Equal educational qualifications but unequal labor market outcomes: An exploration of gender disparities in occupational status and their mechanisms, over five decades

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ABSTRACT

Switzerland's comparatively slow but ongoing educational expansion, alongside the persistent gender disparities in the Swiss labor market, offers a unique context in which to investigate how returns to education, as regards occupational status, have evolved for men and women over the last 50 years. Drawing on large-scale administrative census data (1970, 1980, 1990, 2000) and annual structural surveys (2011–2020), social changes across pseudo-birth cohorts (1920–1994) at two career stages (ages 25–30 and 45–50) are analyzed. Two questions are investigated: (1) How have inequalities in occupational status between men and women with similar levels of educational attainment shifted over time? (2) Which mechanisms – such as part-time work, childcare responsibilities, and sector allocation – explain these gender differences, and how have their impacts changed? The findings reveal that although raw gender gaps in occupational status have narrowed in younger cohorts – particularly at early career stages – significant disparities persist when accounting for key mechanisms. A Blinder-Oaxaca decomposition shows that part-time work and labor market segregation continue to produce gendered penalties. The results underscore that even as women's educational attainment has surpassed that of men in recent cohorts, structural factors continue to limit full returns to education for women, in regard to their occupational status.

1. Introduction

An obvious educational expansion has been observed in many countries in recent decades (Breen et al., 2009; C. Buchmann et al., 2008; Breen & Müller, 2020). As a result of this process, previously existing disadvantages for women in acquiring an education have been reduced and – with temporal variation, depending on the country context – there are now even advantages for women in this area (DiPrete & Buchmann, 2013; Breen et al., 2010). Among other explanations, it has been suggested that the increased participation of women in education is due not only to changing opportunity structures (e.g. increased demand for qualified people), laws (e.g. promoting female work outside the home) or social norms (e.g. female emancipation as a consequence of educational expansion itself) but also to the fact that returns to education have increased for women, who have, as a result, invested more in education over time (DiPrete & Buchmann, 2013; Jonsson, 1999).

Gender differences in educational returns are a key concern in many countries, particularly where women have surpassed men in educational attainment but still face barriers to translating these qualifications into equitable labor market outcomes (Goldin, 2006; DiPrete & Buchmann, 2013, Seehuus & Strømme, 2025). Switzerland offers a particularly illustrative case due to its strong credentialist system, pronounced labor market segregation, and relatively slow pace of institutional change (M. Buchmann & Charles, 1993; Charles & Bradley, 2009; Kriesi & Imdorf, 2019; Levy, 2013). Such conditions, in varying combinations, are also present in other liberal welfare states. By analyzing changes over a long historical period, we aim not only to shed light on the Swiss trajectory but also to contribute to broader theoretical discussions about how different factors shape the link between education and labor market outcomes for women and men (Breen et al., 2010; Orloff, 2009; Mandel & Shalev, 2009; van Hek et al., 2016).

In our article, we use the example of Switzerland to examine whether

returns to education, as regards occupational status, have changed for women (and men) in the last 50 years. Studies are already available for other countries, looking at changes in women's educational participation and returns to education (e.g. C. Buchmann et al., 2008; Breen et al., 2010; DiPrete & Buchmann, 2013; Becker, 2014; Becker & Blossfeld, 2022). However, to the best of our knowledge, there has not yet been a study on returns to education in regard to occupational status for Switzerland over a similarly long historical period. Furthermore, existing research investigating gender differences in labor market allocation (e.g. social class positions) across time, comparing men and women with similar educational levels, does not investigate possible mechanisms by which gender inequality occurs. We therefore seek to answer the following questions in our paper: (1) How have inequalities in labor market allocation (measured as occupational status) between men and women with similar levels of educational attainment changed over time in Switzerland? (2) What mechanisms contribute to these gender inequalities between men and women with similar levels of educational attainment and to what extent has their explanatory power changed over time?

As mentioned above, Switzerland is an interesting case study in regard to gendered returns to education, as regards occupational status. There are several reasons for this. First, its educational expansion can be described as rather "sluggish" in terms of timing and speed, compared to other countries (M. Buchmann & Charles, 1993; Becker & Zangger, 2013; Nennstiel & Becker, 2023). It is also noticeable that women in Switzerland – unlike in other countries (DiPrete & Buchmann, 2013) – have only caught up with and overtaken men in recent years (i.e. women born in the 1980s), for example in terms of university degrees (Nennstiel & Becker, 2023; Nennstiel & Brosy, 2023). Second, strong gender disparities are observed in the Swiss labor market, both in terms of horizontal and vertical placement as well as general labor market positioning (Charles & Buchmann, 1994; Imdorf & Hupka-Brunner, 2015; Falcon, 2020). Switzerland has a very high level of sex segregation in the labor market by international standards (Charles & Bradley, 2009). Third, Switzerland is a liberal welfare state with a qualification-based education system that has a strong connection to the (vocation-specific) labor market (M. Buchmann & Sacchi, 1998). Hence, it is characterized by a strong credentialism (Kriesi & Imdorf, 2019), i.e. there is a strong connection between labor market placement and existing educational qualifications (M. Buchmann & Sacchi, 1998).

For the Swiss context, diverging expectations can be formulated regarding changes in gender differences in occupational status based on educational credentials over time. On the one hand, it can be expected that gender gaps should have narrowed for a number of reasons. Principally, the narrowing educational credential gap, favoring women in recent cohorts, could reduce occupational status inequalities over time because of the strong credentialism in Switzerland. Furthermore, the tertiarization of the Swiss labor market (Oesch, 2013) and the social modernization that has taken place (Zangger et al., 2018) may enable women to better utilize their higher qualifications in the sex-segregated labor market (Jonsson, 1999). On the other hand, it can be assumed that gender inequalities in returns to education, as regards occupational status, have remained persistent for other reasons. For example, Switzerland is socio-politically described as traditional-modern (Levy, 2013) and has very high childcare costs and part-time employment rates for women in comparison to other countries (Zangger et al., 2021; Blossfeld et al., 2017). Therefore, men and women may account for these constraints in educational careers, occupational choices, assortative mating, family formation, and labor market participation (Blossfeld & Hakim, 1997; Becker & Jann, 2017). Consequently, women may continue to face labor market disadvantages despite higher education levels, such as working in lower-status female-dominated occupations, working part time due to child and older parents care responsibilities, or being less likely to attain privileged positions due to anticipated career breaks (Blossfeld & Kiernan, 2019; Charles & Buchmann, 1994).

To answer our research questions, we take a step-by-step approach in our empirical analysis. First, we examine how inequalities in occupational status between men and women with similar educational attainment have changed across cohorts (1920–1994; Ryder, 1965). Second, a Blinder-Oaxaca decomposition (Oaxaca, 1973) is used to examine how the explanatory power of various mechanisms (e.g. working hours, children in household, occupational sector, and civil status) on the gender gap in occupational status among men and women with the same level of education has changed across birth cohorts. For the analyses of changes across cohorts, we perform age standardization so it is possible to examine gender inequalities both at the beginning of working life (aged 25–30) and mid-career (aged 45–50), thus capturing different gendered phases of the life course (e.g. career entry, re-entry after career break, career progression into leadership positions). To depict these changes over time, large-scale administrative data from the Swiss censuses (1970, 1980, 1990, and 2000) and the annual structural surveys (2011–2020) are employed.

In the next section, theoretical considerations and the current state of research are discussed. We then introduce our data, the operationalization, and our statistical methods, before presenting our results. Finally, we discuss our findings in the context of existing research and theoretical explanations.

