Job and Employment Insecurity in Early Careers: Investigating the Vocational Education Premium

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Laura Alexandra Helbling

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2. Helbling, Laura. 2016. "Fixed-term jobs after vocational education and training in Switzerland: Stepping stone or impediment?"
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4. Buchs, Helen, and Laura Helbling[1]. 2016. "Job opportunities and school-to-work transitions in occupational labour markets. Are occupational change and unskilled employment after vocational education interrelated?". *Empirical Research in Vocational Education and Training, 2016,* 8(17), doi: 10.1186/s40461-016-0044-x.

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[1] Helen Buchs and Laura Helbling have contributed equally to this article and share equal authorship.

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Contents

Introduction

Gainful employment and labour market integration is of the utmost importance in contemporary societies, where living standards are secured through money, and where for the vast majority of people money is mainly available through wage labour. Occupational positions together with employment income determine the social and economic standing of individuals and households in broader society to a great extent. Through as well as beyond monetary resources, labour market integration is connected to quality of life, influencing aspects such as life satisfaction, health, social recognition and appreciation, which also shape self-image (Levy 2013).

Over the past decades, flexible forms of work deviating from standard employment have increased, and greater flexibilisation and deregulation are characteristic of recent changes in the world of work (see e.g., Kalleberg 2006). Workers who at one time would have been well integrated, in current times again face insecurity concerning their occupational and social integration (Castel 2008), raising concerns about the integrational power of wage labour (Bonss 2001). This growth of insecurity around employment is described as one of the most important trends over the past decades (ILO 2011, 1) and has become "a core contemporary concern within politics, in the media, and among researchers" (Kalleberg 2009, 1). As Bourdieu (1998) puts it, job insecurity is everywhere in high-income societies.

Despite increased educational attainment, transitions from school to work seem to be particularly affected by these recent trends (Blossfeld 2006; Blossfeld et al. 2008). Lacking bargaining power, young workers and labour market entrants in particular are affected by a deterioration of economic and employment conditions (Eurofound 2013), such that young people are regarded as the "losers" in the context of current macro-economic transformations and increased volatility of local markets in a globalised world (Blossfeld 2006, 163). As successful early career formation impacts future labour market integration (Dietrich and Abraham 2005) these early career "difficulties" can not only be regarded as temporary blemishes (Ellwood 1982) but have much more far-reaching consequences for the future economic and social establishment of the young. Unstable labour market integration at early career stages has, for example, been found to coincide with poor employment

prospects and low subjective well-being later in life. Similarly, first jobs with poor career prospects may lock entrants into segments with little opportunity for professional development (see e.g. Bell and Blanchflower 2011; Blossfeld 1985).

Macro-economic transformations towards increased labour market insecurities do not yet uniformly affect the settlement of young people in advanced economies, as national institutional settings, acting as institutional filters, mitigate or aggravate such risks for labour market entrants (Blossfeld 2006).

Theorising and investigating social stratification as an institutionally embedded process, the pioneering approach of societal analysis (Maurice, Sellier and Silvestre 1986) profoundly influenced sociological research on school to work transitions (see e.g. Allmendinger 1989; Müller and Shavit 1998; Kerckhoff 1995), drawing attention to the societal variation in relationships between educational qualifications, job allocation and occupational careers. While education has become the most crucial resource for labour market success across industrially advanced economies and sociological research has repeatedly pointed to the inter-generational transfer of advantage (Müller and Shavit 1998, 1) through the interrelation of social background and educational achievement, systematic differences in the relationship between educational qualifications and occupational outcomes exist. Institutional arrangements structure associations between social origin and educational attainment as well as connections between educational attainment and early and later labour force placements (Kerckhoff 1995, 323). The formation and allocation of human capital depends on the specific institutional configurations, within which the organisation of education differs and formal qualifications obtained carry different information for recruiting employers (Hillmert 2002). While in some institutional settings formal qualifications are valued by recruiting employers for their information on occupation-specific skills, in other settings they are recognised by employers as providing insight into a more general learning capacity of job applicants (Müller and Shavit 1998). Hence the very meaning of years of education accumulated and the degrees obtained for labour market placement and prospects differs across societal contexts (Allmendinger 19989, 248).

Drawing on institutionally sensitive sociological research on education systems (Allmendinger 1989; Müller and Shavit; Hillmert 2002; Kerckhoff 1995) and the concept of transition systems (Raffe 2008) derived therefrom, which defines a transition system as “the

relatively enduring features of a country's institutional and structural arrangements which shape transition processes and outcomes" (Raffe 2008, 278; Smyth et al. 2001, 19), this dissertation recognises school to work transitions as well as subsequent careers to be shaped by country-specific institutional settings. The education system, its links with the employment system and the structure of the labour market and job allocation regulate transitions from school to work and subsequent career outcomes and hence relate to the risk and specific configurations of job and employment insecurities in early careers.

