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The Labour Market Positioning of Continuing Education from Universities: Evidence from a Factorial Survey Experiment in Switzerland

Ladina Rageth[1], Ursula Renold[1], and Aranya Sritharan[1,2]

Abstract

Since the educational expansion in the twentieth century, universities around the globe provide more diversified education programmes to a broader group of individuals. This paper focuses on the case of Switzerland, where universities have responded to this trend by introducing continuing education for individuals with a tertiary degree and work experience. Using data from a factorial survey experiment on hiring decisions of employers, we investigate the effect of continuing education from universities on the hiring probabilities and salaries of tertiary educated applicants. Our results show that applicants with a professional tertiary education strongly profit from a continuing education from universities. However, for applicants with an academic tertiary education, continuing education credentials from universities do not lead to better hiring prospects compared to a formal master's degree, but they lead to higher salaries. Our results support job competition models and credentialism theories stating that applicants profit from obtaining more educational credentials, especially from university credentials that have high symbolic capital. Our paper contributes to the literature by showing that the increasingly offered continuing education programmes from universities enhance the labour market outcomes of their graduates but also need a clearer positioning in the Swiss educational landscape.

Keywords

Factorial survey, continuing education, university, recruitment

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Content

1 Introduction

Several countries have experienced an educational expansion over the last few decades (Powell & Solga, 2011). With the aim of granting access to tertiary education for larger shares of the population, this educational expansion was a mostly intentional action taken by governments (Hadjar & Becker, 2006). While traditionally, education – especially formal education – was geared towards young people, individuals of any age now have possibilities to enrol in education (Jarvis, 2004). As a consequence, to be competitive in the labour market and to avert job-insecurity or even job-loss, adults are expected to invest in education over longer periods in their lives (Schultheiss & Backes-Gellner, 2021). Thus nowadays, many adults re-enter education long after their first labour market entry (Brown, 2001).

Credentialism theorists (Brown, 2001; Collins, 1979) argue that with rising levels of education in society, individuals nowadays have stronger incentives to obtain more education than in previous generations. Similarly, job competition models (Thurow, 1975) state that the more individuals acquire higher levels of education, the more education is necessary to even enter certain positions. In these models, scholars argue that employers expect applicants to have a minimum education level, whereas this minimum is rising (Solga, 2005). In the hiring process, employers rank applicants within a "labour queue" (Thurow, 1975), in which applicants with more education get a higher rank. Education them shifts from an absolute to a positional good (Hirsch, 1976). However, more education facilitates job entry but does not necessarily entail higher monetary returns within a job, as job requirements define salary (Solga, 2005).

To remain internationally competitive, universities in several countries changed their strategies to absorb the rising demand for higher education from both students and employers (Münch, 2011). Münch (2011) critically calls this phenomenon "academic capitalism", in which the economic system's market logic has taken over the higher education system, resulting in higher education being a good that should be accessible to many. However, in line with job competition models, empirical evidence shows that the value of higher education credentials in the labour market has become more relative since the educational expansion (Bol, 2015), and that graduates often accept jobs that is below their education and skills level (Klein, 2015). Nevertheless, individuals keep investing in higher education in the form of university education (OECD, 2021b). Following Bourdieu (1984), we argue that this high demand for university education is justified by its symbolic capital, i.e. the prestige and socially perceived trustworthiness of university credentials.

Universities in Switzerland are one example where government-initiated reforms explicitly helped higher education institutions to admit more students. After several political reforms in the 1990s, Swiss universities, including the newly introduced universities of applied sciences (UAS), started offering non-formal course programmes (hereafter: *continuing education from universities*) from the 2000s onwards. Continuing education from universities is not regulated at the national level and targeted at tertiary educated and work-experienced individuals (Seitter, 2014; Zimmermann, 2020). The goal of these programmes is to provide experienced individuals with additional education in specific areas (Swissuniversities, 2021). As these continuing education programmes are open to individuals with different educational backgrounds, Swiss universities introduced a demand-driven paradigm that was previously uncharacteristic for this type of public institution (Seitter, 2014). By focusing on the Swiss example, this paper explores the labour market outcomes of continuing education programmes at universities and its relative positioning compared to tertiary education at universities.

Previous studies analyse job competition and credentialism assumptions from different angles. Some scholars show that an individual's formal education acts as a positional good in the labour market, but

also that its positionality depends on the context (e.g. Bol & Weeden, 2015; Ortiz & Rodriguez-Menés, 2016; van Ours & Ridder, 1995). Other scholars show that just acquiring higher education is not always sufficient, as employers also pay attention to the institution at which applicants acquired their credentials (Deming et al., 2016; Isopahkala-Bouret et al., 2021; Rivera, 2011).

Studies focusing on continuing education find mixed evidence due to the different contexts and varying definitions of continuing education (e.g. Dieckhoff, 2007; Ehlert, 2017; Li et al., 2000; Schwerdt et al., 2012). Overall, these studies find that the effect of continuing education on labour market outcomes depends on the context, and that continuing education mainly improves employment prospects, but that it does not necessarily lead to higher salaries.

We contribute to this literature by investigating the labour market positioning of continuing education at universities from the employers' perspective. For continuing education students, such education is demanding in terms of time and monetary resources, thus gaining insight into its labour market outcomes is essential (Weber, 2014). By taking the perspective of employers, we explore the positioning of educational credentials in the first stage of hiring processes. We examine this positioning by answering the following three research questions: 1) Do individuals with professional tertiary degree profit from continuing education at universities in the hiring process? 2) Can individuals with a professional tertiary degree and a continuing education from universities align their position in the hiring processes to those with an academic tertiary degree? 3) Do employers make a difference between individuals with a continuing education credential from universities and those with an academic tertiary degree?

We use data from a factorial survey experiment conducted among employers in Switzerland. The survey respondents evaluated fictional profiles of applicants for two hypothetical job positions: one as sales manager and one as head of IT. The fictional applicants were all qualified for the respective open position and differed in terms of their education. To ensure an experimental design, applicant profiles varied randomly among employers. Factorial surveys allow us to assess employer preferences and identify causal relations between an applicant's education and his/her labour market outcomes. For each applicant profile, the respondents answered the following two questions: 1) How likely is it that your firm would invite this person to a job interview? 2) What monthly salary would you recommend for this person? To compare these outcomes for applicants with different educational degrees, we apply multilevel random intercept regressions, which are the standard method for analysing factorial survey data (Auspurg & Hinz, 2014).

Our results provide evidence that mainly one specific group of applicants profits from obtaining a continuing education at universities. Among applicants with a professional tertiary degree, those with a continuing education credential from a university have a significantly higher probability for a job interview and higher prospective salary compared. This result is in line with job competition models, as they state that individuals with more education have better job entry prospects. Moreover, applicants with a professional tertiary degree and a continuing education credential from a university have a higher probability for a job interview compared to those with a purely academic education path.

We further provide evidence that when inviting applicants for a job interview, employers do not differentiate between credentials from continuing education at universities and degrees from academic tertiary education. However, applicants with a continuing education credential receive a higher monthly salary of around 1% compared to those with a formal university degree. This result partly confirms job competition models, as they state that job requirements – not differences in education of applicants – define salary differentials. This finding highlights that employers reward any kind of credentials from universities and supports the high symbolic value of university education in society.

We structure the remainder of this paper as follows: First, we describe the theoretical foundations, and then present the relevant empirical evidence before elaborating on the context of our analysis and the hypotheses. Second, we explain the data that we use for our analysis and the analytical strategy. Third, we present the results of, which we then discuss in light of our previously elaborated hypotheses. Fourth,

we conclude by reflecting on the limitations of our results, their policy implications and the potential for future research.

2 Literature Review on Educational Expansion and Credentials in the Labour Market

2.1 The Background of Higher Education Expansion

Scholars state that educational expansion is among the most impactful societal phenomena of the twentieth century (Hadjar & Becker, 2006). Hadjar and Becker (2006, p. 12) define educational expansion as an "increased participation in education, longer time spent in the education system and accelerated increase in higher qualifications". The fact that higher levels of education lead to high levels of prosperity within society by reducing gaps in income and wealth further increase the demand for education (Ross & Wu, 1995). Consequently, several countries actively created mechanisms to foster lifelong learning (Powell & Solga, 2011). These mechanisms increased participation at secondary and tertiary (i.e. higher) levels of education but also in continuing education (Becker & Hecken, 2011). Solga (2005, p. 28) considers that today's "education society" is not only a result of the educational expansion, but also stems from the trend that more occupational fields demand knowledge-intensive tasks. She reasons that these two phenomena lead to a system that incentivises individuals to constantly invest in education.

When analysing the effects of educational expansion, scholars often focus on university education (Solga, 2005). Münch (2011) provides a rather critical perspective on a development he calls "academic capitalism" (p. 374), which diverts universities away from their focus on creating knowledge and leads them to becoming enterprise-like entities that compete with one another following the rules of a market economy. He reasons that the acquisition of resources and students has increased in importance so that universities remain attractive and hold onto their reputation in an ever-more internationalised and globally competitive education landscape. He further states that study programmes have become a product that universities try to sell to students, who become consumers of education (Münch, 2011). This development leads universities to open education for a larger part of the population than they traditionally did, and also requires them to offer a broader set of education programmes that suits the different types of students. Reflecting this development from a systemic perspective, Kleimann (2019, p. 1089) argues that universities have shifted to "multiple hybrid organisations" that follow the economic and market system, and are no longer purely education-oriented institutions.

As with the educational expansion an increasing number of individuals acquire more education, credentialism theories (Bills, 2003; Brown, 2001; Collins, 1979) argue that educational credentials experience an inflation of their value. Thus the scarcity of higher education credentials has diminished with educational expansion (Hirsch, 1976). This "elevator effect" (Beck, 2016, p. 122) leads not only to a rise of the overall education level but also to a devaluation of higher education credentials when individuals need to invest more and more in education to remain competitive in the labour market (Beck, 2016). Credentialism theories further emphasise the relational and competitive character of labour market positioning

through education (Bills, 2003). Consequently, to enter highly rewarding positions, they argue that individuals with high abilities and ambitions acquire increasingly more credentials (Bills, 2003).

2.2 Theoretical Foundations: Job Competition Models and Symbolic Capital of Credentials

When analysing the positioning of different educational credentials, scholars often examine their labour market value. Although they agree that educational attainment is closely linked to labour market attainment (Bills, 2003), competing but not mutually exclusive theories provide an explanation as to why education largely explains labour market success. For our analysis, we argue that employers, i.e. the agents evaluating educational credentials in the labour market, act under information asymmetry (Spence, 1974). We therefore rely on theories that explain how individuals can reduce employers' information asymmetry with help of acquiring educational credentials. To explain why especially university credentials enable individuals to distinguish themselves from others in the labour market, we use job competition models, as proposed by Thurow (1975), and theories on symbolic capital as proposed by Bourdieu (1984).

In the hiring process, employers are not able to observe applicants' ability or future productivity on the job (Spence, 1974), resulting in information asymmetry on the side of the employer. As they do not extensively invest in information acquisition due to the high costs, they first rely on the information that applicants provide them, and hence are ready to take decisions under incomplete information (Arrow, 1973). As education proxies a person's ability to learn and absorb new information, education thus constitutes a strong signal for employers in the hiring process (Arcidiacono et al., 2010). Signalling theories (Spence, 1974) explain an individual's investment in higher education with its high signalling value regarding learning abilities. However, with the educational expansion, and as argued by credentialism theories, many individuals nowadays invest in higher education.

The job competition model (Thurow, 1975) extends signalling theories by providing an explanation as to why individuals increasingly invest in education, even after already having completed high levels of education. This model considers formal education as a positional good and emphasises its relative value. According to this model, the allocation of an applicant to an open position happens through two sorting mechanisms: First, through the labour queue, where employers sort jobs according to their level of skill-demand. Second, employers sort applicants following observable criteria including education. In these sorting mechanisms, education serves as a positional good that helps employers place applicants relative to others. In job competition models, trainability is the most important trait, i.e. education serves as a signal that an individual has proven to know how to learn job-relevant skills (Protsch, 2014). Consequently, by gaining a favourable position within the labour queue, applicants profit from obtaining additional educational credentials (Hirsch, 1976). But Hirsch (1976) posits that each additional individual with a higher education credential decreases the relative advantage of that credential in the labour market. However, if enough workers with high education levels are available, the requirements to enter jobs can also rise, and those applicants without any higher education are increasingly disadvantaged in the hiring process (Brown, 2001).

Job competition models also state that differentials in individual wages are defined by the occupation and position and not by the differences in productivity levels, leading to a job competition but no wage competition (Thurow, 1975). However, to protect their position within the labour queue and thus their current or potential future income levels, individuals may defensively invest in education (Bills, 2016).

Higher, i.e. tertiary education is often strongly linked to university education, even in countries with a strong vocationally oriented education system (Solga, 2005). Traditionally, universities enjoy a high prestige within society and for a long time served to place its graduates in socially and economically

distinguished positions (Collins, 1979; Luhmann, 2019; Tholen, 2016). Bourdieu (1984) explains the favourable positioning of university credentials in society with their *symbolic capital*. Symbolic capital is an overarching term that describes the prestige and social recognition that can come along if an individual acquires one of the other capital forms, i.e. economic, social, or cultural. The acquisition of a university credential, for example, is a typical form of how individuals acquire cultural capital in the form of institutionalised credentials (Jurt, 2012). With institutionalised cultural capital (Bourdieu, 1984), embodied by university credentials, individuals have the opportunity to take up powerful positions in society and in the labour market. However, the symbolic capital of university credentials roots in its prestige and acknowledgement from others (Jurt, 2012). While any type of educational credential is a form of cultural capital, especially university credentials hold symbolic power (Tholen, 2016). Thus university credentials have a high symbolic capital, which employers trust as a sign of quality and knowledgeability (Münch, 2011).

Taken together, these theories elaborate on mechanisms that incentivise individuals to increasingly invest in education, especially in the form of university education. But pinpointing one single mechanism behind an increased social or economic necessity for more educational credentials is not feasible; however, with the expansion of existing credentials and the emergence of new ones, investigating their positioning in the labour market helps to understand their potential value for prospective graduates.

2.3 Empirical Evidence on Educational Expansion and Credentials in the Labour Market

The literature that investigates job competition models mainly examines the relative role of education in the labour market (e.g. Bol & Weeden, 2015; Ortiz & Rodriguez-Menés, 2016; van Ours & Ridder, 1995). These studies show that education serves as a positional good in the labour market, but they also show that its positionality depends on the context. For example, analysing 28 countries, Bol (2015) finds that education has become more positional due to educational expansion. He concludes that the relative positioning of applicants in the labour queue, also in terms or earnings, has become more important when analysing job assignments.

By investing the effect of education on labour market outcomes in relation to an individual's cognitive skills, the studies testing the hypothesis of credential inflation find support for that hypothesis (Araki, 2020; Horowitz, 2018; Klein, 2015). Horowitz (2018) finds that with rising number of college graduates in the U.S., increasingly more graduates accept jobs with low skills-demand, and interprets this finding as an indicator for credential inflation. Accordingly, analysing higher education graduates' occupational attainment between 1976 and 2008 in Germany, Klein (2015) shows that these graduates occupy less prestigious occupations in 2008 compared to 1976. Araki (2020) uses internationally comparable data to provide evidence for 26 countries that with rising educational levels in society, the effect of credentials decreases whereas the role of skills remains relatively stable. In a cross-country analysis, Araki and Kariya (2022) find that lower-level tertiary credentials (ISCED level 5) experience a devaluation due their expansion, and that this finding holds irrespective of the individual's skills.

The few studies investigating the relative positioning of the overeducated applicants compared to the adequately educated ones in hiring processes find that more education is mostly an advantage (Di Stasio, 2017; Verhaest et al., 2018). Using a correspondence experiment in Belgium, Verhaest et al. (2018) show that overqualified applicants have higher call-back rates, especially for hard-to-fill positions. Accordingly, using data from a factorial survey in the Netherlands and the United Kingdom, Di Stasio (2017) find that employers favour overeducated applicants to adequately qualified ones, but only if the education corresponds to the occupational field.

Drawing on Bourdieu's (1984) argumentation on the symbolic capital of educational credentials, a handful of studies show that not only the educational credential but also the institution that provided the credential matters in the hiring process (Deming et al., 2016; Isopahkala-Bouret et al., 2021; Rivera, 2011). In her extensive analysis of qualitative interviews with elite employers in the U.S., Rivera (2011) points out that these employers use credentials to select the applicants with the highest social and cultural capital, i.e. the most prestigious educational careers and activities. She states that in certain cases, employers only consider those applicants who have graduated from the most prestigious universities. Applying an audit study that compares fictious applicants with a bachelor's degree, Deming et al. (2016) find that employers show different call-back rates depending on the type of institution from which the applicant acquired his/her degree. Comparing applicants from traditional academic universities to those from universities of applied sciences in Finland, Isopahkala-Bouret et al. (2021) show that applicants with credentials from traditional universities are ahead in the labour queue for high-paying and high-status jobs.

While the previously cited studies focus on formal credentials, other studies investigate the effect of continuing and hence non-formal education programmes on labour market outcomes. However, this literature is vast and analyses a large variety of continuing education, which is defined differently depending on the context and the country. We focus on the studies examining the effect of continuing education on labour market outcomes from German-speaking regions, as they are closest to our analytical context. The literature concerning continuing education from universities mainly analyses this type of education from a conceptual perspective (Gonon, 2019; Hanft, 2007), or provides descriptive analyses of the offer of and demand for these course programmes (Zimmermann, 2020). To the best of our knowledge, we provide first evidence on labour market outcomes of continuing education from universities.

Dieckhoff (2007) shows that the influence of continuing education on unemployment risks and upward mobility of work-experienced individuals depends on the institutional context of the respective country. Li et al. (2000) analyse the effect of further education, which they define as education after labour market entry, on occupational mobility. They find that obtaining a formal further education – i.e., in the form of a tertiary education degree or a vocational degree from a different occupation – enhances their occupational upward mobility. In contrast, non-formal further education (which we define as continuing education) does not have an effect on occupational mobility. Gerfin et al. (2003) provide evidence that the monetary returns to continuing education are significant but very small, when considering the non-randomness of continuing education participation. Also considering the selection bias in continuing education participation, Schwerdt et al. (2012) find no significant effect of continuing education participation on earnings, employment, or participation in other education. Moreover, they find that tertiary educated individuals face below-average income returns to continuing education participation. Görlitz and Tamm (2016) also find no clear impact on labour market outcomes, but show that continuing education participation leads to a change in the working tasks.