2. Background

In the following, we will first discuss determinants of occupational status returns and the extent to which these may vary by gender. We will then point out changes over time in Switzerland that could influence gender gaps in status returns or status return processes in general. Finally, we will formulate expectations regarding the extent to which gender gaps in occupational status could change over time.

One central mechanism for the allocation of occupational status is through educational attainment (Collins, 1979): the higher the educational credentials, the higher the occupational status. Furthermore, intragenerational mobility processes also play a role in the allocation of status (Sørensen, 1979). On the one hand, the earlier occupational status or entry prestige influences the later occupational status. On the other hand, processes such as career advancement, promotions or career breaks also play a role in occupational status returns (Sacchi et al., 2016). Processes that could lead to men and women having different occupational status returns for education are for example: *sex segregation in occupations* and *reduced working hours and career breaks due to family formation*. By international comparison, the Swiss labor market is very strongly horizontally sex segregated (Charles, 1992; Oesch, 2006). In the Swiss context, for example, it can be assumed that men and women anticipate the gendered effect of parenthood on employment when making career and educational decisions (Blossfeld & Hakim, 1997). In Switzerland, very strong horizontal segregation is already evident in the teaching professions and educational aspirations (M. Buchmann & Kriesi, 2012). These differences in training occupations have long-lasting consequences for later labor market placement – especially in systems such as the Swiss one where there is a very strong correlation between the (vocational) education system and occupations. Charles and Buchmann (1994) provide various micro-level explanations for possible reasons for occupational sex segregation and different returns to education in Switzerland. On the one hand, due to anticipated family responsibilities (e.g. expected career breaks and poor compatibility of family and career) and the prevailing motherhood ideology in Switzerland, women and men choose different educational paths that lead to different occupations. On the other hand, the difficulty and expense of correcting early educational choices – which are often influenced by gendered socialization – have lasting consequences for gender inequality. Furthermore, the Swiss labor market is characterized by the fact that women work fewer hours in the labor market and are more frequently employed part time compared to men (M. Buchmann et al., 2003; Vidal-Coso, 2019). There is a strong influence of parenthood on gendered labor market participation and working hours in

Switzerland and, accordingly, on gender inequality. While the employment rates are identical for women and men before parenthood, parenthood is a turning point toward disadvantage for women, in particular for less qualified women (Ernst Stähli et al., 2009). This influence of parenthood on labor market participation is strongly related to social policy measures (Epple et al., 2015; Charles et al., 2001). In the

Swiss context, there are various factors that explain the gender differences in labor market participation. For one, there is a limited supply of payable childcare facilities. The high fees for childcare such as kindergartens or daycare centers often mean that full-time care is not chosen, since otherwise it would be the case that mothers only work to cover costs. Furthermore, the schedules at elementary school (e.g. lunch
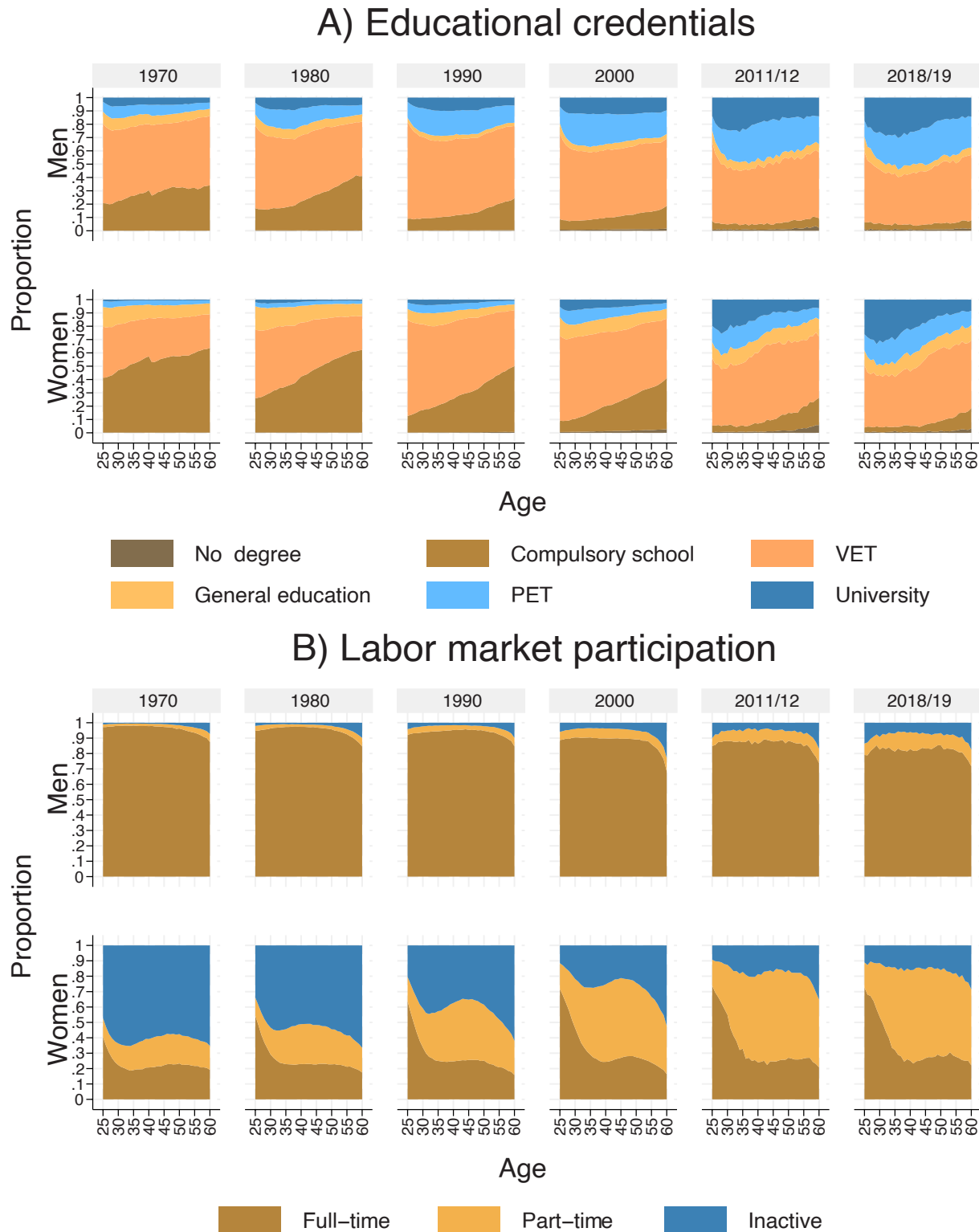
Fig. 1. Educational credentials (A) and labor market participation (B) of men and women across age, by survey year.
Source: Swiss census 1970, 1980, 1990, 2000 and structural surveys 2011–2012 and 2018–2019, weighted data; our own calculations.

breaks during which children come home to eat) make it difficult to balance work and family life (Ernst Stähli et al., 2009). Accordingly, it is challenging for women in Switzerland to achieve a work–family balance with which they are satisfied. Additionally, it must be emphasized that the Swiss tax regime penalizes married double-income couples, which is why the "one-and-a-half earner model" seems to be the standard solution of this problem to the disadvantage of women (Vidal-Coso, 2019, p. 1668). It is argued that these institutional conditions are related to a liberal labor market with a conservative gender regime (Combet & Oesch, 2019), i.e. a conservative cultural climate regarding gender roles and a specific Swiss patriarchal culture of modern traditionalism (Levy, 2013). For intragenerational mobility processes (e.g. promotions in jobs), career interruptions and part-time work have a negative effect (Sacchi et al., 2016). Therefore, one can assume that gender differences in returns to education, as regards occupational status, should increase over the course of a career. Accordingly, gender gaps in occupational status could be influenced by these processes outlined above, despite men and women having similar educational attainment. Furthermore, despite having the same educational attainment in the same educational track, there could be different returns to education because female labor market participation might be seen culturally as marginal and temporary, due to the difficulty of reconciling work and family roles (Charles & Buchmann, 1994).