As pathways to work are highly institutionalised for adolescents in countries with well-established vocational education and training (VET) systems (e.g., Buchmann 2011), where firm links between the education and employment system exist, comparatively smooth school to work transitions of the young who underwent vocational education and hence low youth unemployment have established themselves as the hallmark of VET. While in this regard VET may be seen as an institution preventing a significant channelling of job and employment insecurities to the early stage of career formation (Blossfeld 2006), tertiarisation, globalisation and increased macro-economic uncertainties as well as shifts towards a more knowledge-intensive economy and educational expansion pose new challenges for VET (see e.g. Baethge, Solga, and Wieck 2007; Schellenbauer et al. 2010; Weil and Lauterbach 2009). These should not be dismissed by portraying VET as a simple solution to the integration of young people into the contemporary changing world of work.

Focusing on Switzerland, a country with a strongly vocationally orientated transition system (Buchmann 2011), this dissertation engages with different job and employment insecurities VET graduates face. The empirical studies (articles 1-4, appendixes A-D) aim to contribute to the understanding of how changes in the world of work towards increased macro-level insecurities and non-standard careers impact the integration of vocationally trained young people in the institutional context of Switzerland. Article 1 (appendix A) draws on transition system research (Raffe 2008) and highlights the relatively lower risk of VET graduates of becoming engaged in non-standard work in the context of the strongly vocationally orientated Swiss transition system. Article 2 (appendix B) puts the focus on those vocationally skilled graduates who enter the labour market via fixed-term employment. Exploring whether jobs of a contractually limited duration impede wage development, the article sheds light on the heterogeneous effects of fixed-term entry-level jobs, highlighting

the importance of occupational status for outcomes. In the recent past, VET graduates have come to face increased hurdles at entry to the Swiss labour market as, for example, job requirements have increasingly rendered it more difficult for VET graduates to quickly gain a foothold (Salvisberg and Sacchi 2013; 2014). In addition to individual characteristics and social resources, which are well known to heighten or diminish the risk of early and later unemployment, the experience of early unemployment itself may be seen as a trigger event that as such diminishes future employment chances and career prospects in its own right. In this vein, article 3 (appendix C) investigates the longer term detrimental consequences of initial unemployment – so-called scarring effects – among VET graduates and shows that VET graduates experience scarred careers in the case of exposure to early unemployment. Article 4 (appendix D) engages with the peculiarities of an occupationally structured labour market such as that in Switzerland and the resulting risks of processes of occupational closure for the integration of VET graduates. While on the one hand VET is the basis for the occupationally segmented Swiss labour market allowing for a smooth integration of VET graduates, on the other hand they crucially depend on good labour demand in the occupational fields they were trained in at entry as otherwise they lack an institutionalised pathway to skilled employment. In article 5 (appendix E), the focus of this dissertation is expanded to include an investigation of how a more insecure macro-economic system and perceived job insecurities – which cut across educational groups – relate to the life-satisfaction trajectories of workers in the German labour market.

This framework document provides the reader with details of the discourse, theoretical considerations and the state of research the empirical studies (Appendixes A-E) draw upon.
First, recent changes towards decreases in job and employment securities in advanced economies are outlined (chapter 1), where, in short, *job security* refers to the security of maintaining a particular job with the current employer, and *employment security* relates to the continuity of employment, irrespective of the maintenance of a specific current job and position (see e.g., Chung 2015; European Commission 2007)[2]. It is highlighted that young people in particular are affected by increased job and employment insecurities in early

[2] Continuous employment may exist despite the experience of job insecurity and job loss, which is, for example, the case if one can quickly gain another position. In this, employment insecurity is more closely related to the risk and actual experience of unemployment. Employment security, as used in the following explications, is not only thought of as continuity in employment but also entails the potential for re-gaining a position of similar or better quality (see also European Commission 2007).

career (chapter 2). Non-standard forms of work have increased in the recent past and debates place these workers as holding more volatile positions than others. However, these forms of work cannot simply be categorised as bad and risky secondary labour: they are a mercurial phenomenon (Bühlmann 2013) and an evaluation of their socio-economic consequences is complex. In this regard, competing hypotheses on the consequences of non-standard work for the integration of young people circulating in the literature – such as "dead-end" versus "stepping stone" expectations – are briefly introduced in chapter 2.1. In terms of young people experiencing early career unemployment, however, theoretical expectations of the consequences for their careers are less contradictory and bleaker. In this regard, the focus of chapter 2.2 is on diverse interdisciplinary perspectives such as economic theories of signalling (Spence 1973), statistical discrimination (Aigner and Cain 1977), human capital (Becker 1964; Pissarides 1992) as well as psychological explanations (Goldsmith et al. 1997; 1996) of why unemployment experiences may have long-lasting detrimental consequences for the careers of young people.

In addition to individual and social resources that are crucial in determining early and later career outcomes at the individual level, the exposure of young people to job and employment insecurities in early career varies at an aggregate level across national institutional contexts.

Leaning on the pioneering work of societal analysis (Maurice et al. 1986) and sociological transition system research (e.g. Raffe 2008; Allmendinger 1989; Müller and Shavit 1998; Hillmert 2002), chapter 3 describes and compares vocationally oriented to more comprehensive transition systems and their structuring imprint on job and employment insecurities in early career.