The literature on employer-provided continuing education and training from Germany provides evidence that these courses contribute mainly to prevent downward mobility, but that they also reduce upward mobility and firm switches (Ebner & Ehlert, 2018), and that employer-mandated training leads to the highest salary premiums (Ehlert, 2017). Regarding the income returns to continuing education provided by employers in Germany, Wolter and Schiener (2009) find significant but small wage premiums, whereas other studies find no significant effect on income returns (Jürges & Schneider, 2004; Pischke, 2001).

Taken together, this literature review shows that with the educational expansion, formal education has become a positional good and thus high levels of education often yield favourable employment prospects. The evidence on the effect of continuing education on job entry or salaries is heterogenous and depends on the analysed kind of continuing education and its context. These heterogeneous results stem also from the different definitions for continuing education, the vast amount of continuing education programmes and its lack of standardisation. As a result, most literature on the relative positioning of

education concerns formal higher education credentials and less so continuing education. To contribute to this literature, this paper assesses the positioning of continuing education programmes offered by universities and investigates the individuals who profit from these education programmes.

3 Hypotheses

Our first research question asks whether individuals with a professional tertiary degree profit from completing a continuing education programme at a university. Two investigate this question, we draw on the job competition model and Bourdieu's elaborations on the symbolic capital of institutionalised credentials. Job competition models state that individuals profit from having more education relative to others, i.e. the more education an individual possesses the better his/her position within the labour queue (Hussey, 2012). Furthermore – and as confirmed by credentialism theories – job competition theories argue that certain jobs require increasingly more education, leading to employers rewarding those applicants with more education than the minimum required level. Bourdieu (1984) states that especially university credentials are a trusted signal in society and in the labour market. Hence, university credentials should yield a favourable position in the labour queue compared to those who do not have such credentials.

Following these arguments, we hypothesise that having a continuing education credential – especially when completed at a university – is always an advantage for an applicant in the hiring process, even for those who already have a tertiary education degree. However, job competition models argue that the occupation and position – and not differentials in workers' productivity – define salaries (Horowitz, 2018; Thurow, 1975). Thus, they state that more education does not rise prospective salaries equally to employment prospects. Drawing from these theoretical argumentations, we formulate our first two hypotheses:

H1a: Having a continuing education credential from a university in addition to a professional tertiary degree increases the likelihood for an invitation to a job interview.

H1b: Having a continuing education credential from a university in addition to a professional tertiary degree does not increase the prospective wages.

In our second research question, we draw from Bourdieu (1984) and examine whether obtaining university credentials increases the symbolic capital of those individuals who previously did not have any university education. As society in general and employers in particular acknowledge university credentials as a trustworthy signal, we state that individuals who do not have an academic tertiary degree can advance their position in the labour queue by obtaining a continuing education credential from a university. Consequently, individuals who have a professional tertiary degree and a continuing education credential from a university can align their position in the labour queue to those who with an academic tertiary degree. As, according to job competition models, wages are defined by the occupation and position, these two groups of individuals should also not differ in terms of prospective wages when applying for the same position. From these arguments, we derive our next hypotheses:

H2a: When both have a continuing education credential from a university, individuals with a professional tertiary degree and those with an academic tertiary degree do not differ in the likelihood for an invitation to a job interview.

H2b: When both have a continuing education credential from a university, individuals with a professional tertiary degree and those with an academic tertiary degree do not differ in their prospective salaries.

In our third research question, we elaborate on whether there is a difference in labour market outcomes depending on the type of university credential. Again, following Bourdieu (1984), we argue that employers generally appreciate university credentials, no matter whether they are academic tertiary degrees or continuing education credentials. According to Münch (2011), universities – due to their expansion and opening to larger groups of individuals – offer credentials in different forms, and university credentials are globally recognised and acknowledged. Furthermore, drawing from job competition models, we argue that if individuals have both similar levels of education and credentials from a university, they should have the same position in the labour queue and the same salaries, which are defined by the occupation and position. We therefore formulate the following two hypotheses:

H3a: Individuals with an academic tertiary degree and those with a continuing education credential from a university have the same likelihood for an invitation to a job interview.

H3b: Individuals with an academic tertiary degree and those with a continuing education credential from a university receive the same prospective salary.

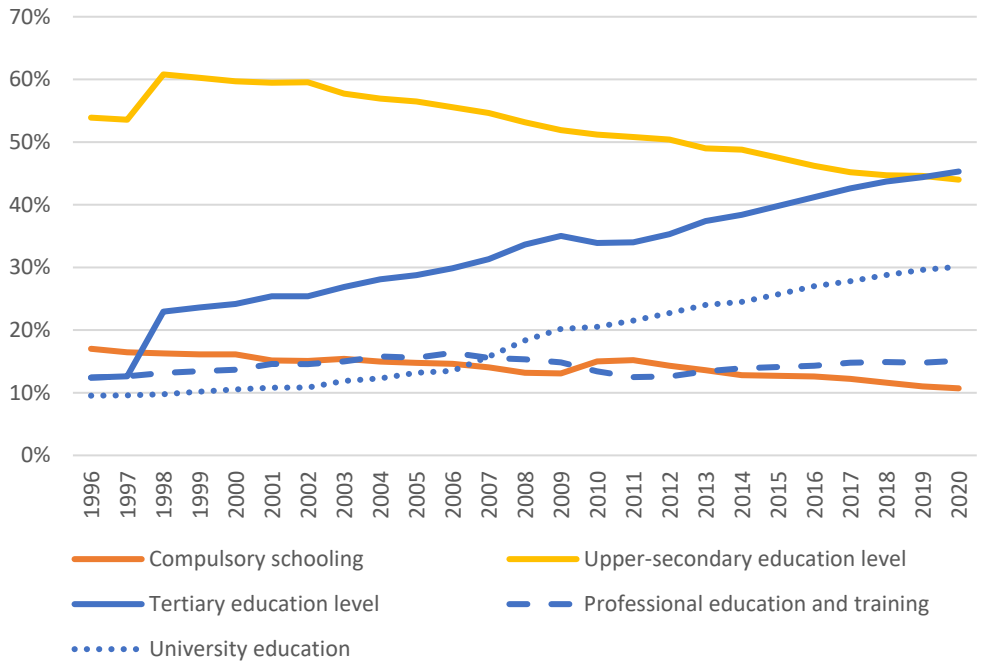
We test our hypotheses with data from a factorial survey conducted among employers in Switzerland. The following section therefore explains the Swiss education system, with a focus on the educational expansion and continuing education offered by universities.

4 Educational Expansion and Continuing Education at Universities in Switzerland

4.1 Educational Expansion in Switzerland

Switzerland is among those countries that experienced a significant educational expansion (CSRE, 2018). For the period 1996-2020, the Swiss Federal Statistical Office (FSO) provides data on the highest level of education within the Swiss adult population (aged 25 to 64). These numbers show that the share of individuals with a tertiary education as their highest completed education has grown remarkably over the last 24 years, from 12.4% in 1996 up to 45.3% in 2020. At the same time, the share of the population with only upper-secondary education declined. The following Figure 1 illustrates this development and shows that most tertiary credentials stem from universities (including both traditional academic universities and UAS; 30.1% in 2020), while graduates of professional education and training (PET) are less frequent (15.1% in 2020) (FSO, 2021a). However, most graduates from a UAS first completed an upper-secondary VET programme, and not a general education. Moreover, the rise in tertiary education participation mainly stems from an increase in university education participation (especially enrolment in UAS has increased remarkably since their introduction, (CSRE, 2018), whereas participation in PET remained constant during this time span. The UNESCO International Standard Classification of Education (ISCED 2011) scheme classifies PET and university education at the levels 6 to 8.

Figure 1: Development of highest educational attainment of the Swiss population, 1996-2020

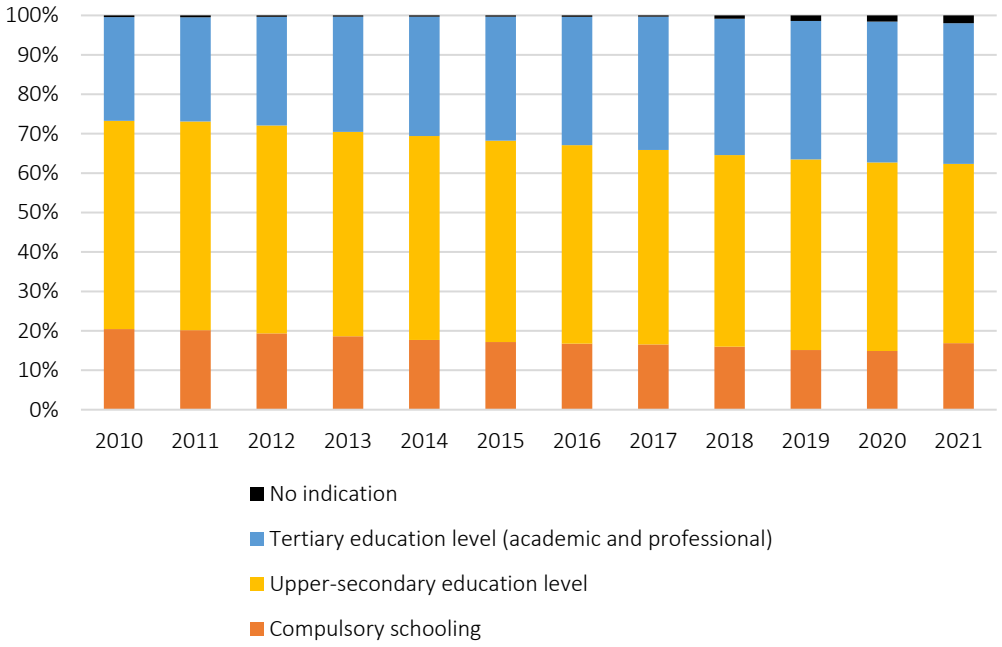


Notes: Figure 1 displays the share of highest educational attainment among the 25-64-year-old permanent resident population in Switzerland from 1996 through 2020. Source: FSO (2021a).

However, adults do not only invest in formal education but also in continuing (or non-formal) education. According to the OECD (2021) continuing and non-formal education – as opposed to formal education – is not recognised by the relevant authorities and thus does not have a quality control or standardised regulation. The OECD (2021a) describes continuing education as a complex landscape that is governed by different public and private stakeholders and policy frameworks. The continuing education landscape in Switzerland is also highly diversified with numerous options for different target groups (CSRE, 2018). The Swiss Federal Statistical Office (FSO) states that continuing education involves "institutionalised, deliberate education, planned by an education provider outside the formal education system" (FSO, 2018, p. 23).

Continuing education can encompass a variety of educational contents targeted at adults, such as language or software courses, conferences, seminars, or on-the-job-training. Such offers can be of small extents with no certification but also appear in the form of longer, in-depth programmes with certification (Ebner & Ehlert, 2018). As it is explicitly designed for work-experienced adults to update and renew their skills to pertain in the labour market, continuing education best captures the concept of lifelong learning, (FSO, 2018). However, due to the low standardisation of continuing education, statistics on the educational attainment of the population include only formal education. For Switzerland, the FSO (2021b) registers that in 2019 26.7% the adult population (aged 25-74) participated in continuing education after their highest formal education, as Figure 2 shows. When focussing on those individuals with a tertiary degree, the participation in continuing education is even larger with about 38.7% in 2019.

Figure 2: Participation in continuing education in Switzerland by highest completed education, 2010-2020



Notes: Share of participation in continuing education in the four weeks before being surveyed of the 25-74-year-old permanent resident population. Source: FSO (2021b). Overall participation in non-formal education experienced a decline in 2020 (from 25% to 22%) due to restricting measures concerning the COVID-19-pandemic (FSO, 2021b). We hence reference the numbers from 2019, i.e. before the measures came into force.

This paper focuses on continuing education provided by universities in Switzerland. This specific type of continuing education was introduced in the early 2000s and only targets tertiary educated and work experienced individuals. So far, participation in this type of education makes up for about 4% of continuing education participation (numbers only avaible for 2018; FSO, 2018, p. 18), but constitutes a growing share for tertiary educated individuals.

4.2 Continuing Education at Universities in Switzerland

Continuing education at universities constitutes a growing part of university offers in Switzerland (Zimmermann, 2020), but also in neighbouring countries, such as Germany and Austria (Allmendinger et al., 2011; Jütte & Bade-Becker, 2018). Both types of Swiss universities, the traditional academic universities and the UASs (incl. teacher universities), offer such programmes. The intention of these programmes was to bring back academically educated adults with work experience to universities for updating and acquisition of additional knowledge (Weber, 2014). Through political actions, such as the continuing education campaign in the 1990s, continuing education at universities has received more funding and structuring to grow and reach an increasing number of individuals. These programmes have become an established part of universities, but are explicitly tailored to the needs of the labour market, as opposed to formal university education (Gonon, 2019). As Weber (2014) posits, the popularity of continuing education at universities at least partly stems from the reputation and prestige that their host institutions, i.e. universities hold. Continuing education from universities is unique compared to other types of continuing education in the sense that it emphasises its academically-oriented programme content (Jütte & Bade-Becker, 2018). Over the period 2005-2016, graduate numbers in such courses have especially grown at traditional academic universities and have remained stable at UASs, while the number of graduates at UASs is overall higher (Zimmermann, 2020).

For university education, this labour market orientation is a novelty that reflects global trends of the marketisation of university education and the entire education system (Münch, 2011). The implementation of these course programmes aims for universities to remain competitive and attractive for many individuals in an internationalised educational landscape (Frey & Künzle, 2002). This trend is also reflected in the fact that for these continuing education course programmes, university representatives requested English credential titles, including their own type of master's course programmes, and measure contents with ECTS points. However, Switzerland is so far the only country that applies this system consistently for continuing education at its universities. Thus their international positioning is not yet clearly outlined, and difficult to define (Zimmermann, 2020).

Universities are highly autonomous in the implementation of continuing education programmes and their entry requirements, as they do not need to undergo external quality assurance procedures (Zimmermann & Fischer, 2016). As these programmes move on the line between traditionally generalist university education and specialised occupation-oriented education, they constitute a hybrid form and are difficult to properly categorise. Although these course programmes are standardised to a certain degree, even over the different types of universities in German-speaking countries, they are not completely transparent due to local differences in the regulatory framework (Weber, 2014). Already in 2014, Weber (2014) acknowledges that the public and media have raised concerns over the expansion of continuing education at universities as their positioning and use remains rather intransparent. Thus Gonon (2019) argues that the multiplication of credentials offered by universities makes it increasingly difficult for students and employers to distinguish between continuing credentials and formal degrees from universities.

In Switzerland, continuing education at universities education imparts both specialised occupation-specific knowledge and general knowledge and is completed with a credential. Among others[3], there exist three different programmes with different lengths and contents: Certificates of Advanced Studies (10-15 ECTS), Diplomas of Advanced Studies (30-36 ECTS) and Master of Advanced Studies (hereafter: *MAS*; 60 ECTS). This paper focuses on the MAS as it comes closest to formal university education in terms required ECTS points and its name. Compared to formal master's degree programmes, MAS target specific educational needs and thus comprise a broader variety of course programmes. However, albeit being tailored to the needs of work-experienced adults, MAS programmes often include contents from formal master's degrees (see for example ETHZ, 2018). But not being part of the formal education system, a MAS does not qualify individuals to pursue a formal university degree. At the time of the introduction of the continuing master's course programmes in Switzerland, Frey and Künzle (2002) made several recommendations that help distinguish formal master's degrees from master's credentials from continuing university course programmes. Table 1 provides an overview of certain key characteristics of the different programmes provided by universities.

Table 1: Characteristics differentiating tertiary master's degree programmes and continuing master's course programmes (MAS) offered by Swiss universities

Type of university education	Tertiary	Continuing
Name	**Master of Arts/Science (Master)**	**Master of Advanced Studies (MAS)**
Classification	Tertiary and formal education (after upper-secondary; ISCED 7)	Continuing and non-formal education (after tertiary)
Content	Consecutive academic education	Education with academic content for specialisation with strong labour market linkage

[3] Another type is the Executive Master's of Business Administration, the EMBA, which in Switzerland is part of the non-formal education system.

Entry requirements	Accessible only to individuals with a bachelor's degree in the same (or related) field	Accessible either with or without an academic degree, but with professional tertiary degree and work experience ("sur-dossier")
Duration	90-120 ECTS	60 ECTS
Regulation	Protected titles	No title protection
Number of available degree/course programmes	1128	532
Costs for students	Low	High

Notes: Own table with key characteristics of formal master's degrees and continuing MAS course programmes at Swiss universities (swissuniversities, 2022; ZHAW, 2021; Zimmermann, 2020). See also the Federal Law on Continuing Education of May 15, 2013 (BBl 2013 3729).

While initially, admission to continuing education programmes was restricted to graduates with a formal university master's degree, universities nowadays handle admission largely "sur-dossier", meaning that they are free to decide on whom to admit (Seitter, 2014). This more liberal practice of admission is arguably a result of the labour market orientation of these programmes, i.e. making them accessible to a larger target group (Gonon, 2019). Thus, Swiss universities have contributed to educational expansion by offering individuals with a professional tertiary degree the possibility to complete courses at universities without having to go through the usual admission process (i.e. completing a baccalaureate) beforehand. The implementation of such programmes has had an impact on educational participation of work-experienced adults (Weber, 2014; Zimmermann, 2020), while their positioning in the labour market remains unclear.

5 Analytical Strategy

5.1 Data and Operationalisation

This paper uses data from a factorial survey conducted among employers in Switzerland. We contacted 46,000 employers in 2020 per e-mail. Our contacted sample of employers work in firms that train apprentices, and are registered in the biggest apprenticeship-matching platform in Switzerland. Employers who did not have any recruitment experience were excluded from the survey. In total, 2'384 employers answered our survey, yielding a response rate of 5%. In our analyses, we include all respondents without any missing values in the included variables. In the Appendix II, Table 8 through Table 11 present the summary statistics for each sample that we use in the different estimations (see the following section on 'Estimation Method').