Over the last 50 years, significant changes have occurred in Switzerland that could have an impact on the returns to people's education. First, for Switzerland, several studies document a hesitant expansion of education in the 1960s and 1970s in a succession of cohorts and show that women benefited from this from the 1980s and 1990s onwards, due to the increased demand for qualified workers in the service and administrative sectors and the increase in the entry requirements for training in these professions (M. Buchmann & Charles, 1993). Employing administrative data, recent studies have found that the gender reversal in the attainment of higher academic diplomas first occurred in the early 1990s, and was driven by those women born around the late 1970s and early 1980s (Nennstiel & Becker, 2023; Nennstiel & Brosy, 2023). This process of educational expansion and of women catching up with, and overtaking, men can also be seen in Fig. 1 (Panel A).

Second, there has been an occupational upgrading in the labor market and an increasing tertiarization of the labor market (Oesch, 2013; Zangger et al., 2018). These developments mean that, over time, more and more people with tertiary educational qualifications are in demand in the labor market, and that an ever larger proportion of people are working in service class jobs or jobs with higher occupational prestige (Jann & Combet, 2012; Falcon, 2020). This upgrading is witnessed for both men and women (see also Figure S1 in the Supporting Online Material (SOM)). These processes of changing labor market structures should lead to higher educational qualifications being usable in the labor market.

Third, Switzerland is known to have a very high level of occupational segregation by gender (Charles & Bradley, 2009). Although this has decreased somewhat over time, it is still very pronounced, with men, for example, working significantly more often in technical and IT jobs and women more often in hospitality and personal services (see Figure S2 in the SOM).

Fourth, labor market participation between the genders has become more equal over time in Switzerland. Women are more likely to be active in the labor market and are also more likely to work full time than they were in the past, whereas the proportion of men working full-time has fallen slightly (see Panel B in Fig. 1). However, despite an increase in labor market participation, women are still inactive more often than men, and work fewer hours when they are active (Vidal-Coso, 2019). Moreover, the pattern of women in their late 20 s and early 30 s very often leaving full-time work – at varying levels – has been very

consistent over the last 50 years (see Panel B in Fig. 1). This points to women taking career breaks after the birth of children more often than men, and hence often being less upwardly mobile, and more downwardly mobile, in their careers (Sacchi et al., 2016).

Fifth, while gender norms in Switzerland have changed over the course of the last 50 years, conservative gender norms regarding family life and transition to parenthood persist (Girardin et al., 2016, Levy, 2013).

Based on the processes mentioned above, conflicting expectations regarding gender gaps in occupational status can be formulated. First, as mentioned above, there is a strong linkage between educational certificates and labor market placement in the Swiss labor market (Kriesi & Imdorf, 2019; M. Buchmann & Sacchi, 1998). Due to societal processes, such as educational expansion, tertiarization of the labor market, and occupational upgrading, one might expect that, over the course of successive birth cohorts, previously observed gender inequalities in labor market allocation, to the disadvantage of women (e.g. measured using social class or occupational prestige) should decrease (see for example: Jann & Combet, 2012; Falcon, 2020).

Second, due to the strong persistence of institutional factors that are disadvantageous for women (e.g., tax regimes and childcare support), and the persistent and marked differences in occupational segregation and working hours, which harm occupational advancement, it can be assumed that gender inequality in returns to education, as regards occupational status, is still persistent among the youngest cohorts.

The results of a study by Falcon (2020) indicate that, for birth cohorts between 1912 and 1978, absolute returns to education are still lower for women than for men, although it is noteworthy that this difference has narrowed across cohorts. Based on the two formulated expectations and the study results for Switzerland, one can accordingly expect a narrowing of the gender gap in educational returns, as regards occupational status, without the gap closing completely.

Over the life course, gender gaps in occupational status can be expected to increase. We expect this to be the case, due to intragenerational mobility processes (Sacchi et al., 2016): it is known that women are less often upwardly mobile than men, due to career interruptions and reduced employment. We expect that this pattern will be stable over the observed historical period, since there remains a close link between an individual's field of study and the labor market sector in which they are employed, and there are still strong differences in working hours and career interruptions, between men and women (Vidal-Coso, 2019; Ernst Stähli et al., 2009; M. Buchmann & Kriesi, 2012).

3. Data

For the empirical analysis, large-scale administrative data from the Swiss Federal Statistical Office (FSO) are employed. For the years 1970, 1980, 1990, and 2000, we use data from the Swiss census, which surveys the whole population (FSO, 2017). The last time a census was conducted in Switzerland was in 2000. Since 2010, a structural survey has been conducted annually; this is a survey based on register data accompanied by sample surveys. For our analyses, we use the data from the cumulative structural surveys for 2011–2015 and 2016–2020. At least 200,000 people from the permanent resident population who are over 15 years old and live in a private household are surveyed each year for the structural survey (FSO, 2021).

In order to reveal changes across birth cohorts (Ryder, 1965), we form five-year pseudo-birth cohorts. In addition, we carry out age standardization in order to observe cohort members at similar points in their lives. On the one hand, we look at cohort members when they enter the labor market at the age of 25–30 and, on the other hand, we look at them mid-career (at the age of 45–50), when occupational mobility may have already occurred, many people have children, and many people may have experienced re-entry after possible family-related

interruptions in employment. To obtain pseudo-birth cohorts that do not overlap, and to avoid possible influences of the Covid pandemic, only the data from the years 2010/11 and 2018/19 are taken into account. Thus, we can distinguish the following quasi-birth cohorts at the ages of 25–30: 1940–45; 1950–55; 1960–65; 1970–75; 1981–1987; and 1988–94. At the age of 45–50, we distinguish the following quasi-birth cohorts: 1920–25; 1930–35; 1940–45; 1950–55; 1961–67; and 1968–74. We construct pseudo-birth cohorts by grouping individuals of the same birth year range from the cross-sectional surveys to approximate longitudinal changes over time. We are required to rely on this approach because we are unable to identify individuals across different surveys. Following the approach of other studies, we only consider people who have a job at the time of the survey (e.g., Falcon, 2020; Jann & Combet, 2012). Furthermore, the analysis is restricted to people born in Switzerland. This restriction ensures that we primarily examine people with a Swiss educational qualification in our analyses. Moreover, people currently enrolled in an educational program at the time of the survey are excluded from the analysis.

4. Operationalization

The data contain information on *the highest educational qualification* at the time of the survey. People's educational qualifications are separated by the FSO into six categories: *no degree*, *compulsory education* (lower secondary level), *vocational education and training (VET)* (upper secondary level), *general education* (upper secondary level), *professional education and training (PET)* (tertiary level), and *university* (tertiary level).[1] Due to the very small proportion of individuals who have no degree (see also Fig. 1), these individuals are excluded from the analyses.

We operationalize *placement in the labor market* using the International Socio-Economic Index of Occupational Status (ISEI) (Ganzeboom et al., 1992). This status scale takes values from 11 to 90. An ISCO for the current occupation is available in the data for all individuals who are active in the labor market. ISCO-88 is available for the survey dates 1970–2000 and ISCO-08 is available for the survey dates 2011–2020. In a first step, we convert the ISCO-88 to ISCO-08, and we then convert ISCO-08 into the ISEI for all survey dates, using the Stata ado *iscogen* (Jann, 2019).