Moving away from this more general theoretical and empirical background, chapter 4 then focuses more specifically on the context of Switzerland. First, the macro-economic environment and labour market insecurities in Switzerland are briefly outlined (4.1), followed by some facts on the vocational orientation of the Swiss education system (4.2). In a further chapter (4.3) the debate and concerns regarding the integrational power of VET in the future are highlighted. The sections on Switzerland are intended to give an introduction to the background against which the empirical research – focusing on different aspects of job and employment insecurities VET graduates face in Switzerland – was pursued. Following this, the empirical studies, which form the core of this dissertation (see appendixes A-E), are

briefly introduced (chapter 5) and the data as well as the methods that were used are presented. Finally, the empirical results are summarised and the implications of the results are discussed in chapter 6. Chapter 7 then highlights the main contributions of the thesis and makes concluding remarks.

1. Debates, Trends and Concerns: Rising Job and Employment Insecurity in Advanced Economies

From standardisation to de-standardisation: a brief account

The *Golden Age* post-war period (referring to the benchmark years of 1945/50 to about 1973) was characterised by historically exceptional economic growth and almost full employment for European economies. The bargaining power of employees was strengthened and real wages increased (Crafts and Toniolo 1996; Marglin and Schor 1990). There was an extension of scope in welfare state spending and social insurance coverage for risks such as industrial accidents, sickness (invalidity), old age and unemployment in Western Europe (Flora and Alber 1981; Kohl 1981; Heclo 1981). The extensive organisation of work in the form of standard employment ("Normalarbeitsverhältnis") – the traditional male breadwinner model encompassing permanent, full-time wage labour[3] (e.g. Meier 2014) - guaranteed stable labour market integration and economic security for the majority of workers (in particular for the male workforce) in advanced economies during the post-war period. This employment model was established as the dominant form of work throughout this period (e.g. Koch and Fritz 2013; Eichhorst and Marx 2009) and European welfare systems came to be based on the concept of male breadwinning in standard employment (Meier 2014, 9-10). Allowing for long-term occupational and familial planning by guaranteeing formal employment, standard work arrangements also became established as a (normative) benchmark, shaping social notions of "normal" and "good" work (Krämer 2008; Hardering 2010, 54-56).

Starting in the 1970s, after the exceptionally prosperous post-war period, the European area experienced a slowing of economic growth (Crafts and Toniolo 1996) and structural

[3] There are different definitions of standard employment. While in most cases standard employment is defined as dependent, permanent, full-time wage labour, other definitions of standard employment also include elements such as collectively set wages above subsistence level, integration into social insurance, the location of work at an employer`s site, or regular (daily and weekly) work hours (e.g. Hoffmann and Walwei 1998; Eichhorst and Marx 2009, 3; Birchmeier 2002; Hardering 2010, 54-55). Non-standard forms of employment (also referred to as 'atypical' employment) are negatively defined with respect to the standard employment relationship. Non-standard employment thus entails a heterogeneous conglomerate of different forms of work that deviate in one or several respects from a definition of what comprises standard work. Depending on the definition of standard employment, inclusions under 'non-standard' employment hence also vary to some extent in the literature. E.g. if standard employment is additionally defined in terms of location and regular working time, then atypical work may also entail work arrangements with irregular weekly working hours (weekend, night and shift work) or homework/ telework (e.g. Birchmeier 2002).

increases in unemployment (e.g. Blanchard 2005). In the context of ongoing economic difficulties, intensified global competition and greater unpredictability in local markets via global interdependencies, as well as tertiarisation and technological progress, demand for work to be arranged in the form of more flexible employment relations increased (Berg 2008; Kalleberg 2006; Crafts and Toniolo 1996; Hoffmann and Walwei 1998; Tregaskis et al. 1998; Atkinson 1985; Blossfeld 2006; Meier 2014; Prodolliet, Knöpfel, and Wälchli 2001). Formerly established standards, which had come to be taken for granted, came under increased pressure. Change towards more short-term forms of commitment and work relationships allowing for more flexible adjustments of labour input to increase labour productivity and to reduce unit labour costs, rather than long-term binding commitments with constant and invariable working hours, appeared on the agenda. From around the 1970s onwards, deregulation and flexibilisation characterise transformations in the world of work. In the light of decreasing chances for full employment and rising job and employment insecurities for greater shares of the workforce, concerns have been raised about the integrational power of wage labour. Projections of a *crisis of standard employment societies* (Bonss 2001) and the *erosion of standard employment relationships* (Diekmann and Jann 2005; Hoffmann and Walwei 1998) have since fed into controversial debate.

A glance at empirical evidence for flexibilisation and deregulation

Statistics support a rise in non-standard work arrangements[4], such as part-time work, fixed-term employment and temporary agency work, in several European and OECD countries (OECD 2002; 2010b; Gash and Inanc 2013; Storrie 2002; Arrowsmith 2006; Turmann 2006; De Grip, Hoevenberg and Willems 1997; Tregaskis et al. 1998)[5]. These non-standard forms of employment have been found to coincide with greater insecurity concerning stable labour market integration, worse career prospects and lower economic returns, suggesting their inferiority compared to standard employment (see e.g. OECD 2014; 2010b; 2002; Giesecke

[4] See footnote 3 for a brief definition of non-standard employment.