In factorial surveys, respondents take decisions in close-to-real-life situations. For this paper, we focus on the survey respondents who evaluated four fictional profiles of applicants for one of the two hypothetical job positions that require a tertiary education, i.e. either for the position of 'Sales manager' or the position of 'Head of IT', depending on the respondents' familiarity with these positions.[4] . We chose these two positions as they are common in different industries. To ensure a realistic description of the two open positions and the applicant profiles, we screened real job vacancies and conducted a

[4] The respondents additionally rated four applicants for an entry-level position, but we do not analyse this part of the factorial survey in this paper (see Rageth & Sritharan, 2022).

workshop with recruitment experts. We register 1,436 respondents who evaluated applicant profiles for the position of 'Sales manager', and 575 respondents for the position of 'Head of IT'.

By randomly assigning the applicant profiles to the respondents, we are able to ensure a quasi-experimental design. The fictional applicants were all qualified for the respective open position and most importantly differed in terms of their tertiary degree and whether they have a continuing education from a university, i.e. a MAS. An individual's tertiary degree encompasses either an academic tertiary degree, i.e. a bachelor's or master's degree depending on the comparison, from a university or university of applied sciences or a professional tertiary degree, i.e. an advanced federal diploma of higher education. Applicants' characteristics also randomly varied in terms of upper-secondary education, gender, years of general work experience, occupation-specific work experience and volunteering. Table 9 in Appendix I provides an overview of these applicant characteristics. Table 23 in Appendix IV presents the correlation matrix of all applicant characteristics, while Table 24 shows their correlation with respondent characteristics. Both tables make evident that we successfully randomised applicant profiles to respondents in our paper. In the survey, we used the full universe of applicant profiles and only excluded profiles that display implausible combinations of the different dimensions.

The applicant characteristics 'tertiary education' and 'MAS' constitute our main explanatory variables[5]. To test our hypotheses, we undertake three different comparisons. We compare:

1) applicants with only a professional tertiary degree to applicants with a professional tertiary degree and MAS
2) applicants with a bachelor's degree from a university and a MAS to applicants with a professional tertiary degree and a MAS
3) applicants with a bachelor's and a master's degree from a university to applicants with a bachelor's degree and a MAS from a university.

Table 2: Summary of expected relations based on theory and their operationalisation

	Hypothesis	Theory	Outcome
Professional tertiary vs. professional tertiary + MAS			
H1a	Having a continuing education credential from a university in addition to a professional tertiary degree increases the likelihood for an invitation to a job interview.	Job competition models	Likelihood for job interview
H1b	Having a continuing education credential from a university in addition to a professional tertiary degree does not increase the prospective wages.	Job competition models	Prospective salary
Professional tertiary + MAS vs. academic tertiary (bachelor's degree) + MAS			
H2a	When both have a continuing education credential from a university, individuals with a professional tertiary degree and those with an academic tertiary degree do not differ in the likelihood for an invitation to a job interview.	Symbolic capital	Likelihood for job interview
H2b	When both have a continuing education credential from a university, individuals with a professional tertiary degree and those with an academic tertiary degree do not differ in their prospective salaries.	Symbolic capital	Prospective salary
Academic tertiary (bachelor's degree) + MAS vs. academic tertiary (bachelor's) + Master's degree			
H3a	Individuals with an academic tertiary degree and those with a continuing education credential from a university have the same likelihood for an invitation to a job interview.	Symbolic capital	Likelihood for job interview

[5] We build the variables for this comparison based on the dimension 'Tertiary and continuing education' with its five levels, for which Table 9 in Appendix I provides an overview.

H3b	Individuals with an academic tertiary degree and those with a continuing education credential from a university receive the same prospective salary.	Symbolic capital	Prospective salary

Notes: Own table.

When evaluating each applicant, the respondents answered the following two questions: 1) How likely is it that your firm would invite this person for a job interview? 2) What monthly salary would you recommend for this specific person? We compute separate models for these two dependent variables and each of the previously described comparisons. Our first dependent variable is a categorical variable that ranges from 1 to 10 and measures the probability for an invitation to a job interview. Our second dependent variable is the potential salary an employer would offer the applicant. We take the logarithmic of this variable to receive normal distribution and to report changes in percentage points.

Our control variables include other applicants' characteristics including gender, upper-secondary education, whether they do voluntary work, years of general work experience and years of occupation-specific work experience. Moreover, the survey also covered questions on the respondents and the firm they work for, which we include as control variables. The respondent variables include their age, gender, birth country, type of educational career (i.e. general, vocational, or mixed), whether they work in the HR department within their firm or organisation. The firm variables include firm size, sector, region and whether the firm is internationally active, i.e., whether they are a supplier for a firm abroad, whether the majority of shareholders are residents abroad, and whether the head of the firm is a resident abroad. In addition, we include three study design variables, one that controls for the position of the applicant profile within the four rated profiles, one that measures how far the hypothetic open position matches the real positions in the firm, and a variable that captures whether a respondent received a support letter to incentivise survey participation. Furthermore, we control for five variables that measure the respondents' opinion and knowledge about higher and continuing education in Switzerland (see summary statistics in Table 11 and Table 12 in the Appendix II).

5.2 Estimation Method

We estimate several models to test our hypotheses. We regress the two dependent variables on each of the three explanatory variables separately. For each of these models we include a varying set of control variables in three steps. Furthermore, we estimate the regressions separately by position. The number of observations in each estimation model results from the multiplication of the number of respondents with the number of rated applicant profiles per respondent. The evaluations are hence nested by respondent, meaning that we operate with two-level data. Our lower-level variables (level 1) comprise all applicant characteristics, while our higher-level variables (level 2) comprise all variables that refer to the survey respondents and their firms. The vector of study design variables comprises both a level 1 variable and two level 2 variables. We consider this nested structure by estimating multilevel random intercept regressions – the standard method to analyse data from factorial survey experiments (Auspurg & Hinz, 2014). We allow for random intercepts to account for differences in means of the dependent variables by cluster, i.e. by respondent. The following section presents the results for the different regression models that test our hypotheses.

6 Results

The following sections present the results of our analyses. We compare three groups of applicants that differ in their combination of tertiary education and whether they have a MAS in terms of 1) the likelihood for an invitation to a job interview and 2) the salary recommended by the respondent. We present two tables for each of the three comparisons, one table displaying the effect on the likelihood for a job interview, one table for the effect on the recommended salary. Each table displays six models: models (1) to (3) refer to the results for the position 'Sales manager', models (4) to (6) display the results for the position 'Head of IT'. Models (1) and (4) include only applicant characteristics, models (2) and (5) further include the two survey design controls, and models (3) and (6) additionally include the controls at the respondent level (respondent and firm characteristics).

6.1 Do individuals with professional tertiary degree profit from continuing education at universities in the hiring process?

In a first comparison, we investigate the likelihood for a job interview and the recommended salary for applicants with a professional tertiary degree to those with a professional tertiary degree and a MAS. This comparison intents to show whether applicants with a professional tertiary education profit from an additional continuing university credential. Table 1 provides evidence that among applicants with a professional tertiary degree, those with a MAS have a higher likelihood for an invitation to a job interview than those without a MAS. The effect is significant in all models and larger for the position 'Head of IT', where the difference is almost 0.4 points in the full model. Thus, our evidence supports H1a that applicants profit from obtaining more education in the form of continuing education from universities.

Table 3: Results for likelihood for job interview comparing applicants with a professional tertiary degree to those with a professional tertiary degree and a MAS

	Sales Manager			Head of IT		
Dependent variable: likelihood for job interview (1-10)						
	(1)	(2)	(3)	(4)	(5)	(6)
Professional tertiary degree	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Professional tertiary degree + MAS	0.160***	0.191**	0.205**	0.470***	0.381***	0.378***
	(0.044)	(0.081)	(0.081)	(0.080)	(0.128)	(0.131)
Constant	7.634***	7.137***	5.799***	7.230***	6.660***	4.023***
	(0.122)	(0.212)	(0.661)	(0.198)	(0.416)	(1.223)
Applicant controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey design controls	No	Yes	Yes	No	Yes	Yes
Respondent-level controls	No	No	Yes	No	No	Yes
No. of observations	1944	1944	1944	793	793	793
No. of groups	1220	1220	1220	494	494	494
Log-Likelihood	-3628.405	-3618.193	-3561.370	-1533.214	-1531.140	-1493.484

Notes: Table 3 displays results of linear regressions with random intercepts and robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively. Applicant controls include upper-secondary education, gender, voluntary work, general work experience and occupation-specific work experience. Survey design controls include the position of applicant profiles within the four rated profiles, in how far the hypothetical position matches the real positions in the firm, and whether the respondents received a support letter to incentivise survey participation. Respondent-level controls include the respondent characteristics (age, gender, birth country, educational background, whether they work in human resources, number of

years of recruitment experience), the firm characteristics (size, sector, region, language region, internationalisation, relevance of apprentice training for firm), and five items on respondents' opinion and knowledge about higher and continuing education in Switzerland.

Table 4 displays the results of the same comparison while analysing the effects on the log of the monthly salary proposed by the employers. For the two positions, we find a statistically significant positive effect for having a MAS on the salary. In the full models (3) and (6), this effect is again larger for the 'Head IT' position (2.0%) than for the 'Sales manager' position (1.1%). Nevertheless, our evidence does not support H1b that having a non-formal university credential does not increase salaries. In qualitative terms, however, we see that the proposed salaries for both groups are almost identical.

Table 4: Results for recommended salary comparing applicants with a professional tertiary degree to those with a professional tertiary degree and MAS

	Sales Manager			Head of IT		
Dependent variable: (log) monthly salary						
	(1)	(2)	(3)	(4)	(5)	(6)
Professional tertiary degree	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Professional tertiary degree + MAS	0.022***	0.011***	0.011***	0.031***	0.016**	0.019***
	(0.002)	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)
Constant	8.838***	8.721***	8.358***	8.916***	8.765***	8.643***
	(0.008)	(0.017)	(0.064)	(0.014)	(0.030)	(0.101)
Applicant controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey design controls	No	Yes	Yes	No	Yes	Yes
Respondent-level controls	No	No	Yes	No	No	Yes
No. of observations	1,743	1,743	1,743	682	682	682
No. of groups	1,093	1,093	1,093	430	430	430
Log-Likelihood	1206.808	1235.314	1444.211	417.418	433.044	509.635

Notes: Table 4 displays results of linear regressions with random intercepts and robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively. Applicant controls include upper-secondary education, gender, voluntary work, general work experience and occupation-specific work experience. Survey design controls include the position of applicant profiles within the four rated profiles, in how far the hypothetical position matches the real positions in the firm, and whether the respondents received a support letter to incentivise survey participation. Respondent-level controls include the respondent characteristics (age, gender, birth country, educational background, whether they work in human resources, number of years of recruitment experience), the firm characteristics (size, sector, region, language region, internationalisation, relevance of apprentice training for firm), and five items on respondents' opinion and knowledge about higher and continuing education in Switzerland.

6.2 Can individuals with a professional tertiary degree and a continuing education from universities align their position in the hiring processes to those with an academic tertiary degree?

Our hypotheses H2a and H2b state that applicants with continuing education from universities, no matter their tertiary education background, should have similar positions in the labour queue. Table 5 compares applicants with a professional tertiary degree and MAS to those with an academic tertiary degree (i.e. a bachelor's degree) and a MAS in terms of their likelihood for an invitation to a job interview. The results show that these effects are heterogeneous and depend on the occupation of the open position. For the position 'Head or IT' there is a slight but not significant disadvantage for those with only university

credentials. In contrast, we find that those with a professional tertiary degree and a MAS have an advantage when applying for the position of 'Sales Manager'. Hence, we reject H2a that there should be no difference in terms of likelihood for an invitation to a job interview for the 'Sales manager' position.

Table 5: Results for likelihood for job interview comparing applicants with a professional tertiary degree and a MAS to those with a professional tertiary degree and a MAS

	Sales Manager			Head of IT		
Dependent variable: likelihood for job interview (1-10)						
	(1)	(2)	(3)	(4)	(5)	(6)
Academic tertiary (bachelor's) degree + MAS	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Professional tertiary degree+ MAS	0.253***	0.219***	0.215***	0.140*	0.129	0.122
	(0.053)	(0.065)	(0.065)	(0.077)	(0.103)	(0.103)
Constant	7.458***	6.501***	5.525***	7.449***	6.781***	5.038***
	(0.140)	(0.287)	(0.702)	(0.222)	(0.439)	(1.264)
Applicant controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey design controls	No	Yes	Yes	No	Yes	Yes
Respondent-level controls	No	No	Yes	No	No	Yes
No. of observations	1,913	1,913	1,913	782	782	782
No. of groups	1,218	1,218	1,218	496	496	496
Log-Likelihood	-3702.412	-3689.444	-3638.779	-1505.289	-1501.408	-1464.577

Notes: Table 5 displays results of linear regressions with random intercepts and robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively. Applicant controls include upper-secondary education, gender, voluntary work, general work experience and occupation-specific work experience. Survey design controls include the position of applicant profiles within the four rated profiles, in how far the hypothetical position matches the real positions in the firm, and whether the respondents received a support letter to incentivise survey participation. Respondent-level controls include the respondent characteristics (age, gender, birth country, educational background, whether they work in human resources, number of years of recruitment experience), the firm characteristics (size, sector, region, language region, internationalisation, relevance of apprentice training for firm), and five items on respondents' opinion and knowledge about higher and continuing education in Switzerland.

Table 6 shows no statistically significant differences in terms of proposed salary when comparing applicants with an academic tertiary degree and a MAS to those with a professional tertiary degree and a MAS. For the two positions, we almost register null-effects of the tertiary education background on the proposed salary. Thus, we find evidence to support H2b that there should be no differences in salary propositions for applicants with a MAS depending on their type of tertiary education.

Table 6: Results for recommended salary comparing applicants with a professional tertiary degree and a MAS to those with a professional tertiary degree and a MAS

	Sales Manager			Head of IT		
Dependent variable: (log) monthly salary						
	(1)	(2)	(3)	(4)	(5)	(6)
Academic tertiary (bachelor's) degree + MAS	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Professional tertiary degree+ MAS	0.003	0.000	0.000	-0.002	-0.004	-0.002
	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.005)
Constant	8.881***	8.763***	8.405***	8.961***	8.824***	8.658***
	(0.011)	(0.023)	(0.073)	(0.014)	(0.034)	(0.112)
Applicant controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey design controls	No	Yes	Yes	No	Yes	Yes
Respondent-level controls	No	No	Yes	No	No	Yes
No. of observations	1,718	1,718	1,718	675	675	675
No. of groups	1,089	1,089	1,089	428	428	428
Log-Likelihood	1036.701	1058.813	1261.130	440.991	453.571	535.857

Notes: Table 6 displays results of linear regressions with random intercepts and robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display

results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively. Applicant controls include upper-secondary education, gender, voluntary work, general work experience and occupation-specific work experience. Survey design controls include the position of applicant profiles within the four rated profiles, in how far the hypothetical position matches the real positions in the firm, and whether the respondents received a support letter to incentivise survey participation. Respondent-level controls include the respondent characteristics (age, gender, birth country, educational background, whether they work in human resources, number of years of recruitment experience), the firm characteristics (size, sector, region, language region, internationalisation, relevance of apprentice training for firm), and five items on respondents' opinion and knowledge about higher and continuing education in Switzerland.

6.3 Do employers make a difference between individuals with a continuing education credential from universities and those with an academic tertiary degree?

This subsection examines whether employers distinguish formal university education (master's degree) from continuing education at universities when hiring new employees. Table 7 displays the effects of holding a bachelor's degree and a MAS from a university in comparison to holding a bachelor's degree and a master's degree on the likelihood for an invitation to a job interview. Our results show that employers do not distinguish between applicants with those two educational paths when considering them for a job interview. In our full models (3) and (6), we find a positive but not statistically significant effect of having a MAS instead of a formal master's degree. The effect is only significant for the position of 'sales manager' in model (1) without survey design and respondent controls. Thus, our evidence supports H3a that there is no difference in the likelihood to be invited to a job interview depending on whether applicants have an academic tertiary degree or a continuing education credential from a university.

Table 7: Results for likelihood for job interview comparing applicants with a bachelor's and a master's degree to those with a bachelor's degree and a MAS

	Sales Manager			Head of IT		
Dependent variable: (log) monthly salary						
	(1)	(2)	(3)	(4)	(5)	(6)
Academic tertiary degree (bachelor's + master's degrees)	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Academic tertiary (bachelor's) degree + MAS	0.153***	0.070	0.075	0.076	0.087	0.081
	(0.054)	(0.096)	(0.098)	(0.080)	(0.136)	(0.130)
Constant	7.006***	6.265***	5.961***	7.812***	7.471***	5.954***
	(0.150)	(0.262)	(0.763)	(0.206)	(0.410)	(1.279)
Applicant controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey design controls	No	Yes	Yes	No	Yes	Yes
Respondent-level controls	No	No	Yes	No	No	Yes
No. of observations	1,918	1,918	1,918	778	778	778
No. of groups	1,216	1,216	1,216	491	491	491
Log-Likelihood	-3762.496	-3752.848	-3711.055	-1490.587	-1488.374	-1454.603

Notes: Table 7 displays results of linear regressions with random intercepts and robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively. Applicant controls include upper-secondary education, gender, voluntary work, general work experience and occupation-specific work experience. Survey design controls include the position of applicant profiles within the four rated profiles, in how far the hypothetical position matches the real positions in the firm, and whether the respondents received a support letter to incentivise survey participation. Respondent-level controls include the respondent characteristics (age, gender, birth country, educational background, whether they work in human resources, number of years of recruitment experience), the firm characteristics (size, sector, region, language region, internationalisation,

relevance of apprentice training for firm), and five items on respondents' opinion and knowledge about higher and continuing education in Switzerland.

Regarding the effect on the recommended salary, Table 8 shows that we find a small positive effect if an applicant holds a MAS instead of a master's degree. For applicants with a MAS, in the full models (3) and (6), employers recommend a 1.1% and 1.2%, respectively, higher salary than for those with a master's degree for the two positions. As the result in model (3) is significant on the 5% level, they do not support H3b, which posits that there should be no differences in salary.