In the following, we explain how we operationalize the variables that we assume, for theoretical reasons, have an influence on status returns: working hours, labor market segregation, having children, and civil status (Vidal-Coso, 2019; Ernst Stähli et al., 2009; M. Buchmann & Kriesi, 2012; Sacchi et al., 2016; Blossfeld & Kiernan, 2019; Charles & Buchmann, 1994; Levy, 2013). We operationalize *working hours* using the information provided by the respondents in the surveys. Respondents were asked to indicate whether they worked full time or part time in their job. Since the number of hours worked per week is not available for all surveys, we can only use this aggregated self-assessment.[2] To model horizontal segregation in the labor market, we subdivide occupations into different *economic sectors* based on the Swiss Standard Classification of Occupations 2000 (SSCO2000): "Not classified"; "Health, Education, Culture, Science"; "Management, Admin,

Finance, Law"; "Hospitality, Personal Services"; "Trade & Transport"; "Construction & Mining"; "Technical & IT"; "Manufacturing & Industry"; and "Agriculture & Forestry".[3] We operationalize *children living in household* by whether or not at least one child was living in the household at the time of the survey and, based on this, we create a dummy variable. We categorize *civil status* into four categories based on the available information: single, married, widowed, and divorced. Furthermore, we operationalize the following control variables that are available in the data for our decomposition models: *Swiss nationality* (yes/no) and *cantons*.

5. Methods

We want to map changes in gender differences in returns to education, as regards occupational status, across birth cohorts at different points in a person's career. Therefore, we choose a cross-sectional approach in which we calculate our analyses separately for each survey time point (1970–2019) and age range (20–25 or 40–45). This gives us our results for the corresponding pseudo-birth cohorts (1920–1994).

After a bivariate presentation of the association between educational credential and labor market allocation, we calculate ordinary least squares (OLS) regressions in which only gender is included as a dependent variable. This gives us the raw gender difference in occupational status. In a further step, we consider children living in the household, Swiss nationality, civil status, working hours, economic sector, and canton, thus obtaining the controlled gender difference in occupational status. On the one hand, we calculate these models for all men and women (total) and, on the other hand, we calculate them for those with the same educational credential level.

In a further step, a Blinder-Oaxaca decomposition is estimated to calculate which mechanisms contribute to gender differences in occupational status between men and women (with similar educational attainment) and to what extent this varies across birth cohorts and time in the life course. To do this, a two-fold Blinder-Oaxaca decomposition (Oaxaca, 1973) is used. The coefficients of our decomposition are based on a pooled regression over both groups (for a similar procedure used to analyze income differences, see: Combet & Oesch, 2019).

Since we have cross-sectional data, we cannot rule out endogeneity between our model variables. For example, it could be argued that civil status is influenced by occupational status and not, as we assume in our model, that civil status influences occupational status. Therefore, it is important to emphasize that we cannot draw any causal conclusions based on our cross-sectional data.[4]

For all calculations, we calculate complete case analyses and thus use

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[1] Since the education system and educational qualifications have changed over the last 50 years, we use the harmonization for the censuses 1970–2000 applied by the FSO for the classification, on the one hand, and the FSO's classification of education for the structural surveys, on the other. The exact allocation of the qualifications is shown in Table S1 in the SOM.

[2] Regarding the question of who is actually considered to be employed, adjustments have been made to the questionnaires over the last 50 years. In 1970 and 1980, for example, people were considered to be in employment if they worked at least six hours per week; since 1990, they are considered to be employed if they work one hour per week. Since our analyses only consider those who are employed, this change should not have a major impact.

[3] For this purpose, we use two classifications of the FSO. One is a key from STAMM codes to SSCO2000 and the other is from STAMM codes to ISCO-08. This enable us to assign the ISCO-88 and ISCO-08 codes present in the data to SSCO2000 codes. Since several SSCO2000 group codes belong to the same ISCO in the keys, we calculate the median and mode of the associated SSCO2000 group codes for each ISCO code, in a first step. If these match, we assign the SSCO2000 group code to this ISCO. For 2 % of the ISCO codes, these do not match; in such cases, we assign the median SSCO2000 group code.

[4] In additional analyses, we examine the extent to which occupational status predicts selected model variables and varies across cohorts. To do this, we use a proportion of reduced error (PRE; Jann & Combet, 2012) approach and predicted pseudo-R^2 values as an error reduction measure (applying multinomial logistic regressions with 1000 bootstrap replications, see Figures S3 and S4 in the SOM). In general, the pseudo-R^2 values are low. Across the cohorts, there are minor absolute changes such that the predictive power of occupational status for children decreases while it increases for working hours and civil status. Based on these analyses, we assume that the potential endogeneity across cohorts has remained relatively stable.
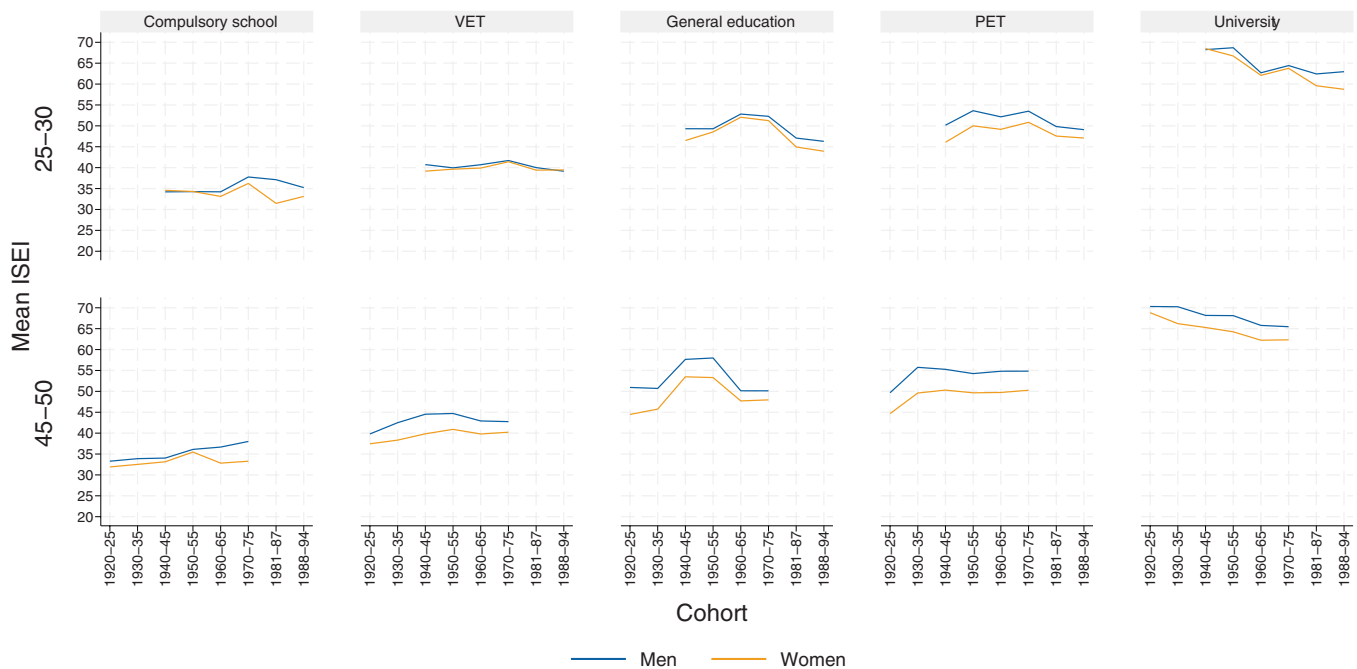
Fig. 2. Mean occupational status by highest educational qualification across birth cohorts at age 25–30 and 45–50. *Note: For better readability, the cohorts 1961–67 and 1968–74 are displayed under the labels 1960–65 and 1970–75.*
Source: Swiss census 1970, 1980, 1990, 2000 and structural surveys 2011–2012 and 2018–2019, weighted data; our own calculations.

all individuals who have no missing values in the variables used in the respective analyses.[5] As the censuses cover the entire population, we do not weight the analyses based on these data. For the analyses based on the structural survey, the corresponding design weights are used. We run Stata18 and (among others) the following ados: *coefplot* (Jann, 2014) and *oaxaca* (Jann, 2008).