[5] The increase in part-time work over past decades can, in many countries, be explained to a great extent by increases in female labour force participation (OECD 2010b). With respect to growth patterns in temporary work, one may note that these vary greatly across countries in the OECD area, with, for example, a number of countries having experienced a sharp increase in the share of temporary employment (e.g. France, Italy, the Netherlands, Spain and Portugal) in 1985-2000, while others show no clear trend (see OECD 2002).

and Groß 2003; 2004; Booth, Francesconi and Frank 2002; Brehmer and Seifert 2007; Kalina and Weinkopf 2008).

There are reasons for the increase in non-standard forms of employment on the demand and on the supply side. While non-standard forms of work allow employers to adapt more quickly to fluctuations in demand, certain forms of atypical employment (e.g. part-time work) also more closely meet the needs of employees for greater flexibility, allowing a balance of work and family obligations, for example (De Grip et al. 1997, 52; Hoffmann and Walwei 1998; Tregaskis et al. 1998; Kalleberg 2006). Claiming labour institutions to be at the root of persistently high unemployment in European countries compared to lower unemployment in the more flexible U.S. labour market, labour market deregulation has also been pushed by governments, (e.g. Freeman 2005; Howell et al. 2007; Kalleberg 2006), giving employers new room for manoeuvre. In response to increased demand for more flexible forms of employment, and in the hope of lowering persistently high unemployment, (partial) reform strategies were imposed by governments in a number of European countries (mainly) in the 1990s. The use of temporary contracts and/or other marginal forms of work was eased (ILO 2012; OECD 2014; Eichhorst and Marx 2009; Cazes and Tonin 2010).

Expansion of social spending was accompanied by increasing deficits (e.g. Kohl 1981), and thus welfare state policy became subject to pressures for reform when sustained economic growth and full employment became increasingly less common[6] (e.g. Schmidt 2002). In several advanced economies, for example, a move from passive to more active labour market policies has been noted (Streckeisen 2012b), - or, distinguishing between types of active labour market policies, one may call it a move from active labour market policies aimed at upskilling towards the "activation" of those unemployed (Bonoli 2012). Introducing active labour market policies that are not targeted at upskilling, but instead favour integration into work no matter the quality of that work, can be seen as promoting entry into low-skilled employment (Bonoli 2012) and as playing an integral part in the expansion of marginal and insecure forms of work (Streckeisen 2012b).

[6] It has been argued that welfare states have proved rather resilient towards profound retrenchment or a dismantling (Pierson 1996).

Despite general trends towards a de-standardisation of work (Koch and Fritz 2013), empirical evidence shows that standard employment, defined as permanent, full-time work, is (though to varying degrees) still dominant compared to atypical forms of employment across European countries. There is also no unitary trend towards a continuous increase in the incidence of non-standard employment across advanced economies, nor are non-standard forms of work uniformly introduced at the expense of standard employment[7] (Allmendinger et al. 2012). Flexibilisation and deregulation have followed different institutional logics, such that the proportion of non-standard work arrangements and growth rates varies greatly between countries and industries (Schmeisser et al. 2012; Allmendinger, Hipp and Stuth 2013; Blossfeld et al. 2008; OECD 2002; De Grip et al. 1997; Gash and Inanc 2013; Muffels 2015; Kalleberg 2006). Given the empirical evidence, it is questionable whether the deterioration of standard employment is taking place at the pace and in the form of a high generalisability across industrially advanced economies that some discourses portraying a rapid crowding-out of standard employment would suggest[8].

[7] Generalised statements on the share and ongoing expansion (degradation) of non-standard (standard) employment are complicated as what is subsumed under non-standard work crucially depends on the definition of "the standard", which to some extent varies throughout the literature (see footnote 3).

[8] One should note, however, that flexibilisation of work is a broad term. Flexibility can be achieved by firms in differing ways and thus has many different faces. While, for example, *functional flexibility* refers to the redeployment of employees between activities and tasks encompassing retraining of workers, *numerical flexibility* refers to flexibility allowing for the quick and easy adjustment of work and workers to fluctuations in demand (Atkinson 1984; 1985). Further distinctions may be made between *internal and external flexibility* (e.g. Hohendanner and Bellmann 2006; Prodolliet et al. 2001, 23-24). Internal flexibility refers to in-plant adjustment practices including, for example, flexible working-time arrangements, which do not necessarily appear in labour market statistics for non-standard employment if standard employment is (as in this paragraph) simply defined as permanent, full-time work, encompassing such internally de-standardised working time patterns.
Further, increases in the presence of "cheap" alternative forms of work may also have an effect on the workforce in standard (permanent, full-time) employment. Despite being employed in standard employment, workers may face higher pressure trading (e.g. in the case of Germany) internal flexibility in terms of working time arrangements and potential monetary cuts against the maintenance of job security (Eichhorst and Marx 2011; Berg 2008; Seifert and Massa-Wirth 2005). From 2008 to 2013, tendencies towards a relaxation of regulations governing regular work are seen (particularly in OECD countries with stringent protection for regular work), so that job security may nowadays also decrease, to some extent, for those employed in standard forms of employment (OECD 2013; Dolado et al. 2002).