Table 8: Results for recommended salary comparing applicants with a bachelor's and a master's degree to those with a bachelor's degree and a MAS

	Sales Manager			Head of IT		
Dependent variable: (log) monthly salary						
	(1)	(2)	(3)	(4)	(5)	(6)
Academic tertiary degree (bachelor's + master's degrees)	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*	*Ref.*
Academic tertiary (bachelor's) degree + MAS	0.015***	0.010*	0.011**	0.013***	0.010	0.012*
	(0.002)	(0.005)	(0.005)	(0.004)	(0.006)	(0.006)
Constant	8.829***	8.736***	8.378***	8.948***	8.812***	8.641***
	(0.009)	(0.021)	(0.076)	(0.015)	(0.036)	(0.113)
Applicant controls	Yes	Yes	Yes	Yes	Yes	Yes
Survey design controls	No	Yes	Yes	No	Yes	Yes
Respondent-level controls	No	No	Yes	No	No	Yes
No. of observations	1,707	1,707	1,707	677	677	677
No. of groups	1,082	1,082	1,082	427	427	427
Log-Likelihood	1056.441	1074.679	1300.045	401.847	414.235	497.263

Notes: Table 8 displays results of linear regressions with random intercepts and robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively. Applicant controls include upper-secondary education, gender, voluntary work, general work experience and occupation-specific work experience. Survey design controls include the position of applicant profiles within the four rated profiles, in how far the hypothetical position matches the real positions in the firm, and whether the respondents received a support letter to incentivise survey participation. Respondent-level controls include the respondent characteristics (age, gender, birth country, educational background, whether they work in human resources, number of years of recruitment experience), the firm characteristics (size, sector, region, language region, internationalisation, relevance of apprentice training for firm), and five items on respondents' opinion and knowledge about higher and continuing education in Switzerland.

6.4 Robustness and Validity Tests

To uncover whether respondent-level variables bias our estimates, we additionally compute fixed-effects linear regressions for the models with only applicant controls and the level-1 survey design control variable (position of applicant profile within four rated profiles). Our estimations show that the fixed effects results qualitatively support the results from the random effects linear regressions as the effect sizes are nearly the same. One exception is the comparison between applicants with a bachelor's degree and a master's degree and applicants with a bachelor's degree and a MAS for the position 'Head of IT'. For this case, we find larger effects if we estimate fixed effects models, i.e. our random effects linear regressions may yield downward biased coefficients, which, however, in both cases are not significant.

As we work with hypothetical open positions, and fictious applicant profiles, we needed to ensure that these hypothetical positions match the real-life positions that firms have. Even though we worked with recruitment experts and screened real vacancies to write the job descriptions, a large share of respondents indicated that the hypothetical open positions do not correspond to real positions their firm offers. To test whether our results are robust, we excluded those respondents from the analyses who indicated

a low match of the hypothetical open position with real positions in their firm. The results of this test support the robustness of our main estimates, as they are qualitatively the same.[6]

For quasi-experimental research the most important concept to measure the validity of the experimental construct is the internal validity. An experiment has a high internal validity if its treatment (or dimension in our case) causes the variation in the outcome variable of interest (Auspurg & Hinz, 2014). Additional to correlation analyses among the applicant profile variables and between applicant profile variables and respondent-level variables, we examine whether the time a respondent takes to evaluate the applicant profiles has an effect on their answers. As each respondent evaluated multiple applicant profiles, this test captures whether survey fatigue influences our results. We include the time that a respondent took for his/her evaluation for each applicant profile in the baseline model for this robustness test. These regressions show that including these time variables does not change our results (see Appendix III).

To test for the external validity and the generalisability of our results, we compare the available characteristics of the survey sample to the ones of the contacted population and the overall population of training firms in Switzerland. Table 25 in the Appendix V shows that we do not have a response bias for female and male respondents when comparing the contacted sample to the respondent sample. However, respondents from the French- and Italian-speaking parts of Switzerland and small firms with less than 10 employees are underrepresented in our respondent sample.

7 Discussion

This paper investigates the effect of continuing university education on the labour market outcomes of tertiary educated individuals. Swiss universities and universities of applied sciences introduced these educational credentials to remain internationally competitive and to absorb the rising demand for higher education from both students and employers (Frey & Künzle, 2002). Consequently, we provide first evidence on the positioning of this specific kind of continuing education credentials.

First, we first test the hypothesis that tertiary educated individuals with more education, in the form of continuing education from universities, have a higher likelihood for an invitation to a job interview but similar salaries compared those without a continuing education. In line with job competition models and previous empirical evidence (Di Stasio, 2017; Verhaest et al., 2018), our data confirms that more education enhances employment prospects. However, as we find that continuing education from universities leads to a salary premium of 1-2 per cent, we do not find support for job competition models in terms of salary outcomes. This finding is in line with previous evidence on the effects of continuing education on labour market outcomes (Görlitz & Tamm, 2016; Jürges & Schneider, 2004; Pischke, 2001).

Second, we test the hypothesis whether individuals with a professional tertiary degree and a university credential in the form of continuing education have a similar likelihood for a job interview compared to those with an academic tertiary degree, thus a university education. In contrast to our hypothesis, our findings reveal that those with a professional tertiary degree partly have better employment prospects. Employers who hire for the position of ‘Sales manager’ reward applicants with a professional tertiary degree and continuing education from universities with a higher likelihood for a job interview. However, this finding is not significant for the position of ‘Head of IT’, which is in line with another study’s finding that for this specific position, employers prefer applicants with an academic tertiary education to those with a professional tertiary education (Rageth & Sritharan, 2022). Moreover, and in line with our

[6] The results of this robustness test are available from the authors upon request.

hypothesis, we find no difference in the salaries for applicants with a professional tertiary degree and a continuing education from universities and those with an academic tertiary degree and continuing education from universities. This result confirms job competition models stating that the occupation and position defines the salary and not differences in the educational background of applicants.

Third, we test whether applicants profit more from a tertiary university degree or from a continuing education from universities and find no significant difference in terms of the likelihood for a job interview. For the two positions, employers do not make a difference between applicants with a continuing education from universities and those with an academic tertiary education in the form of a master's degree. This finding supports Bourdieu's (1984) argument regarding the high symbolic capital of university credentials, leading to a high standing of university education in general. However, we find a salary premium for applicants with a continuing university education compared to those with an academic tertiary education in the form of a master's degree, which does not support our hypothesis and the underlying theoretical argument from the job competitions models why there should be no difference in proposed salaries. However, these theoretical foundations do not consider the different economic structures of labour markets or the role of education in diversified education systems. In many countries, universities occupy a unique position and have almost no competitors offering higher education, which is why universities as an institution hold a distinguished position in society and have high symbolic capital.

While a quasi-experiment has several advantages compared to conventional surveys and real experiments, our study design and the external validity of the results face limitations. Even though we refer to real-life examples to create the hypothetical open positions and the applicant profiles, employers usually have more information on applicants in real hiring processes. Moreover, in real hiring processes, employers may not face the same time constraints as in a quasi-experimental setting. Furthermore, to limit the complexity and number of the applicant profiles, we had to restrict the applicant dimensions and included educational paths. We did therefore not include applicants who obtained a continuing university education after a tertiary master's degree or after a doctorate. Furthermore, a large share of the survey respondents state that the hypothetical open positions only partly match the open positions that they offer in their firm. Nevertheless, Gutfleisch et al. (2021) provide evidence that employer evaluations for hypothetical positions and real vacancies do not differ significantly. Moreover, we apply multiple tests that confirm that our results withstand this shortcoming.

Regarding the external validity of our results, the comparison of the responding sample with the contacted sample and the population of firms that train apprentices shows that firms from the German-speaking part are overrepresented in the responding sample. Moreover, we had to limit our hypothetical open positions to positions for which applicants with different educational backgrounds qualify, and which firms of different sizes and from various industries offer. Hence, we need to be cautious when generalising these results to other positions and occupational fields.

8 Conclusion and Outlook

By investigating how employers evaluate applicants with different educational credentials in hiring processes, we provide a starting point for assessing the relative positioning of these credentials. This positioning becomes even more important with universities offering increasingly more credentials. Our analyses further provide evidence on whether individuals who already have a tertiary degree and work experience profit from continuing university education.

Our results show that especially individuals without previous university education – i.e., those with a professional tertiary degree – profit from continuing education from universities. In Switzerland, universities started offering these continuing education programmes merely for their own graduates, thus access to these programmes was difficult for individuals without an academic tertiary education. However, universities increasingly faced the expectation that continuing education from universities should also be open to work-experienced individuals with a professional tertiary degree (Zimmermann & Fischer, 2016). Consequently, these credentials have become more common among individuals with a professional tertiary degree. Our finding that those individuals highly profit from continuing education from universities supports this trend.

Interestingly, employers do not distinguish between continuing education from universities and master's degrees (i.e. academic tertiary education) when deciding about whom to invite to a job interview. In light of credentialism theories, the introduction of continuing university education blurred the positioning of university degrees due to employers either not knowing the difference between these education programmes or attributing the same value to them for the analysed positions.

Our findings provide evidence that continuing education (from universities) for tertiary educated workers gives them a relative advantage in terms of employment prospects and a salary premium. In light of credentialism theories and the still ongoing educational expansion, investing in education after labour market entry yields favourable outcomes for workers.

Scholars discussing the role of continuing education from universities in Switzerland from different angles state that the positioning of these programmes is ambiguous (Gonon, 2019; Weber, 2014; Zimmermann, 2020). They argue that their similarity to academic tertiary degrees and the strongly varying entry requirements makes a proper categorisation of these credentials difficult. Our finding that employers evaluate applicants with a master's degree similar to those with a continuing education from universities support this argument. Furthermore, policy makers defining the positioning of these continuing education credentials should consider that they allow individuals with a professional tertiary education and a high amount of work experience to acquire a university credential that comes with a high symbolic capital, which strengthens their position in the labour market. However, originally, these individuals were not the target groups of these continuing education programmes. If these individuals then strongly profit from obtaining a continuing education from universities, they may increasingly enrol in such programmes. But if an increasing number of individuals obtains university credentials, then the potential threat of an elevator effect (Beck, 2016) may over time lead to a de-evaluation of these credentials and potential overinvestment in education on an individual level.

We conclude that policy makers should more clearly define and communicate the aim and target group of continuing education from universities, to position them against both academic and professional tertiary education. This paper reveals that a professional tertiary background prior to completing continuing education at a university is appreciated by employers in Switzerland, although there are differences in terms of occupational fields. This result may help education policy makers in Switzerland and abroad promote mixed educational paths.

9 References

Allmendinger, J., Kleinert, C., Antoni, M., Christoph, B., Drasch, K., Janik, F., Leuze, K., Matthes, B., Pollak, R., & Ruland, M. (2011). 18 Adult education and lifelong learning. *Zeitschrift für Erziehungswissenschaft*, *14*(2), 283-299.

Araki, S. (2020). Educational Expansion, Skills Diffusion, and the Economic Value of Credentials and Skills. *American Sociological Review*, *85*(1), 128-175. https://doi.org/10.1177/0003122419897873

Araki, S., & Kariya, T. (2022). Credential Inflation and Decredentialization: Re-examining the Mechanism of the Devaluation of Degrees. *European Sociological Review. Online First*. Retrieved February 2022, from https://doi.org/10.1093/esr/jcac004

Arcidiacono, P., Bayer, P., & Hizmo, A. (2010). Beyond signaling and human capital: Education and the revelation of ability. *American Economic Journal: Applied Economics*, *2*(4), 76-104. https://doi.org/10.1257/app.2.4.76

Arrow, K. J. (1973). Higher education as a filter. *Journal of public economics*, *2*(3), 193-216.

Auspurg, K., & Hinz, T. (2014). *Factorial survey experiments* (Vol. 175). Sage Publications.

Beck, U. (2016). *Risikogesellschaft: Auf dem Weg in eine andere Moderne*. Suhrkamp Verlag.

Becker, R., & Hecken, A. E. (2011). Berufliche Weiterbildung–theoretische Perspektiven und empirische Befunde. In *Lehrbuch der Bildungssoziologie* (pp. 367-410). Springer.

Bills, D. B. (2003). Credentials, signals, and screens: Explaining the relationship between schooling and job assignment. *Review of educational research*, *73*(4), 441-469. https://doi.org/https://doi.org/10.3102/00346543073004441

Bills, D. B. (2016). Congested credentials: The material and positional economies of schooling. *Research in Social Stratification and Mobility*, *43*, 65-70. https://doi.org/https://doi.org/10.1016/j.rssm.2016.03.002

Bol, T. (2015). Has education become more positional? Educational expansion and labour market outcomes, 1985–2007. *Acta Sociologica*, *58*(2), 105-120. https://doi.org/10.1177/0001699315570918

Bol, T., & Weeden, K. A. (2015). Occupational Closure and Wage Inequality in Germany and the United Kingdom. *European Sociological Review*, *31*(3), 354-369. https://doi.org/10.1093/esr/jcu095

Bourdieu, P. (1984). *Distinction: A social critique of the judgement of taste* (R. Nice, Trans.). Routledge.

Brown, D. K. (2001). The social sources of educational credentialism: Status cultures, labor markets, and organizations. *Sociology of education*, 19-34. https://doi.org/https://doi.org/10.2307/2673251

Collins, R. (1979). *The credential society*. Columbia University Press.

CSRE. (2018). *Swiss Education Report 2018*. https://www.skbf-csre.ch/en/education-report/education-report/

Deming, D. J., Yuchtman, N., Abulafi, A., Goldin, C., & Katz, L. F. (2016). The value of postsecondary credentials in the labor market: An experimental study. *American Economic Review*, *106*(3), 778-806.

Di Stasio, V. (2017). Who is ahead in the labor queue? Institutions' and employers' perspective on overeducation, undereducation, and horizontal mismatches. *Sociology of education*, *90*(2), 109-126. https://doi.org/https://doi.org/10.1177/0038040717694877

Dieckhoff, M. (2007). Does it Work? The Effect of Continuing Training on Labour Market Outcomes: A Comparative Study of Germany, Denmark, and the United Kingdom. *European Sociological Review*, *23*(3), 295-308. https://doi.org/10.1093/esr/jcm002

Ebner, C., & Ehlert, M. (2018). Weiterbilden und Weiterkommen? Non-formale berufliche Weiterbildung und Arbeitsmarktmobilität in Deutschland. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, *70*(2), 213-235.

Ehlert, M. (2017). Who Benefits from Training Courses in Germany? Monetary Returns to Non-formal Further Education on a Segmented Labour Market. *European Sociological Review*, *33*(3), 436-448. https://doi.org/10.1093/esr/jcx042

ETHZ. (2018). Master of Advanced Studies ETH in Management, Technology, and Economics. https://ethz.ch/content/dam/ethz/special-interest/study-programme-websites/mas-mtec-dam/Education/education-files/regulations/mtec-mas-regulations-2018-translated.pdf

Frey, H. R., & Künzle, D. (2002). Vom Nachdiplom zum Master. Abklärungen und Empfehlungen im Zusammenhang mit der Bologna-Deklaration für den Fachhochschulbereich.

FSO. (2018). Lebenslanges Lernen in der Schweiz. Ergebnisse des Mikrozensus Aus- und Weiterbildung 2016. https://www.bfs.admin.ch/bfs/de/home/statistiken/kataloge-datenbanken.assetdetail.1325-1600.html
FSO. (2019a). Statistik der beruflichen Grundbildung. Benutzerhandbuch der Erhebungsapplikation SBG. https://dam-api.bfs.admin.ch/hub/api/dam/assets/10447533/master
FSO. (2019b). Statistik der Unternehmensstruktur (STATENT), Beschäftigte und Arbeitsstätten: Geodaten 2017. https://dam-api.bfs.admin.ch/hub/api/dam/assets/20124095/master
FSO. (2021a). Bildungsstand der Bevölkerung, 1996-2020. *2022*. https://www.bfs.admin.ch/bfs/de/home/statistiken/bildung-wissenschaft/bildungsindikatoren/themen/wirkung/bildungsstand.html
FSO. (2021b). Weiterbildungsteilnahme. *2022*. https://www.bfs.admin.ch/bfs/de/home/statistiken/bildung-wissenschaft/bildungsindikatoren/themen/zugang-und-teilnahme/weiterbildungsteilnahme.html
Gerfin, M., Leu, R., & Nyffeler, R. (2003). Berufliche Weiterbildung in der Schweiz. https://doi.org/https://doi.org/10.7892/boris.144086
Gonon, P. (2019). Zur Legitimität von Hochschulweiterbildung in der Schweiz–Zwischen Wissenschafts- und Arbeitsmarktorientierung. In *Bildung und Konventionen* (pp. 371-399). Springer.
Görlitz, K., & Tamm, M. (2016). The returns to voucher-financed training on wages, employment and job tasks. *Economics of Education Review*, *52*, 51-62. https://doi.org/https://doi.org/10.1016/j.econedurev.2016.01.004
Gutfleisch, T., Samuel, R., & Sacchi, S. (2021). The application of factorial surveys to study recruiters' hiring intentions: comparing designs based on hypothetical and real vacancies. *Quality & Quantity*, *55*(3), 775-804. https://doi.org/https://doi.org/10.1007/s11135-020-01012-7
Hadjar, A., & Becker, R. (2006). Bildungsexpansion — erwartete und unerwartete Folgen. In A. Hadjar & R. Becker (Eds.), *Die Bildungsexpansion: Erwartete und unerwartete Folgen* (pp. 11-24). VS Verlag für Sozialwissenschaften. https://doi.org/10.1007/978-3-531-90325-5_1
Hanft, A. (2007). *Weiterbildung und lebenslanges Lernen in Hochschulen*. Waxmann Verlag.
Hirsch, F. (1976). *Social limits to growth*. Harvard University Press.
Horowitz, J. (2018). Relative Education and the Advantage of a College Degree. *American Sociological Review*, *83*(4), 771-801. https://doi.org/10.1177/0003122418785371
Hussey, A. (2012). Human capital augmentation versus the signaling value of MBA education. *Economics of Education Review*, *31*(4), 442-451. https://doi.org/https://doi.org/10.1016/j.econedurev.2011.12.004
Isopahkala-Bouret, U., Aro, M., & Ojala, K. (2021). Positional competition in a binary system: the case of Finnish higher education. *Tertiary Education and Management*, *27*(2), 143-159. https://doi.org/10.1007/s11233-021-09070-8
Jarvis, P. (2004). *Adult education and lifelong learning: Theory and practice*. Routledge.
Jürges, H., & Schneider, K. (2004). Dynamische Lohneffekte beruflicher Weiterbildung: Eine Längsschnittanalyse mit den Daten des SOEP. *None*. http://ub-madoc.bib.uni-mannheim.de/1285
Jurt, J. (2012). Bourdieus Kapital-Theorie. In M. Bergman, S. Hupka-Brunner, T. Meyer, & R. Samuel (Eds.), *Bildung–Arbeit–Erwachsenwerden* (pp. 21-41). Springer.
Jütte, W., & Bade-Becker, U. (2018). Weiterbildung an Hochschulen. In *Handbuch Erwachsenenbildung/Weiterbildung* (pp. 821-836). Springer.
Kleimann, B. (2019). (German) Universities as multiple hybrid organizations. *Higher Education*, *77*(6), 1085-1102. https://doi.org/https://doi.org/10.1007/s10734-018-0321-7
Klein, M. (2015). Educational Expansion, Occupational Closure and the Relation between Educational Attainment and Occupational Prestige over Time. *Sociology*, *50*(1), 3-23. https://doi.org/10.1177/0038038514560602
Li, J. H., König, M., Buchmann, M., & Sacchi, S. (2000). The influence of further education on occupational mobility in Switzerland. *European Sociological Review*, *16*(1), 43-65. https://doi.org/10.1093/esr/16.1.43
Luhmann, N. (2019). Schriften zur Organisation. In L. Ernst & V. Tacke (Eds.), *Reform und Beratung* (Vol. 4). Springer.
Münch, R. (2011). *Akademischer Kapitalismus: zur politischen Ökonomie der Hochschulreform*. Suhrkamp.
OECD. (2021a). *Continuing Education and Training in Germany*. https://doi.org/doi:https://doi.org/10.1787/1f552468-en
OECD. (2021b). *Education at a Glance 2021*. https://doi.org/doi:https://doi.org/10.1787/b35a14e5-en
Ortiz, L., & Rodriguez-Menés, J. (2016). The Positional Value of Education and its Effect on General and Technical Fields of Education: Educational Expansion and Occupational Returns to

