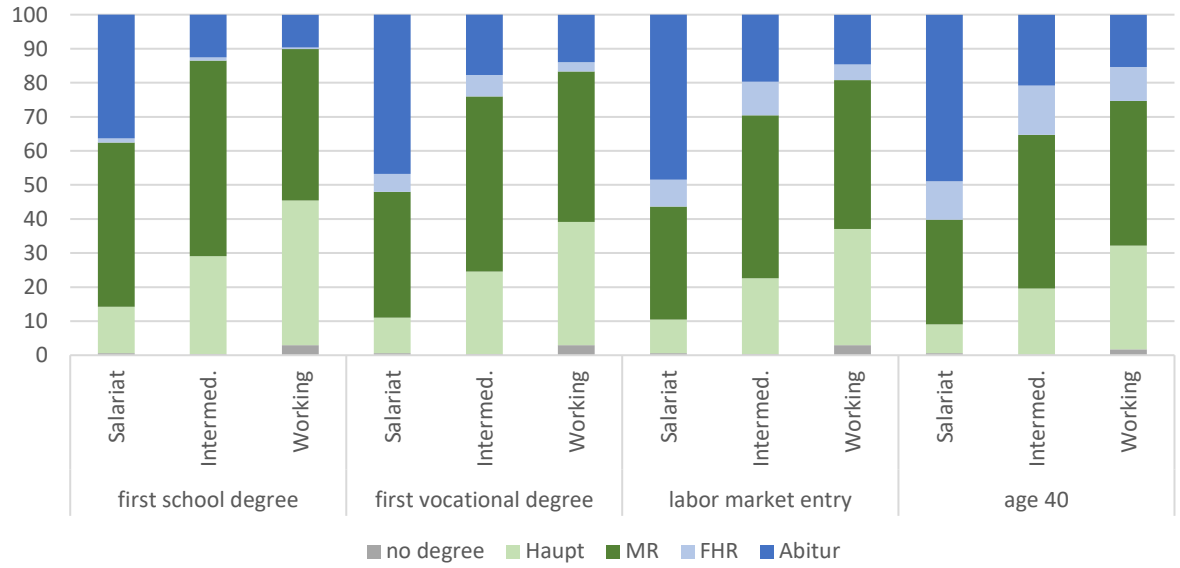

Figure 27. Distribution of school-leaving degrees at different stages of the life course by social origin.

Figure 28 presents the same analyses for vocational degrees. The first set of bars represents the combination of vocational and school-leaving degrees at the point in time when respondents obtained their first vocational degree. It only considers vocational degrees that have been obtained before labor market entry. The second set of bars refers to degrees at labor market entry and the third set of bars to degrees at the age of 40. The distribution of the first vocational degrees shows some notable differences between the social classes. As with the school-leaving degrees, the differences are most pronounced between persons from the salariat classes and the other two classes. While about 25 percent of the former have obtained a higher education degree as their first vocational certificate, the respective shares are about 8 percent for the intermediate and about 4 percent for the working classes. At that stage of the career, higher-level vocational degrees (VOC2) do not play a particular role for any of the three classes. In relative terms, however, persons from the salariat classes do show

higher shares than intermediate and working classes (3 vs. 1.6 and 2 percent). While persons from the intermediate and working classes show higher shares of lower-level vocational degrees (VOC1), the distribution of school-leaving degrees within that category is much more beneficial for persons with salariat class backgrounds. The latter show substantively higher shares of persons combining a lower-level vocational degree (VOC1) with either an *Abitur* or a *Fachhochschulreife* and lower shares of the combination with a *Hauptschulabschluss*. Persons from working class families stand out with the least beneficial distribution of educational degrees. In particular, they display the highest shares of persons without any vocational degree before labor market entry (around 19 percent compared to 12 and 8 percent for the intermediate and salariat classes).

Figure 28. Distribution of vocational educational attainment at different stages of the life course by social origin

All three classes expand their higher education graduation rates until labor market entry, while the pronounced differences between the classes remain. While higher-level vocational degrees (VOC2) still play a marginal role at that stage, their shares have become somewhat higher for all three classes. Differences at the bottom of the distribution (up to lower-level vocational training (VOC1) with a *Hauptschulabschluss*) have more or less remained the same.

At age 40, higher education attainment rates have increased further for all classes and inequalities are still substantive. About 41 percent of the persons with a salariat class background now possess a higher education degree, while the respective shares are about 18 percent for the intermediate and 14 percent for the working classes. Higher-level vocational degrees (VOC2) have markedly increased for all classes, but more so for persons from the intermediate and working classes (now 15 and 12 percent) than for the salariat classes (now 10 percent). With respect to persons without any vocational degree, their shares have decreased further for all classes and the respective shares have somewhat converged (3.6, 5.7 and 8.0 percent).

Table 15 presents some inequality indicators summarizing the differences in the distributions between social classes. The first line displays the index of dissimilarity with respect to the

distributions shown in *Figure 28*. As already visible in the figure, the most dissimilar distributions appear in the comparisons between the salariat and the other two classes. For the contrast between salariat and intermediate classes, the distributions become somewhat more similar across the life course. For the other comparisons, the distributions become more dissimilar between the first vocational degree and the degree at labor market entry and then become less dissimilar again until the age of 40.

Table 15

Indicators of Inequality by Social Origin in Educational Attainment at Different Stages of the Life Course

	First degree			Labor market entry			Age 40		
	S/I	**S/W**	**I/W**	**S/I**	**S/W**	**I/W**	**S/I**	**S/W**	**I/W**
Combined school and vocational degrees									
Index of dissimilarity	30.2	35.4	15.7	29.7	37.2	16.5	28.5	35.0	13.4
School-leaving degrees									
Index of dissimilarity	24.5	31.2	16.4	29.1	37.2	14.5	28.5	34.8	12.6
Odds ratio									
Haupt or less	0.4	0.2	0.5	0.4	0.2	0.5	0.4	0.2	0.5
MR or more	2.5	5.0	2.0	2.5	5.0	2.0	2.5	4.8	1.9
FH-Reife or Abitur	3.9	5.4	1.4	3.1	5.4	1.8	2.8	4.4	1.6
Abitur	4.0	5.4	1.4	3.8	5.5	1.4	3.6	5.3	1.4
Vocational degrees									
Index of dissimilarity	19.0	22.0	7.7	20.8	26.4	7.3	22.5	26.9	7.2
Odds ratio									
None	0.7	0.4	0.6	0.7	0.4	0.6	0.6	0.4	0.7
VOC1	0.5	0.6	1.3	0.5	0.5	1.1	0.5	0.4	0.8
VOC2	2.0	1.6	0.8	1.3	1.6	1.3	0.7	0.8	1.3
VOC2 or more	3.8	5.8	1.5	3.0	4.9	1.6	2.1	3.0	1.4
Higher education	4.0	7.3	1.8	3.3	5.8	1.7	3.1	4.2	1.4

Notes: The column 'First degree' refers to the first school-leaving degree in the section 'school-leaving degrees' and to the degree at obtainment of the first vocational degree otherwise. S=Salariat classes, I=Intermediate classes, W=Working classes.

The next section of the table displays the index of dissimilarity and the odds ratio with regard to inequalities in school-leaving degrees as shown in *Figure 27*. For the comparisons between the salariat and the other two classes, we can again see the pattern that the distributions become slightly more dissimilar until labor market entry and then less dissimilar until the age of 40. As regards the odds ratio, we can hardly see any substantive changes across the life course. Only access to a higher education entrance qualification (*Fachhochschulreife* or *Abitur*) becomes somewhat more equal across the life course between the salariat and the other two classes. However, this pattern almost disappears when only considering attainment of the *Abitur*.

The values in the bottom part of the table refer to inequalities with respect to vocational degrees, not differentiating by school-leaving degrees within vocational degree categories. Here, the index of dissimilarity indicates a somewhat increasing dissimilarity of the distributions of the salariat class on the one hand and of the other classes on the other across the life course. The distributions of intermediate and working classes become somewhat more similar. As regards the odds ratio, the most outstanding patters are connected to higher-level vocational training and higher education. Here, the inequalities between the salariat and the other two classes decrease over the life course.

8.4 Social origin and educational upgrading

Similar to the section on gender and educational upgrading, this section explores the relationships between social origins and educational upgrading. *Section 8.4.1* presents descriptive evidence on differences in patterns of education upgrading between persons of different social classes. *Section 0* explores whether the associations between educational upgrading and labor market returns differ by social origins.

8.4.1 Differences in educational upgrading by social origin

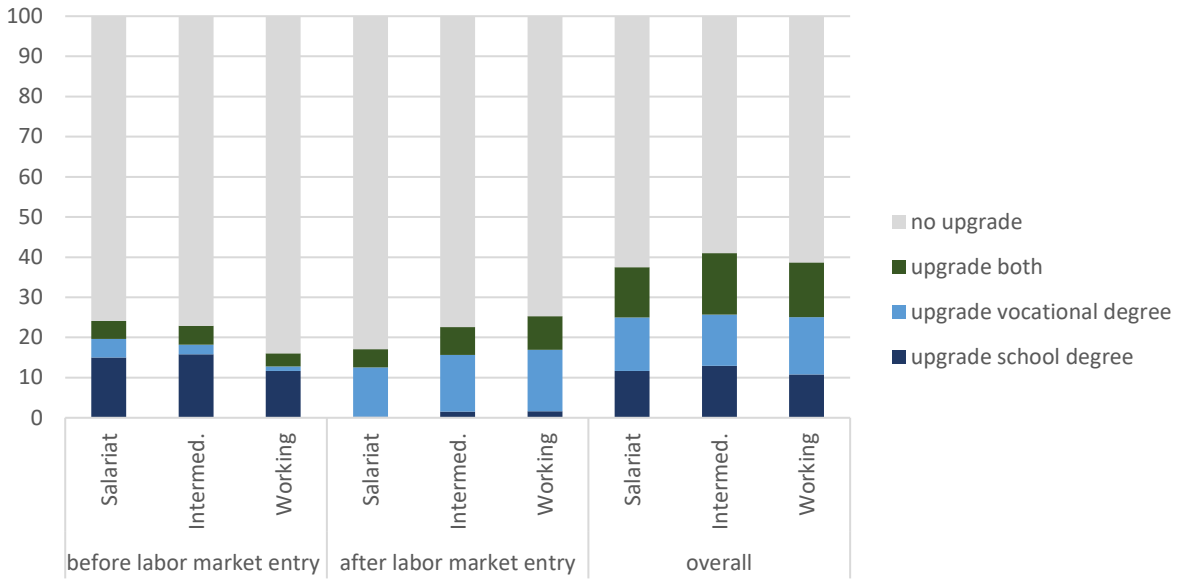

Figure 29. Educational upgrading rates by social origin.

Figure 29 presents educational upgrading rates by social origin and across different stages of the life course. The overall upgrading rates until the age of 40 are surprisingly similar across social origins. They range from around 37 percent (salariat classes) over 39 percent (working classes) to 41 percent (intermediate classes). Also, the types of upgrades (school-leaving, vocational or both degrees) are not substantively differently distributed over the three social classes. Notable differences appear in the timing of the upgrading. Persons from the working classes show somewhat lower upgrading rates before labor market entry than the other two classes, while the salariat classes show comparatively lower upgrading rates after labor market entry.

Table 16

Conditional Upgrading Rates by School-Leaving Degrees and Social Origin

First school degree		Degree at first vocational degree						Degree at labor market entry				
			Percent upgrade to					Percent upgrade to				
		Distr.	Haupt	MR	FHR	Abitur	**Distr.**	Haupt	MR	FHR	Abitur	**Distr.**
Salariat	No degree		-	-	-	-	**0.6**	-	-	-	-	**0.6**
	Haupt	**13.6**	-	*11.8*	*4.9*	*6.8*	**10.4**	-	*1.4*	*1.8*	*2.2*	**9.9**
	MR	**48.1**		-	*7.0*	*19.7*	**36.9**		-	*6.8*	*3.9*	**33.1**
	FH-Reife	**1.2**			-	*0.0*	**5.3**			-	*0.0*	**8.0**
	Abitur	**36.4**				-	**46.8**				-	**48.5**
Intermediate	No degree	**0.3**	-	-	-	-	**0.3**	-	-	-	-	**0.3**
	Haupt	**28.8**	-	*12.5*	*0.9*	*2.4*	**24.2**	-	*7.7*	*0.3*	*0.1*	**22.3**
	MR	**57.5**		-	*9.2*	*7.7*	**51.4**		-	*6.8*	*3.9*	**47.8**
	FH-Reife	**0.9**			-	*0.0*	**6.3**			-	*0.0*	**9.9**
	Abitur	**12.6**				-	**17.7**				-	**19.7**
Working	No degree	**3.0**	-	-	-	-	**3.0**	-	-	-	-	**3.0**
	Haupt	**42.5**	-	*11.5*	*2.0*	*1.5*	**36.2**	-	*4.9*	*0.5*	*0.3*	**34.1**
	MR	**44.5**		-	*3.4*	*8.2*	**44.2**		-	*3.6*	*1.4*	**43.8**
	FH-Reife	**0.5**			-	*2.4*	**2.8**			-	*0.0*	**4.6**
	Abitur	**9.6**				-	**13.9**				-	**14.6**

First school degree		Degree at labor market entry						Degree at age 40				
			Percent upgrade to					Percent upgrade to				
		Distr.	Haupt	MR	FHR	Abitur	**Distr.**	Haupt	MR	FHR	Abitur	**Distr.**
Salariat	No degree	**0.6**	-	-	-	-	**0.6**	*0.0*	*0.0*	*0.0*	*0.0*	**0.6**
	Haupt	**13.6**	-	*9.0*	*9.1*	*9.6*	**9.9**	-	*9.3*	*5.7*	*0.0*	**8.4**
	MR	**48.1**		-	*11.4*	*22.4*	**33.1**		-	*8.7*	*1.3*	**30.7**
	FH-Reife	**1.2**			-	*0.0*	**8.0**			-	*0.0*	**11.4**
	Abitur	**36.4**				-	**48.5**				-	**48.9**
Intermediate	No degree	**0.3**	-	-	-	-	**0.3**	*27.5*	*0.0*	*11.9*	*0.0*	**0.2**
	Haupt	**28.8**	-	*16.7*	*3.4*	*2.5*	**22.3**	-	*11.7*	*1.5*	*0.0*	**19.4**
	MR	**57.5**		-	*14.0*	*11.2*	**47.8**		-	*8.9*	*2.4*	**45.0**
	FH-Reife	**0.9**			-	*0.0*	**9.9**			-	*0.0*	**14.5**
	Abitur	**12.6**				-	**19.7**				-	**20.9**
Working	No degree	**3.0**	-	-	-	-	**3.0**	*35.0*	*1.4*	*6.6*	*0.0*	**1.7**
	Haupt	**42.5**	-	*15.0*	*3.0*	*1.8*	**34.1**	-	*7.8*	*5.6*	*0.1*	**30.5**
	MR	**44.5**		-	*6.4*	*9.5*	**43.8**		-	*7.6*	*1.7*	**42.4**
	FH-Reife	**0.5**			-	*2.4*	**4.6**			-	*0.0*	**10.0**
	Abitur	**9.6**				-	**14.6**				-	**15.4**

Note: values in italics describe conditional upgrading rates by education category (row percentages), non-italic values describe distributions over education categories (column percentages).

To inspect socially selective upgrading patterns in more detail, *Table* 16 shows the conditional upgrading rates of school-leaving degrees by initial degrees and separately by social origin. As

in *Table 12* on gender inequalities, the upper section of the table shows the conditional upgrading rates between the first school-leaving degree, the school degree at obtainment of the first vocational degree and labor market entry. The lower section of the table displays the conditional upgrading rates between the first school-leaving degree, labor market entry and the age of 40. The last columns of each sections present again the resulting distributions of school-leaving degrees.