6. Results

6.1. Association of educational credential and labor market allocation

Fig. 2 shows the mean ISEI for men and women at the ages of 25–30 and 45–50 across the pseudo-birth cohorts. We see for men and women that the higher the educational attainment, the higher the occupational status, on average. In general, it is noteworthy that men, on average, consistently across educational attainment, have an occupational status that is similar to, or higher than, women's. Furthermore, it is noticeable that the gender gaps tend to be wider between the ages of 45 and 50, even for the cohorts for which both measurement points are available. In general, a strong persistence of the gender gap can be seen across the cohorts, with the gender gap among men and women with compulsory education rising slightly across the cohorts and the gap between men and women with a university degree rising among 25- to 30-year-olds.

6.2. Regression results

Fig. 3 (aged 25–30) and Fig. 4 (aged 45–50) show the results of the OLS regressions on the gender gap in occupational status (see Table S2 and S3 in the SOM for the regression coefficients). Looking at the raw gender differences in Fig. 3, it is striking that the (total) gender gap in

occupational status between men and women aged 25–30 narrows from 2.5 ISEI points to almost 0 across the birth cohorts (1940–1994), so that in the youngest cohort there are no longer any statistically significant differences. When looking at the raw differences separately by level of education, it can be seen that for people with a university degree, general education, and compulsory education, these have increased across the birth cohorts. It is striking that in the oldest cohort of those with a university degree, there are no statistically significant differences. However, this group of women, who have a university degree, is highly selective (see Fig. 1). For people with a PET or VET qualification, a reduction in the raw gender gaps in occupational status can be seen across the birth cohorts. Among those with a VET qualification, no statistically significant gender gap can be determined in the youngest cohort. Controlling for factors like working hours, economic sector, and children generally increases the observed gender gap (except for tertiary degrees in the youngest cohorts), suggesting that part-time employment and family responsibilities amplify disparities among men and women with the same educational credentials. The trends across the cohorts in the raw and controlled gender gaps are relatively similar.

For older individuals aged 45–50 (see Fig. 4; birth cohorts 1920–1974), the overall cohort trends resemble those for younger cohorts, but the absolute size of the raw gender gap tends to be larger (compare birth cohort 1970–75 in Fig. 3 and birth cohort 1968–74 in Fig. 4) and remains statistically significant across all educational groups. Further, it is interesting that the controlled gender gap (total) is smaller than the raw gender gap. Despite some evidence of diminishing gender gaps among those with the same educational qualification levels, the results highlight persistent – and, indeed, sometimes even widening – disparities for certain educational levels, particularly among university-educated women in the younger cohorts.

6.3. Decomposition results

In Fig. 5 and Fig. 6 below, we have decided to show only the change in the coefficients of the explained part of two variables – part-time work and sector of job – since these are the most influential variables, even when other variables, such as civil status and children in the household,