Education in Spain. *European Sociological Review*, *32*(2), 216-237. https://doi.org/10.1093/esr/jcv085
Pischke, J.-S. (2001). Continuous training in Germany. *Journal of population economics*, *14*(3), 523-548. https://doi.org/https://doi.org/10.1007/s001480000040
Powell, J. J. W., & Solga, H. (2011). Why are higher education participation rates in Germany so low? Institutional barriers to higher education expansion. *Journal of Education and Work*, *24*(1-2), 49-68. https://doi.org/10.1080/13639080.2010.534445
Protsch, P. (2014). *Segmentierte Ausbildungsmärkte: Berufliche Chancen von Hauptschülerinnen und Hauptschülern im Wandel*. Verlag Barbara Budrich.
Rageth, L., & Sritharan, A. (2022). Does Familiarity with Vocational and Professional Education Shape Employers' Educational Preferences in Hiring Processes? *CES Working Paper Series*, *10* (forthcoming).
Rivera, L. A. (2011). Ivies, extracurriculars, and exclusion: Elite employers' use of educational credentials. *Research in Social Stratification and Mobility*, *29*(1), 71-90. https://doi.org/https://doi.org/10.1016/j.rssm.2010.12.001
Ross, C. E., & Wu, C.-l. (1995). The links between education and health. *American Sociological Review*, 719-745. https://doi.org/https://doi.org/10.2307/2096319
Schultheiss, T., & Backes-Gellner, U. (2021). *Differing roles of lifelong learning: Hedging against unemployment risks from skill obsolescence or boosting upward career mobility?* (188). University of Zurich, Department of Business Administration (IBW).
Schwerdt, G., Messer, D., Woessmann, L., & Wolter, S. C. (2012). The impact of an adult education voucher program: Evidence from a randomized field experiment. *Journal of Public Economics*, *96*(7), 569-583. https://doi.org/https://doi.org/10.1016/j.jpubeco.2012.03.001
Seitter, W. (2014). Nachfrageorientierung als neuer Steuerungsmodus. Wissenschaftliche Weiterbildung als organisationale Herausforderung universitärer Studienangebotsentwicklung. In *Organisation und das Neue* (pp. 141-150). Springer.
Solga, H. (2005). *Ohne Abschluss in die Bildungsgesellschaft: Die Erwerbschancen gering qualifizierter Personen aus soziologischer und ökonomischer Perspektive*. Verlag Barbara Budrich.
Spence, A. M. (1974). *Job Market Signaling* (Vol. v.143 H1 - British Library H2 - DSC 4265.890000 v 143 2 copies). Harvard University Press.
Swissuniversities. (2021). *Further Education at Tertiary Level*. Retrieved December 21 from https://www.swissuniversities.ch/en/topics/studying/qualifications-framework-nqfch-hs/further-education
swissuniversities. (2022). *Course Offerings in Switzerland*. Retrieved March 2022 from https://studyprogrammes.ch/en
Tholen, G. (2016). Symbolic Closure: Towards a Renewed Sociological Perspective on the Relationship between Higher Education, Credentials and the Graduate Labour Market. *Sociology*, *51*(5), 1067-1083. https://doi.org/10.1177/0038038516641857
Thurow, L. C. (1975). *Generating inequality*. New York: Basic books.
van Ours, J. C., & Ridder, G. (1995). Job matching and job competition: Are lower educated workers at the back of job queues? *European Economic Review*, *39*(9), 1717-1731. https://doi.org/https://doi.org/10.1016/0014-2921(95)00010-0
Verhaest, D., Bogaert, E., Dereymaeker, J., Mestdagh, L., & Baert, S. (2018). Do employers prefer overqualified graduates? A field experiment. *Industrial Relations: A Journal of Economy and Society*, *57*(3), 361-388.
Weber, K. (2014). Wissenschaftliche Weiterbildung in der Schweiz: Diskurs, Institutionalisierung und Profilbildung. *Internationales Jahrbuch der Erwachsenenbildung*, *37*(1).
Wolter, F., & Schiener, J. (2009). Einkommenseffekte beruflicher Weiterbildung. *KZfSS Kölner Zeitschrift für Soziologie und Sozialpsychologie*, *61*(1), 90-117. https://doi.org/10.1007/s11577-009-0043-z
ZHAW. (2021). *Zulassungs- & Teilnahmebedingungen*. Zurich University of Applied Sciences. Retrieved December 21 from https://www.zhaw.ch/de/psychologie/institute/iap/weiterbildung/zulassungs-teilnahmebedingungen/#c36758
Zimmermann, T. E. (2020). Wissenschaftliche Weiterbildung in der Schweiz. In *Handbuch Wissenschaftliche Weiterbildung* (pp. 609-627). Springer.
Zimmermann, T. E., & Fischer, A. (2016). Hochschulweiterbildung Schweiz 2025. *zoom*(6). https://www.zuw.unibe.ch/e7734/e413748/e643408/e647330/ZimmermannFischer_2016_HochschulweiterbildungSchweiz2025_1.Auflage_zoom6_ger.pdf

Appendix I: Detailed Information on Applicant Profiles and Summary Statistics

Applicant profile dimensions

Table 9: Applicant profile dimensions and levels in factorial survey

DIMENSIONS	LEVELS FOR HIGH-LEVEL JOBS
Randomised CV elements	
Tertiary and continuing education	- Master's degree from university - Master's degree from university of applied sciences (UAS) - Advanced Federal Diploma of Higher Education - Master of Advanced Studies (MAS; with advanced federal diploma) - Master of Advanced Studies (MAS; with bachelor's degree from university)
Upper-secondary education	- Academic baccalaureate - Federal VET diploma with vocational baccalaureate
Gender	- Female - Male
Volunteering	- None - Communal work: neighbourhood help
Total work experience	- 8 years (age: 32 years) - 10 years (age: 34 years) - 12 years (age: 36 years)
Occupation-specific work experience	Thereof: - 4 years - 6 years - 8 years

Notes: Table displays dimensions and levels of applicant profiles as displayed to respondents.

Job descriptions for hypothetical open positions

SALES MANAGER

Please imagine you have a vacancy for the position of '**Sales Manager'**. This position includes the management and responsibility for sales tasks, the preparation of market analyses, the operative development and implementation of sales-relevant measures (incl. marketing measures) and the support and new acquisition of customers.

HEAD OF IT

Please imagine you have a vacancy for the position of '**Head of IT'**. This position includes the definition and implementation of the IT strategy, responsibility for the IT budget and cost controlling.

Table 10: Example of applicant profile for 'Sales manager' position (English translation)

The following qualified persons are among the applicants. All of them have sent you a written application with a letter of motivation, have **above-average grades**, obtained their **degree in Switzerland**, are **available** for the date you are looking for an applicant and live in the **region of your company**.
The curriculum vitae of **[candidate 1**] contains the following information: **Personal information** Age [32] Gender [Female] **Education** [MAS in Marketing Management] [Advanced Federal Diploma of Higher Education in Sales] [Federal VET Diploma as Commercial Employee with Vocational Baccalaureate] **Work experience (incl. internships, trainee programmes, etc.)** [8 years] Of which [4 years] in the relevant professional field **Language skills** German Native Language French Fluent English Fluent **Voluntary work** [None]
How likely is it that your company will invite [candidate 1] to an interview?
Very unlikely ... Very likely
1 2 3 4 5 6 7 8 9 10
What income would you recommend for this person? Gross monthly income in CHF (100%):

Note: Exemplary applicant profile for the position of 'Sales manager'. Dimensions in brackets vary, the rest of the information is fixed.

Table 11: Summary statistics for variables included in regression models for 'Sales manager'

Variable	N of resp.	Mean	Std. Dev.	Min.	Max.
Explanatory variables					
Professional tertiary + MAS vs. professional tertiary	1,436	0.5	0.5	0	1
Academic tertiary (bachelor's degree) + MAS vs. Academic tertiary (bachelor's + master's degrees)	1,436	0.49	0.5	0	1
Academic tertiary (bachelor's degree) + MAS vs. professional tertiary + MAS	1,436	0.49	0.5	0	1
Applicant controls					
Gender of applicant	1,436	0.5	0.5	0	1
Volunteering applicant	1,436	0.5	0.5	0	1
Occupation-specific work experience of applicant	1,436				
4 years	1,436	0.33	0.47	0	1
6 years	1,436	0.33	0.47	0	1
8 years	1,436	0.34	0.47	0	1
General work experience of applicant	1,436				
8 years	1,436	0.34	0.47	0	1
10 years	1,436	0.34	0.47	0	1
12 years	1,436	0.33	0.47	0	1
Respondent controls					
Age of Respondent	1,436	45.83	10.28	19	74
Female Respondent	1,436	0.48	0.5	0	1
Swiss Respondent	1,436	0.92	0.28	0	1
Educational career of respondent	1,436				
General education	1,436	0.17	0.38	0	1
Mixed education	1,436	0.31	0.46	0	1
VPET	1,436	0.52	0.5	0	1
Number of recruitment processes in last five years	1,436				
1-5	1,436	0.24	0.42	0	1
6-10	1,436	0.23	0.42	0	1
11-25	1,436	0.19	0.39	0	1
>25	1,436	0.35	0.48	0	1
Position of respondent	1,436				
HR Respondent	1,436	0.47	0.5	0	1
Managing director/executive board	1,436	0.3	0.46	0	1
Business owner	1,436	0.24	0.43	0	1
Items on knowledge about higher and continuing education in Switzerland	1,436				
I am well informed about opportunities for further qualification after compulsory education.	1,436	4.28	0.73	1	5
I know the various Professional Education and Training (PET) degrees well.	1,436	3.91	0.9	1	5
I know the difference between the Master of Advanced Studies and the Master of Arts/Science.	1,436	3.38	1.32	1	5
A tertiary degree (PET or university) is increasingly necessary to obtain higher positions.	1,436	3.64	0.98	1	5
A continuing education course is increasingly necessary to obtain higher positions.	1,436	4.07	0.85	1	5
Firm controls					
Firm size					
<10 employees	1,436	0.13	0.33	0	1
10-49 employees	1,436	0.39	0.49	0	1
50-249 employees	1,436	0.3	0.46	0	1
250+ employees	1,436	0.18	0.38	0	1
Firm in German-speaking part of CH	1,436	0.93	0.25	0	1

Variable	N of resp.	Mean	Std. Dev.	Min.	Max.
Firm region	1,436				
Région lémanique	1,436	0.04	0.21	0	1
Espace Mittelland	1,436	0.21	0.41	0	1
Northwestern Switzerland	1,436	0.14	0.35	0	1
Zurich	1,436	0.22	0.42	0	1
Eastern Switzerland	1,436	0.23	0.42	0	1
Central Switzerland	1,436	0.15	0.35	0	1
Ticino	1,436	0.01	0.09	0	1
Internationally active firm	1,436	0.19	0.39	0	1
Firm sector	1,436				
Agriculture, forestry and fishing	1,436	0.02	0.15	0	1
Mining and quarrying	1,436	0.00	0.05	0	1
Manufacturing/production of goods	1,436	0.22	0.41	0	1
Energy supply	1,436	0.01	0.10	0	1
Water supply; sewage and waste disposal and pollution abatement	1,436	0.01	0.10	0	1
Construction/building	1,436	0.19	0.39	0	1
Wholesale and retail trade; repair of motor vehicles and motorcycles	1,436	0.12	0.32	0	1
Transport and storage	1,436	0.02	0.13	0	1
Hospitality/accommodation and gastronomy	1,436	0.05	0.21	0	1
Information and communication	1,436	0.02	0.15	0	1
Provision of financial and other services	1,436	0.03	0.17	0	1
Real estate and housing	1,436	0.02	0.13	0	1
Provision of professional, scientific and technical services	1,436	0.02	0.13	0	1
Provision of other services	1,436	0.04	0.20	0	1
Public administration, defense, social security	1,436	0.16	0.37	0	1
Education and teaching	1,436	0.01	0.09	0	1
Health and social services	1,436	0.02	0.14	0	1
Art, entertainment and recreation	1,436	0.01	0.10	0	1
Other services	1,436	0.04	0.19	0	1
Survey design controls					
Position of applicant profile within four rated profiles	1,436	2.56	1.12	1	4
Applicant profile matching open position in firm	1,436	2.59	1.06	1	5
Respondent received support letter	1,436	0.67	-	0	1

Notes: summary statistics of all variables included in all regression models for the position of 'Sales manager'.

Table 12: Summary statistics for variables included in regression models for 'Sales manager'

Variable	N of resp.	Mean	Std. Dev.	Min.	Max.
Explanatory variables					
Professional tertiary + MAS vs. professional tertiary	575	0.49	0.5	0	1
Academic tertiary (bachelor's degree) + MAS vs. Academic tertiary (bachelor's + master's degrees)	575	0.5	0.5	0	1
Academic tertiary (bachelor's degree) + MAS vs. professional tertiary + MAS	575	0.51	0.5	0	1
Applicant controls					
Gender of applicant	575	0.5	0.5	0	1
Volunteering applicant	575	0.5	0.5	0	1
Occupation-specific work experience of applicant	575				
4 years	575	0.34	0.47	0	1
6 years	575	0.32	0.47	0	1
8 years	575	0.34	0.47	0	1
General work experience of applicant	575				
8 years	575	0.33	0.47	0	1

Variable	N of resp.	Mean	Std. Dev.	Min.	Max.
10 years	575	0.32	0.47	0	1
12 years	575	0.34	0.47	0	1
Respondent controls					
Age of Respondent	575	46.5	10.22	24	77
Female Respondent	575	0.43	0.5	0	1
Swiss Respondent	575	0.87	0.34	0	1
Educational career of respondent	575				
General education	575	0.21	0.41	0	1
Mixed education	575	0.39	0.49	0	1
VPET	575	0.39	0.49	0	1
Number of recruitment processes in last five years	575				
1-5	575	0.23	0.42	0	1
6-10	575	0.22	0.41	0	1
11-25	575	0.16	0.36	0	1
>25	575	0.4	0.49	0	1
Position of respondent	575				
HR Respondent	575	0.53	0.5	0	1
Managing director/executive board	575	0.27	0.45	0	1
Business owner	575	0.21	0.41	0	1
Items on knowledge about higher and continuing education in Switzerland	575				
I am well informed about opportunities for further qualification after compulsory education.	575	4.35	0.7	1	5
I know the various Professional Education and Training (PET) degrees well.	575	3.96	0.9	1	5
I know the difference between the Master of Advanced Studies and the Master of Arts/Science.	575	3.57	1.3	1	5
A tertiary degree (PET or university) is increasingly necessary to obtain higher positions.	575	3.77	0.97	1	5
A continuing education course is increasingly necessary to obtain higher positions.	575	4.03	0.85	1	5
Firm controls					
Firm size					
<10 employees	575	0.12	0.33	0	1
10-49 employees	575	0.34	0.47	0	1
50-249 employees	575	0.33	0.47	0	1
250+ employees	575	0.21	0.41	0	1
Firm in German-speaking part of CH	575	0.91	0.29	0	1
Firm region	575				
Région lémanique	575	0.05	0.22	0	1
Espace Mittelland	575	0.2	0.4	0	1
Northwestern Switzerland	575	0.15	0.35	0	1
Zurich	575	0.26	0.44	0	1
Eastern Switzerland	575	0.19	0.39	0	1
Central Switzerland	575	0.14	0.35	0	1
Ticino	575	0.01	0.1	0	1
Internationally active firm	575	0.18	0.39	0	1
Firm sector	575				
Agriculture, forestry and fishing	575	0.03	0.16	0	1
Manufacturing/production of goods	575	0.13	0.34	0	1
Energy supply	575	0.04	0.20	0	1
Water supply; sewage and waste disposal and pollution abatement	575	0.01	0.08	0	1
Construction/building	575	0.14	0.35	0	1

Variable	N of resp.	Mean	Std. Dev.	Min.	Max.
Wholesale and retail trade; repair of motor vehicles and motorcycles	575	0.04	0.19	0	1
Transport and storage	575	0.02	0.12	0	1
Hospitality/accommodation and gastronomy	575	0.02	0.14	0	1
Information and communication	575	0.17	0.38	0	1
Provision of financial and other services	575	0.05	0.21	0	1
Real estate and housing	575	0.01	0.10	0	1
Provision of professional, scientific and technical services	575	0.10	0.30	0	1
Provision of other services	575	0.06	0.24	0	1
Public administration, defense, social security	575	0.05	0.22	0	1
Education and teaching	575	0.04	0.20	0	1
Health and social services	575	0.03	0.16	0	1
Art, entertainment and recreation	575	0.01	0.11	0	1
Other services	575	0.05	0.23	0	1
Survey design controls					
Position of applicant profile within four rated profiles	575	2.56	1.13	1	4
Applicant profile matching open position in firm	575	2.68	1.02	1	5
Respondent received support letter	575	0.68	-	0	1

Notes: summary statistics of all variables included in all regression models for the position of 'Head of IT'.