As regards upgrading before labor market entry, the upper center part of *Table* 16 reflects a pattern that we already know from previous research (e.g. Schindler, 2015): the conditional upgrading rates to degrees that allow for access to higher education (*Fachhochschulreife* and *Abitur*) are markedly higher for persons from the salariat classes than for persons from the other two classes. For example, among persons with an initial *Mittlere Reife*, the combined upgrading rates are 26.7 percent for the salariat classes, 16.9 percent for the intermediate and 11.6 percent for the working classes. For upgrades to *Mittlere Reife*, however, the conditional upgrading rates are very similar across classes of social origin. Between the first vocational degree and labor market entry (upper right section), the conditional upgrading rates are smaller for all social classes. Among persons holding a *Hauptschulabschluss* at labor market entry, salariat class offspring shows higher upgrading rates to degrees granting access to higher education, while persons with intermediate and working class background more frequently upgrade to *Mittlere Reife*. Upgrading rates from *Mittlere Reife* to *Fachhochschulreife* or *Abitur* are similar for persons from salariat or intermediate class origins and lower for persons from working class families.

After labor market entry (lower right section), differences between the salariat and the other two classes appear among persons without school-leaving degree at labor market entry. While in this category, persons with a salariat class background do not show any upgrades, substantive fractions of persons from the intermediate and working classes (around 39 and 43 percent) obtain at least a *Hauptschulabschluss*. Among persons with any other school-leaving degree at labor market entry, the differences in the conditional upgrading rates do not differ much between the social classes. Only persons from the intermediate classes with a *Hauptschulabschluss* at labor market entry deviate somewhat from the other two classes in that they show lower upgrading rates to the *Fachhochschulreife* but higher uprading rates to *Mittlere Reife*.

Table 17 repeats the analysis of conditional upgrading rates for vocational degrees. Before labor market entry, it is again persons with a salariat class background that show the highest and persons from the working classes that show the lowest conditional upgrading rates. In particular, this applies to upgrading to higher education. After labor market entry, we can see some minor differences in the combined conditional upgrading rates by degree at labor market entry. Among persons without any vocational degree, around 60 percent from the salariat, around 51 percent from the intermediate and around 58 percent from the working classes upgrade to any vocational degree by the age of 40. Among persons with a lower-level vocational degree (VOC1), the respective figures are around 21 percent for salariat and intermediate classes and around 18 percent for the working classes. More substantive differences are visible with regard to the destinations of the upgrades. Among persons with no or a lower-level vocational degree (VOC1) at labor market entry, the salariat classes show markedly higher upgrading rates to a higher education degree than the other two classes. Only for persons with a higher-level vocational degree (VOC2), the upgrading rates to higher

education are highest for persons from the working classes and lowest for persons with a salariat class background.

Table 17

Conditional Upgrading Rates by Vocational Degrees and Social Origin

First voc. degree		Degree at labor market entry				Degree at age 40			
		Percent upgrade to				Percent upgrade to			
	Distr.	VOC1	VOC2	HE	**Distr.**	VOC1	VOC2	HE	**Distr.**
Salariat									
No degree	**8.9**	-	-	-	**8.9**	*32.6*	*7.0*	*20.1*	**3.6**
VOC1	**62.7**	-	*2.9*	*11.4*	**53.8**	-	*9.0*	*12.1*	**45.4**
VOC2	**3.1**		-	*2.7*	**4.8**		-	*4.4*	**10.0**
HE	**25.3**			-	**32.5**			-	**41.0**
Intermediate									
No degree	**11.8**	-	-	-	**11.8**	35.8	5.7	9.8	**5.7**
VOC1	**78.8**	-	3.0	6.1	**71.7**	-	14.4	6.2	**61.2**
VOC2	**1.5**		-	1.9	**3.9**		-	5.9	**14.6**
HE	**7.9**			-	**12.7**			-	**18.5**
Working									
No degree	**19.1**	-	-	-	**19.1**	43.9	3.9	10.3	**8.0**
VOC1	**74.5**	-	*1.5*	*4.4*	**70.1**	-	11.7	5.9	**66.2**
VOC2	**2.0**		-	*0.4*	**3.1**		-	8.6	**11.8**
HE	**4.4**			-	**7.7**			-	**14.1**

Note: values in italics describe conditional upgrading rates by education category (row percentages), non-italic values describe distributions over education categories (column percentages).

Table 18 presents for each social class the most common upgrading patterns. The upper section of the table refers to upgrading of school-leaving degrees between the first school-leaving certificate and labor market entry.[8] For salariat and intermediate classes, upgrades from *Mittlere Reife* to a higher education entrance qualification are the top categories.

[8] The rank orders in the patterns of upgrading of school-leaving degrees between the first school-leaving degree and the first vocational degree and between the first vocational degree and labor market entry are provided in the appendix, *Table AT18.1*.

Table 18

Typical Patterns of Educational Upgrading by Social Origin

Before labor market entry (school-leaving degrees only)									
	Salariat			Intermediate			Working		
Rank	From	To	%	From	To	%	From	To	%
1	MR	Abitur	53.8	MR	FHR	38.3	Haupt	MR	41.2
2	MR	FHR	27.4	MR	Abitur	30.6	MR	Abitur	27.2
3	Haupt	Abitur	6.5	Haupt	MR	23.0	MR	FHR	18.5
4	Haupt	FHR	6.2	Haupt	FHR	4.7	Haupt	FHR	8.1
5	Haupt	MR	6.1	Haupt	Abitur	3.4	Haupt	Abitur	5.0
Before labor market entry (after first vocational degree)									
	Salariat			Intermediate			Working		
Rank	From	To	%	From	To	%	From	To	%
1	Abitur-VOC1	Abitur-HE	39.2	Abitur-VOC1	Abitur-HE	19.6	Abitur-VOC1	Abitur-HE	28.5
2	MR-VOC1	FHR-HE	14.7	MR-VOC1	FHR-HE	17.5	Haupt-no voc	MR-no voc	18.5
3	MR-no voc	FHR-no voc	7.1	Abitur-VOC1	Abitur-VOC2	8.5	MR-VOC1	FHR-HE	13.5
4	MR-VOC1	MR-VOC2	6.6	MR-no voc	Abitur-no voc	8.4	MR-VOC1	FHR-VOC1	7.8
5	Abitur-VOC1	Abitur-VOC2	5.7	Haupt-VOC1	MR-VOC1	7.5	Haupt-VOC1	MR-VOC2	6.8
After labor market entry									
	Salariat			Intermediate			Working		
Rank	From	To	%	From	To	%	From	To	%
1	Abitur-VOC1	Abitur-HE	15.9	MR-VOC1	MR-VOC2	29.5	MR-VOC1	MR-VOC2	18.4
2	MR-VOC1	FHR-HE	12.8	MR-VOC1	FHR-HE	9.5	Haupt-no voc	Haupt-VOC1	13.2
3	MR-VOC1	MR-VOC2	11.3	MR-no voc	MR-VOC1	9.4	MR-no voc	MR-VOC1	12.3
4	MR-no voc	MR-VOC1	8.1	Haupt-VOC1	MR-VOC2	6.7	MR-VOC1	FHR-HE	8.1
5	Abitur-VOC1	Abitur-VOC2	7.6	FHR-VOC1	FHR-VOC2	4.5	Haupt-VOC1	MR-VOC2	7.0

For persons with a salariat class background, the upgrade from *Mittlere Reife* to *Abitur* is the most common pattern (about 54 percent of all school degree upgrades before labor market entry), while for persons with intermediate class background it is the upgrade from *Mittlere Reife* to *Fachhochschulreife* (38 percent). Upgrades from the *Mittlere Reife* are in the top ranks, because the *Mittlere Reife* is the dominant first school-leaving degree type for these two classes. While upgrades from a *Hauptschulabschluss* play a marginal role for persons with a salariat class background, upgrading from *Hauptschulabschluss* to *Mittlere Reife* accounts

for 23 percent of the upgrading activities for persons with an intermediate class background. For persons with a working class background, the most common upgrading pattern is the upgrade from a *Hauptschulabschluss* to *Mittlere Reife* (about 41 percent), which ranks above the two types of upgrade from *Mittlere Reife*.

The center section of *Table 18* refers to upgrades between combinations of school-leaving and vocational degrees before labor market entry. The most common upgrading pattern is similar for all social classes. It is the upgrade from lower-level vocational training (VOC1) to higher education for persons holding an *Abitur*. However, the relative importance within all upgrades before labor market entry differs between the social classes (39.2, 19.6 and 28.5 percent). The rank orders and types of other upgrades differ somewhat between the social origins. Common patterns are, however, that upgrades from lower-level vocational training (VOC1) to higher education play an important role for all social classes. Each of the classes has at least one upgrade of school-leaving degrees only among their top-five for, but these kinds of upgrade are more frequent for intermediate and working classes than for the salariat classes.

The bottom section of the table presents upgrading patterns after labor market entry. Upgrading from lower-level (VOC1) to higher-level vocational training (VOC2) among persons with *Mittlere Reife* constitutes the most common pattern for both the intermediate and working classes and ranges on third position for persons from the salariat classes. For the latter, the most common upgrading pattern is the upgrade from lower-level vocational training (VOC1) to higher education. Overall, patterns of upgrading from lower-level vocational training (VOC1) to higher education appear most important for the salariat classes, while patterns of upgrading from lower-level (VOC1) to higher-level vocational training (VOC2) are most important for the intermediate classes. For the working classes, the dominant patterns comprise upgrades from no to lower-level vocational training (VOC1) and from lower-level (VOC1) to higher-level vocational training (VOC2).

8.4.2 Differences in the returns to educational upgrading by social origin

Similar to the analyses of gender differences in section *7.4.2*, the following analyses explore whether the associations between educational upgrading and labor market outcomes differ between social origins. Again, the results cannot be interpreted as differences in the causal effects of educational upgrading as the descriptive analyses do not control for potential confounders.

Figure 30 shows average earnings premiums (in gross hourly earnings) at the age of 40 for persons who engaged in educational upgrading. The analysis is based on the sample excluding non-employed persons. As in the gender analyses, the bars reflect coefficients from linear regression models that were conducted separately by social origins. In all regression models, the level of education before upgrading was held constant. The left-hand side of *Figure 30* refers to upgrading before labor market entry. Again, upgrades of the school degree refer to upgrading between the first school-leaving degree and the school-leaving degree at obtainment of the first vocational degree. The underlying regression models (cf. *Table AF30* in the appendix) control for the first school-leaving degree. Upgrades of vocational degrees refer to upgrades between the first vocational degree and labor market entry. The underlying regression models control for a variable indicating the combined school-leaving and vocational degrees at obtainment of the first vocational degree. For all social classes, we can

observe gross hourly earnings premiums for both upgrading of school-leaving and vocational degrees. The estimates lie between 4.0 and 4.5 Euros for the former and between 4.8 and 5.2 Euros for the latter. Except for upgrades of vocational degrees among persons from the intermediate classes, these premiums are statistically significantly different from zero according to the conventional 95-percent criterion. However, they do not differ substantively and statistically significantly between the classes of origin.

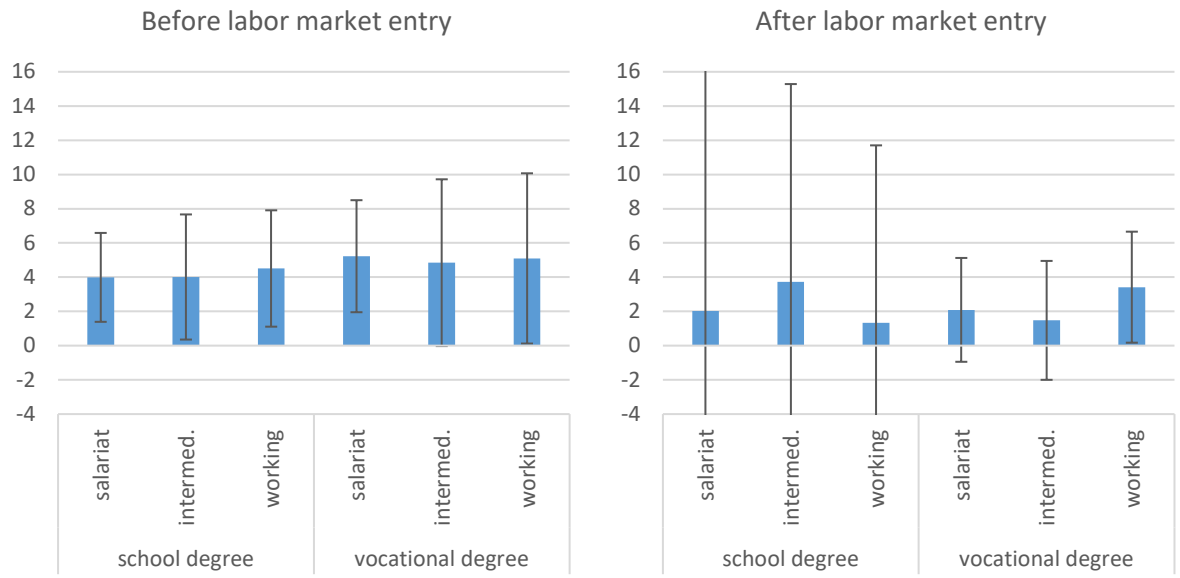

Figure 30. Gross hourly earnings premiums by type of educational upgrading and social origin (excluding non-employed).

The right-hand side of the figure refers to upgrading after labor market entry. All underlying regression models control for school-leaving and vocational degrees at labor market entry. While the estimated premiums lie somewhat below the estimates for premiums associated with upgrading before labor market entry, we observe more variation between the classes of origin. Yet, as indicated by the large 95-percent confidence intervals, none but the estimated premiums for upgrades of vocational degrees among persons from working class families are statistically significantly different from zero.

Figure 31 replicates the same analyses for net monthly earnings and based on the sample including non-employed persons with a zero-coding of their earnings (the underlying regression models are provided in *Table AF31* in the appendix). As in the previous analysis of upgrading before labor market entry, we do not observe differences between the classes of origin that can be considered statistically significant based on conventional criteria. For upgrading after labor market entry, we do observe an estimated negative premium for upgrades of school-leaving degrees among the salariat classes and positive premiums for the other classes. But the 95-percent confidence intervals are very large, so that we cannot derive any conclusion about between-class differences based on that analysis. For upgrades of vocational degrees, we observe positive premiums for all classes of origin, however no substantive or statistically significant differences.

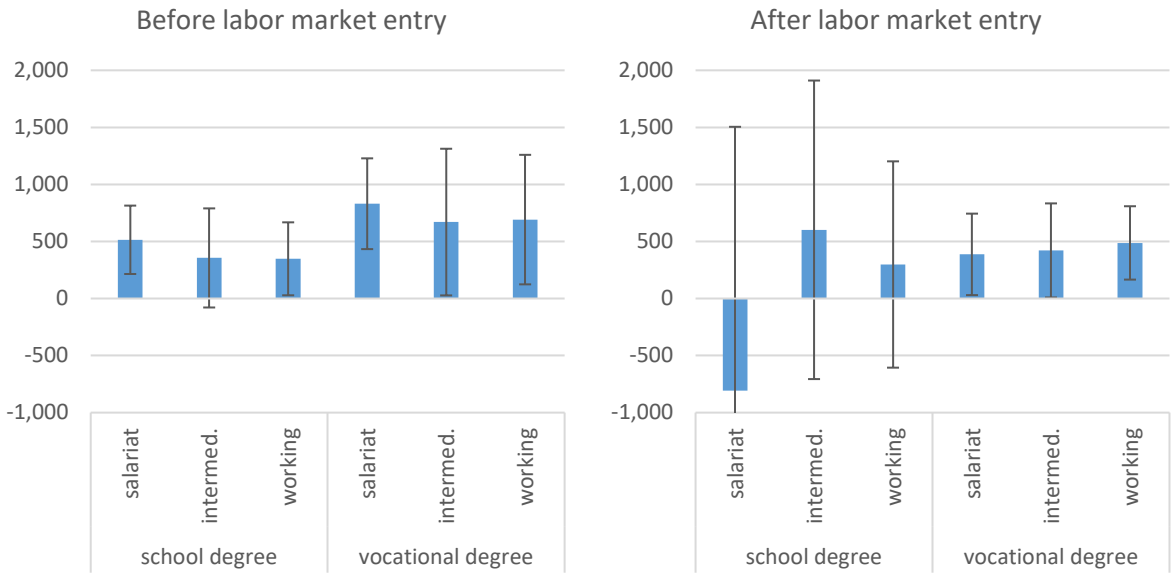

Figure 31. Net monthly earnings premiums by type of educational upgrading and social origin (including non-employed).