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[5] In most cases, the missing values amount to less than 5 %. The year 2000 is noteworthy in that there are clearly the most missing values in all variables and many people who are active in the labor market do not have a valid ISCO. The FSO documents provide no explanation as to why the year 2000 is an outlier in this regard.
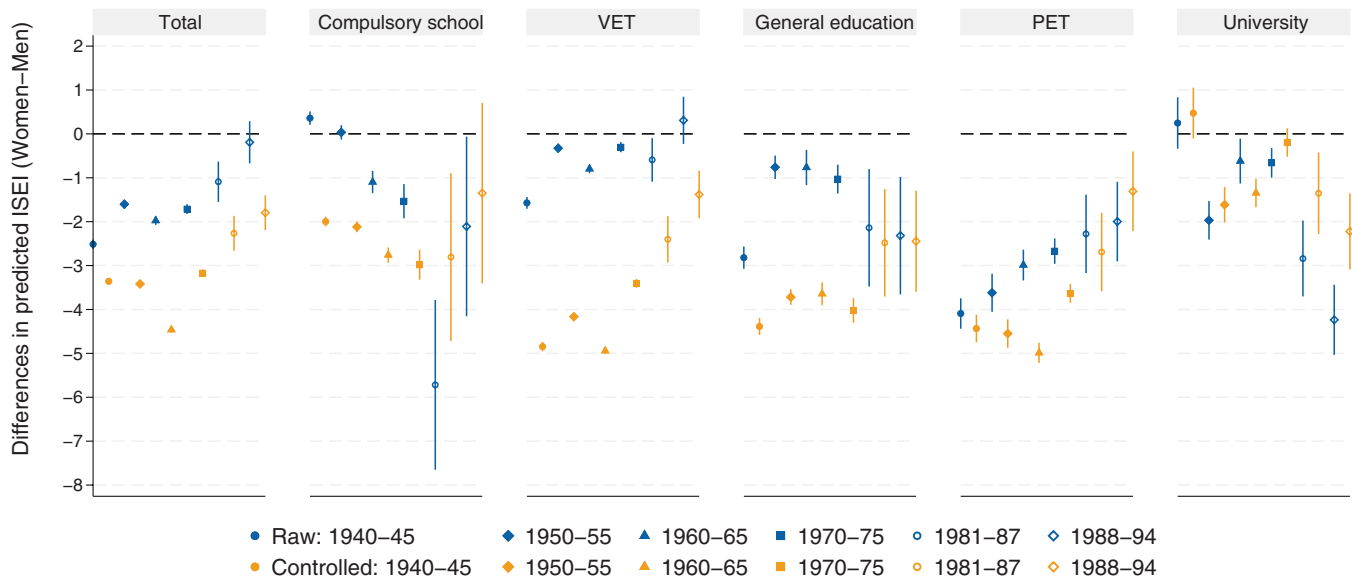
Fig. 3. Predicted occupational status gender differences total and by highest educational qualification across birth cohorts at age 25–30.
Source: Swiss census 1970, 1980, 1990, 2000 and structural surveys 2011–2012 and 2018–2019, weighted data; our own calculations.
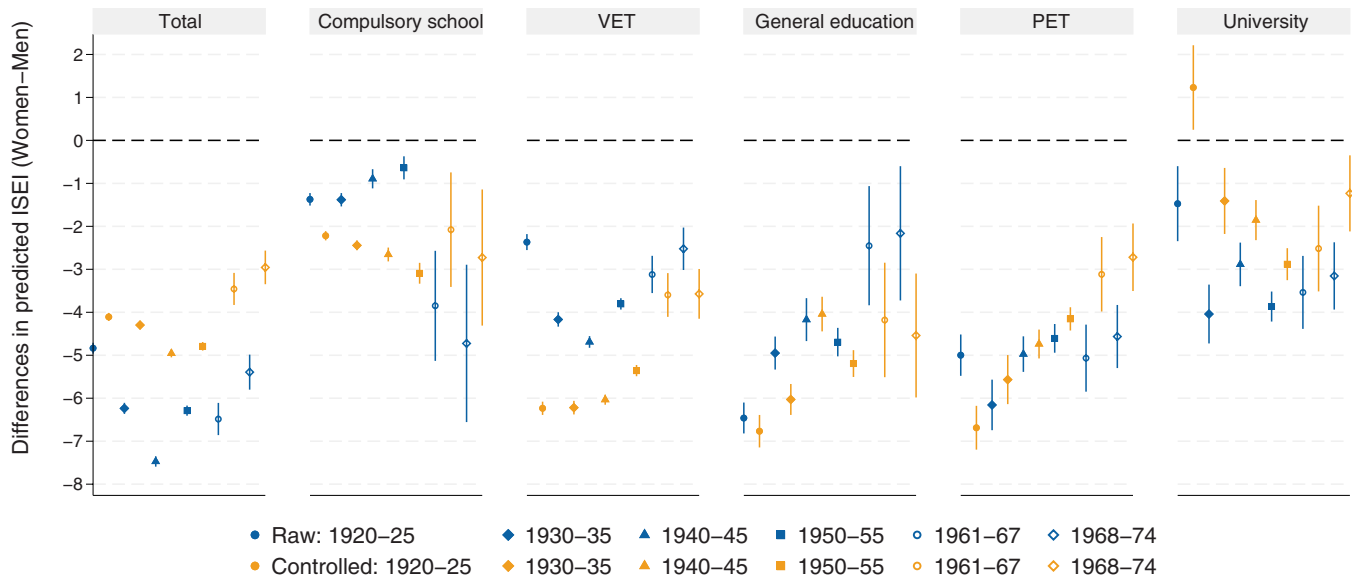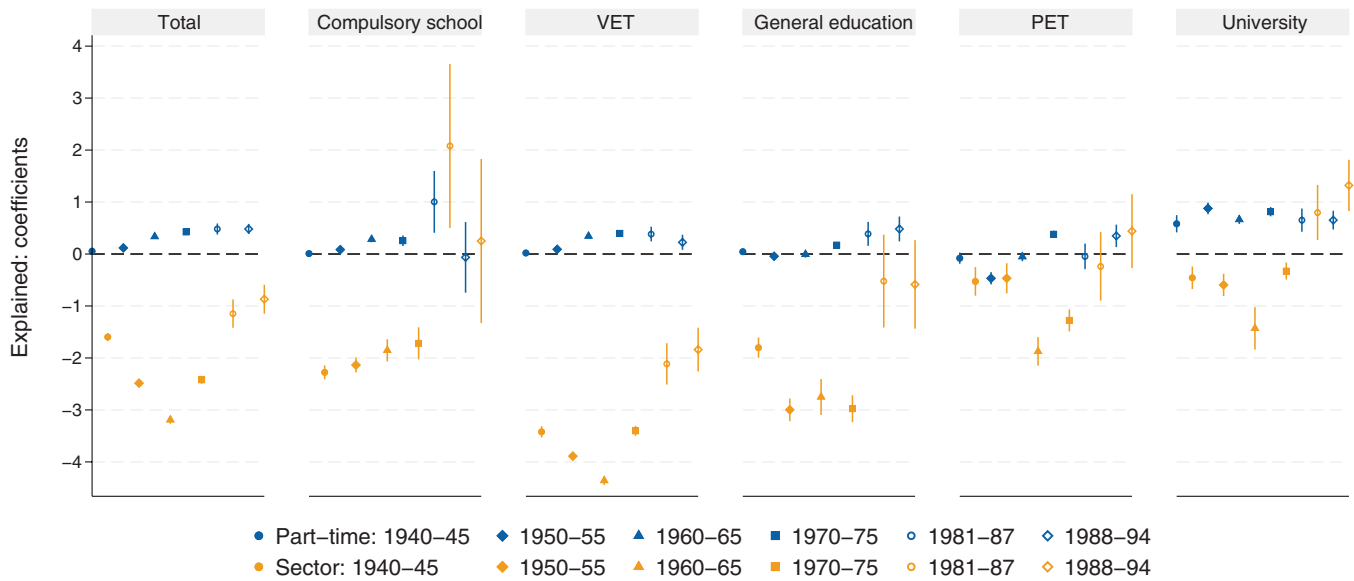

Fig. 4. Predicted occupational status gender differences total and by highest educational qualification across birth cohorts at age 45–50.
Source: *Swiss census 1970, 1980, 1990, 2000 and structural surveys 2011–2012 and 2018–2019, weighted data; our own calculations.*

partially show statistically significant coefficients. Tables S4 and S5 in the SOM show the overall results of the decomposition (group difference, explained part, and unexplained part), as well as a detailed breakdown of the individual variables and their impact on the explained differences at the ages of 25–30 and 45–50. To simplify the interpretation, men (who generally have a higher occupational status) represent the reference group. A positive overall difference thus indicates that men have a higher occupational status than women. Positive explained part coefficients indicate that the group difference between men and women would change in favor of women if the same endowment in these variables were present. Negative explained part coefficients indicate that the group difference between men and women would change to the disadvantage of women if the same endowment in these variables were present.

In general, it can be seen that, of the variables examined, sector of occupation and working hours, in particular, have a consistently statistically significant influence. Looking at the decomposition results for

the age group 25–30 (see Fig. 5 and Table S4 in the SOM), the following things stand out. First, when considering all men and women (total), a negative coefficient of the sector of occupation, and a positive one of the working hours (part-time work), can be seen quite consistently. Furthermore, it can be seen that the sign of the coefficient of education changes from positive to negative for those born after 1980. This suggests that if women had the same level of education as men, there would be an even greater gender gap among the youngest cohorts. Second, the signs of the coefficient of the explained part differ by educational group and to some extent between cohorts within educational groups. Among those with VET qualifications, for example, the sector coefficients are always negative. Among those with a university degree, on the other hand, they are significantly positive in the youngest cohorts. Furthermore, the influence and the sign of working hours varies across educational groups and cohorts. For example, among those with a university degree, working hours have a statistically significant positive influence in all cohorts. This means that if men and women with a university