2. At Risk: Employment and Job Insecurities in Early Careers

Despite increased educational attainment, labour market entrants in particular encounter increasing difficulties in finding stable employment across the OECD (Eurofound 2013). They are often relegated to insecure jobs and are more prone to experience spells of unemployment during their transition period as they lack prior work experience, seniority, a lobby, as well as networks (Bukodi et al. 2006, 5; Buchmann 2011; Buchholz and Kurz 2005, I; Blossfeld 2006). Many young people trying to establish themselves in the labour market are left without gainful employment, and those who are employed are disproportionately affected by non-standard forms of work, such as fixed-term work, part-time employment and temporary agency work (Eurofound 2013; ILO 2012; OECD 2014; Eurostat 2009). Across OECD countries, adolescents are more vulnerable to unemployment compared to adults (see Scarpetta, Sonnet, and Manfredi 2010).

Higher youth unemployment compared to adult unemployment is on the one hand inherently related to the phase of education-employment transition, during which young people must search for matching jobs. On the other hand, employment prospects of young people in transition are highly sensitive to economic downturns. New hiring is often cut at the onset of a crisis, hindering young people in becoming established within the labour market. Young workers who have managed to gain a foothold in the labour market are also more likely to lose their jobs during economically weak periods, as their limited work experience is a smaller loss for firms. Young people are often portrayed as the ones *last-in* and *first-out* when the economy declines (Vandenberghe 2010: 4-5; Bell and Blanchflower 2011).

Evaluating the socio-economic consequences of flexibilised and de-standardised work, in which young people are overrepresented, is as yet a rather complex issue. Non-standard employment, in its many forms and guises, escapes a simple classification as “bad” work that leaves employees in more volatile and less rewarding positions. As Bühlmann (2013, 75) puts it, atypical work may be seen as a mercurial phenomenon that includes different potential situations, changing its social meaning with respect to specific configurations.

2.1 Insecure Jobs in Early Career: Eased Integration or Trap?

Evaluating the consequences of non-standard employment in the early career period, there are competing perspectives in the literature as to whether atypical forms of work ease school to work transitions for adolescents in current times of increased macro-economic insecurities and more risk-averse hiring strategies of employers and thus for young people may be seen as *stepping stones* into regular work, or whether they in fact hinder stable labour market integration and professional development of the young, proving to be *traps* (see e.g. Scherer 2004; Giesecke and Groß 2003; OECD 2014, 179 ff.).

In line with the *entrapment hypothesis*, there exist concerns that non-standard forms of work may simply be utilised by employers as they allow for the flexible and low-risk hiring of a buffer stock of peripheral workers onto whom market risks are shifted (Atkinson 1984; Kalleberg 2003). Employment relationships may be divided into open and closed positions. Besides sheltering from competitive market forces, closed positions are viewed as providing above-market wages as well as internal career ladders (Sørensen 1983; 2000). If resembling open positions, atypical work may not lead to secure core positions with good promotion prospects. Exposing incumbents to market forces, atypical work may evolve as a trap for young people, who may become faced with repeat cycles of non-standard forms of work and discontinuous careers interspersed with unemployment experiences. This viewpoint of atypical employment as entrapment is also supported when drawing on segmentation theories (e.g., Doeringer and Piore 1971), which posit a division of the labour market into primary and secondary segments, diverging in quality of work. Non-standard employment characterised by job insecurity is thought of as being located in secondary segments, providing low quality jobs and bad prospects for professional development. Once established within secondary segments, barriers on upward mobility into primary segments are assumed to exist, resulting in a lock-in effect hindering career advancement and improvements in employment integration (Doeringer and Piore 1971; Sengenberger 1979). In this regard, transiting from school into atypical work may be a bad start into work life.

Contradicting this view of entrapment, an opposing view is that part-time work, for example, may be regarded as allowing young people to gain work experience while studying (see e.g. OECD 2010b, Eurostat 2009), which may help them in finding stable employment after completion of education as they have already set foot into the labour market. Similarly, as

fixed-term contracts may be utilised as screening devices by employers (e.g., Giesecke and Groß 2006), the hypothesis of an *integration scenario* (Giesecke and Groß 2003) of temporary work for young people has been advanced. According to this scenario, contracts of limited duration allow new entrants to become established more easily within the labour market as they get the chance to prove themselves on the job. After a prolonged probation period, young people are thought to have good chances to become employed in a permanent position.

2.2 Scarring: Lasting Adverse Consequences of Early Career Instability[9]

In case young people experience unstable early careers interspersed with unemployment, this is regarded as a major risk factor for their subsequent labour market integration and professional development by different interdisciplinary theoretical perspectives. Employment discontinuities and unemployment in early work life may not only affect the establishment of young people within the labour market initially; they may also lead to longer-lasting adverse consequences threatening career advancement and future employment prospects of the young.

Besides individual characteristics and social resources that heighten the risk of unemployment exposure and persistence throughout the life course (Biewen and Steffes 2010), a vast body of literature suggests that the incidence of unemployment and employment instability *itself* – hindering human capital development, rendering people less attractive to prospect employers and impacting workers' job-search motivation and application behaviour through psychological effects (Brandt and Hank 2014, 728) - has an impact in its own right, diminishing the competitiveness and future employment prospects of those (formerly) unemployed. Several studies conducted across a number of countries with diverse institutional settings point towards persisting detrimental effects of early unemployment on young people's future careers and labour market integration as well as on their future subjective well-being (Nilsen and Holm Reiso 2011; Nordström Skans 2004; Luijkx and Wolbers 2009; Schmillen and Umkehrer 2013; Gregg and Tominey 2005; Bell and Blanchflower 2011). These longer-lasting adverse consequences of the experience of

[9] This section is based on a theoretical review of mechanisms driving scarring effects outlined in a Working Paper for the EU H2020 project Negotiate (see Helbling et al. 2015).

employment instability and unemployment on future employment outcomes have come to be known in the literature as *scarring effects*.