Finally, *Figure 32* presents an analysis estimating premiums in terms of occupational status (ISEI). It is based on the sample including non-employed persons and zero-coding their ISEI. It follows the same design as the previous analyses, except that the outcome variable for the models estimating premiums of upgrades before labor market entry refers to labor market entry and not age 40 earnings (the underlying regression models are provided in *Table AF32* in the appendix). For all upgrades before labor market entry, we observe positive ISEI premiums for all classes that are statistically significant according to the 95-percent criterion. We do observe some differences in premiums between classes, but they cannot be considered statistically significant following conventional criteria.

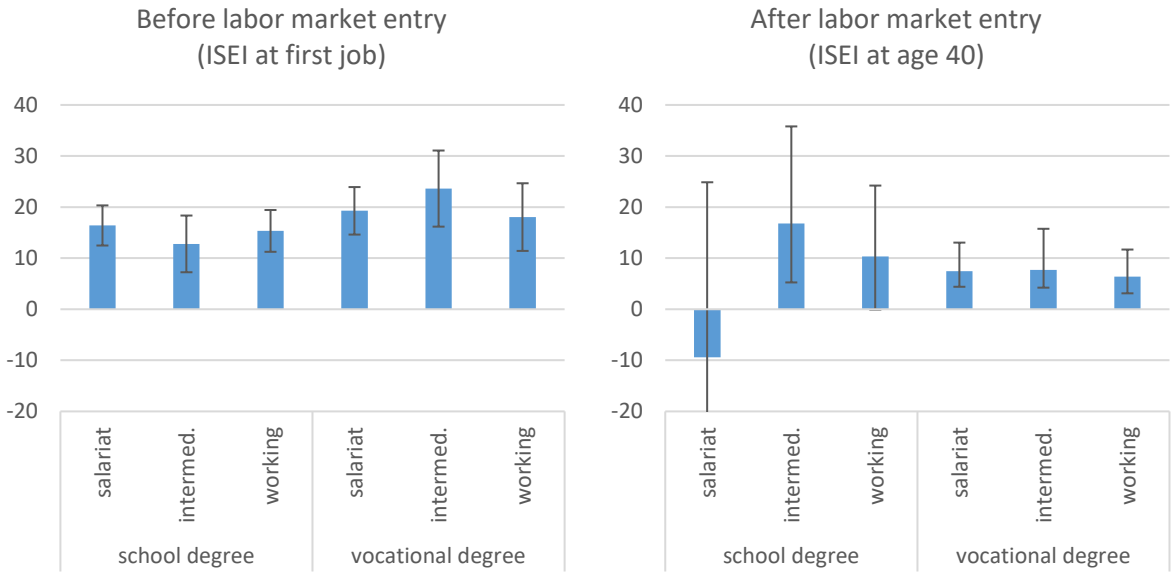

Figure 32. ISEI premiums by type of educational upgrading and social origin (including non-employed).

For upgrades after labor market entry, we only see premiums of upgrading the school-leaving degree for persons from intermediate and working classes, while only the former is statistically significantly different from zero according to the 95-percent criterion. Again, due to the low incidence rates of upgrades of school-leaving degrees only, the 95-percent confidence intervals around the point estimates are large, so that comparisons between the classes lack statistical power. For upgrades of vocational degrees, we can observe small ISEI premiums for all classes that are statistically significant according to conventional criteria, but not different from each other.

9. Concluding remarks and summary

The aim of this paper was to provide descriptive evidence on educational attainment, patterns of educational upgrading and labor market outcomes of the cohort born in the 1970s, which now has reached occupational maturity and can be considered as established in the labor market. Another aim was to show descriptively how these variables differ by gender and social origin. All empirical data shown in this paper stem from the Starting Cohort 6 of the German National Educational Panel Study (NEPS), which provides a formidable data source to study educational and labor market trajectories. The comparison with earnings data from official statistics have shown that this data – once carefully imputed and weighted – is able the reproduce population averages and distributions within acceptable levels of statistical uncertainty. A big advantage of the data is its rich information on sociodemographic characteristics that allow for subgroup analyses, which are not possible with official statistics. While this is only partly true for comparisons by gender, the subgroup analyses by social origin shown in this paper provide a highly relevant added value to gain insights into a key determinant of social inequality. Another advantage of the data is its individual-level longitudinal structure, which allows for an investigation of processes, such as educational upgrading. Hence, even for descriptive analyses, the NEPS data can deliver insights that are beyond the scope of currently available official statistics and help to discover politically relevant patterns regrading educational and labor market outcomes. While this richness of information on individual-level characteristics and developments is valuable per se, it comes at the cost of comparatively low case numbers once broken down to sociodemographic subgroups and cohorts. In some of the specific analyses in this paper, this was visible in very large confidence intervals that impede clear conclusions about subgroup differences. Nevertheless, the analyses pointed to several empirical regularities that shall be summarized in the following concluding remarks.

As regards the univariate statistics (*section 5*), the analyses have underlined that formal education is an ongoing process in Germany that accompanies a substantive part of the population even throughout their 30s. Almost 40 percent of the population engage in some form of educational upgrading until the age of 40. This might point to a rather undervalued feature of the German education system, which traditionally has been considered as strict and inflexible. Before labor market entry, in particular the pathways into upper secondary school-degrees that enable access to higher education are widespread. Also, upgrades from vocational degrees to higher education are very common patterns. After labor market entry, upgrades from lower-level to higher-level vocational degrees are the most dominant pathways. This underlines the importance of the further education paths that are embedded in the German vocational training system. But also upgrades from no vocational degree to a lower-level vocational degree or from a lower-level vocational degree to higher education are

common after labor market entry. As we already knew from previous research, employment rates of the cohort born in the 1970s are at a very high level. They reach their plateau at the age of 35. Thereby, the inequality in the distribution of labor market returns at occupational maturity in the cohort born in the 1970s can be considered on intermediate levels compared against OECD standards. The comparison between earnings and occupational status (ISEI) as alternative measures of labor market outcomes shows that the latter leads to a slightly lower level of measured inequalities than the former. While both measures are certainly correlated, it also highlights that earnings and occupational status measure different aspects of labor market outcomes that should be thoroughly reflected when interpreting results based on either outcome.

The paper also provided descriptive evidence on the association between education and labor market outcomes (*section 6*). While these simple descriptive figures are hard to find in previous publications, they document the well-known fact that labor market outcomes show a strong covariation with formal levels of education in Germany. Not only are labor market outcomes the higher, on average, the higher the vocational degrees are, but they typically also increase within vocational degrees with the level of the school-leaving certificate. While it is beyond the empirical analyses of this paper, one might speculate that, in the occupation-based German labor market, the reason is that different credentials provide access to different training programs and occupations with varying earnings potential. The descriptive analyses provided in this paper are not suited to make causal attributions. Nonetheless, they show the clear pattern that persons who engage in educational upgrading tend to score higher on earnings or occupational status at occupational maturity than persons who do not. It will be up to further research to explore to what extent these patterns reflect selection effects, human capital gains or sheepskin effects.

The subgroup analyses by gender (*section 7*) replicated some findings for the cohort born in the 1970s that already appeared in previous research. For example, after age 25, employment rates are substantively lower for women than for men. At the same time, men show higher participation rates in education. We could also replicate the well-known gender wage gap. Interestingly, the average occupational status (ISEI) does not differ by gender or even shows some minor advantages for women. Regarding educational attainment, we see more advantageous distributions for women at the early stages of the educational trajectory. However, men seem to take advantage of educational upgrading more often than women – in particular after labor market entry. Eventually, they catch up regarding the school-leaving degrees and overtake women regarding vocational degrees until the age of 40.

The subgroup analyses by social origin (*section 8*) point to pronounced differences in labor market outcomes at occupational maturity for the cohort born in the 1970s. This applies both to earnings and occupational status. As we know from previous research on social mobility, one of the key explanations most likely is to be found in very pronounced social differentials in educational attainment. This paper provided clear evidence on tremendous gaps between classes of social origin both with regard to school-leaving and vocational degrees. Overall educational upgrading rates do not differ much between classes of social origin, so that all classes show an improved distribution of educational attainment at occupational maturity, but pronounced differences between the classes remain. The descriptive analyses do neither suggest that educational upgrading can be expected to have a large compensating nor reinforcing influence on inequalities in educational attainment or, relatedly labor market

outcomes. However, a final clarification of this issue will require more refined analyses that go beyond pure descriptives.

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Appendix

Table AF6 (Figure 6)

Participation Rates in Education and Employment Rates over the Life Course

Age	Employment			Education		
	Rate	Lower CI	Upper CI	Rate	Lower CI	Upper CI
15	2.6	1.6	3.6	99.2	98.6	99.8
16	5.3	3.9	6.7	98.0	97.0	99.0
17	9.6	7.8	11.4	94.4	92.9	95.9
18	20.8	18.4	23.3	82.2	80.0	84.5
19	40.1	37.3	43.0	60.2	57.4	63.1
20	53.6	50.7	56.4	44.1	41.3	47.0
21	63.1	60.3	65.8	38.3	35.6	41.1
22	69.9	67.4	72.5	33.7	31.1	36.3
23	73.9	71.5	76.3	32.3	29.8	34.9
24	76.4	74.0	78.7	30.5	28.0	33.0
25	79.2	76.9	81.5	28.0	25.6	30.5
26	82.7	80.6	84.9	22.9	20.7	25.2
27	84.9	82.8	86.9	19.5	17.5	21.6
28	86.4	84.4	88.4	16.6	14.7	18.6
29	86.9	84.8	88.9	14.4	12.5	16.3
30	87.6	85.6	89.7	13.6	11.7	15.5
31	87.8	85.7	89.8	11.4	9.8	13.2
32	88.4	86.4	90.4	10.6	9.0	12.3
33	88.9	86.9	90.8	10.6	9.0	12.4
34	89.3	87.4	91.3	9.6	8.0	11.3
35	89.6	87.7	91.5	8.8	7.2	10.5
36	90.0	88.1	91.9	8.0	6.5	9.7
37	89.7	87.8	91.7	6.8	5.3	8.4
38	89.2	87.1	91.3	6.7	5.2	8.3
39	89.8	87.7	91.8	5.9	4.4	7.6
40	87.9	87.9	92.2	5.9	4.4	7.5

Note: CI=95-percent confidence interval.

Table AF9 (Figure 9)

Distribution of Educational Attainment at Different Stages of the Life Course after Labor Market Entry

Vocational degree	School-leaving degree	First voc. degree before labor market entry	At labor market entry	At age 40
None	None	1.4	1.4	0.9
	Haupt	4.7	4.0	2.0
	MR	4.9	4.6	1.6
	FHR	0.4	0.7	0.3
	Abitur	1.8	2.4	0.8
VOC1	Haupt	18.0	17.3	16.7
	MR	36.5	33.5	28.7
	FHR	3.1	3.4	2.8
	Abitur	12.9	9.5	8.0
VOC2	MR	1.3	2.0	7.7
	FHR	0.2	0.4	1.2
	Abitur	0.8	1.6	2.7
HE	FHR	0.8	2.7	7.2
	Abitur	13.1	16.5	19.2

Table AF10 (Figure 10)

Association between Education and Earnings at Age 40

Gross hourly earnings (excluding non-employed)						
	Education at labor market entry			Education at age 40		
	Mean	Lower CI	Upper CI	Mean	Lower CI	Upper CI
No voc. degr.						
No degree	12.8	7.7	17.9	13.4	8.9	17.9
Haupt	16.1	12.8	19.5	14.4	9.9	18.8
MR	17.4	13.4	21.4	15.7	7.0	24.4
FHR	20.9	11.5	30.3	19.0	1.1	36.9
Abitur	23.1	19.5	26.8	19.4	12.5	26.3
VOC1						
Haupt	16.4	15.1	17.8	16.0	14.7	17.3
MR	18.4	17.3	19.5	17.8	16.6	18.9
FHR	21.7	18.8	24.6	21.5	17.7	25.3
Abitur	22.8	20.6	25.0	22.8	20.2	25.3
VOC2						
MR	21.5	18.1	24.9	20.9	19.0	22.9
FHR	28.7	20.3	37.0	24.8	20.0	29.6
Abitur	24.3	21.0	27.6	23.7	20.7	26.6
HE						
FHR	26.7	23.2	30.1	22.3	20.0	24.7
Abitur	28.0	26.5	29.6	27.5	26.1	28.9
Net monthly earnings (including non-employed)						
	Education at labor market entry			Education at age 40		
	Mean	Lower CI	Upper CI	Mean	Lower CI	Upper CI
No voc. degr.						
No degree	592.4	77.4	1,107.4	628.9	3.8	1,253.9
Haupt	1,115.3	776.8	1,453.9	828.7	361.5	1,295.9
MR	1,123.7	824.6	1,422.8	852.9	333.0	1,372.7
FHR	2,163.5	878.3	3,448.7	1,956.9	-272.8	4,186.6
Abitur	2,163.9	1,708.7	2,619.0	1,914.6	1,022.3	2,806.8
VOC1						
Haupt	1,502.9	1,337.7	1,668.0	1,415.5	1,251.9	1,579.0
MR	1,735.8	1,629.7	1,841.8	1,592.4	1,481.5	1,703.2
FHR	2,037.6	1,726.7	2,348.5	1,890.3	1,480.9	2,299.6
Abitur	2,009.5	1,790.3	2,228.7	1,962.8	1,716.0	2,209.5
VOC2						
MR	2,045.7	1,646.0	2,445.5	2,168.3	1,917.6	2,419.0
FHR	1,684.4	905.3	2,463.5	2,037.9	1,591.6	2,484.2
Abitur	1,986.6	1,589.1	2,384.0	2,102.8	1,795.5	2,410.0
HE						
FHR	2,843.4	2,400.6	3,286.3	2,162.0	1,823.8	2,500.1
Abitur	2,765.8	2,582.3	2,949.2	2,697.9	2,529.7	2,866.1

Note: CI=95-percent confidence interval.