Fig. 5. Blinder-Oaxaca decomposition coefficients of part-time work and sector (explained), total and by highest educational qualification across birth cohorts at age 25–30.
Source: Swiss census 1970, 1980, 1990, 2000 and structural surveys 2011–2012 and 2018–2019, weighted data; our own calculations.
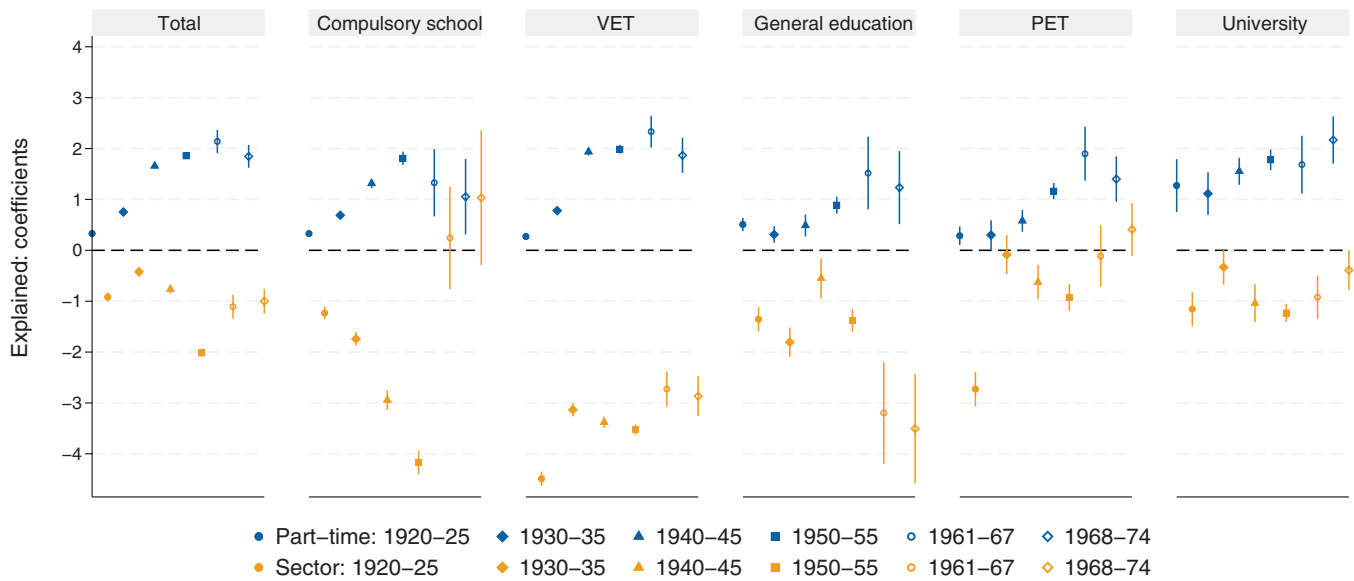
Fig. 6. Blinder-Oaxaca decomposition coefficients of part-time work and sector (explained), total and by highest educational qualification across birth cohorts at age 45–50.
Source: Swiss census 1970, 1980, 1990, 2000 and structural surveys 2011–2012 and 2018–2019, weighted data; our own calculations.

degree were to work the same hours, the occupational status gender gap would be significantly smaller. This pattern is also evident among those with VET and general education qualifications, especially in the youngest cohorts (i.e. those born in 1970 or later). Fourth, the influence of the sector of occupation has a statistically significant negative coefficient in most cases. This means that if men and women worked in the same sectors, the occupational status gender gap would be even wider. Across the cohorts, it is striking that occupational sector no longer has a statistically significant influence among those with PET and general education in the two youngest cohorts. Among those with a university degree, the sign changes from negative to positive. This means that if women with a university degree in the younger cohorts were to work in the same sectors as men, the gender gap in occupational status would be smaller. In other words, in younger cohorts, part of the disadvantage faced by university-educated women stems from their employment in

sectors with lower occupational status.

When looking at the composition results at the age of 45–50 (see Fig. 6), similar patterns can be seen as are shown in Fig. 5. In particular, part-time work (positive) and sector of occupation (mainly negative) are the most influential variables in explaining gender occupational status gaps. While an equal endowment in working hours between men and women in all educational groups would reduce the gender gap, an equal endowment in the sector (with the exception of the youngest cohorts of those with a tertiary degree) would increase the gender gap. In other words, if men and women were to work the same number of hours, the status gaps would be smaller. Furthermore, part of the status gaps can be explained by the fact that women more often work in sectors with lower occupational status. When considering all men and women (total), the influences of part-time work and sector are similar to those for 25–30-year-olds (see Table S4 and Table S5 in the SOM). However, the change

in the sign of the education coefficient cannot be observed for those born before 1974.

When comparing the four pseudo-cohorts that could be analyzed at the ages of 25–30 and 45–50 (1940–1975), the following is noticeable when comparing the life stages. Within the education groups, it can be seen that the coefficient of working hours at the age of 45–50 is greater. The influence of the sector of occupation is generally greater as well, but not consistently in the group of those with a university degree. Considering all men and women (total), it can be seen that the positive coefficient of education is more pronounced in terms of magnitude at an older age.

7. Robustness checks

We conduct several additional analyses to test the robustness of our results. The results of these analyses are shown in the SOM. For one, we use the sector of the job a person was trained in (learned job) instead of the sector of the current job. For these analyses, only a smaller number of cases are available because more people had missing information regarding the learned job than the sector of the current job (see Figure S5 and Figure S6 and Table S6 and Table S7 in the SOM). Furthermore, in order to be able to take into account possible distortions in ISEI measurement due to structural change (Nennstiel, 2021), we use a percentile-based operationalization of our dependent variable (percentile-based ISEI ranks within surveys; see Figure S7 and Figure S8 in the SOM). Even if – which is not surprising when using other classifications and samples – numerically different results are shown, the trends between the genders and over time are similar to the results we have reported here.

Furthermore, we use supervisory responsibility (binary outcome) among all employees (excluding self-employed from the sample) as our dependent variable. Since the information required to create this variable is not included in the 2011 and 2012 structural survey data, these data could not be considered, which is why only five (instead of six) cohorts could be analyzed. For this dependent variable (see Figure S9 and Figure S10 and Table S8 and Table S9 in the SOM), too, it can be seen that gaps tend to be larger later in life – also because very few people have a job with supervisory responsibility by the end of their 20 s – and that in the cohort sequence the gender gaps among equally educated men and women have narrowed but are still persistent even in the youngest cohorts (among 45–50-year-olds with a university degree born in 1968–74; raw difference 23 percentage points, controlled difference 10 percentage points). Examining the decomposition results (see Table S10 and Table S11 in the SOM) at the age of 45–50 shows that part-time work has a very strong influence on gender gaps in supervisory responsibility, and, to a significantly lesser extent, the sector does too.

In our previous models, we did not take into account the fact that the influence of variables can vary between the genders. It can be argued that, for example, civil status or the influence of children on occupational status varies between the genders and thus the controlled gender gaps reported above could be distorted. Therefore, we calculate models in which we additionally include interactions between gender and having children, as well as gender and civil status (see Tables S12 and S13 in the SOM). There is no consistent effect across cohorts whereby these effects vary systematically by gender. Furthermore, including the interactions does not improve the model fit. The predicted gender differences also show hardly any changes compared to the model without interactions (see Figures S11 and S12 in the SOM).

As can be seen in Fig. 1, not all men and women work. However, since we – like many researchers studying social stratification – only consider those in our analyses who were working at the time of the survey, we have a selection in our analysis sample that is likely to differ between the sexes and across the cohorts. This may lead to biased estimates in our statistical models. Therefore, we calculate models in which we statistically control for this selection (Heckman, 1979). To do this, we calculate separate selection models for women and men in which we

predict labor market participation using Swiss nationality, children in the household, civil status and age. Based on these models, we calculate mills ratios for men and women and then include them in our original regression and decomposition models for selection control (see Figures S13-S16 and Tables S14-S17 in the SOM). It can be seen that the raw gender gaps are smaller with selection control, i.e., that gender gaps to the disadvantage of women are smaller. Controlled gaps and the decomposition models show similar trends to the models without selection control. However, this could also be due to methodological problems, since there are very few variables in the data that we can include in the selection model that are not already included in the occupational status model.

8. Discussion

The aim of our paper is to investigate whether, in the wake of major educational expansion, occupational status gaps among men and women with similar levels of education have undergone changes in Switzerland over the last 50 years (DiPrete & Buchmann, 2013). Therefore, we analyzed pseudo-birth cohorts (1920–1994) at different points in the life course (aged 25–30 and 45–50) based on large-scale administrative data from 1970 to 2019 to answer our two research questions: (1) How have inequalities in labor market allocation (measured as occupational status) between men and women with similar levels of educational attainment changed over time? (2) What mechanisms contribute to these gender inequalities, and to what extent has their explanatory power changed over time?