Appendix II: Full Results Tables

Table 13: Full results table for regression models in Table 3 (H1a)

	Sales Manager			Head of IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: likelihood for invitation to job interview (1-10)						
Professional tertiary degree	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Professional tertiary degree + MAS	0.160***	0.192**	0.206**	0.470***	0.381***	0.381***
	(0.044)	(0.081)	(0.080)	(0.079)	(0.127)	(0.126)
Applicant controls						
Upper-secondary VET of applicant	0.146**	0.252	0.289	0.304***	-0.014	-0.015
	(0.059)	(0.216)	(0.215)	(0.101)	(0.370)	(0.370)
Female applicant	0.086	0.084	0.067	-0.039	-0.028	-0.023
	(0.055)	(0.055)	(0.054)	(0.091)	(0.094)	(0.094)
Volunteering applicant	0.029	0.029	0.037	0.151	0.143	0.143
	(0.052)	(0.052)	(0.052)	(0.093)	(0.094)	(0.093)
Occupation-specific work experience of applicant	0.100***	0.105***	0.106***	0.138**	0.126**	0.122**
	(0.033)	(0.033)	(0.033)	(0.055)	(0.055)	(0.055)
General work experience of applicant	0.055	0.055	0.053	0.021	0.023	0.012
	(0.035)	(0.035)	(0.035)	(0.051)	(0.051)	(0.050)
Survey design controls						
Position of applicant profile within set of four applicant profiles		-0.049	-0.066		0.146	0.152
		(0.094)	(0.093)		(0.159)	(0.157)
Applicant profile matching high-level position in firm		0.215***	0.227***		0.144	0.136
		(0.053)	(0.054)		(0.097)	(0.103)
Respondent received support letter		0.206*	0.193*		0.017	-0.028
		(0.112)	(0.110)		(0.192)	(0.183)
Respondent controls						
Age of respondent			-0.015***			-0.006
			(0.005)			(0.009)
Female respondent			0.334***			0.290
			(0.116)			(0.177)
Respondent born in Switzerland			0.073			-0.110
			(0.183)			(0.248)
Educational career of respondent						
General education			Ref.			Ref.

	Sales Manager			Head of IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Mixed education			0.032			0.161
			(0.146)			(0.222)
VPET			0.184			0.088
			(0.135)			(0.234)
Number of recruitment processes in last five years						
1-5			Ref.			Ref.
6-10			-0.018			0.287
			(0.158)			(0.265)
11-25			-0.078			0.094
			(0.166)			(0.276)
>25			-0.154			0.126
			(0.178)			(0.298)
Respondent working in HR			0.004			-0.170
			(0.126)			(0.221)
Firm size						
<10 employees			Ref.			Ref.
10-49 employees			0.165			0.612*
			(0.202)			(0.365)
50-249 employees			0.267			0.461
			(0.226)			(0.365)
250+ employees			0.041			0.122
			(0.252)			(0.390)
Region of firm in Switzerland						
Région lémanique			Ref.			Ref.
Espace Mittelland			0.230			0.416
			(0.298)			(0.395)
Northwestern Switzerland			0.351			0.172
			(0.306)			(0.456)
Zurich			0.202			0.453
			(0.297)			(0.393)
Eastern Switzerland			0.283			0.594
			(0.292)			(0.395)
Central Switzerland			0.390			0.524
			(0.302)			(0.389)
Ticino			-0.126			0.051
			(0.392)			(1.042)
Industry of firm						
Agriculture, forestry and fishing			Ref.			Ref.
Mining and quarrying			-1.852			

	Sales Manager			Head of IT		
	(1)	(2)	(3)	(4)	(5)	(6)
			(1.524)			
Manufacturing/production of goods			-0.498			0.144
			(0.389)			(0.681)
Energy supply			-0.214			-0.277
			(0.610)			(0.748)
Water supply; sewage and waste disposal and pollution abatement			-0.705			0.057
			(0.471)			(1.058)
Construction/building			-0.345			-0.028
			(0.380)			(0.657)
Wholesale and retail trade; repair of motor vehicles and motorcycles			-0.328			-0.250
			(0.384)			(0.799)
Transport and storage			-0.259			-2.175
			(0.452)			(1.355)
Hospitality/accommodation and gastronomy			0.079			0.793
			(0.409)			(0.701)
Information and communication			-0.420			0.115
			(0.448)			(0.642)
Provision of financial and other services			-0.068			-0.655
			(0.443)			(0.752)
Real estate and housing			-0.101			-0.494
			(0.427)			(1.282)
Provision of professional, scientific and technical services			-0.195			-0.572
			(0.566)			(0.689)
Provision of other services			-0.293			-0.188
			(0.432)			(0.684)
Public administration, defense, social security			-0.988***			-0.142
			(0.379)			(0.715)
Education and teaching			-0.282			0.143
			(0.828)			(0.717)
Health and social services			-0.252			-0.156
			(0.432)			(0.740)
Art, entertainment and recreation			0.370			0.572
			(0.470)			(0.741)
Other services			-0.157			-0.767
			(0.444)			(0.776)
Firm is internationally active			0.094			-0.269
			(0.130)			(0.231)
Items on knowledge about further and higher education						
I am well informed about opportunities for further qualification after compulsory education.			0.182**			0.161
			(0.088)			(0.170)
I know the various Professional Education and Training (PET) degrees well.			-0.089			-0.101
			(0.080)			(0.126)

	Sales Manager			Head of IT		
	(1)	(2)	(3)	(4)	(5)	(6)
I know the difference between the Master of Advanced Studies and the Master of Science/Arts.			0.141***			-0.037
			(0.050)			(0.077)
A tertiary degree (PET or university) is increasingly necessary to obtain higher positions.			0.096*			0.034
			(0.056)			(0.102)
A continuing education course is increasingly necessary to obtain higher positions.			0.127**			0.425***
			(0.061)			(0.119)
Constant	7.635***	7.003***	5.647***	7.229***	6.650***	4.251***
	(0.122)	(0.225)	(0.649)	(0.198)	(0.430)	(1.209)
Std. Dev. random intercept	1.626***	1.607***	1.534***	1.730***	1.722***	1.572***
	(0.072)	(0.069)	(0.068)	(0.111)	(0.109)	(0.097)
Std. Dev. residual	0.885**	0.885**	0.883**	0.956	0.955	0.954
	(0.051)	(0.051)	(0.051)	(0.063)	(0.064)	(0.063)
N of observations	1,944	1,944	1,944	793	793	793
N of respondents	1,220	1,220	1,220	494	494	494
Log-likelihood	-3,628.405	-3,616.373	-3,567.613	-1,533.214	-1,531.136	-1,494.233

Notes: Table displays results of random-effects regressions with robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively.

Table 14: Full results table for regression models in Table 4 (H1b)

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: (log) monthly salary)						
Professional tertiary degree	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Professional tertiary degree + MAS	0.022***	0.011***	0.011***	0.031***	0.016**	0.018***
	(0.002)	(0.003)	(0.003)	(0.004)	(0.007)	(0.006)
Applicant controls						
Upper-secondary VET of applicant	0.011***	-0.028***	-0.026***	0.027***	-0.027	-0.021
	(0.003)	(0.010)	(0.010)	(0.006)	(0.019)	(0.019)
Female applicant	-0.006**	-0.003	-0.003	0.002	0.005	0.004
	(0.003)	(0.003)	(0.003)	(0.006)	(0.006)	(0.006)
Volunteering applicant	-0.001	-0.001	-0.001	0.003	0.003	0.003
	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)
Occupation-specific work experience of applicant	0.007***	0.006***	0.006***	0.007**	0.005	0.005*
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
General work experience of applicant	0.014***	0.014***	0.014***	0.016***	0.016***	0.016***
	(0.002)	(0.002)	(0.001)	(0.003)	(0.003)	(0.003)

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: (log) monthly salary)						
Survey design controls						
Position of applicant profile within set of four applicant profiles		0.018***	0.017***		0.024***	0.022***
		(0.004)	(0.004)		(0.008)	(0.008)
Applicant profile matching high-level position in firm		0.037***	0.011**		0.045***	0.017*
		(0.006)	(0.005)		(0.009)	(0.009)
Respondent received support letter		-0.009	-0.002		-0.001	0.008
		(0.013)	(0.011)		(0.021)	(0.018)
Respondent controls						
Age of respondent			0.000			-0.001
			(0.001)			(0.001)
Female respondent			-0.034***			-0.027
			(0.013)			(0.019)
Respondent born in Switzerland			0.009			0.001
			(0.020)			(0.024)
Educational career of respondent						
General education			Ref.			Ref.
Mixed education			0.009			-0.024
			(0.015)			(0.020)
VPET			-0.038***			-0.054**
			(0.015)			(0.022)
Number of recruitment processes in last five years						
1-5			Ref.			Ref.
6-10			0.025			0.014
			(0.016)			(0.024)
11-25			0.031*			0.014
			(0.017)			(0.026)
>25			0.029*			0.067**
			(0.017)			(0.027)
Respondent working in HR			0.052***			-0.005
			(0.013)			(0.023)
Firm size						
<10 employees			Ref.			Ref.
10-49 employees			0.040**			0.001
			(0.019)			(0.031)
50-249 employees			0.090***			0.057*
			(0.021)			(0.033)

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: (log) monthly salary)						
250+ employees			0.115***			0.103***
			(0.024)			(0.038)
Region of firm in Switzerland						
Région lémanique			Ref.			Ref.
Espace Mittelland			0.105***			0.162***
			(0.028)			(0.046)
Northwestern Switzerland			0.107***			0.176***
			(0.029)			(0.051)
Zurich			0.134***			0.201***
			(0.028)			(0.048)
Eastern Switzerland			0.101***			0.165***
			(0.028)			(0.050)
Central Switzerland			0.098***			0.186***
			(0.029)			(0.049)
Ticino			-0.140**			-0.023
			(0.069)			(0.080)
Industry of firm						
Agriculture, forestry and fishing			Ref.			Ref.
Mining and quarrying			0.038			
			(0.080)			
Manufacturing/production of goods			0.087*			0.027
			(0.045)			(0.054)
Energy supply			0.092			0.155***
			(0.066)			(0.058)
Water supply; sewage and waste disposal and pollution abatement			0.108*			0.070
			(0.063)			(0.108)
Construction/building			0.051			0.021
			(0.045)			(0.052)
Wholesale and retail trade; repair of motor vehicles and motorcycles			0.057			0.114*
			(0.046)			(0.063)
Transport and storage			0.041			0.121*
			(0.060)			(0.068)
Hospitality/accommodation and gastronomy			-0.062			0.035
			(0.050)			(0.082)
Information and communication			0.119**			0.091*
			(0.059)			(0.054)

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: (log) monthly salary)						
Provision of financial and other services			0.138***			0.139**
			(0.053)			(0.062)
Real estate and housing			0.109*			0.093
			(0.057)			(0.109)
Provision of professional, scientific and technical services			0.051			0.015
			(0.055)			(0.050)
Provision of other services			0.053			0.114**
			(0.050)			(0.056)
Public administration, defense, social security			0.148***			0.133**
			(0.045)			(0.056)
Education and teaching			0.142*			0.020
			(0.080)			(0.060)
Health and social services			0.026			0.013
			(0.055)			(0.062)
Art, entertainment and recreation			-0.018			-0.064
			(0.052)			(0.066)
Other services			0.036			-0.030
			(0.051)			(0.058)
Firm is internationally active			0.028*			-0.016
			(0.015)			(0.024)
Items on knowledge about further and higher education						
I am well informed about opportunities for further qualification after compulsory education.			0.001			0.005
			(0.009)			(0.015)
I know the various Professional Education and Training (PET) degrees well.			0.002			-0.014
			(0.008)			(0.011)
I know the difference between the Master of Advanced Studies and the Master of Arts/Science.			0.015***			0.015*
			(0.005)			(0.008)
A tertiary degree (PET or university) is increasingly necessary to obtain higher positions.			0.020***			0.007
			(0.006)			(0.009)
A continuing education course is increasingly necessary to obtain higher positions.			0.002			-0.005
			(0.006)			(0.009)

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: (log) monthly salary)						
Constant	8.838***	8.727***	8.367***	8.916***	8.766***	8.605***
	(0.008)	(0.019)	(0.071)	(0.013)	(0.033)	(0.111)
Std. Dev. random intercept	0.200***	0.196***	0.162***	0.192***	0.187***	0.156***
	(0.004)	(0.004)	(0.004)	(0.007)	(0.007)	(0.006)
Std. Dev. residual	0.036***	0.036***	0.036***	0.047***	0.046***	0.046***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)
N of observations	1,743	1,743	1,743	682	682	682
N of respondents	1,093	1,093	1,093	430	430	430
Log-likelihood	1,206.808	1,235.584	1,437.406	417.418	433.044	506.283

Notes: Table displays results of random intercept regressions with robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively.

Table 15: Full results table for regression models in Table 5 (H2a)

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: likelihood for invitation to job interview (1-10)						
Academic tertiary (bachelor's) degree + MAS	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Professional tertiary degree + MAS	0.253***	0.219***	0.219***	0.140*	0.129	0.122
	(0.053)	(0.065)	(0.065)	(0.077)	(0.103)	(0.103)
Applicant controls						
Upper-secondary VET of applicant	0.100	-0.117	-0.122	0.135	0.091	0.106
	(0.064)	(0.203)	(0.204)	(0.103)	(0.328)	(0.322)
Female applicant	0.136**	0.114*	0.105*	0.019	0.016	0.019
	(0.060)	(0.060)	(0.059)	(0.084)	(0.086)	(0.087)
Volunteering applicant	0.114*	0.122**	0.124**	0.084	0.085	0.063
	(0.059)	(0.060)	(0.059)	(0.085)	(0.086)	(0.085)
Occupation-specific work experience of applicant	0.114***	0.117***	0.130***	0.127**	0.127**	0.137**
	(0.038)	(0.038)	(0.038)	(0.063)	(0.063)	(0.062)
General work experience of applicant	0.053	0.056	0.062	0.129**	0.130**	0.117**
	(0.038)	(0.038)	(0.038)	(0.052)	(0.052)	(0.053)
Survey design controls						
Position of applicant profile within set of four applicant profiles		0.114	0.118		0.025	0.026
		(0.099)	(0.100)		(0.147)	(0.144)
Applicant profile matching high-level position in firm		0.241***	0.235***		0.220**	0.188*
		(0.053)	(0.055)		(0.096)	(0.099)
Respondent received support letter		0.190*	0.183		0.049	-0.036
		(0.115)	(0.114)		(0.187)	(0.173)
Respondent controls						
Age of respondent			-0.014***			-0.010
			(0.005)			(0.008)
Female respondent			0.275**			0.235
			(0.115)			(0.173)
Respondent born in Switzerland			-0.145			-0.352
			(0.188)			(0.235)
Educational career of respondent						
General education			Ref.			Ref.
Mixed education			-0.014			0.130
			(0.152)			(0.219)
VPET			-0.027			0.012
			(0.140)			(0.236)
Number of recruitment processes in last five years						
1-5			Ref.			Ref.
6-10			-0.070			0.077

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
			(0.160)			(0.259)
11-25			-0.055			0.055
			(0.164)			(0.274)
>25			-0.148			0.246
			(0.178)			(0.288)
Respondent working in HR			-0.026			-0.261
			(0.125)			(0.226)
Firm size						
<10 employees			Ref.			Ref.
10-49 employees			0.076			0.533
			(0.199)			(0.333)
50-249 employees			0.211			0.367
			(0.223)			(0.330)
250+ employees			-0.032			0.155
			(0.249)			(0.356)
Region of firm in Switzerland						
Région lémanique			Ref.			Ref.
Espace Mittelland			0.201			0.426
			(0.323)			(0.412)
Northwestern Switzerland			0.426			0.007
			(0.329)			(0.450)
Zurich			0.128			0.421
			(0.324)			(0.402)
Eastern Switzerland			0.329			0.438
			(0.318)			(0.409)
Central Switzerland			0.339			0.314
			(0.332)			(0.414)
Ticino			0.254			-0.694
			(0.408)			(1.048)
Industry of firm						
Agriculture, forestry and fishing			Ref.			Ref.
Mining and quarrying			-0.938			
			(0.819)			
Manufacturing/production of goods			-0.562			-0.023
			(0.426)			(0.713)
Energy supply			-0.172			-0.089
			(0.632)			(0.781)
Water supply; sewage and waste disposal and pollution abatement			-1.211**			0.675
			(0.576)			(1.130)
Construction/building			-0.284			-0.086

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
			(0.416)			(0.694)
Wholesale and retail trade; repair of motor vehicles and motorcycles			-0.359			0.017
			(0.421)			(0.828)
Transport and storage			-0.205			-2.055
			(0.505)			(1.316)
Hospitality/accommodation and gastronomy			0.177			0.717
			(0.451)			(0.730)
Information and communication			-0.158			0.275
			(0.451)			(0.680)
Provision of financial and other services			0.260			-0.269
			(0.490)			(0.757)
Real estate and housing			-0.040			-0.302
			(0.477)			(1.238)
Provision of professional, scientific and technical services			-0.124			-0.504
			(0.545)			(0.728)
Provision of other services			-0.237			-0.032
			(0.465)			(0.726)
Public administration, defense, social security			-0.538			-0.085
			(0.416)			(0.728)
Education and teaching			-0.205			0.126
			(0.870)			(0.752)
Health and social services			-0.094			-0.257
			(0.458)			(0.757)
Art, entertainment and recreation			0.739			0.313
			(0.469)			(0.788)
Other services			-0.129			-0.455
			(0.477)			(0.781)
Firm is internationally active			0.166			-0.235
			(0.129)			(0.224)
Items on knowledge about further and higher education						
I am well informed about opportunities for further qualification after compulsory education.			0.074			0.235
			(0.087)			(0.157)
I know the various Professional Education and Training (PET) degrees well.			-0.017			-0.169
			(0.080)			(0.118)
I know the difference between the Master of Advanced Studies and the Master of Arts/Science.			0.146***			-0.036
			(0.051)			(0.076)
A tertiary degree (PET or university) is increasingly necessary to obtain higher positions.			0.131**			0.099
			(0.059)			(0.101)
A continuing education course is increasingly necessary to obtain higher positions			0.107*			0.354***
			(0.063)			(0.117)
Constant	7.458***	6.501***	5.525***	7.449***	6.781***	5.038***
	(0.140)	(0.287)	(0.702)	(0.222)	(0.439)	(1.264)
Std. Dev. random intercept	1.601***	1.576***	1.505***	1.688***	1.671***	1.516***

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
	(0.075)	(0.072)	(0.072)	(0.120)	(0.118)	(0.105)
Std. Dev. residual	1.027	1.028	1.028	0.954	0.955	0.959
	(0.057)	(0.057)	(0.058)	(0.088)	(0.088)	(0.089)
N of observations	1,913	1,913	1,913	782	782	782
N of respondents	1,218	1,218	1,218	496	496	496
Log-likelihood	-3,702.412	-3,687.946	-3,645.235	-1,505.289	-1,501.408	-1,464.577

Notes: Table displays results of random intercept regressions with robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively.