Table AF11 (Figure 11)

Association between Education and ISEI

ISEI at labor market entry (education measured at labor market entry)						
	Incl. non-employed			Excl. non-employed		
	Mean	Lower CI	Upper CI	Mean	Lower CI	Upper CI
No voc. degr.						
No degree	13.1	6.5	19.8	19.0	14.9	23.2
Haupt	24.6	20.4	28.8	27.8	24.7	31.0
MR	32.3	27.7	36.9	35.7	31.9	39.6
FHR	39.1	18.0	60.3	50.1	29.8	70.3
Abitur	42.0	35.5	48.5	46.8	41.1	52.5
VOC1						
Haupt	28.7	27.1	30.3	30.0	28.7	31.4
MR	39.1	37.9	40.4	39.6	38.4	40.8
FHR	47.9	44.2	51.5	47.9	44.2	51.6
Abitur	49.4	47.1	51.7	50.0	48.0	52.1
VOC2						
MR	46.6	42.4	50.8	47.0	43.3	50.7
FHR	57.0	48.6	65.4	57.3	49.3	65.2
Abitur	58.9	54.4	63.4	59.3	55.6	63.1
HE						
FHR	66.7	61.7	71.6	67.2	62.6	71.7
Abitur	66.6	64.3	68.9	72.0	70.5	73.4
ISEI at age 40 (education measured at labor market entry)						
	Incl. non-employed			Excl. non-employed		
	Mean	Lower CI	Upper CI	Mean	Lower CI	Upper CI
No voc. degr.						
No degree	10.9	0.4	21.4	25.0	13.6	36.4
Haupt	22.5	15.6	29.4	33.6	27.9	39.3
MR	34.7	27.5	41.8	46.3	41.7	50.9
FHR	53.9	35.8	72.1	59.4	47.4	71.4
Abitur	54.0	46.2	61.7	58.5	53.1	63.9
VOC1						
Haupt	28.9	26.3	31.6	33.6	31.8	35.5
MR	42.4	40.5	44.3	44.8	43.3	46.3
FHR	49.4	43.5	55.3	53.4	49.5	57.3
Abitur	52.2	48.3	56.0	55.5	53.0	58.0
VOC2						
MR	50.4	42.9	58.0	52.5	47.1	57.9
FHR	60.9	47.9	73.9	65.0	58.5	71.5
Abitur	56.0	48.8	63.3	60.7	56.7	64.7
HE						
FHR	66.5	59.9	73.2	68.8	63.6	74.1
Abitur	67.9	65.3	70.5	72.5	71.2	73.8

Note: CI=95-percent confidence interval.

Table AF11 (Figure 11), continued

	ISEI at age 40 (education measured at age 40)					
	Incl. non-employed			Excl. non-employed		
	Mean	Lower CI	Upper CI	Mean	Lower CI	Upper CI
No voc. degree						
No degree	9.9	-1.5	21.4	22.6	10.2	35.0
Haupt	16.4	6.8	26.0	27.8	18.5	37.1
MR	24.1	13.5	34.7	34.7	28.3	41.0
FHR	51.0	13.6	88.4	62.4	39.7	85.2
Abitur	53.7	41.3	66.1	57.9	48.8	67.0
VOC1						
Haupt	27.4	24.7	30.2	32.4	30.4	34.3
MR	40.9	38.7	43.0	43.8	42.0	45.5
FHR	47.6	40.2	55.0	53.6	48.7	58.5
Abitur	50.4	46.4	54.4	53.4	50.6	56.3
VOC2						
MR	45.0	40.6	49.4	48.0	44.7	51.3
FHR	53.1	45.2	60.9	55.5	49.6	61.4
Abitur	54.6	48.3	60.8	58.2	54.8	61.6
HE						
FHR	52.1	45.2	59.1	58.8	53.9	63.6
Abitur	66.9	64.4	69.3	71.5	70.2	72.9

Note: CI=95-percent confidence interval.

Table AF12 (Figure 12)

Gross Hourly Earnings at Age 40 by Initial Educational Degree and Upgrading Status (Excluding Non-Employed Persons)

Before labor market entry					
Voc. degree	**School degree**	**Upgrade**	**Mean**	**Lower CI**	**Upper CI**
none	none	no upgrade	12.8	7.7	17.9
	Haupt	no upgrade	16.1	12.8	19.5
		school	15.6	2.1	29.1
	MR	no upgrade	17.6	13.7	21.4
		school	26.5	19.0	34.0
	FHR	no upgrade	21.3	7.7	35.0
	Abitur	no upgrade	21.3	17.6	25.1
VOC1	Haupt	no upgrade	16.4	15.1	17.8
		school	22.2	9.0	35.4
		school+voc.	24.4	16.1	32.6
	MR	no upgrade	18.3	17.3	19.4
		school	20.1	11.8	28.5
		vocational	23.4	16.0	30.8
		school+voc.	26.8	22.6	31.0
	FHR	no upgrade	22.1	19.2	25.1
		vocational	26.3	21.7	30.8
	Abitur	no upgrade	22.9	20.6	25.1
		vocational	25.8	22.9	28.7
VOC2	MR	no upgrade	20.3	16.2	24.4
		school	20.0	-	-
		school+voc.	23.0	-	-
	FHR	no upgrade	32.4	21.5	43.3
	Abitur	no upgrade	23.6	19.9	27.2
HE	FHR	no upgrade	25.3	18.5	32.2
	Abitur	no upgrade	28.6	26.9	30.4

Note: CI=95-percent confidence interval.

Table AF12 (Figure 12), continued

After labor market entry					
Voc. degree	**School degree**	**Upgrade**	**Mean**	**Lower CI**	**Upper CI**
None	none	no upgrade	12.8	7.7	17.9
	Haupt	no upgrade	14.4	9.9	18.8
		school	25.8	-19.9	71.6
		vocational	16.6	11.9	21.4
		school+voc.	16.3	-	-
	MR	no upgrade	13.8	5.2	22.4
		vocational	19.1	14.1	24.0
		school+voc.	15.9	5.3	26.5
	FHR	no upgrade	19.0	0.1	37.9
		vocational	20.7	9.7	31.7
	Abitur	no upgrade	19.4	12.5	26.3
		vocational	25.0	20.7	29.2
VOC1	Haupt	no upgrade	16.0	14.6	17.4
		school	13.5	10.9	16.0
		school+voc.	20.0	15.9	24.1
	MR	no upgrade	17.8	16.6	19.0
		school	18.7	11.7	25.8
		vocational	20.4	17.4	23.3
		school+voc.	21.6	18.2	24.9
	FHR	no upgrade	22.0	17.9	26.1
		vocational	21.1	17.0	25.1
	Abitur	no upgrade	23.1	20.3	26.0
		vocational	21.8	18.8	24.9
VOC2	MR	no upgrade	21.5	18.1	24.9
	FHR	no upgrade	28.1	18.7	37.4
		vocational	33.7	13.2	54.2
	Abitur	no upgrade	24.4	21.0	27.8
		vocational	20.7	-	-
HE	FHR	no upgrade	26.7	23.2	30.1
	Abitur	no upgrade	28.0	26.5	29.6

Note: CI=95-percent confidence interval.

Table AF13 (Figure 13)

Net monthly Earnings at age 40 by Initial Educational Degree and Upgrading Status (Including Non-Employed Persons)

Before labor market entry					
Voc. degree	**School degree**	**Upgrade**	**Mean**	**Lower CI**	**Upper CI**
none	none	no upgrade	592.4	77.4	1,107.4
	Haupt	no upgrade	1,115.4	776.8	1,453.9
		school	436.9	-201.4	1,075.2
	MR	no upgrade	1,253.1	933.9	1,572.4
		school	2,225.0	1,211.0	3,239.1
	FHR	no upgrade	2,293.9	410.5	4,177.2
	Abitur	no upgrade	2,112.9	1,649.6	2,576.2
VOC1	Haupt	no upgrade	1,502.9	1,337.7	1,668.0
		school	2,415.0	1,369.8	3,460.2
		school+voc.	2,327.7	1,319.0	3,336.4
	MR	no upgrade	1,728.3	1,621.6	1,835.1
		school	1,941.9	1,175.1	2,708.7
		vocational	2,472.9	1,715.7	3,230.0
		school+voc.	2,743.1	2,235.9	3,250.4
	FHR	no upgrade	2,073.6	1,745.9	2,401.3
		vocational	3,316.0	2,412.6	4,219.4
	Abitur	no upgrade	2,013.1	1,790.0	2,236.3
		vocational	2,611.5	2,242.7	2,980.4
VOC2	MR	no upgrade	1,807.8	1,371.7	2,243.9
		school	2,074.6	-	-
		school+voc.	2,354.7	-	-
	FHR	no upgrade	1,436.3	381.6	2,490.9
	Abitur	no upgrade	1,970.4	1,558.5	2,382.3
HE	FHR	no upgrade	2,587.7	1,878.8	3,296.6
	Abitur	no upgrade	2,780.4	2,565.8	2,994.9

Note: CI=95-percent confidence interval.

Table AF13 (Figure 13), continued

After labor market entry					
Voc. degree	**School degree**	**Upgrade**	**Mean**	**Lower CI**	**Upper CI**
none	none	no upgrade	592.4	77.4	1,107.4
	Haupt	no upgrade	828.7	361.5	1,295.9
		school	1,590.7	-612.8	3,794.2
		vocational	1,412.9	714.3	2,111.5
		school+voc.	1,407.6	-	-
	MR	no upgrade	716.4	254.3	1,178.5
		vocational	1,329.3	888.8	1,769.9
		school+voc.	1,117.6	181.1	2,054.1
	FHR	no upgrade	2,335.9	98.3	4,573.6
		vocational	1,911.9	364.3	3,459.4
	Abitur	no upgrade	1,914.6	1,022.3	2,806.8
		vocational	2,292.3	1,757.7	2,826.9
VOC1	Haupt	no upgrade	1,437.4	1,268.1	1,606.7
		school	1,146.4	38.0	2,254.9
		school+voc.	2,043.4	1,392.9	2,693.9
	MR	no upgrade	1,624.3	1,509.5	1,739.2
		school	1,987.5	1,289.6	2,685.4
		vocational	2,153.0	1,806.3	2,499.7
		school+voc.	2,161.8	1,747.3	2,576.4
	FHR	no upgrade	1,961.6	1,553.6	2,369.6
		vocational	2,188.0	1,645.1	2,730.8
	Abitur	no upgrade	1,983.6	1,704.0	2,263.3
		vocational	2,082.7	1,737.3	2,428.2
VOC2	MR	no upgrade	2,045.7	1,646.0	2,445.5
	FHR	no upgrade	1,539.6	727.8	2,351.3
		vocational	2,863.2	719.8	5,006.6
	Abitur	no upgrade	2,028.1	1,618.1	2,438.1
		vocational	1,373.1	-	-
HE	FHR	no upgrade	2,843.4	2,400.6	3,286.3
	Abitur	no upgrade	2,765.8	2,582.3	2,949.2

Note: CI=95-percent confidence interval.

Table AF14 (Figure 14)

ISEI by Initial Educational Degree and Upgrading Status (Including Non-Employed Persons)

Before labor market entry					
Voc. degree	**School degree**	**Upgrade**	**Mean**	**Lower CI**	**Upper CI**
none	none	no upgrade	13.1	6.5	19.8
	Haupt	no upgrade	24.6	20.4	28.8
		school	29.0	21.1	37.0
	MR	no upgrade	32.8	27.8	37.9
		school	41.0	31.0	50.8
	FHR	no upgrade	38.1	0.2	75.9
	Abitur	no upgrade	42.8	35.2	50.3
VOC1	Haupt	no upgrade	28.7	27.1	30.3
		school	38.8	22.1	55.5
		school+voc.	48.3	35.6	61.0
	MR	no upgrade	39.2	37.9	40.4
		school	50.4	39.7	61.0
		vocational	48.8	41.8	55.9
		school+voc.	68.6	64.0	73.2
	FHR	no upgrade	47.3	43.7	51.0
		vocational	67.0	60.7	73.2
	Abitur	no upgrade	49.4	47.0	51.7
		vocational	66.0	62.5	69.5
VOC2	MR	no upgrade	47.6	42.4	52.7
		school	52.7	-	-
		school+voc.	77.7	-	-
	FHR	no upgrade	57.8	44.8	70.8
	Abitur	no upgrade	60.7	53.9	67.5
HE	FHR	no upgrade	60.5	49.4	71.7
	Abitur	no upgrade	66.3	63.6	69.0

Note: CI=95-percent confidence interval.

Table AF14 (Figure 14), continued

After labor market entry					
Voc. degree	**School degree**	**Upgrade**	**Mean**	**Lower CI**	**Upper CI**
none	none	no upgrade	10.9	0.4	21.4
	Haupt	no upgrade	16.4	6.8	26.0
		school	31.9	-0.7	64.5
		vocational	24.1	12.1	36.1
		school+voc.	46.6	-	-
	MR	no upgrade	22.2	10.8	33.6
		vocational	39.8	29.6	50.1
		school+voc.	39.7	10.3	69.1
	FHR	no upgrade	61.8	33.8	89.8
		vocational	48.3	25.4	71.2
	Abitur	no upgrade	53.7	41.3	66.1
		vocational	54.2	44.1	64.3
VOC1	Haupt	no upgrade	28.1	25.3	30.8
		school	25.7	-0.8	52.2
		school+voc.	35.9	25.9	45.9
	MR	no upgrade	40.8	38.7	43.0
		school	54.8	42.3	67.3
		vocational	44.1	38.2	50.0
		school+voc.	52.6	43.3	61.9
	FHR	no upgrade	48.5	40.6	56.3
		vocational	51.3	42.7	59.9
	Abitur	no upgrade	50.7	46.4	55.1
		vocational	56.1	48.4	63.7
VOC2	MR	no upgrade	50.4	42.9	58.0
	FHR	no upgrade	58.9	44.1	73.6
		vocational	77.2	63.2	91.2
	Abitur	no upgrade	56.6	49.5	63.7
		vocational	53.5	-	-
HE	FHR	no upgrade	66.5	59.9	73.1
	Abitur	no upgrade	67.9	65.3	70.5

Note: CI=95-percent confidence interval.

Table AF15 (Figure 15)

Participation Rates in Education and Employment Rates over the Life Course by Gender

Age	Employment rates					
	Men			Women		
	Rate	Lower CI	Upper CI	Rate	Lower CI	Upper CI
15	2.6	1.2	4.0	2.6	1.3	4.1
16	5.0	3.2	6.9	5.5	3.5	7.6
17	9.2	6.6	11.7	10.0	7.4	12.7
18	19.2	15.9	22.6	22.5	19.0	26.1
19	40.3	36.3	44.3	39.8	35.8	43.9
20	53.5	49.5	57.5	53.6	49.5	57.7
21	62.0	58.1	65.8	64.2	60.4	68.1
22	68.8	65.2	72.3	71.1	67.5	74.8
23	73.0	69.5	76.4	74.9	71.4	78.4
24	76.8	73.6	80.0	75.8	72.4	79.3
25	79.4	76.2	82.6	78.9	75.6	82.3
26	85.1	82.3	87.8	80.3	77.1	83.6
27	89.7	87.4	91.9	79.7	76.4	83.1
28	91.0	88.8	93.3	81.5	78.3	84.9
29	92.2	89.9	94.5	81.2	77.9	84.7
30	93.8	91.8	95.9	81.1	77.7	84.6
31	93.5	91.3	95.7	81.6	78.3	85.1
32	94.3	92.2	96.4	82.1	78.9	85.5
33	95.4	93.5	97.4	81.9	78.7	85.3
34	95.3	93.3	97.3	83.0	79.8	86.4
35	94.9	92.8	97.0	83.9	80.7	87.2
36	95.5	93.5	97.5	84.2	81.0	87.5
37	93.9	91.6	96.2	85.3	82.2	88.5
38	93.5	91.0	96.0	84.6	81.3	88.0
39	93.2	90.6	95.9	86.1	83.0	89.2
40	93.8	91.1	96.5	86.0	82.9	89.3

Note: CI=95-percent confidence interval.