Diverse demand- as well as supply-side mechanisms, which have proven difficult to disentangle in their effects, are considered to be at a play driving scarring.

Demand-side mechanisms: employer discrimination

Demand-side mechanisms encompass employer-driven discriminatory practices in recruitment, which can make it difficult for individuals experiencing employment discontinuities to integrate or re-establish themselves within the labour market. Explaining discrimination, economic perspectives highlight the fact that the productivity and ability of job applicants is not known at hiring. Due to incomplete information at hiring, discrimination (defined as unequal remuneration for equal productivity across individuals or groups) may come to the fore as employers need to assess and proxy unknown productivity based on differential observable characteristics of potential hires, which then determines their hiring and wage setting decisions. Borrowing and extrapolating from *signalling theory* (Spence 1973), experiences of unemployment or employment instability may be a negative signal at hiring in that employers may believe gaps in an individual's work history to convey information about lower productivity, indicating e.g. a deterioration of human capital during periods of joblessness, less motivation or less innate ability to perform well on a job (see e.g. Blau and Robins 1990; Clark, Georgellis, and Sanfey 2001; Lockwood 1991; Omori 1997). Assuming negative signalling of unemployment, *rational herding* - referring to the idea that recruiting employers are likely to assume that unemployed applicants have already had other job interviews and would have already been hired if they were productive (Oberholzer-Gee 2008) – may also diminish employment prospects for unemployed.

Drawing further on signalling theory (Spence 1973) as well as on *statistical discrimination theory* (Aigner and Cain 1977), relative disadvantages for (formerly) unemployed may also be thought to arise if employers do not believe consolidated productivity indicators, such as e.g. educational credentials, to be an equally reliably proxy for their productivity. In the presence of risk-aversion of employers (Aigner and Cain 1977), this may result in relative hiring and wage setting disadvantages for this group. Furthermore, if group differences in average productivity exist and if they are integrated in hiring decisions then *stereotyping and judgement based on average group characteristics* may also lead to comparatively worse job

prospects for unemployed job seekers (see e.g. Aigner and Cain 1977; Blau and Jusenius 1976: 194).

Beyond economic explanations of discrimination based on rational recruitment practices of employers, emotions and *gut feelings* on whether or not a job applicant is anticipated to fit into the firm (culture) and team also critically determine hiring decisions of employers (Imdorf 2010). *Social construction and ascription of an identity of the unemployed* as lazy, less motivated and less devoted to perform well on a job, with unemployment exposure appearing as self-inflicted, renders those who experienced some unemployment subject to further exclusion from the labour market (Harvard Law Review 1997). Against this background, gaps in an individual's work history and thus employment stability are expected to become relevant sorting criteria at hiring, rendering job and employment security in early career important determinants of future employment prospects and career advancement.
In addition to this, not only unemployment in one`s work history but also frequent job changes, so-called job-hopping, and non-standard careers can be a negative signal at future hiring (Bills 1990; Pedulla 2016). Thus non-standard employment and job insecurities emerge as a risk factor for future employment prospects and professional development of young people even if the individual's employment history is not interspersed with the experience of unemployment.

Supply-side mechanisms: human capital and self-selection
Drawing on human capital theory (Becker 1964), investment in (job-specific) human capital is assumed to pay off. Differences in accumulated work experience account for differential remuneration as well as unequal job and promotion prospects. Experiences of unemployment cause adolescents to lag behind their peers in work experience gained, explaining their poor career advancement. Furthermore, human capital (such as work-related skills and competencies) may depreciate during times of economic inactivity (Pissarides 1992).
Besides limited accumulation or loss of human capital, *self-selection* into jobs of lower quality may also be at a play, driving scarring. Based on reservation-wage assumptions (Mortensen 1986) job seekers may be expected to lower their initial job expectations as time spent in unemployment passes, eventually accepting jobs that do not meet their initial

expectations. As unemployed job seekers become discouraged (Ayllón 2013) or habituated to their situation (Clark et al. 2001), their application behaviour may alter to the detriment of successful job market integration. Furthermore, the experience of unemployment or employment instability in early career may have an impact on subjective well-being and self-esteem (Goldsmith, Veum, and Darity 1997; Goldsmith, Veum and Darity 1996). Such adverse psychological implications may then in turn have motivational consequences and manifest themselves in altered job search behaviour and success, affecting re-integration and career advancement of young people.

In sum, young people face increasing difficulties in quickly establishing themselves within economically advanced labour markets and are overrepresented in non-standard forms of work, which are controversially debated as either stepping stones or traps towards better employment. The interspersion of early career with frequent job turnover and experiences of unemployment is assumed to leave scars on career advancement by different theoretical perspectives.