Table 16: Full results table for regression models in Table 6 (H2b)

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: (log) monthly salary						
Academic tertiary (bachelor's) degree + MAS	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Professional tertiary degree + MAS	0.003	0.000	0.000	-0.002	-0.004	-0.002
	(0.003)	(0.003)	(0.003)	(0.004)	(0.005)	(0.005)
Applicant controls						
Upper-secondary VET of applicant	0.009***	-0.010	-0.011	0.016***	0.004	0.010
	(0.003)	(0.009)	(0.009)	(0.005)	(0.016)	(0.015)
Female applicant	0.001	-0.001	-0.001	-0.002	-0.003	-0.003
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
Volunteering applicant	-0.002	-0.001	-0.001	-0.003	-0.002	-0.002
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
Occupation-specific work experience of applicant	0.001	0.002	0.001	0.009***	0.009***	0.009***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
General work experience of applicant	0.009***	0.009***	0.009***	0.012***	0.012***	0.012***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
Survey design controls						
Position of applicant profile within set of four applicant profiles		0.010**	0.010**		0.006	0.004
		(0.005)	(0.005)		(0.007)	(0.007)
Applicant profile matching high-level position in firm		0.037***	0.010**		0.046***	0.016*
		(0.006)	(0.005)		(0.010)	(0.009)
Respondent received support letter		-0.009	-0.004		0.005	0.013
		(0.013)	(0.011)		(0.021)	(0.018)
Respondent controls						
Age of respondent			0.000			-0.001
			(0.001)			(0.001)
Female respondent			-0.033***			-0.023

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
			(0.013)			(0.019)
Respondent born in Switzerland			0.005			0.007
			(0.022)			(0.023)
Educational career of respondent						
General education			Ref.			Ref.
Mixed education			0.012			-0.025
			(0.016)			(0.020)
VPET			-0.045***			-0.061***
			(0.015)			(0.022)
Number of recruitment processes in last five years						
1-5			Ref.			Ref.
6-10			0.024			0.006
			(0.016)			(0.025)
11-25			0.029*			0.014
			(0.018)			(0.026)
>25			0.027			0.075***
			(0.018)			(0.027)
Respondent working in HR			0.049***			-0.010
			(0.013)			(0.022)
Firm size						
<10 employees			Ref.			Ref.
10-49 employees			0.036*			0.013
			(0.020)			(0.031)
50-249 employees			0.085***			0.071**
			(0.022)			(0.033)
250+ employees			0.114***			0.120***
			(0.025)			(0.037)
Region of firm in Switzerland						
Région lémanique			Ref.			Ref.
Espace Mittelland			0.108***			0.166***
			(0.030)			(0.046)
Northwestern Switzerland			0.109***			0.181***
			(0.031)			(0.051)
Zurich			0.139***			0.201***
			(0.030)			(0.049)
Eastern Switzerland			0.105***			0.171***
			(0.030)			(0.050)
Central Switzerland			0.107***			0.185***
			(0.031)			(0.050)

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Ticino			-0.131*			-0.015
			(0.068)			(0.083)
Industry of firm						
Agriculture, forestry and fishing			Ref.			Ref.
Mining and quarrying			0.060			
			(0.085)			
Manufacturing/production of goods			0.102**			0.008
			(0.045)			(0.051)
Energy supply			0.110			0.150***
			(0.067)			(0.057)
Water supply; sewage and waste disposal and pollution abatement			0.148**			0.043
			(0.058)			(0.104)
Construction/building			0.064			0.010
			(0.045)			(0.050)
Wholesale and retail trade; repair of motor vehicles and motorcycles			0.074			0.101*
			(0.046)			(0.061)
Transport and storage			0.063			0.112*
			(0.060)			(0.066)
Hospitality/accommodation and gastronomy			-0.051			0.044
			(0.050)			(0.078)
Information and communication			0.139**			0.087*
			(0.057)			(0.052)
Provision of financial and other services			0.165***			0.137**
			(0.054)			(0.061)
Real estate and housing			0.119**			0.072
			(0.060)			(0.127)
Provision of professional, scientific and technical services			0.062			0.009
			(0.057)			(0.048)
Provision of other services			0.072			0.120**
			(0.051)			(0.054)
Public administration, defense, social security			0.167***			0.137**
			(0.045)			(0.054)
Education and teaching			0.160*			0.028
			(0.084)			(0.061)
Health and social services			0.036			-0.002
			(0.056)			(0.064)
Art, entertainment and recreation			-0.013			-0.089
			(0.053)			(0.062)
Other services			0.044			-0.039
			(0.050)			(0.055)
Firm is internationally active			0.029*			-0.014
			(0.015)			(0.023)

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Items on knowledge about further and higher education						
I am well informed about opportunities for further qualification after compulsory education.			-0.004			-0.003
			(0.010)			(0.015)
I know the various Professional Education and Training (PET) degrees well.			0.005			-0.011
			(0.008)			(0.011)
I know the difference between the Master of Advanced Studies and the Master of Arts/Science.			0.014***			0.017**
			(0.005)			(0.008)
A tertiary degree (PET or university) is increasingly necessary to obtain higher positions.			0.022***			0.006
			(0.006)			(0.009)
A continuing education course is increasingly necessary to obtain higher positions.			-0.001			-0.001
			(0.007)			(0.009)
Constant	8.881***	8.769***	8.416***	8.960***	8.820***	8.655***
	(0.010)	(0.023)	(0.073)	(0.015)	(0.035)	(0.112)
Std. Dev. random intercept	0.203***	0.199***	0.164***	0.197***	0.192***	0.157***
	(0.005)	(0.005)	(0.004)	(0.007)	(0.007)	(0.006)
Std. Dev. residual	0.043***	0.043***	0.043***	0.040***	0.040***	0.040***
	(0.006)	(0.006)	(0.006)	(0.003)	(0.003)	(0.003)
N of observations	1,718	1,718	1,718	675	675	675
N of respondents	1,089	1,089	1,089	428	428	428
Log-likelihood	1,036.701	1,058.813	1,261.13	440.991	453.571	535.857

Notes: Table displays results of random intercept regressions with robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively.

Table 17: Full results table for regression models in Table 7 (H3a)

	Sales Manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: likelihood for invitation to job interview (1-10)						
Academic tertiary degree (bachelor's & master's degrees)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Academic tertiary (bachelor's) degree + MAS	0.153***	0.070	0.075	0.076	0.087	0.081
	(0.054)	(0.096)	(0.098)	(0.080)	(0.136)	(0.130)
Applicant controls						
Upper-secondary VET of applicant	0.174***	-0.018	-0.017	0.247***	0.283	0.247
	(0.060)	(0.211)	(0.215)	(0.083)	(0.327)	(0.315)
Female applicant	0.146**	0.140**	0.143**	0.087	0.090	0.100
	(0.062)	(0.062)	(0.062)	(0.087)	(0.087)	(0.086)
Volunteering applicant	0.117*	0.117*	0.119*	-0.004	-0.006	-0.004
	(0.062)	(0.062)	(0.063)	(0.097)	(0.097)	(0.096)
Occupation-specific work experience of applicant	0.198***	0.200***	0.196***	0.051	0.053	0.057

	Sales Manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
	(0.038)	(0.038)	(0.038)	(0.055)	(0.055)	(0.055)
General work experience of applicant	0.093**	0.098**	0.100**	-0.043	-0.041	-0.041
	(0.041)	(0.041)	(0.040)	(0.052)	(0.052)	(0.052)
Survey design controls						
Position of applicant profile within set of four applicant profiles		0.105	0.103		-0.017	0.001
		(0.105)	(0.108)		(0.154)	(0.148)
Applicant profile matching high-level position in firm		0.207***	0.202***		0.163*	0.162
		(0.055)	(0.057)		(0.097)	(0.098)
Respondent received support letter		0.136	0.097		-0.132	-0.206
		(0.118)	(0.117)		(0.186)	(0.170)
Respondent controls						
Age of respondent			-0.017***			-0.005
			(0.005)			(0.008)
Female respondent			0.111			0.194
			(0.118)			(0.172)
Respondent born in Switzerland			-0.298			-0.465*
			(0.183)			(0.257)
Educational career of respondent						
General education			Ref.			Ref.
Mixed education			-0.268*			-0.029
			(0.153)			(0.217)
VPET			-0.285**			-0.196
			(0.142)			(0.239)
Number of recruitment processes in last five years						
1-5			Ref.			Ref.
6-10			0.086			-0.161
			(0.167)			(0.247)
11-25			0.185			-0.113
			(0.170)			(0.269)
>25			0.103			0.002
			(0.180)			(0.267)
Respondent working in HR			-0.142			-0.268
			(0.129)			(0.227)
Firm size						
<10 employees			0.000			0.000
			(.)			(.)
10-49 employees			-0.090			0.404
			(0.198)			(0.332)
50-249 employees			-0.144			0.338
			(0.225)			(0.324)
250+ employees			-0.230			0.226

	Sales Manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
			(0.244)			(0.347)
Region of firm in Switzerland						
Région lémanique			Ref.			Ref.
Espace Mittelland			0.261			0.585
			(0.331)			(0.441)
Northwestern Switzerland			0.509			0.219
			(0.335)			(0.477)
Zurich			0.192			0.632
			(0.334)			(0.430)
Eastern Switzerland			0.380			0.552
			(0.327)			(0.433)
Central Switzerland			0.397			0.455
			(0.339)			(0.442)
Ticino			0.017			-0.205
			(0.575)			(0.904)
Industry of firm						
Agriculture, forestry and fishing			Ref.			Ref.
Mining and quarrying			1.094			
			(0.803)			
Manufacturing/production of goods			-0.335			-0.169
			(0.480)			(0.720)
Energy supply			0.056			-0.073
			(0.645)			(0.766)
Water supply; sewage and waste disposal and pollution abatement			-0.930			0.866
			(0.661)			(1.032)
Construction/building			-0.095			-0.207
			(0.480)			(0.703)
Wholesale and retail trade; repair of motor vehicles and motorcycles			-0.183			-0.151
			(0.483)			(0.836)
Transport and storage			0.353			-1.919
			(0.569)			(1.325)
Hospitality/accommodation and gastronomy			0.267			0.572
			(0.514)			(0.742)
Information and communication			-0.115			0.216
			(0.506)			(0.676)
Provision of financial and other services			0.473			-0.319
			(0.526)			(0.746)
Real estate and housing			0.243			-0.374
			(0.530)			(1.390)
Provision of professional, scientific and technical services			0.291			-0.719
			(0.567)			(0.714)

	Sales Manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Provision of other services			-0.366			-0.056
			(0.532)			(0.728)
Public administration, defense, social security			0.141			-0.171
			(0.471)			(0.740)
Education and teaching			-0.132			0.082
			(0.881)			(0.745)
Health and social services			0.058			-0.406
			(0.506)			(0.854)
Art, entertainment and recreation			1.241**			0.175
			(0.536)			(0.818)
Other services			-0.129			-0.217
			(0.541)			(0.771)
Firm is internationally active			0.053			-0.218
			(0.141)			(0.224)
Items on knowledge about further and higher education						
I am well informed about opportunities for further qualification after compulsory education.			0.144			0.313*
			(0.093)			(0.162)
I know the various Professional Education and Training (PET) degrees well.			-0.064			-0.214*
			(0.081)			(0.121)
I know the difference between the Master of Advanced Studies and the Master of Arts/Science.			0.104**			-0.066
			(0.052)			(0.083)
A tertiary degree (PET or university) is increasingly necessary to obtain higher positions.			0.193***			0.060
			(0.060)			(0.106)
A continuing education course is increasingly necessary to obtain higher positions			-0.005			0.322***
			(0.066)			(0.124)
Constant	7.006***	6.265***	5.961***	7.812***	7.471***	5.954***
	(0.150)	(0.262)	(0.763)	(0.206)	(0.410)	(1.279)
Std. Dev. random intercept	1.650***	1.633***	1.560***	1.682***	1.673***	1.537***
	(0.071)	(0.068)	(0.067)	(0.116)	(0.114)	(0.104)
Std. Dev. residual	1.053	1.053	1.054	0.942	0.942	0.942
	(0.053)	(0.053)	(0.053)	(0.079)	(0.079)	(0.079)
N of observations	1,918	1,918	1,918	778	778	778
N of respondents	1,216	1,216	1,216	491	491	491
Log-likelihood	-3,762.496	-3,752.848	-3,711.055	-1,490.587	-1,488.374	-1,454.603

Notes: Table displays results of random intercept regressions with robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively.

Table 18: Full results table for regression models in Table 8 (H3b)

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent variable: (log) monthly salary)						
Academic tertiary degree (bachelor's & master's degrees)	Ref.	Ref.	Ref.	Ref.	Ref.	Ref.
Academic tertiary (bachelor's) degree + MAS	0.015***	0.010*	0.011**	0.013***	0.010	0.012*
	(0.002)	(0.005)	(0.005)	(0.004)	(0.006)	(0.006)
Applicant controls						
Upper-secondary VET of applicant	0.013***	0.002	0.004	0.018***	0.012	0.015
	(0.003)	(0.012)	(0.012)	(0.004)	(0.016)	(0.015)
Female applicant	0.001	0.001	0.001	-0.004	-0.004	-0.005
	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)
Volunteering applicant	0.004	0.004	0.004	-0.006	-0.006	-0.006
	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.005)
Occupation-specific work experience of applicant	0.008***	0.008***	0.008***	0.003	0.003	0.003
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)
General work experience of applicant	0.016***	0.016***	0.016***	0.018***	0.018***	0.017***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)
Survey design controls						
Position of applicant profile within set of four applicant profiles		0.006	0.005		0.003	0.001
		(0.006)	(0.006)		(0.008)	(0.008)
Applicant profile matching high-level position in firm		0.035***	0.007		0.048***	0.018*
		(0.006)	(0.005)		(0.010)	(0.009)
Respondent received support letter		-0.009	-0.006		0.004	0.011
		(0.014)	(0.011)		(0.022)	(0.019)
Respondent controls						
Age of respondent			0.000			-0.001
			(0.001)			(0.001)
Female respondent			-0.032**			-0.021
			(0.013)			(0.020)
Respondent born in Switzerland			0.011			-0.013
			(0.022)			(0.024)
Educational career of respondent						
General education			Ref.			Ref.
Mixed education			0.001			-0.033
			(0.016)			(0.021)
VPET			-0.055***			-0.077***
			(0.016)			(0.023)
Number of recruitment processes in last five years						
1-5			0.000			0.000
			(.)			(.)
6-10			0.030*			-0.000

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
			(0.016)			(0.025)
11-25			0.031*			0.013
			(0.018)			(0.027)
>25			0.023			0.069**
			(0.018)			(0.027)
Respondent working in HR			0.041***			-0.008
			(0.013)			(0.023)
Firm size						
<10 employees			0.000			0.000
			(.)			(.)
10-49 employees			0.040**			0.024
			(0.020)			(0.032)
50-249 employees			0.088***			0.079**
			(0.022)			(0.034)
250+ employees			0.130***			0.135***
			(0.026)			(0.038)
Region of firm in Switzerland						
Région lémanique			Ref.			Ref.
Espace Mittelland			0.121***			0.167***
			(0.032)			(0.046)
Northwestern Switzerland			0.120***			0.180***
			(0.033)			(0.052)
Zurich			0.158***			0.207***
			(0.032)			(0.049)
Eastern Switzerland			0.120***			0.181***
			(0.032)			(0.051)
Central Switzerland			0.122***			0.206***
			(0.033)			(0.050)
Ticino			-0.116*			-0.063
			(0.070)			(0.087)
Industry of firm						
Agriculture, forestry and fishing			Ref.			Ref.
Mining and quarrying			0.067			
			(0.086)			
Manufacturing/production of goods			0.095**			-0.011
			(0.043)			(0.052)
Energy supply			0.125*			0.138**
			(0.067)			(0.058)
Water supply; sewage and waste disposal and pollution abatement			0.146***			0.074
			(0.052)			(0.117)
Construction/building			0.058			0.001

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
			(0.044)			(0.051)
Wholesale and retail trade; repair of motor vehicles and motorcycles			0.067			0.095
			(0.045)			(0.063)
Transport and storage			0.061			0.118*
			(0.058)			(0.066)
Hospitality/accommodation and gastronomy			-0.057			0.013
			(0.049)			(0.079)
Information and communication			0.126**			0.085
			(0.056)			(0.052)
Provision of financial and other services			0.147***			0.123*
			(0.055)			(0.063)
Real estate and housing			0.109*			0.044
			(0.057)			(0.130)
Provision of professional, scientific and technical services			0.049			-0.004
			(0.058)			(0.049)
Provision of other services			0.068			0.113**
			(0.049)			(0.055)
Public administration, defense, social security			0.181***			0.132**
			(0.044)			(0.053)
Education and teaching			0.132			-0.002
			(0.082)			(0.062)
Health and social services			0.043			-0.003
			(0.055)			(0.066)
Art, entertainment and recreation			-0.006			-0.084
			(0.060)			(0.065)
Other services			0.046			-0.037
			(0.049)			(0.061)
Firm is internationally active			0.036**			-0.013
			(0.015)			(0.024)
Items on knowledge about further and higher education						
I am well informed about opportunities for further qualification after compulsory education.			-0.003			0.006
			(0.010)			(0.016)
I know the various Professional Education and Training (PET) degrees well.			0.007			-0.011
			(0.008)			(0.011)
I know the difference between the Master of Advanced Studies and the Master of Arts/Science.			0.014***			0.013
			(0.005)			(0.008)
A tertiary degree (PET or university) is increasingly necessary to obtain higher positions.			0.020***			0.007
			(0.006)			(0.009)
A continuing education course is increasingly necessary to obtain higher positions.			-0.002			-0.004
			(0.007)			(0.010)
Constant	8.829***	8.736***	8.378***	8.948***	8.812***	8.641***
	(0.009)	(0.021)	(0.076)	(0.015)	(0.036)	(0.113)
Std. Dev. random intercept	0.205***	0.202***	0.164***	0.202***	0.196***	0.160***

	Sales manager			Head IT		
	(1)	(2)	(3)	(4)	(5)	(6)
	(0.005)	(0.005)	(0.004)	(0.007)	(0.007)	(0.006)
Std. Dev. residual	0.041***	0.041***	0.041***	0.045***	0.045***	0.045***
	(0.002)	(0.002)	(0.002)	(0.004)	(0.004)	(0.004)
N of observations	1,707	1,707	1,707	677	677	677
N of respondents	1,082	1,082	1,082	427	427	427
Log-likelihood	1,056.441	1,074.679	1,288.432	401.847	414.235	497.263

Notes: Table displays results of random intercept regressions with robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively.