Table AF15 (Figure 15), continued

Participation rates in education						
Age	Men			Women		
	Rate	Lower CI	Upper CI	Rate	Lower CI	Upper CI
15	99.4	98.7	100.1	99.1	98.1	100.0
16	99.0	98.1	99.8	97.0	95.1	98.8
17	96.0	94.3	97.7	92.8	90.3	95.3
18	84.6	81.5	87.6	79.8	76.4	83.2
19	60.4	56.4	64.3	60.1	56.1	64.2
20	42.7	38.8	46.7	45.6	41.5	49.7
21	38.8	34.9	42.6	37.9	34.0	41.8
22	36.9	33.1	40.6	30.4	26.8	34.0
23	36.4	32.7	40.1	28.1	24.6	31.6
24	35.4	31.7	39.1	25.4	22.0	28.7
25	32.6	29.0	36.1	23.3	20.0	26.6
26	27.5	24.1	30.8	18.2	15.2	21.2
27	24.7	21.5	27.9	14.1	11.5	16.7
28	22.1	19.1	25.2	10.8	8.6	13.1
29	18.1	15.2	21.1	10.5	8.1	12.9
30	18.0	15.0	21.0	9.0	6.8	11.1
31	15.2	12.5	17.9	7.6	5.5	9.6
32	13.9	11.3	16.5	7.2	5.2	9.2
33	13.7	11.0	16.4	7.5	5.4	9.6
34	12.1	9.5	14.6	7.1	4.9	9.2
35	11.3	8.7	13.9	6.3	4.3	8.2
36	9.9	7.4	12.4	6.2	4.2	8.2
37	7.7	5.4	9.9	6.0	3.9	8.1
38	8.5	6.2	10.9	4.9	3.1	6.7
39	7.8	5.3	10.3	4.0	2.3	5.8
40	6.6	4.4	8.9	5.3	3.3	7.3

Note: CI=95-percent confidence interval.

Table AF16 (Figure 16)

Average Gross Hourly and Net Monthly Earnings at Age 40 by Gender

	Gross hourly earnings		
	Mean	**Lower CI**	**Upper CI**
Incl. non-employed			
Men	22.4	21.5	23.3
Women	18.8	17.9	19.6
Excl. non-employed			
Men	21.0	20.0	22.1
Women	16.2	15.2	17.1
	Net monthly earnings		
	Mean	**Lower CI**	**Upper CI**
Incl. non-employed			
Men	2,586.1	2,486.7	2,685.5
Women	1,528.6	1,464.4	1,592.8
Excl. non-employed			
Men	2,425.9	2,314.2	2,537.6
Women	1,316.1	1,244.8	1,387.4

Note: CI=95-percent confidence interval.

Table AF17 (Figure 17)

ISEI at First Job and at Age 40 by Gender

	First job		
	Mean	**Lower CI**	**Upper CI**
Incl. non-employed			
Men	42.7	41.3	44.1
Women	43.8	42.4	45.1
Excl. non-employed			
Men	43.6	42.2	45.0
Women	46.8	45.7	48.0
	Job at age 40		
	Mean	**Lower CI**	**Upper CI**
Incl. non-employed			
Men	46.9	45.1	48.8
Women	43.6	41.8	45.4
Excl. non-employed			
Men	50.0	48.6	51.5
Women	50.6	49.3	51.9

Note: CI=95-percent confidence interval.

Table AF18 (Figure 18)

Distribution of School-Leaving Degrees at Different Stages of the Life Course by Gender

	First school degree		First vocational degree		Labor market entry		Age 40	
	Men	Women	Men	Women	Men	Women	Men	Women
No degree	1.3	1.6	1.3	1.6	1.3	1.6	0.7	1.2
Haupt	31.1	23.4	26.4	18.8	25.3	17.0	21.3	16.1
MR	46.8	51.0	40.5	45.0	36.3	44.2	35.1	41.2
FHR	1.0	0.8	5.8	3.3	9.4	4.8	14.5	8.5
Abitur	19.9	23.3	26.1	31.3	27.7	32.4	28.6	33.1

Table AF19 (Figure 19)

Distribution of Vocational Educational Attainment at Different Stages of the Life Course by Gender

Voc. degree	School degree	First voc. degree		Labor market entry		Age 40	
		Men	Women	Men	Women	Men	Women
none	none	1.3	1.6	1.3	1.6	0.7	1.2
	Haupt	4.3	5.2	4.1	4.0	1.4	2.8
	MR	3.2	6.6	2.2	7.2	0.8	2.3
	FHR	0.4	0.4	0.7	0.6	0.3	0.3
	Abitur	2.4	1.2	3.4	1.5	1.1	0.5
VOC1	Haupt	22.1	13.7	21.3	13.0	19.9	13.3
	MR	36.7	36.3	32.7	34.2	24.0	33.7
	FHR	4.0	2.2	4.0	2.8	3.4	2.2
	Abitur	10.0	15.9	6.5	12.6	5.7	10.6
VOC2	MR	0.6	2.1	1.3	2.8	10.2	5.1
	FHR	0.3	0.2	0.5	0.3	1.5	0.9
	Abitur	0.7	0.9	1.4	1.7	2.6	2.8
HE	FHR	1.1	0.5	4.2	1.1	9.3	5.0
	Abitur	13.0	13.3	16.4	16.6	19.1	19.2

Table AF20 (Figure 20)

Educational Upgrading Rates by Gender

Upgrade	Before LM entry		After LM entry		Overall	
	Men	Women	Men	Women	Men	Women
School degree	13.6	14.4	1.6	0.4	11.6	11.7
Vocational degree	2.8	2.9	15.8	11.7	15.2	11.8
Both	5.5	2.6	8.2	4.6	17.0	9.9
No upgrade	78.1	80.1	74.4	83.3	56.3	66.6

Note: LM=labor market.

Table AF21 (Figure 21)

Gross Hourly Earnings Premiums by Type of Educational Upgrading and Gender (Excluding Non-Employed)

Before labor market entry	**Men**		**Women**	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*4.37*	*1.24*	*4.32*	*1.33*
School degree (ref: none)				
Hauptschulabschluss	4.48	4.14	4.96	10.20
Mittlere Reife	8.15	4.06	7.35	10.15
FH-Reife	14.05	6.78	7.51	11.23
Abitur	16.31	4.06	13.97	10.15
Intercept	13.08	4.03	9.64	10.09
Upgrade of vocational degree	*5.73*	*1.70*	*2.92*	*1.81*
Education degree (ref: none)				
No voc – Haupt	4.09	4.67	5.11	10.50
No voc – MR	7.97	4.52	8.30	10.26
No voc – FHR	15.38	12.08	3.85	10.99
No voc – Abitur	9.00	4.77	10.30	10.32
VOC1 – Haupt	4.69	4.08	4.71	10.11
VOC1 – MR	7.21	4.02	7.06	10.09
VOC1 – FHR	9.21	4.27	11.46	10.29
VOC1 – Abitur	11.98	4.16	11.14	10.02
VOC2 – MR	7.10	6.77	10.80	10.25
VOC2 – FHR	21.21	9.62	18.85	13.40
VOC2 – Abitur	14.29	5.84	10.68	10.35
HE - FHR	14.47	5.36	10.37	11.92
HE - Abitur	18.52	4.10	15.68	10.15
Intercept	13.08	3.97	9.64	10.01

Note: Upgrade of school degree refers to upgrading between first school-leaving degree and the time of obtainment of the first vocational degree. Models control for first school-leaving degrees. Upgrade of vocational degree refers to upgrading between first vocational degree and labor market entry. Models control for combined school-leaving and vocational degrees at the time of obtainment of the first vocational degree.

Table AF21 (Figure 21), continued

After labor market entry	Men		Women	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*0.63*	*4.25*	*4.71*	*5.15*
School degree (ref: none)				
Hauptschulabschluss	0.06	5.50	5.27	11.22
Mittlere Reife	2.09	5.44	7.55	11.26
FH-Reife	5.76	5.68	11.03	11.45
Abitur	8.85	5.49	11.91	11.30
Vocational degree (ref: none)				
VOC1	3.19	2.99	1.29	2.82
VOC2	7.55	4.32	3.77	3.15
Higher education	8.12	3.19	5.02	3.11
Intercept	14.02	4.62	7.70	10.93
Upgrade of vocational degree	*2.10*	*1.19*	*0.63*	*1.49*
Education degree (ref: none)				
No voc – Haupt	2.60	4.58	4.45	10.36
No voc – MR	2.82	4.82	7.71	10.18
No voc – FHR	11.33	8.52	6.00	11.41
No voc – Abitur	10.48	4.59	10.22	10.50
VOC1 – Haupt	5.07	4.13	4.45	10.02
VOC1 – MR	7.10	4.04	7.10	10.01
VOC1 – FHR	9.22	4.42	10.84	10.35
VOC1 – Abitur	12.81	4.26	11.41	9.92
VOC2 – MR	11.54	5.70	10.91	10.11
VOC2 – FHR	16.31	7.11	18.72	13.10
VOC2 – Abitur	16.44	5.28	11.00	10.14
HE - FHR	15.43	4.58	12.47	10.74
HE - Abitur	18.60	4.14	15.31	10.04
Intercept	12.41	4.03	9.45	9.92

Note: Upgrade of school degree refers to upgrading between labor market entry and the age of 40. Models control for school-leaving and vocational degrees at labor market entry. Upgrade of vocational degree refers to upgrading between labor market entry and the age of 40. Models control for combined school-leaving and vocational degrees at labor market entry.

Table AF22 (Figure 22)

Net Monthly Earnings Premiums by Type of Educational Upgrading and Gender (Including Non-Employed)

Before labor market entry	**Men**		**Women**	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*467.48*	*152.12*	*472.14*	*102.30*
School degree (ref: none)				
Hauptschulabschluss	632.80	477.58	697.04	249.11
Mittlere Reife	1,119.87	466.05	1,178.75	244.56
FH-Reife	1,781.87	816.59	1,247.21	455.43
Abitur	2,015.96	469.70	1,766.91	252.47
Intercept	1,220.43	461.39	65.91	240.23
Upgrade of vocational degree	*656.35*	*194.94*	*519.24*	*156.99*
Education degree (ref: none)				
No voc – Haupt	314.58	517.61	491.80	277.00
No voc – MR	1,017.88	528.72	937.46	274.24
No voc – FHR	2,065.36	1,336.78	1,062.49	515.87
No voc – Abitur	1,184.77	543.39	1,410.53	371.75
VOC1 – Haupt	721.46	471.21	739.73	249.60
VOC1 – MR	1,010.59	462.49	1,183.16	241.24
VOC1 – FHR	1,347.65	500.84	1,283.44	310.72
VOC1 – Abitur	1,428.86	482.24	1,531.43	254.03
VOC2 – MR	752.52	826.85	1,719.87	320.31
VOC2 – FHR	9.01	948.82	1,652.59	744.80
VOC2 – Abitur	1,376.68	704.64	1,403.65	393.58
HE - FHR	1,879.88	647.21	1,436.60	599.04
HE - Abitur	2,356.44	477.09	1,891.23	259.83
Intercept	1,220.43	453.54	65.91	236.35

Note: Upgrade of school degree refers to upgrading between first school-leaving degree and the time of obtainment of the first vocational degree. Models control for first school-leaving degrees. Upgrade of vocational degree refers to upgrading between first vocational degree and labor market entry. Models control for combined school-leaving and vocational degrees at the time of obtainment of the first vocational degree.

Table AF22 (Figure 22), continued

After labor market entry	Men		Women	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*-241.88*	*411.86*	*798.51*	*533.57*
School degree (ref: none)				
Hauptschulabschluss	-228.62	658.54	447.45	316.43
Mittlere Reife	88.96	658.60	848.29	317.07
FH-Reife	327.21	692.87	950.71	368.07
Abitur	709.48	665.51	1,165.79	328.73
Vocational degree (ref: none)				
VOC1	538.66	312.51	316.92	157.23
VOC2	523.75	433.18	663.87	212.24
Higher education	1,255.78	353.35	774.14	202.32
Intercept	1,545.35	584.60	47.05	273.84
Upgrade of vocational degree	*234.57*	*151.47*	*166.78*	*122.49*
Education degree (ref: none)				
No voc – Haupt	353.16	528.15	506.59	288.13
No voc – MR	449.50	556.18	784.66	276.52
No voc – FHR	1,559.67	942.66	1,172.42	470.15
No voc – Abitur	1,262.42	522.66	1,148.38	365.86
VOC1 – Haupt	800.07	480.26	726.70	252.70
VOC1 – MR	1,026.29	467.50	1,210.76	241.44
VOC1 – FHR	1,288.08	505.00	1,292.05	313.03
VOC1 – Abitur	1,581.40	496.44	1,529.59	256.77
VOC2 – MR	1,482.88	670.83	1,740.13	313.92
VOC2 – FHR	482.08	774.87	1,780.94	707.77
VOC2 – Abitur	1,391.10	635.26	1,487.61	328.80
HE - FHR	2,030.46	519.27	1,614.37	405.69
HE - Abitur	2,388.35	478.48	1,973.62	255.77
Intercept	1,117.40	462.54	22.68	238.20

Note: Upgrade of school degree refers to upgrading between labor market entry and the age of 40. Models control for school-leaving and vocational degrees at labor market entry. Upgrade of vocational degree refers to upgrading between labor market entry and the age of 40. Models control for combined school-leaving and vocational degrees at labor market entry.

Table AF23 (Figure 23)

ISEI Premiums by Type of Educational Upgrading and Gender (Including Non-Employed)

Before labor market entry	**Men**		**Women**	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*19.84*	*1.71*	*12.20*	*1.85*
School degree (ref: none)				
Hauptschulabschluss	8.97	5.42	21.83	5.48
Mittlere Reife	19.04	5.39	34.19	5.41
FH-Reife	35.07	11.74	28.15	8.78
Abitur	42.95	5.47	49.94	5.51
Intercept	19.29	5.31	7.68	5.34
Upgrade of vocational degree	*24.25*	*2.13*	*15.18*	*2.77*
Education degree (ref: none)				
No voc – Haupt	6.67	5.46	16.97	5.71
No voc – MR	18.10	5.63	24.95	5.60
No voc – FHR	30.55	20.85	16.52	10.34
No voc – Abitur	30.30	5.96	19.95	7.99
VOC1 – Haupt	8.34	4.94	23.19	5.35
VOC1 – MR	17.67	4.90	34.79	5.17
VOC1 – FHR	29.16	5.50	36.13	6.35
VOC1 – Abitur	27.37	5.19	41.94	5.33
VOC2 – MR	22.10	8.41	41.90	6.66
VOC2 – FHR	43.66	11.84	41.42	14.11
VOC2 – Abitur	42.19	8.74	51.73	7.93
HE - FHR	41.17	7.39	54.17	12.56
HE - Abitur	49.68	5.08	55.87	5.36
Intercept	19.29	4.82	7.68	5.09

Note: Upgrade of school degree refers to upgrading between first school-leaving degree and the time of obtainment of the first vocational degree. Models control for first school-leaving degrees. Upgrade of vocational degree refers to upgrading between first vocational degree and labor market entry. Models control for combined school-leaving and vocational degrees at the time of obtainment of the first vocational degree.

Table AF23 (Figure 23), continued

After labor market entry	Men		Women	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*8.26*	*5.28*	*12.46*	*11.03*
School degree (ref: none)				
Hauptschulabschluss	0.93	10.45	12.68	7.59
Mittlere Reife	14.08	10.51	25.48	7.55
FH-Reife	26.36	11.05	29.48	8.78
Abitur	27.19	10.64	35.05	7.79
Vocational degree (ref: none)				
VOC1	4.84	4.43	13.03	3.71
VOC2	12.57	6.19	21.11	5.10
Higher education	21.55	5.05	27.47	4.58
Intercept	21.86	9.56	2.20	6.51
Upgrade of vocational degree	*6.70*	*2.42*	*5.88*	*2.92*
Education degree (ref: none)				
No voc – Haupt	9.37	9.15	10.00	7.25
No voc – MR	15.28	10.17	27.97	6.70
No voc – FHR	36.84	14.50	42.67	11.62
No voc – Abitur	34.56	9.58	43.20	9.63
VOC1 – Haupt	11.65	8.75	25.33	6.15
VOC1 – MR	23.02	8.59	39.75	5.93
VOC1 – FHR	34.74	9.07	38.55	7.67
VOC1 – Abitur	34.73	9.19	47.97	6.34
VOC2 – MR	35.66	11.99	47.24	7.42
VOC2 – FHR	42.95	12.65	58.67	14.99
VOC2 – Abitur	37.00	11.37	55.30	8.00
HE - FHR	50.46	9.50	60.51	10.54
HE - Abitur	53.88	8.76	62.83	6.11
Intercept	17.25	8.59	1.70	5.84

Note: Upgrade of school degree refers to upgrading between labor market entry and the age of 40. Models control for school-leaving and vocational degrees at labor market entry. Upgrade of vocational degree refers to upgrading between labor market entry and the age of 40. Models control for combined school-leaving and vocational degrees at labor market entry.