We are able to show that the total gender gaps in occupational status in the cohort sequence have narrowed. In the youngest cohort (1988–94), no gender gaps in occupational status are observed early in individuals' careers, while gaps persist into mid-career for the 1968–74 cohort.

Looking at controlled gender gaps, the gender gaps decrease in the cohort sequence at both career stages. However, for the youngest cohorts studied, this approach shows significant occupational gender gaps at both career stages. These differences between raw and controlled differences among young people entering the labor market indicate that women have been able to improve their position through higher education in the cohort sequence, as is to be expected based on the processes of tertiarization of labor markets and the simultaneous strong relationship between education and labor market placement (Oesch, 2013; Zangger et al., 2018; M. Buchmann & Sacchi, 1998). Nonetheless, significant gender gaps continue to exist, due to different working hours and the segregation of the labor market by gender. Persistent structural inequalities (Epple et al., 2015; Charles et al., 2001; Ernst Stähli et al., 2009; Levy, 2013) thus continue to influence gender differences in returns to education, as regards occupational status.

Across birth cohorts, the size and direction of gender gaps in occupational status vary notably by educational level. Controlling for factors like working hours, sector of occupation, and children generally increases the observed gender gap (except for tertiary degrees in the youngest cohorts), suggesting that part-time employment and family responsibilities amplify disparities among men and women with the same educational credentials. For older individuals, aged 45–50, the overall cohort trends resemble those for younger cohorts, but the absolute size of the raw gender gap tends to be larger and remains statistically significant across all educational groups. These results are in line with our theoretically formulated expectation that gender gaps should increase over the life course. One possible interpretation would be that this is due to differential career mobility patterns between the genders as a result of employment interruptions and reduced working hours due to family formation (Sacchi et al., 2016; Charles & Buchmann, 1994; Vidal-Coso, 2019).

The decomposition results indicate that, among the variables investigated, part-time work (working hours) and sector allocation are among the most influential mechanisms driving gender differences in

occupational status. When considering all men and women (total gaps), part-time work tends to have a positive influence (i.e. reducing the gap if men and women had equal working hours), whereas sector allocation typically exerts a negative influence (i.e. widening the gap if men and women were equally distributed across sectors). Interestingly, the sign of the influence of education changes for the birth cohorts born in the 1980s. This means that if women did not have such a high level of education on average, the gender gaps in the youngest cohorts would be even wider in the early career stage. This could point to the influence of the expansion of education, with women in these cohorts having higher average levels of education (Nennstiel & Becker, 2023; see also Fig. 1). It is also interesting to note that the effect of working hours increases across cohorts in both the earlier and later career phases, which could indicate the increased labor force participation of women in part-time work. As more and more women are entering the labor market (and an increased share of women among them are working part time), the impact of working hours to explain gender gaps in occupational status is increasing.

Taken together, the findings underscore that, although women's rising educational attainment can help reduce gender differences in occupational status (C. Buchmann et al., 2008; DiPrete & Buchmann, 2013), entrenched patterns of working hours (Vidal-Coso, 2019) and sector allocation (Charles & Buchmann, 1994; Imdorf & Hupka-Brunner, 2015) continue to yield notable gender gaps across cohorts and career stages.

When comparing the influence of these mechanisms on occupational status gender gaps among individuals with the same level of qualification, it becomes evident that both the direction and magnitude of the explained part vary by educational group and, to some extent, by birth cohort. These results indicate the differential impact of labor market segmentation across various groups and the changing (slightly reduced) sex segregation among highly educated men and women among younger birth cohorts. Part-time work shows a positive effect at career entry across many educational groups, especially in the youngest cohorts (born from 1970 onwards). Among 45–50-year-olds, the effect of working hours tends to grow across cohorts and is often significantly positive even in the oldest groups – likely reflecting the sharp rise in women's part-time employment (see Fig. 1). Another possible explanation for greater influence of working hours on gender gaps later in the life course could be that this is an indication of women's missed upward mobility, or experienced downward mobility, due to career interruptions and reduced working hours as a result of family formation (Vidal-Coso, 2019; Sacchi et al., 2016).

As mentioned above, our analyses are based on cross-sectional data. Therefore, it is not possible to draw causal conclusions regarding individual-level effects across careers and we cannot rule out possible forms of endogeneity in our model (e.g. that occupational status influences civil status; see, however, Figures S3 and S4 in the SOM). Furthermore, the data used only contain a selected number of variables and do not contain information on individual values or beliefs. We would also like to reiterate that, like other stratification studies (e.g., Falcon, 2020; Jann & Combet, 2012), we only consider those who were actively employed at the time of the survey. Thus, possible processes for selection into the labor market must be taken into account when interpreting the results (see Fig. 1 and the robustness checks with selection models). However, our results add to the state of research by, first, analyzing a long historical period with high-quality administrative data and, second, by investigating the impact of different possible mechanisms for occupational status gender gaps across cohorts and different career stages.

Our findings suggest that while the narrowing educational credential gap – favoring women in more recent cohorts – has contributed to a partial reduction in gender disparities in returns to education, as regards occupational status (for similar results on education–destination class relationships, see Falcon, 2020), traditional social structures and institutional constraints continue to limit women's full utilization of their educational investments. The results of our decomposition analysis suggest that, despite improvements in women's educational attainment, persistent sex segregation in the Swiss labor market and enduring cultural norms still shape men's and women's occupational trajectories differently. Furthermore, we understand the findings of our models as indicating that modernization processes and increased female participation in higher education have weakened some mechanisms that historically disadvantaged women, other factors – such as sectoral placement and reduced working hours (e.g., related to childcare) – remain significant. These findings resonate with earlier research highlighting how both macro-level institutional features and micro-level decision-making processes interact to maintain labor market inequalities (Charles & Buchmann, 1994; Charles et al., 2001; Epple et al., 2015). Consequently, even as women surpass men in tertiary education attainment, Switzerland's relatively traditional socio-political environment continues to produce barriers to women's career advancement.

Beyond the Swiss context, our findings have broader implications for international research on gender inequality in education and labor market outcomes. Many countries exhibit similar patterns to those found in Switzerland: despite women's growing educational advantages, gender disparities in occupational status and earnings persist (Goldin, 2006; DiPrete & Buchmann, 2013, Seehuus & Strømme, 2025). This suggests that educational expansion alone is insufficient to overcome structural and cultural barriers to gender equality in the labor market. Our results underscore the importance of considering how institutional configurations – such as childcare provision, parental leave policies, and labor market regulations – may interact with gender norms to shape occupational trajectories (Orloff, 2009; Mandel & Shalev, 2009; van Hek et al., 2016). These insights contribute to comparative research that seeks to understand why similar educational achievements translate into different labor market outcomes across countries. By situating the Swiss case within this wider framework, we aim to inform scholarly debates on the conditions under which educational gains for women can lead to more substantial progress toward gender equality.

CRediT authorship contribution statement

Rolf Becker: Writing – original draft, Supervision, Conceptualization. **Richard Nennstiel:** Writing – original draft, Visualization, Supervision, Methodology, Formal analysis, Data curation, Conceptualization.

Data access and replication

Due to Swiss data protection regulations, we are not allowed to share the data we use publicly. However, researchers can request the data from the Federal Statistical Office. https://www.bfs.admin.ch/bfs/en/home/services/data-linkages/for-third-parties.html

Our data preparation and analysis scripts can be downloaded under the following link https://osf.io/h4w76/.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

which helped us improve earlier versions of the manuscript.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.rssm.2025.101070.

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