Appendix III: Robustness Tests

Table 19: Fixed-effects regressions 'likelihood for job interview' by position

	Sales manager						Head of IT					
Dependent variable: likelihood for job interview (1-10)												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Professional tertiary degree	*Ref.*	*Ref.*					*Ref.*	*Ref.*				
Professional tertiary degree + MAS	0.174***	0.221**					0.490***	0.404**				
	(0.046)	(0.100)					(0.083)	(0.158)				
Academic tertiary degree (bachelor's) + MAS			*Ref.*	*Ref.*					*Ref.*	*Ref.*		
Professional tertiary degree + MAS			0.260***	0.237***					0.153*	0.192*		
			(0.057)	(0.074)					(0.082)	(0.117)		
Academic tertiary degree (bachelor's & master's degrees)					*Ref.*	*Ref.*					*Ref.*	*Ref.*
Academic tertiary (bachelor's) degree + MAS					0.138**	0.074					0.049	0.173
					(0.058)	(0.129)					(0.087)	(0.159)
Constant	7.716***	7.798***	7.669***	7.528***	6.919***	6.824***	7.224***	7.049***	7.525***	7.713***	7.900***	8.084***
	(0.128)	(0.178)	(0.154)	(0.285)	(0.164)	(0.243)	(0.193)	(0.311)	(0.225)	(0.349)	(0.224)	(0.313)
Applicant controls												
Upper-secondary VET of applicant	0.109	0.269	0.117	-0.013	0.192***	0.039	0.325***	0.015	0.137	0.331	0.245***	0.564
	(0.067)	(0.282)	(0.073)	(0.229)	(0.068)	(0.281)	(0.111)	(0.476)	(0.116)	(0.363)	(0.090)	(0.383)
Female applicant	0.027	0.018	0.147**	0.138**	0.199***	0.202***	-0.079	-0.058	0.066	0.081	0.066	0.064
	(0.061)	(0.062)	(0.066)	(0.067)	(0.070)	(0.070)	(0.101)	(0.105)	(0.090)	(0.094)	(0.097)	(0.097)
Volunteering applicant	0.051	0.052	0.080	0.086	0.136**	0.137**	0.172*	0.169	0.055	0.053	0.021	0.019
	(0.056)	(0.056)	(0.069)	(0.070)	(0.068)	(0.068)	(0.104)	(0.105)	(0.093)	(0.093)	(0.111)	(0.111)
General work experience of applicant	0.089**	0.095**	0.122***	0.122***	0.206***	0.207***	0.156***	0.143**	0.138*	0.141*	0.028	0.025

	(0.036)	(0.037)	(0.043)	(0.043)	(0.044)	(0.044)	(0.060)	(0.061)	(0.072)	(0.073)	(0.065)	(0.065)
Occupation-specific work experience of applicant	0.040	0.041	0.072	0.074	0.109**	0.111**	-0.001	0.001	0.145**	0.145**	-0.067	-0.072
	(0.039)	(0.039)	(0.045)	(0.045)	(0.048)	(0.048)	(0.055)	(0.055)	(0.058)	(0.058)	(0.058)	(0.058)
Survey design controls												
Position of applicant profile within four rated profiles		-0.072		0.067		0.083		0.139		-0.097		-0.165
		(0.120)		(0.113)		(0.147)		(0.198)		(0.163)		(0.185)
No. of observations	1,944	1,944	1,913	1,913	1,918	1,918	793	793	782	782	778	778
No. of groups	1,220	1,220	1,218	1,218	1,216	1,216	494	494	496	496	491	491
Log-Likelihood	-1560.444	-1559.869	-1795.109	-1794.702	-1858.241	-1857.776	-701.242	-700.464	-680.272	-679.828	-676.156	-675.126

Notes: Table displays fixed effects regressions for models with dependent variable 'likelihood for job interview' with robust standard errors in parentheses. Models (1) through (6) display results for the position 'Sales Manager', while models (7) through (12) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively.

Table 20: Fixed-effects regressions '(log) monthly salary' by position

	Sales manager						Head of IT					
Dependent variable: (log) monthly salary												
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Professional tertiary degree	*Ref.*	*Ref.*					*Ref.*	*Ref.*				
Professional tertiary degree + MAS	0.022***	0.010***					0.031***	0.015**				
	(0.002)	(0.003)					(0.004)	(0.007)				
Academic tertiary degree (bachelor's) + MAS			*Ref.*	*Ref.*					*Ref.*	*Ref.*		
Professional tertiary degree + MAS			0.003	0.001					-0.002	-0.004		
			(0.003)	(0.003)					(0.004)	(0.005)		
Academic tertiary degree (bachelor's & master's degrees)					*Ref.*	*Ref.*					*Ref.*	*Ref.*
Academic tertiary (bachelor's) degree + MAS					0.015***	0.009					0.013***	0.011
					(0.002)	(0.006)					(0.004)	(0.007)
Constant	8.838***	8.817***	8.882***	8.860***	8.828***	8.820***	8.925***	8.893***	8.963***	8.953***	8.944***	8.941***

	(0.005)	(0.007)	(0.008)	(0.012)	(0.007)	(0.010)	(0.010)	(0.016)	(0.012)	(0.019)	(0.010)	(0.015)
Applicant controls												
Upper-secondary VET of applicant	0.012***	-0.027***	0.009***	-0.011	0.012***	-0.001	0.026***	-0.029	0.016***	0.005	0.018***	0.013
	(0.003)	(0.010)	(0.003)	(0.009)	(0.003)	(0.012)	(0.006)	(0.021)	(0.005)	(0.016)	(0.004)	(0.017)
Female applicant	-0.006**	-0.003	0.001	-0.000	0.001	0.001	0.001	0.005	-0.002	-0.003	-0.006	-0.006
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.006)	(0.006)	(0.004)	(0.004)	(0.005)	(0.005)
Volunteering applicant	-0.002	-0.002	-0.002	-0.002	0.004	0.004	0.002	0.001	-0.005	-0.004	-0.003	-0.003
	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.005)	(0.005)	(0.004)	(0.004)	(0.006)	(0.006)
General work experience of applicant	0.007***	0.006***	0.001	0.001	0.009***	0.009***	0.006*	0.004	0.009***	0.009***	0.004	0.004
	(0.002)	(0.002)	(0.003)	(0.003)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Occupation-specific work experience of applicant	0.014***	0.014***	0.009***	0.009***	0.016***	0.016***	0.015***	0.016***	0.011***	0.011***	0.018***	0.018***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)
Survey design controls												
Position of applicant profile within four rated profiles		0.018***		0.010**		0.007		0.025***		0.006		0.003
		(0.004)		(0.005)		(0.006)		(0.009)		(0.007)		(0.009)
No. of observations	1,743	1,743	1,718	1,718	1,710	1,710	682	682	675	675	677	677
No. of groups	1,093	1,093	1,089	1,089	1,084	1,084	430	430	428	428	427	427
Log-Likelihood	4175.107	4193.531	3818.295	3823.277	3894.801	3896.851	1463.325	1472.704	1557.413	1558.097	1471.849	1471.951

Notes: Table displays fixed effects regressions for models with dependent variable '(log) monthly salary' with robust standard errors in parentheses. Models (1) through (6) display results for the position 'Sales Manager', while models (7) through (12) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively.

Appendix IV: Internal Validity

Table 21: Random intercept regression with time variables 'likelihood for job interview'

	Sales Manager			Head of IT		
Dependent variable: likelihood for job interview (1-10)						
	(1)	(2)	(3)	(4)	(5)	(6)
Professional tertiary degree	*Ref.*			*Ref.*		
Professional tertiary degree + MAS	0.189**			0.426***		
	(0.081)			(0.127)		
Academic tertiary degree (bachelor's) + MAS		*Ref.*			*Ref.*	
Professional tertiary degree + MAS		-0.230***			-0.145	
		(0.066)			(0.106)	
Academic tertiary degree (bachelor's & master's degrees)			*Ref.*			*Ref.*
Academic tertiary (bachelor's) degree + MAS			0.054			0.079
			(0.099)			(0.132)
Constant	5.580***	5.823***	6.112***	4.387***	5.416***	6.101***
	(0.669)	(0.727)	(0.780)	(1.159)	(1.239)	(1.234)
Time to evaluate applicant profile 1	0.002	0.003**	0.003**	0.003	-0.002	-0.008
	(0.002)	(0.002)	(0.001)	(0.011)	(0.008)	(0.008)
Time to evaluate applicant profile 2	0.013	0.011	0.014*	0.137**	0.063	0.065
	(0.008)	(0.007)	(0.008)	(0.062)	(0.086)	(0.095)
Time to evaluate applicant profile 3	-0.035***	-0.034***	-0.037***	0.044	0.040	0.042
	(0.004)	(0.007)	(0.003)	(0.030)	(0.037)	(0.032)
Time to evaluate applicant profile 4	0.023	0.019	0.040	-0.017	0.143	0.053
	(0.022)	(0.021)	(0.029)	(0.158)	(0.168)	(0.190)
Full set of control variables	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	1,886	1,852	1,857	764	755	751
No. of groups	1,181	1,179	1,177	477	479	474
Log-Likelihood	-3434.604	-3512.794	-3580.158	-1427.343	-1398.206	-1396.746

Notes: Table displays results of random intercept regressions with robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively. Each model includes the full set of control variables (as defined in Table 11 and Table 12).

Table 22: Random intercept regression with time variables '(log) monthly salary'

	Sales Manager			Head of IT		
Dependent variable: (log) monthly salary						
	(1)	(2)	(3)	(4)	(5)	(6)
Professional tertiary degree	*Ref.*			*Ref.*		
Professional tertiary degree + MAS	0.012***			0.022***		
	(0.003)			(0.007)		
Academic tertiary degree (bachelor's & master's degrees)		*Ref.*			*Ref.*	
Academic tertiary (bachelor's) degree + MAS		-0.001			0.002	
		(0.003)			(0.005)	
Academic tertiary bachelor's degree + academic tertiary master's degree			*Ref.*			*Ref.*
Academic tertiary bachelor's degree + MAS			0.011*			0.014**
			(0.006)			(0.006)
Constant	8.356***	8.397***	8.345***	8.605***	8.656***	8.629***
	(0.072)	(0.074)	(0.078)	(0.118)	(0.120)	(0.120)
Time to evaluate applicant profile 1	0.001***	0.001***	0.001***	0.000*	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Time to evaluate applicant profile 2	0.000	0.000	0.000	0.005	0.001	-0.000
	(0.001)	(0.001)	(0.001)	(0.006)	(0.005)	(0.005)
Time to evaluate applicant profile 3	0.003	0.005	0.005*	0.004***	0.003**	0.003***
	(0.003)	(0.003)	(0.003)	(0.001)	(0.001)	(0.001)
Time to evaluate applicant profile 4	0.010***	0.013***	0.010***	0.033**	0.040***	0.048***
	(0.004)	(0.004)	(0.003)	(0.014)	(0.014)	(0.013)
Full set of control variables	Yes	Yes	Yes	Yes	Yes	Yes
No. of observations	1,673	1,634	1,631	656	646	648
No. of groups	1,054	1,047	1,039	414	413	409
Log-Likelihood	1386.295	1197.266	1241.550	493.534	516.635	489.974

Notes: Table displays results of random intercept regressions with robust standard errors in parentheses. Models (1) through (3) display results for the position 'Sales Manager', while models (4) through (6) display results for the position 'Head of IT'. *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively. Each model includes the full set of control variables (as defined in Table 11 and Table 12).

Table 23: Pairwise correlation of applicant profile variables

	Applicant profile variable	1	2	3	4	5	6	7	8	9
1	Tertiary and continuing education General category with five levels	1								
2	Tertiary and continuing education: Professional Tertiary + MAS (vs. Vocational Tertiary)	-	1							
3	Tertiary and continuing education: Professional Tertiary + MAS (vs. Academic Tertiary + MAS)	-	-	1						
4	Tertiary and continuing education: Academic tertiary (bachelor's) + MAS (vs. academic tertiary bachelor's + academic tertiary master's)	-	-	-	1					
5	Upper-secondary education	0.0234	-0.0216	-0.0211	0.0048	1				
6	Gender	0.0159	-0.0290*	-0.0042	0.0266	-0.0120	1			
7	Social skills	0.0218	0.0067	-0.0090	-0.0343*	0.0019	-0.0055	1		
8	*General work experience*	-0.0257**	-0.0052	-0.0461**	0.0080	-0.0054	-0.0069	-0.0008	1	
9	*Occupation-specific work experience*	0.0053	0.0030	0.0048	-0.0068	0.0013	0.0185	0.0013	0.0096	1

Notes: *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively. We indicate the Pearson's correlation coefficient for metric variables (in Italic), and the Cramér's V measure for categorical variables.

Table 24: Pairwise correlations of applicant profile variables and respondent-level variables

Variables	Vocational Tertiary + MAS (vs. Vocational Tertiary)	Vocational Tertiary + MAS (vs. Academic Tertiary + MAS)	Bachelor's + MAS (vs. bachelor's + master's)	Upper-secondary education	Gender	Applicant volunteers	*General work experience*	*Occupation-specific work experience*
Respondent born in CH	0.0067	-0.0211	-0.0072	-0.0006	0.0019	0.0005	0.0084	-0.0014
Age of respondent	-0.0126	0.0066	0.0089	-0.0001	0.0013	0.0003	0.0005	-0.0044
Educational career respondent	0.0082	0.0116	0.0109	0.0038	0.0035	0.0003	0.0046	0.0106
Female respondent	0.0094	-0.0090	-0.0064	-0.0016	-0.0007	-0.0014	-0.0033	-0.0102
Respondent working in HR	-0.0010	-0.0030	-0.0033	-0.0030	-0.0001	0.0008	0.0007	-0.0068
Item on education 1	-0.0134	-0.0111	0.0057	-0.0027	0.0015	-0.0006	0.0040	0.0012
Item on education 2	0.0019	-0.0050	0.0011	-0.0031	0.0014	-0.0008	-0.0036	0.0003
Item on education 3	0.0048	-0.0139	-0.0064	-0.0036	0.0002	-0.0013	0.0032	-0.0048
Item on education 4	-0.0110	0.0086	0.0193	-0.0030	0.0000	-0.0007	0.0039	-0.0055
Item on education 5	-0.0154	-0.0085	0.0019	-0.0020	0.0008	-0.0002	-0.0025	0.0024
Firm size	0.0107	0.0133	0.0153	0.0059	0.0022	0.0020	0.0050	-0.0118
Region of firm in CH	0.0277	0.0227	0.0237	0.0026	0.0018	0.0009	-0.0020	-0.0059
Industry of firm	0.0314	0.0367	0.0407	0.0046	0.0044	0.0018	-0.0011	-0.0020
Internationally active firm	0.0018	0.0030	-0.0103	-0.0030	0.0003	0.0002	-0.0076	-0.0041

Notes: *, **, *** denote significance at the 10%, 5%, and 1%-level, respectively. We indicate the Pearson's correlation coefficient for metric variables (in Italic), and the Cramér's V measure for categorical variables. Items on education 1-5 refer to the items measuring knowledge about the higher and continuing education system in Switzerland. Refer to Appendix II to see the items in full length.

Appendix V: External Validity

Table 25: Compare sample characteristics to survey population

	Population of training firms in Switzerland (N=191'973)	Contacted sample (N=49,906)	Responding sample (N=2'384)
Gender of respondent			
Female	*No information*	50.15%	42.45%
Male	*No information*	38.66%	45.02%
No indication	*No information*	11.19%	12.53%
Total		100.00%	100.00%
Language region of respond-ent			
German-speaking Switzerland	*No information*	76.14%	84.33%
French-/Italian-speaking regions	*No information*	17.05%	7.02%
No indication	*No information*	6.81%	8.65%
Total		100.00%	100.00%
Firm size			
<10	25.62%	*No information*	13.72%
10-49	35.64%	*No information*	37.34%
50-249	25.56%	*No information*	30.43%
250+	13.18%	*No information*	18.51%
No indication	0.00%	*No information*	6.06%
Total	100.00%		100.00%
Region of firm in Switzerland			
Région lémanique	14.03%	11.07%	4.72%
Espace Mittelland	23.5%	19.42%	19.01%
North-western Switzerland	13.55%	12.11%	13%
Zürich	17.89%	17.79%	21.16%
Eastern Switzerland	16.66%	18.44%	19.94%
Central Switzerland	12.32%	12.79%	13.37%
Ticino	3.24%	3.08%	0.71%
No indication	0.00%	5.3%	8.09%
Total	100.00%	100.00%	100.00%

Notes: Table comparing factorial survey sample to population. Data on the population of firms that train appren-tices stems from the Swiss Federal Statistical Office (FSO, 2019a, 2019b).

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