Table AF24 (Figure 24)

Participation Rates in Education and Employment Rates over the Life Course by Social Origin

Age	Employment rate			Participation rate in education		
	Salariat	Intermed.	Working	Salariat	Intermed.	Working
15	2.3	3.5	2.5	100.0	99.7	98.0
16	4.3	7.0	5.4	99.4	98.3	96.1
17	7.7	10.3	11.3	97.4	96.2	89.8
18	18.1	19.8	24.7	86.9	83.0	76.2
19	34.5	42.4	45.2	67.8	60.3	51.4
20	45.1	61.6	58.7	55.2	37.0	35.4
21	56.0	70.1	67.1	50.8	29.8	28.9
22	63.5	75.9	73.9	48.9	25.7	20.7
23	69.9	79.6	75.1	46.7	26.3	19.3
24	73.5	81.6	76.5	44.3	23.2	18.7
25	76.1	86.0	78.7	39.8	22.3	17.9
26	81.0	84.7	83.6	32.3	18.3	14.7
27	85.0	85.5	84.3	27.1	17.0	12.3
28	89.6	87.0	82.3	21.0	16.3	11.7
29	91.4	85.9	82.1	18.9	11.3	11.1
30	92.9	87.6	81.5	17.6	11.2	10.4
31	93.7	87.9	80.7	14.5	9.0	9.5
32	93.3	87.6	83.1	13.3	10.0	7.9
33	93.1	87.5	84.8	12.5	7.7	10.3
34	92.9	88.6	85.6	11.6	7.5	8.6
35	94.2	89.3	84.4	10.1	7.4	8.3
36	94.8	88.9	85.0	7.9	6.2	9.5
37	93.7	89.5	85.2	6.4	5.4	8.2
38	91.7	90.0	85.7	7.1	6.4	6.7
39	92.7	91.3	85.4	6.2	6.5	5.4
40	93.6	89.8	86.0	6.7	5.3	5.5

Table AF25 (Figure 25)

Average Gross Hourly and Net Monthly Earnings at Age 40 by Social Origin

		Gross hourly earnings			Net monthly earnings		
		Mean	Lower CI	Upper CI	Mean	Lower CI	Upper CI
Excl. non-employed	Salariat	22.8	21.7	23.8	2,338.8	2,233.3	2,444.3
	Intermed.	19.9	18.4	21.4	2,023.0	1,892.7	2,153.3
	Working	18.6	17.6	19.6	1,826.2	1,738.1	1,914.3
Incl. non-employed	Salariat	21.3	20.2	22.4	2,188.5	2,077.3	2,299.8
	Intermed.	17.9	16.3	19.4	1,817.6	1,669.7	1,965.5
	Working	16.0	14.9	17.1	1,571.4	1,468.2	1,674.5

Note: CI=95-percent confidence interval.

Table AF26 (Figure 26)

ISEI at First Job and at Age 40 by Social Origin

		First job			Job at age 40		
		Mean	Lower CI	Upper CI	Mean	Lower CI	Upper CI
Excl. non-employed	Salariat	53.1	51.8	54.5	57.3	55.9	58.7
	Intermed.	41.8	39.9	43.6	46.7	44.6	48.7
	Working	37.8	36.4	39.2	43.6	42.0	45.3
Incl. non-employed	Salariat	50.8	49.3	52.4	53.6	51.7	55.6
	Intermed.	40.4	38.5	42.4	42.0	39.3	44.6
	Working	36.0	34.4	37.5	37.5	35.4	39.7

Note: CI=95-percent confidence interval.

Table AF27 (Figure 27)

Distribution of School-Leaving Degrees at Different Stages of the Life Course by Social Origin

	First school-leaving degree			First vocational degree			Labor market entry			Age 40		
	S	I	W	S	I	W	S	I	W	S	I	W
No degree	0.6	0.3	3.0	0.6	0.3	3.0	0.6	0.3	3.0	0.6	0.2	1.7
Haupt	13.6	28.8	42.5	10.4	24.2	36.2	9.9	22.3	34.1	8.4	19.4	30.5
MR	48.1	57.5	44.5	36.9	51.4	44.2	33.1	47.8	43.8	30.8	45.1	42.4
FHR	1.2	0.9	0.5	5.3	6.3	2.8	7.9	9.9	4.6	11.3	14.5	10.0
Abitur	36.4	12.6	9.6	46.8	17.7	13.9	48.5	19.7	14.6	48.9	20.9	15.4

Note: S=Salariat classes, I=Intermediate classes, W=Working classes

Table AF28 (Figure 28)

Distribution of Vocational Educational Attainment at Different Stages of the Life Course by Social Origin

Voc. degree	School degree	First vocational degree			Labor market entry			Age 40		
		S	I	W	S	I	W	S	I	W
none	none	0.6	0.3	3.0	0.6	0.3	3.0	0.6	0.2	1.7
	Haupt	1.1	4.7	9.0	1.0	3.9	7.6	0.6	2.7	3.4
	MR	3.9	5.6	5.5	2.9	5.1	6.4	0.8	1.7	2.4
	FHR	0.4	0.5	0.4	0.7	0.8	0.6	0.4	0.5	0.1
	Abitur	2.9	0.7	1.2	3.7	1.6	1.5	1.2	0.7	0.4
VOC1	Haupt	9.4	19.5	27.1	8.8	18.4	26.5	7.8	16.7	27.1
	MR	31.5	44.9	37.3	28.1	41.2	35.2	24.8	33.2	30.8
	FHR	3.6	4.4	1.9	3.4	5.2	2.2	2.3	4.4	2.5
	Abitur	18.3	9.9	8.2	13.5	6.9	6.3	10.6	7.0	5.8
VOC2	MR	1.5	0.9	1.4	2.1	1.5	2.2	5.6	10.2	9.2
	FHR	0.3	0.1	0.3	0.4	0.4	0.3	1.1	1.9	1.1
	Abitur	1.3	0.6	0.4	2.2	2.0	0.6	3.8	2.6	1.5
HE	FHR	1.0	1.3	0.3	3.4	3.4	1.4	7.6	7.8	6.4
	Abitur	24.3	6.5	4.2	29.1	9.2	6.3	33.3	10.7	7.7

Note: S=Salariat classes, I=Intermediate classes, W=Working classes

Table AF29 (Figure 29)

Educational Upgrading Rates by Social Origin

Upgrade	Before labor market entry			After labor market entry			Overall		
	S	I	W	S	I	W	S	I	W
school degree	15.0	15.8	11.7	0.3	1.6	1.6	11.7	12.9	10.8
voc. degree	4.6	2.4	1.1	12.3	14.1	15.4	13.3	12.8	14.2
both	4.5	4.8	3.3	4.6	6.9	8.3	12.5	15.3	13.7
no upgrade	75.9	77.1	89.9	82.9	77.4	74.7	62.5	59.0	61.3

Note: S=Salariat classes, I=Intermediate classes, W=Working classes

Table AF30 (Figure 30)

Gross Hourly Earnings Premiums by Type of Educational Upgrading and Social Origin (Excluding Non-Employed)

Before labor market entry	Salariat		Intermediate		Working	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*3.99*	*1.32*	*4.01*	*1.85*	*4.51*	*1.71*
School degree (ref: none)						
Hauptschulabschluss	3.01	5.33	8.65	12.07	3.28	5.47
Mittlere Reife	5.66	5.23	9.80	12.02	6.27	5.49
FH-Reife	13.46	7.10	6.96	13.60	2.21	8.92
Abitur	12.60	5.24	18.65	12.14	11.66	5.58
Intercept	14.18	5.17	8.76	11.96	12.50	5.44
Upgrade of voc. degree	*5.23*	*1.66*	*4.85*	*2.47*	*5.10*	*2.51*
Educ. degree (ref: none)						
No voc – Haupt	0.20	7.56	7.35	12.46	3.92	5.74
No voc – MR	4.23	5.76	9.93	12.56	7.50	5.60
No voc – FHR	13.33	13.69	2.62	13.71	8.33	10.92
No voc – Abitur	5.95	5.60	9.97	14.75	12.80	6.61
VOC1 – Haupt	3.27	5.26	9.19	11.97	3.15	5.44
VOC1 – MR	5.11	5.09	9.35	11.91	5.64	5.56
VOC1 – FHR	7.11	5.40	11.18	12.11	15.12	6.74
VOC1 – Abitur	7.91	5.14	16.31	12.11	8.31	5.88
VOC2 – MR	3.97	5.84	10.17	13.21	11.63	7.06
VOC2 – FHR	15.08	9.06	19.37	976.65	24.46	13.26
VOC2 – Abitur	9.41	5.98	10.52	13.76	14.22	8.37
HE - FHR	10.64	7.07	20.37	13.13	7.26	15.29
HE - Abitur	15.24	5.12	18.10	12.23	12.32	5.46
Intercept	14.18	5.02	8.76	11.85	12.50	5.40

Note: Upgrade of school degree refers to upgrading between first school-leaving degree and the time of obtainment of the first vocational degree. Models control for first school-leaving degrees. Upgrade of vocational degree refers to upgrading between first vocational degree and labor market entry. Models control for combined school-leaving and vocational degrees at the time of obtainment of the first vocational degree.

Table AF30 (Figure 30), continued

After labor market entry	Salariat		Intermediate		Working	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*2.03*	*13.22*	*3.73*	*5.82*	*1.33*	*5.19*
School degree (ref: none)						
Hauptschulabschluss	-1.34	6.54	7.50	13.46	1.14	969.42
Mittlere Reife	0.73	6.36	7.43	13.58	2.85	969.42
FH-Reife	2.69	6.76	12.50	13.75	11.66	969.43
Abitur	4.70	6.34	15.18	13.69	7.76	969.43
Voc. degree (ref: none)						
VOC1	3.77	3.83	2.46	4.17	1.25	2.73
VOC2	6.19	4.24	1.08	5.16	8.76	3.96
Higher education	9.87	3.77	5.91	4.95	3.22	4.17
Intercept	14.18	5.16	7.46	12.92	12.87	969.42
Upgrade of voc. degree	*2.09*	*1.54*	*1.48*	*1.76*	*3.42*	*1.63*
Educ. degree (ref: none)						
No voc – Haupt	-1.26	7.61	6.90	11.99	2.85	5.90
No voc – MR	0.30	5.92	7.02	12.45	5.47	5.78
No voc – FHR	10.60	10.59	4.38	13.30	7.40	9.29
No voc – Abitur	5.85	5.65	13.33	13.80	14.18	6.46
VOC1 – Haupt	2.91	5.28	8.91	11.73	4.45	5.70
VOC1 – MR	4.68	5.12	9.02	11.67	6.46	5.71
VOC1 – FHR	6.40	5.44	10.49	11.99	14.37	7.20
VOC1 – Abitur	7.36	5.17	18.58	11.98	9.99	6.15
VOC2 – MR	6.27	5.66	11.20	12.90	12.91	6.84
VOC2 – FHR	12.98	8.22	13.25	14.27	23.77	11.16
VOC2 – Abitur	10.83	5.74	12.42	12.20	16.59	7.70
HE - FHR	11.37	5.57	21.04	11.95	15.57	7.50
HE - Abitur	14.71	5.11	18.60	11.90	13.42	5.64
Intercept	14.18	5.03	8.48	11.61	10.80	5.64

Note: Upgrade of school degree refers to upgrading between labor market entry and the age of 40. Models control for school-leaving and vocational degrees at labor market entry. Upgrade of vocational degree refers to upgrading between labor market entry and the age of 40. Models control for combined school-leaving and vocational degrees at labor market entry.

Table AF31 (Figure 31)

Net Monthly Earnings Premiums by Type of Educational Upgrading and Social Origin (Including Non-Employed)

Before labor market entry	Salariat		Intermediate		Working	
	Coef.	Std.err.	Coef.	Std.err.	Coef.	Std.err.
Upgrade of school degree	*514.54*	*152.55*	*355.62*	*220.12*	*347.97*	*162.31*
School degree (ref: none)						
Hauptschulabschluss	559.82	618.54	909.51	1,532.49	795.65	309.93
Mittlere Reife	914.79	607.25	1,053.46	1,529.19	1,180.89	307.56
FH-Reife	1,891.45	914.60	1,107.32	1,714.66	307.36	794.60
Abitur	1,520.31	608.56	1,885.81	1,538.76	1,812.63	342.85
Intercept	1,013.22	601.02	654.10	1,522.89	492.66	296.96
Upgrade of voc. degree	*830.68*	*202.18*	*669.91*	*325.21*	*691.71*	*287.50*
Educ. degree (ref: none)						
No voc – Haupt	-62.82	752.93	405.74	1,536.55	516.99	343.58
No voc – MR	621.20	642.35	529.62	1,529.67	894.31	371.28
No voc – FHR	2,449.16	1,745.52	1,005.65	1,764.84	882.30	865.90
No voc – Abitur	1,070.17	663.22	878.77	1,763.01	1,871.12	505.98
VOC1 – Haupt	577.58	606.30	1,068.67	1,510.56	909.45	313.30
VOC1 – MR	857.71	590.11	1,043.51	1,506.01	1,166.48	308.06
VOC1 – FHR	1,343.45	637.62	1,193.64	1,534.76	1,522.40	445.24
VOC1 – Abitur	912.26	597.09	1,588.82	1,526.95	1,381.38	362.53
VOC2 – MR	875.28	713.54	1,099.60	1,678.94	1,306.57	589.39
VOC2 – FHR	1,040.82	1,067.11	1,371.56	2,641.78	27.64	916.14
VOC2 – Abitur	984.19	714.96	1,234.59	1,783.83	1,338.64	817.22
HE - FHR	1,489.14	773.01	2,531.80	1,616.18	833.16	1,213.22
HE - Abitur	1,867.46	594.42	1,790.79	1,520.45	1,923.25	375.89
Intercept	1,013.22	582.22	654.10	1,498.93	492.66	295.45

Note: Upgrade of school degree refers to upgrading between first school-leaving degree and the time of obtainment of the first vocational degree. Models control for first school-leaving degrees. Upgrade of vocational degree refers to upgrading between first vocational degree and labor market entry. Models control for combined school-leaving and vocational degrees at the time of obtainment of the first vocational degree.