Young people are, however, not equally at risk of experiencing job and employment insecurities in early career, which besides their differential equipment with social and individual resources on the micro level, can, on a macro level be explained by country-specific institutional settings structuring transitions from school to work while exposing or sheltering school graduates from increased macro-economic insecurities to a different extent. Well-established vocational education and training (VET) systems have in this regard become well-known in providing graduates with strongly institutionalised pathways to work, sheltering them from a significant exposure to early job and employment insecurities.

3. Institutional Embeddedness of School to Work Transitions

Generally when speaking of school to work transitions one refers to the phase between the completion of full-time education or training and the entrance into continuous employment[10]. This transition is bumpy and turbulent for some and consists of multiple attempts and various routes as individuals combine or move back and forth between continuing education, short-term employment and non-employment, while for others education-employment transitions may be smooth (Schoon and Silbereisen 2009, 3). Besides the state of the economy as a crucial determinant for the integration and career prospects of young people (de Lange, Gesthuizen, and Wolbers 2014), the intergenerational reproduction of social inequalities clearly plays an important role in determining the outcomes of school to work transitions at the individual level. Successful labour market integration is firmly linked to educational achievement, which – obscured by a "meritocratic rhetoric" - still heavily depends on an individual's social background. Furthermore, socialisation processes within families endowed with a lot of cultural and social capital (Bourdieu 2005) equip the young with abilities and "soft skills" appreciated by recruiting employers and social contacts, which facilitate successful school to work transitions (see Buchmann 2011; Gangl, Müller and Raffe 2003).

Despite variation in trajectories at the micro level of individual transition processes, country-specific aggregate patterns of education-employment transitions exist. On an aggregate level, school to work transitions may be viewed as institutionally regulated *pathways* (Raffe 2003) to work, which are further shaped by macro-economic conditions as well as socio-cultural factors. Young people can be conceived of as active agents of their transitions and negotiate their school to work transitions within this framework of opportunities and constraints (Schoon and Silbereisen 2009).

Drawing upon the pioneering work of *societal analysis* (Maurice et al. 1986), which influenced sociological research on education systems (e.g., Allmendinger 1989; Müller and Shavit 1998) and fed into the *concept of transition systems* (Raffe 2008; Smyth et al. 2001), institutional settings can be regarded as leading to a country-specific logic and coherence in

[10] In research on school to work transitions, the first paid job after leaving the main education track pursued is often the primary focus (see e.g. Dietrich and Abraham 2005; Buchmann 2011).

education-employment trajectories and ensuing occupational careers. *Transition systems* are defined as "the relatively enduring features of a country`s institutional and structural arrangements which shape transition processes and outcomes" (Raffe 2008, 278; Smyth et al. 2001, 19). Structuring the formation and allocation of human capital, national education and employment systems generate country-specific modes of coordination between education and labour market integration. For example, formal qualifications obtained in the education system guide job allocation and employment prospects in that they serve as screening devices during recruitment, affecting the hiring decisions of employers, as well as providing an orientation for individual occupational choices (Hillmert 2002).

The Education System and institutionalised Links between Education and Work

Focusing on institutional features of education systems that are relevant for the formation of aggregate transition processes, education systems are often distinguished by the extent to which they equip young people with *vocational education and training (VET)* compared to a more *general education*. Further distinctions among vocationally oriented education systems are made according to the *occupational specificity of vocational education* and the extent to which vocational education and training takes place in form of so-called *apprenticeships*, combining school-based learning with company-based, on-the-job training (dual VET) in contrast to purely school-based vocational education. According to these distinctive features, education systems are classified as *vocationally oriented education systems* or more *comprehensive education systems* (see e.g. Buchmann 2011). While strongly vocationally oriented education systems show high shares of young people pursuing occupation-specific vocational education, taking place to a great extent in form of apprenticeship training, countries with a more comprehensive education system do not have a well-established VET system but rather rely on more general education as a main educational track that is pursued by the vast majority of young people. Countries such as Germany, Austria, Switzerland and Denmark have become well-known for the strong vocational orientation of their education systems[11]. Anglo-Saxon countries including the USA, Great Britain, Canada and Australia are often viewed as counterparts in this regard,

[11] The Netherlands are sometimes also included among (strongly) vocationally orientated education systems (see e.g. Iannelli and Raffe 2007; Gangl 2003a).

possessing comprehensive education systems that privilege general education (Buchmann 2011).

Differences in the institutional design of education systems[12] are known to coincide with differently institutionalised links to the labour market (Iannelli and Raffe 2007; Müller and Shavit 1998), which is characteristic of distinctive transition systems (Raffe 2008).

In countries featuring vocationally oriented education systems, firm links between education and employment govern school to work transitions. Educational tracks are stratified in that early tracking at the secondary level is prevalent and standardised occupation-specific credentials provide clear signals to employers about the occupation-specific skills newcomers hold[13]. This allows for a straightforward job-education matching after completion of initial vocational education. In addition, employers are involved in the elaboration and assessment of educational programmes. This, besides fostering their reliance upon educational credentials as indicators of prospective (job-specific) productivity, ensures the formation of skills in the education system that more closely match the skill demands in the labour market. Moreover, many young people gain work experience and practical skills during the on-the-job training undergone in dual VET programmes, which lowers induction costs for prospective employers and allows young people to compete more readily for jobs with older job seekers who have a longer work history (see e.g. Gangl 2003b; Iannelli and Raffe 2007; Buchmann 2011). Not to neglect that a proportion of apprentices are lucky enough to find employment at their training firm directly after graduation, rendering job search unnecessary for them.