Table AF31 (Figure 31), continued

After labor market entry	Salariat		Intermediate		Working	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*-807.34*	*1,176.34*	*602.14*	*661.16*	*298.09*	*456.46*
School degree (ref: none)						
Hauptschulabschluss	192.75	724.98	291.69	1,667.91	335.06	429.02
Mittlere Reife	562.78	714.51	299.38	1,671.13	459.38	431.35
FH-Reife	869.22	764.71	859.66	1,693.63	767.64	529.53
Abitur	718.66	708.48	929.10	1,683.11	809.30	484.63
Voc. degree (ref: none)						
VOC1	206.98	390.31	711.24	306.22	573.75	224.99
VOC2	468.08	448.39	701.20	501.30	800.00	378.37
Higher education	1,114.73	398.15	1,222.36	412.93	1,166.18	327.13
Intercept	1,013.22	595.17	567.75	1,640.70	466.50	377.89
Upgrade of voc. degree	*386.85*	*181.17*	*421.35*	*208.64*	*487.24*	*162.14*
Educ. degree (ref: none)						
No voc – Haupt	-111.12	777.79	500.76	1,522.50	533.15	346.95
No voc – MR	47.26	667.94	128.97	1,521.38	459.17	358.29
No voc – FHR	1,469.10	1,239.42	1,207.95	1,642.67	836.12	721.29
No voc – Abitur	929.28	652.11	597.64	1,644.35	1,904.26	461.72
VOC1 – Haupt	510.43	606.67	1,059.40	1,500.77	1,077.05	326.42
VOC1 – MR	782.53	589.93	1,051.66	1,495.13	1,243.58	312.12
VOC1 – FHR	1,170.66	639.97	1,113.89	1,519.39	1,433.31	419.13
VOC1 – Abitur	809.78	599.93	1,688.05	1,516.43	1,586.66	370.89
VOC2 – MR	1,138.44	671.17	1,619.89	1,628.93	1,565.30	507.88
VOC2 – FHR	952.51	980.30	1,407.59	1,802.90	676.07	833.91
VOC2 – Abitur	1,072.27	681.67	1,151.34	1,570.61	1,677.84	691.02
HE - FHR	1,844.15	650.67	2,390.23	1,535.31	2,452.84	658.77
HE - Abitur	1,850.04	589.93	2,061.28	1,504.76	2,092.18	348.50
Intercept	1,013.22	580.33	549.22	1,487.43	284.76	307.31

Note: Upgrade of school degree refers to upgrading between labor market entry and the age of 40. Models control for school-leaving and vocational degrees at labor market entry. Upgrade of vocational degree refers to upgrading between labor market entry and the age of 40. Models control for combined school-leaving and vocational degrees at labor market entry.

Table AF32 (Figure 32)

ISEI Premiums by Type of Educational Upgrading and Social Origin (Including Non-Employed)

Before labor market entry	Salariat		Intermediate		Working	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*16.40*	*2.00*	*12.80*	*2.82*	*15.34*	*2.08*
School degree (ref: none)						
Hauptschulabschluss	23.26	8.61	5.31	20.73	13.60	4.15
Mittlere Reife	30.88	8.48	14.87	20.69	25.28	4.15
FH-Reife	42.16	13.12	28.95	22.74	-0.61	10.61
Abitur	48.84	8.48	32.86	20.83	45.20	4.57
Intercept	11.87	8.40	24.18	20.66	12.85	4.03
Upgrade of voc. degree	*19.27*	*2.37*	*23.62*	*3.78*	*18.04*	*3.36*
Educ. degree (ref: none)						
No voc – Haupt	7.02	9.99	2.65	19.73	12.75	4.39
No voc – MR	21.97	8.44	12.76	19.73	20.03	4.52
No voc – FHR	55.85	27.58	19.15	22.81	-12.85	9.64
No voc – Abitur	30.35	8.68	9.05	23.54	34.26	6.52
VOC1 – Haupt	23.13	8.02	4.77	19.43	13.51	3.89
VOC1 – MR	30.79	7.84	13.96	19.37	25.08	3.91
VOC1 – FHR	36.83	8.54	21.54	19.74	33.74	5.86
VOC1 – Abitur	38.11	7.93	20.90	19.66	34.23	4.53
VOC2 – MR	32.72	9.37	29.34	21.54	36.79	7.30
VOC2 – FHR	35.50	14.92	28.55	32.83	59.09	12.14
VOC2 – Abitur	48.32	9.45	35.07	24.85	50.42	10.80
HE - FHR	55.02	9.93	40.35	21.23	8.02	14.34
HE - Abitur	54.56	7.88	36.12	19.83	58.60	5.08
Intercept	11.87	7.76	24.18	19.33	12.85	3.77

Note: Upgrade of school degree refers to upgrading between first school-leaving degree and the time of obtainment of the first vocational degree. Models control for first school-leaving degrees. Upgrade of vocational degree refers to upgrading between first vocational degree and labor market entry. Models control for combined school-leaving and vocational degrees at the time of obtainment of the first vocational degree.

Table AF32 (Figure 32), continued

After labor market entry	Salariat		Intermediate		Working	
	Coef.	**Std.err.**	**Coef.**	**Std.err.**	**Coef.**	**Std.err.**
Upgrade of school degree	*-9.39*	*17.40*	*16.80*	*9.62*	*10.30*	*7.06*
School degree (ref: none)						
Hauptschulabschluss	14.62	10.37	-11.08	26.21	7.72	8.58
Mittlere Reife	29.33	10.14	-3.62	26.34	21.03	8.49
FH-Reife	41.60	10.55	7.23	26.64	24.49	10.34
Abitur	39.03	10.03	6.67	26.48	31.35	8.92
Voc. degree (ref: none)						
VOC1	1.94	5.85	16.14	5.14	10.40	4.36
VOC2	9.39	6.41	25.46	8.01	19.05	7.02
Higher education	17.52	6.00	31.93	6.76	27.75	6.41
Intercept	11.87	8.23	25.77	25.73	8.25	7.63
Upgrade of voc. degree	*7.43*	*2.84*	*7.70*	*4.04*	*6.36*	*2.70*
Educ. degree (ref: none)						
No voc – Haupt	18.73	11.36	0.75	26.29	7.46	6.99
No voc – MR	30.75	9.73	-5.81	25.91	19.97	7.23
No voc – FHR	38.32	17.49	27.72	27.89	37.15	13.35
No voc – Abitur	39.93	9.54	-2.50	28.84	51.06	9.74
VOC1 – Haupt	17.95	8.68	3.55	25.93	19.45	6.55
VOC1 – MR	31.31	8.45	12.62	25.75	32.38	6.37
VOC1 – FHR	39.04	9.27	17.37	26.17	37.21	8.54
VOC1 – Abitur	40.56	8.74	18.57	26.14	40.92	6.89
VOC2 – MR	46.13	9.64	18.30	27.06	36.38	9.69
VOC2 – FHR	43.03	14.19	29.83	30.38	62.68	14.96
VOC2 – Abitur	41.15	10.01	34.16	26.81	50.89	12.91
HE - FHR	59.74	9.31	37.73	26.39	49.38	12.17
HE - Abitur	56.48	8.44	38.47	25.95	60.97	6.93
Intercept	11.87	8.30	26.27	25.65	7.34	6.20

Note: Upgrade of school degree refers to upgrading between labor market entry and the age of 40. Models control for school-leaving and vocational degrees at labor market entry. Upgrade of vocational degree refers to upgrading between labor market entry and the age of 40. Models control for combined school-leaving and vocational degrees at labor market entry.

Table AT7.1 (Table 7)

Typical Patterns of Educational Upgrading

Between first school-leaving degree and first vocational degree			
Rank	**Upgrading from**	**Upgrading to**	**Percent of upgrades**
1	MR	Abitur	44.8
2	Haupt	MR	23.0
3	MR	FHR	22.2
4	Haupt	Abitur	5.5
5	Haupt	FHR	4.6
Between first vocational degree and labor market entry			
Rank	**Upgrading from**	**Upgrading to**	**Percent of upgrades**
1	MR	FHR	47.1
2	MR	Abitur	25.0
3	Haupt	MR	22.0
4	Haupt	FHR	3.2
5	Haupt	Abitur	2.8

Table AT7.2 (Table 7)

Upgrading of School-Leaving Degrees (Cell Frequencies)

First school-leaving degree	**School degree at first vocational degree**				
	No degree	Haupt	MR	FHR	Abitur
No degree	1.4	0.0	0.0	0.0	0.0
Haupt		22.7	3.2	0.6	0.8
MR			39.5	3.1	6.3
FHR				0.9	0.0
Abitur					21.6
School degree at first vocational degree	**School degree at labor market entry**				
	No degree	Haupt	MR	FHR	Abitur
No degree	1.4	0.0	0.0	0.0	0.0
Haupt		21.3	1.1	0.2	0.1
MR			39.0	2.4	1.3
FHR				4.6	0.0
Abitur					28.6
First school-leaving degree	**School degree at labor market entry**				
	No degree	Haupt	MR	FHR	Abitur
No degree	1.4	0.0	0.0	0.0	0.0
Haupt		21.3	3.8	1.2	1.0
MR			36.3	5.1	7.5
FHR				0.9	0.0
Abitur					21.6

Table AT7.2 (Table 7)

Upgrading of Combined School-Leaving and Vocational Degrees (Cell Frequencies)

Combined degree at first vocational degree		**At labor market entry**													
Voc.		none					VOC1				VOC2			HE	
	School	none	Haupt	MR	FHR	Abitur	Haupt	MR	FHR	Abitur	MR	FHR	Abitur	FHR	Abitur
none	none	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Haupt		4.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MR			4.0	0.2	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	FHR				0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur					1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC1	Haupt						17.3	0.2	0.0	0.1	0.2	0.0	0.0	0.1	0.1
	MR							33.2	0.6	0.1	0.6	0.0	0.2	1.5	0.3
	FHR								2.8	0.0	0.0	0.1	0.0	0.3	0.0
	Abitur									9.3	0.0	0.0	0.6	0.0	3.0
VOC2	MR										1.2	0.1	0.0	0.0	0.0
	FHR											0.2	0.0	0.0	0.0
	Abitur												0.8	0.0	0.0
HE	FHR													0.8	0.0
	Abitur														13.2

Table AT7.2 (Table 7), continued

Combined degree at labor market entry		**At age 40**													
Voc.		none					VOC1				VOC2			HE	
	School	none	Haupt	MR	FHR	Abitur	Haupt	MR	FHR	Abitur	MR	FHR	Abitur	FHR	Abitur
none	none	0.9	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Haupt		2.1	0.2	0.0	0.0	1.4	0.2	0.0	0.0	0.1	0.0	0.0	0.2	0.0
	MR			1.4	0.0	0.0	0.0	2.2	0.0	0.0	0.4	0.0	0.0	0.6	0.0
	FHR				0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2	0.0
	Abitur					0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.2	0.0	0.7
VOC1	Haupt						14.9	0.2	0.1	0.0	1.3	0.0	0.0	0.7	0.0
	MR							26.2	0.2	0.4	4.0	0.3	0.0	2.1	0.3
	FHR								2.3	0.0	0.0	0.6	0.0	0.5	0.0
	Abitur									6.9	0.0	0.0	1.0	0.0	1.6
VOC2	MR										1.9	0.0	0.0	0.1	0.0
	FHR											0.3	0.0	0.0	0.0
	Abitur												1.5	0.0	0.1
HE	FHR													2.7	0.0
	Abitur														16.5

Table AT7.2 (Table 7), continued

Combined degree at first vocational degree		**At age 40**													
Voc.		none					VOC1				VOC2			HE	
	School	none	Haupt	MR	FHR	Abitur	Haupt	MR	FHR	Abitur	MR	FHR	Abitur	FHR	Abitur
none	none	0.9	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Haupt		2.1	0.6	0.1	0.0	1.4	0.3	0.0	0.0	0.1	0.0	0.0	0.2	0.0
	MR			1.0	0.0	0.2	0.0	2.1	0.1	0.4	0.4	0.0	0.0	0.6	0.1
	FHR				0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0
	Abitur					0.7	0.0	0.0	0.0	0.4	0.0	0.0	0.1	0.0	0.6
VOC1	Haupt						14.9	0.4	0.1	0.1	1.5	0.0	0.0	0.8	0.1
	MR							26.0	0.6	0.5	4.5	0.4	0.3	3.7	0.5
	FHR								1.8	0.0	0.0	0.6	0.0	0.8	0.0
	Abitur									6.8	0.0	0.0	1.4	0.0	4.6
VOC2	MR										1.2	0.1	0.0	0.1	0.0
	FHR											0.2	0.0	0.0	0.0
	Abitur												0.8	0.0	0.1
HE	FHR													0.8	0.0
	Abitur														13.2

Table AT14.1 (Table 14)

Typical Patterns of Educational Upgrading by Gender

Between first school-leaving degree and first vocational degree						
	Men			Women		
Rank	From	To	Percent	From	To	Percent
1	MR	Abitur	38.8	MR	Abitur	51.3
2	MR	FH-Reife	28.4	Haupt	MR	23.1
3	Haupt	MR	22.9	MR	FH-Reife	15.6
4	Haupt	FH-Reife	5.8	Haupt	Abitur	6.8
5	Haupt	Abitur	4.3	Haupt	FH-Reife	3.2
Between first vocational degree and labor market entry						
	Men			**Women**		
Rank	From	To	Percent	From	To	Percent
1	MR	FH-Reife	57.4	Haupt	MR	35.9
2	MR	Abitur	25.4	MR	FH-Reife	30.6
3	Haupt	MR	13.3	MR	Abitur	24.3
4	Haupt	Abitur	2.0	Haupt	FH-Reife	5.3
5	Haupt	FH-Reife	1.9	Haupt	Abitur	3.9

Table AT14.2 (Table 14)

Upgrading of School-Leaving Degrees by Gender (Cell Frequencies)

First school-leaving degree before labor market entry	**School degree at first vocational degree**									
	No degree		**Haupt**		**MR**		**FHR**		**Abitur**	
	M	W	M	W	M	W	M	W	M	W
No degree	1.3	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haupt			26.4	18.8	3.3	3.2	0.8	0.4	0.6	0.9
MR					37.3	41.8	4.0	2.1	5.5	7.1
FHR							1.0	0.8	0.0	0.0
Abitur									19.9	23.3
School degree at first vocational degree	**School degree at labor market entry**									
	No degree		**Haupt**		**MR**		**FHR**		**Abitur**	
	M	W	M	W	M	W	M	W	M	W
No degree	1.3	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haupt			25.3	17.0	0.8	1.4	0.1	0.2	0.1	0.2
MR					35.5	42.8	3.5	1.2	1.5	1.0
FHR							5.8	3.3	0.0	0.0
Abitur									26.1	31.3
First school-leaving degree before labor market entry	**School degree at labor market entry**									
	No degree		**Haupt**		**MR**		**FHR**		**Abitur**	
	M	W	M	W	M	W	M	W	M	W
No degree	1.3	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haupt			25.3	17.0	3.3	4.5	1.7	0.7	0.7	1.2
MR					33.0	39.7	6.8	3.4	7.1	7.9
FHR							1.0	0.8	0.0	0.0
Abitur									19.9	23.3

Note: M=Men, W=Women.

Table AT14.3 (Table 14)

Upgrading of Combined School-Leaving and Vocational Degrees by Gender (Cell Frequencies)

		Men													
At first vocational degree		**At labor market entry**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Haupt		4.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MR			2.0	0.3	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	FHR				0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur					2.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC1	**Haupt**						21.3	0.2	0.0	0.1	0.3	0.0	0.0	0.1	0.1
	MR							32.5	0.7	0.1	0.6	0.0	0.2	2.4	0.2
	FHR								3.3	0.0	0.0	0.1	0.0	0.6	0.0
	Abitur									6.3	0.0	0.0	0.6	0.0	3.1
VOC2	**MR**										0.4	0.1	0.0	0.0	0.0
	FHR											0.3	0.0	0.0	0.0
	Abitur												0.7	0.0	0.0
HE	**FHR**													1.1	0.0
	Abitur														13.0

Table AT14.3 (Table 14), continued

		Men													
At labor market entry		**At age 40**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	0.7	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Haupt		1.4	0.3	0.1	0.0	1.7	0.3	0.0	0.0	0.1	0.0	0.0	0.1	0.0
	MR			0.5	0.0	0.0	0.0	1.0	0.0	0.0	0.4	0.0	0.0	0.3	0.0
	FHR				0.2	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.3	0.0
	Abitur					1.1	0.0	0.0	0.0	1.1	0.0	0.0	0.2	0.0	0.9
VOC1	**Haupt**						17.6	0.3	0.2	0.0	2.3	0.1	0.0	0.8	0.0
	MR							22.3	0.3	0.4	6.2	0.4	0.1	2.7	0.3
	FHR								2.6	0.0	0.0	0.6	0.0	0.8	0.0
	Abitur									4.2	0.0	0.0	0.9	0.0	1.4
VOC2	**MR**										1.2	0.0	0.0	0.1	0.0
	FHR											0.5	0.0	0.0	0.0
	Abitur												1.3	0.0	0.1
HE	**FHR**													4.2	0.0
	Abitur														16.4

Table AT14.3 (Table 14), continued

		Men													
At first vocational degree		**At age 40**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	0.7	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Haupt		1.4	0.4	0.1	0.0	1.7	0.5	0.0	0.0	0.1	0.0	0.0	0.1	0.0
	MR			0.4	0.0	0.3	0.0	0.9	0.1	0.5	0.4	0.0	0.0	0.4	0.1
	FHR				0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0
	Abitur					0.9	0.0	0.0	0.0	0.5	0.0	0.0	0.2	0.0	0.8
VOC1	**Haupt**						17.6	0.5	0.2	0.1	2.7	0.1	0.0	0.9	0.2
	MR							22.2	0.7	0.4	6.7	0.5	0.4	5.4	0.5
	FHR								2.2	0.0	0.0	0.6	0.0	1.2	0.0
	Abitur									4.2	0.0	0.0	1.3	0.0	4.5
VOC2	**MR**										0.4	0.1	0.0	0.0	0.0
	FHR											0.3	0.0	0.0	0.0
	Abitur												0.7	0.0	0.0
HE	**FHR**													1.1	0.0
	Abitur														13.0

Table AT14.3 (Table 14), continued

		Women													
At first vocational degree		**At labor market entry**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Haupt		4.0	1.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MR			6.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	FHR				0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur					1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC1	**Haupt**						13.0	0.3	0.0	0.1	0.1	0.0	0.0	0.1	0.1
	MR							34.0	0.6	0.1	0.6	0.1	0.3	0.4	0.3
	FHR								2.2	0.0	0.0	0.0	0.0	0.1	0.0
	Abitur									12.4	0.0	0.0	0.5	0.0	3.0
VOC2	**MR**										2.1	0.0	0.0	0.0	0.0
	FHR											0.2	0.0	0.0	0.0
	Abitur												0.9	0.0	0.0
HE	**FHR**													0.5	0.0
	Abitur														13.3

Table AT14.3 (Table 14), continued

		Women													
At labor market entry		**At age 40**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	1.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Haupt		2.8	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.1	0.0	0.0	0.2	0.0
	MR			2.3	0.0	0.0	0.0	3.4	0.0	0.0	0.5	0.0	0.0	1.0	0.0
	FHR				0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur					0.5	0.0	0.0	0.0	0.5	0.0	0.0	0.1	0.0	0.5
VOC1	**Haupt**						12.1	0.0	0.0	0.0	0.3	0.0	0.0	0.6	0.0
	MR							30.3	0.1	0.3	1.6	0.1	0.0	1.5	0.3
	FHR								1.9	0.0	0.0	0.6	0.0	0.3	0.0
	Abitur									9.7	0.0	0.0	1.1	0.0	1.8
VOC2	**MR**										2.7	0.0	0.0	0.1	0.0
	FHR											0.2	0.0	0.1	0.0
	Abitur												1.6	0.0	0.1
HE	**FHR**													1.1	0.0
	Abitur														16.6

Table AT14.3 (Table 14), continued

		Women													
At first vocational degree		**At age 40**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	1.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Haupt		2.8	0.8	0.0	0.0	1.0	0.1	0.1	0.0	0.1	0.0	0.0	0.3	0.0
	MR			1.5	0.0	0.0	0.0	3.3	0.1	0.3	0.4	0.0	0.0	0.9	0.1
	FHR				0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur					0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.1	0.0	0.4
VOC1	**Haupt**						12.1	0.3	0.0	0.1	0.4	0.0	0.0	0.8	0.1
	MR							30.1	0.5	0.4	2.2	0.3	0.3	2.0	0.5
	FHR								1.4	0.0	0.0	0.5	0.0	0.3	0.0
	Abitur									9.6	0.0	0.0	1.6	0.0	4.7
VOC2	**MR**										2.0	0.0	0.0	0.1	0.0
	FHR											0.1	0.0	0.1	0.0
	Abitur												0.9	0.0	0.1
HE	**FHR**													0.5	0.0
	Abitur														13.3

Table AT18.1 (Table 18)

Typical Patterns of Educational Upgrading by Social Origin

	Between first school-leaving degree and first vocational degree								
	Salariat			Intermediate			Working		
Rank	**From**	**To**	**Percent**	**From**	**To**	**Percent**	**From**	**To**	**Percent**
1	MR	Abitur	59.0	MR	FH-Reife	36.6	Haupt	MR	42.3
2	MR	FH-Reife	21.1	MR	Abitur	31.3	MR	Abitur	31.7
3	Haupt	MR	10.9	Haupt	MR	25.4	MR	FH-Reife	13.3
4	Haupt	Abitur	5.8	Haupt	Abitur	4.9	Haupt	FH-Reife	7.3
5	Haupt	FH-Reife	4.3	Haupt	FH-Reife	1.8	Haupt	Abitur	5.5
	Between first vocational degree and labor market entry								
	Salariat			Intermediate			Working		
Rank	**From**	**To**	**Percent**	**From**	**To**	**Percent**	**From**	**To**	**Percent**
1	MR	FH-Reife	55.2	MR	FH-Reife	47.1	Haupt	MR	41.9
2	MR	Abitur	32.4	MR	Abitur	26.7	MR	FH-Reife	37.1
3	Haupt	Abitur	5.0	Haupt	MR	25.1	MR	Abitur	14.1
4	Haupt	FH-Reife	4.2	Haupt	FH-Reife	1.0	Haupt	FH-Reife	4.3
5	Haupt	MR	3.3	Haupt	Abitur	0.2	Haupt	Abitur	2.7

Table AT18.2 (Table 18)

Upgrading of School-Leaving Degrees by Social Origin (Cell Frequencies)

First school-leaving degree before labor market entry	School degree at first vocational degree														
	No degree			Haupt			MR			FHR			Abitur		
	S	I	W	S	I	W	S	I	W	S	I	W	S	I	W
No degree	0.6	0.3	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haupt				10.4	24.2	36.2	1.6	3.6	4.9	0.7	0.3	0.8	0.9	0.7	0.6
MR							35.3	47.8	39.3	3.4	5.2	1.5	9.5	4.4	3.6
FHR										1.2	0.9	0.4	0.0	0.0	0.0
Abitur													36.4	12.6	9.6

School degree at first vocational degree	School degree at labor market entry														
	No degree			Haupt			MR			FHR			Abitur		
	S	I	W	S	I	W	S	I	W	S	I	W	S	I	W
No degree	0.6	0.3	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haupt				9.9	22.3	34.1	0.2	1.9	1.8	0.2	0.1	0.2	0.2	0.0	0.1
MR							32.9	45.9	42.0	2.5	3.5	1.6	1.5	2.0	0.6
FHR										5.3	6.3	2.8	0.0	0.0	0.0
Abitur													46.8	17.7	13.9

First school-leaving degree before labor market entry	School degree at labor market entry														
	No degree			Haupt			MR			FHR			Abitur		
	S	I	W	S	I	W	S	I	W	S	I	W	S	I	W
No degree	0.6	0.3	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Haupt				9.9	22.3	34.1	1.2	4.8	6.4	1.2	1.0	1.3	1.3	0.7	0.8
MR							31.9	43.0	37.4	5.5	8.0	2.9	10.8	6.4	4.2
FHR										1.2	0.9	0.4	0.0	0.0	0.0
Abitur													36.4	12.6	9.6

Note: S=Salariat classes, I=Intermediate classes, W=Working classes

Table AT18.3 (Table 18)

Upgrading of Combined School-Leaving and Vocational Degrees by Social Origin (Cell Frequencies)

		Salariat classes													
At first vocational degree		**At labor market entry**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Haupt		1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MR			2.9	0.3	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	FHR				0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur					2.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC1	**Haupt**						8.8	0.1	0.0	0.1	0.0	0.0	0.0	0.2	0.1
	MR							27.9	0.6	0.0	0.7	0.0	0.3	1.6	0.4
	FHR								2.8	0.0	0.0	0.1	0.0	0.6	0.0
	Abitur									13.4	0.0	0.0	0.6	0.0	4.3
VOC2	**MR**										1.4	0.0	0.0	0.0	0.0
	FHR											0.3	0.0	0.0	0.0
	Abitur												1.3	0.0	0.0
HE	**FHR**													1.0	0.0
	Abitur														24.2

Table AT18.3 (Table 18), continued

		Salariat classes													
At labor market entry		**At age 40**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Haupt	0.0	0.6	0.0	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MR	0.0	0.0	0.7	0.0	0.0	0.0	1.4	0.0	0.0	0.3	0.0	0.0	0.5	0.0
	FHR	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0
	Abitur	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	1.0	0.0	0.0	0.3	0.0	1.1
VOC1	**Haupt**	0.0	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.0	0.9	0.0	0.0	0.4	0.0
	MR	0.0	0.0	0.0	0.0	0.0	0.0	23.3	0.1	0.1	1.9	0.1	0.0	2.2	0.4
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.6	0.0	0.8	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	1.3	0.0	2.7
VOC2	**MR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.0	0.1	0.0
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.1	0.0	0.1
HE	**FHR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	29.1

Table AT18.3 (Table 18), continued

		Salariat classes													
At first vocational degree		**At age 40**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Haupt	0.0	0.6	0.1	0.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MR	0.0	0.0	0.7	0.0	0.2	0.0	1.4	0.1	0.5	0.3	0.0	0.0	0.6	0.9
	FHR	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.5	0.0	0.0	0.3	0.0	1.0
VOC1	**Haupt**	0.0	0.0	0.0	0.0	0.0	7.5	0.0	0.0	0.1	0.9	0.0	0.0	0.6	0.3
	MR	0.0	0.0	0.0	0.0	0.0	0.0	23.3	0.4	0.1	2.6	0.1	0.3	4.0	0.6
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.7	0.0	1.2	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.5	0.0	0.0	1.8	0.0	7.1
VOC2	**MR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.1	0.0
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.1	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.1
HE	**FHR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	24.2

Table AT18.3 (Table 18), continued

		Intermediate classes													
At first vocational degree		**At labor market entry**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Haupt	0.0	3.9	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MR	0.0	0.0	4.3	0.4	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	FHR	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC1	**Haupt**	0.0	0.0	0.0	0.0	0.0	18.4	0.9	0.0	0.0	0.2	0.0	0.0	0.1	0.0
	MR	0.0	0.0	0.0	0.0	0.0	0.0	40.3	0.9	0.2	0.7	0.0	0.4	2.0	0.4
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.4	0.0	0.0	0.0	0.0	0.1	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.7	0.0	0.0	1.0	0.0	2.3
VOC2	**MR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.0	0.0
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
HE	**FHR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5

Table AT18.3 (Table 18), continued

		Intermediate classes													
At labor market entry		**At age 40**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Haupt	0.0	2.7	0.2	0.0	0.0	0.2	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MR	0.0	0.0	1.5	0.0	0.0	0.0	2.1	0.0	0.0	0.6	0.0	0.0	0.9	0.0
	FHR	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.7	0.0	0.0	0.1	0.0	0.2
VOC1	**Haupt**	0.0	0.0	0.0	0.0	0.0	16.4	0.1	0.0	0.0	1.5	0.0	0.0	0.3	0.0
	MR	0.0	0.0	0.0	0.0	0.0	0.0	30.2	0.6	0.7	6.6	0.6	0.1	2.1	0.3
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0	0.0	1.0	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.5	0.7	0.9
VOC2	**MR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.1	0.0
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.9	0.0	0.1
HE	**FHR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.5	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	9.2

Table AT18.3 (Table 18), continued

		Intermediate classes													
At first vocational degree		**At age 40**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Haupt	0.0	2.7	0.5	0.0	0.0	0.2	1.1	0.0	0.0	0.1	0.0	0.0	0.1	0.0
	MR	0.0	0.0	1.1	0.0	0.3	0.0	1.8	0.3	0.4	0.5	0.0	0.1	0.9	0.2
	FHR	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.1
VOC1	**Haupt**	0.0	0.0	0.0	0.0	0.0	16.4	1.0	0.0	0.0	1.7	0.0	0.0	0.4	0.0
	MR	0.0	0.0	0.0	0.0	0.0	0.0	29.3	1.2	0.9	7.4	0.7	0.5	4.2	0.7
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	0.0	0.9	0.0	0.7	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	5.3	0.0	0.0	1.5	0.0	3.2
VOC2	**MR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.3	0.0	0.0	0.0
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0
HE	**FHR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.5

Table AT18.3 (Table 18), continued

		Working classes													
At first vocational degree		**At labor market entry**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Haupt	0.0	7.6	1.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	MR	0.0	0.0	5.1	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	FHR	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
VOC1	**Haupt**	0.0	0.0	0.0	0.0	0.0	26.5	0.0	0.0	0.1	0.5	0.0	0.0	0.0	0.1
	MR	0.0	0.0	0.0	0.0	0.0	0.0	35.1	0.5	0.2	0.3	0.1	0.0	0.9	0.1
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.2	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0	0.0	0.0	0.2	0.0	2.0
VOC2	**MR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0	0.0	0.0	0.0
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0
HE	**FHR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2

Table AT18.3 (Table 18), continued

		Working classes													
At labor market entry		**At age 40**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	1.7	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Haupt	0.0	3.4	0.3	0.0	0.0	3.3	0.0	0.0	0.0	0.2	0.0	0.0	0.4	0.0
	MR	0.0	0.0	2.1	0.0	0.0	0.0	3.1	0.0	0.0	0.5	0.0	0.0	0.7	0.0
	FHR	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.2	0.0
	Abitur	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.6	0.0	0.0	0.1	0.0	0.5
VOC1	**Haupt**	0.0	0.0	0.0	0.0	0.0	22.7	0.4	0.2	0.0	1.8	0.1	0.0	1.2	0.1
	MR	0.0	0.0	0.0	0.0	0.0	0.0	27.3	0.1	0.5	4.7	0.3	0.0	2.1	0.2
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	0.0	0.4	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.7	0.0	0.0	1.0	0.0	0.6
VOC2	**MR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0	0.2	0.0
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.1
HE	**FHR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.4	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.3

Table AT18.3 (Table 18), continued

		Working classes													
At first vocational degree		**At age 40**													
Voc.		**none**					**VOC1**				**VOC2**			**HE**	
	School	**none**	**Haupt**	**MR**	**FHR**	**Abitur**	**Haupt**	**MR**	**FHR**	**Abitur**	**MR**	**FHR**	**Abitur**	**FHR**	**Abitur**
none	**none**	1.7	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0
	Haupt	0.0	3.4	1.3	0.1	0.0	3.3	0.1	0.1	0.0	0.2	0.0	0.0	0.6	0.0
	MR	0.0	0.0	1.1	0.0	0.0	0.0	3.0	0.0	0.3	0.5	0.0	0.0	0.5	0.1
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.2	0.0
	Abitur	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.5
VOC1	**Haupt**	0.0	0.0	0.0	0.0	0.0	22.7	0.4	0.2	0.1	2.2	0.1	0.0	1.3	0.1
	MR	0.0	0.0	0.0	0.0	0.0	0.0	27.3	0.5	0.6	5.0	0.6	0.2	3.1	0.3
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.5	0.0	0.0	0.2	0.0	0.2	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.6	0.0	0.0	1.0	0.0	2.6
VOC2	**MR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.3	0.0	0.0	0.0	0.0
	FHR	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.1
HE	**FHR**	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0
	Abitur	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.2