Distinctive institutionalised logics govern the allocation of labour market entrants in countries with differing transition systems. Countries following an *educational logic*

[12] Looking at institutional features of the labour market, employment protection legislations (EPL) are further outlined as playing an important role in facilitating or hindering quick labour market entry. Strict employment protection legislations encompassing high dismissal costs (stringent lay-off protection) for the permanent workforce have been noted to potentially hinder a quick establishment of newcomers in permanent positions (e.g. Buchmann 2011).

[13] *Stratification* and *standardisation* are further institutional dimensions of education systems distinguished as relevant in structuring school to work transitions (Allmendinger 1989; Müller and Shavit 1998). While standardisation refers to "…the degree to which the quality of education meets the same standards nationwide" (Allmendinger 1989, 233) (including uniformity of curricula and examinations), stratification captures the extent of early tracking by which students are separated into diverse educational tracks that differ in curricula and access to academic university education (Müller and Shavit 1998, 6-7). The degree of stratification and standardisation are important factors concerning the extent to which employers can rely upon educational credentials as screening devices (see e.g. Allmendinger 1989; van der Velden and Wolbers 2003).

traditionally allocate school graduates to jobs based mainly on their (vertical) educational/academic achievement, as employers recognise educational credentials as first and foremost indicating a general learning capacity. Conversely, allocation in strongly vocationally-oriented education systems is governed by an *employment logic* where school graduates are not simply sorted on the basis of their (vertical) investment in education, but on the basis of their occupation-specific skills and credentials (horizontal dimension). Vocational diplomas in these transition systems are valued for their signalling power regarding occupation-specific skills (see e.g. Iannelli and Raffe 2007). These differing modes of allocating school graduates to jobs in countries with different transition systems may also be considered against the background of differently structured labour markets. The existence of *occupational labour markets* (Marsden 1986; Gangl 2003a) (coinciding with well-established VET systems), where a large segment of the labour market comprises of occupational sub-segments in which labour demand follows lines of occupation-specific credentials relying upon the supply provided by VET systems (Sacchi, Kriesi, and Buchmann 2016; Blossfeld and Mayer 1988; Sengenberger 1979), accounts for tight links between education and employment, channelling young people into the occupations for which they have been trained. Boundaries exist between occupational sub-segments, limiting mobility to occupations of similar skill and task profiles (Sacchi et al. 2016). This stands in contrast to, for example, recruitment patterns in *internal labour markets* (Marsden 1986; Gangl 2003a), where employment prospects are more closely linked to work experience (seniority) and internal career ladders, rendering it more difficult for entrants to become established within the labour market.

All in all, this is seen as fostering comparatively smooth transitions into skilled positions, coinciding with lower rates of youth unemployment in countries with strongly vocationally orientated (dual VET) education systems. Due to this*, smooth school to work transitions have come to be widely recognised as the vocational education premium at labour market entry.* In contrast, countries that organise education in the form of more general education are characterised by their weak links between education and employment[14] (see e.g. Buchmann

[14] There are exceptions. E.g. Japan`s more comprehensive education system demonstrates tight links and cooperation between schools and universities on the one hand, and firms on the other hand. Students are directly recommended to respective employers according to their general educational competencies, which paves their way to the labour market (Müller and Shavit 1998, 2-3).

2011). Lower co-ordination of school to work transitions in these countries is e.g. reflected in generally higher initial unemployment rates and a somewhat higher incidence of low-skilled employment in early career (Gangl 2003a,b).

Providing young people with strongly institutionalised links into the world of work, well-established VET systems can be seen as institutional filters mitigating a shifting of macro-economic insecurities onto labour market entrants (Blossfeld 2006).

4. The Swiss Context

As this dissertation's empirical research focuses mainly on job and employment insecurity among graduates from vocational education in Switzerland, the following sections are dedicated to outlining labour market security and school to work transitions in Switzerland.

4.1 Job and Employment Security in Switzerland: A brief overview

Just as in other advanced economies, transformations have occurred in the Swiss labour market towards more flexible work arrangements and non-standard forms of work have come to form an integral part of the Swiss labour market over the past few decades (Ecoplan 2010). Looking back on decades of full employment lasting well into the 1980s when neighbouring countries were struggling with mass unemployment, the 1990s can be described as a departure from the "special case of Switzerland". Beginning in the 1990s, Switzerland started to experience increases in (long-term) unemployment and a more volatile labour market integration of larger portions of the workforce (see Streckeisen 2012a; Weber 2001; Bolli et al. 2015).

After the post-war period, which, as in other advanced economies, was characterised by the organisation of work in the form of standard employment (particularly for the male workforce in the secondary and tertiary sectors; Birchmeier 2002; Prodolliet et al. 2001, 30), atypical work arrangements experienced a rise in Switzerland (see e.g., Bühlmann 2013). Until the 1990s it was mainly the expansion of female labour force participation which brought about a disproportionate growth in part-time employment. This first expansion in part-time work did not take place at the cost of standard employment, but rather coincided with employment growth. Beginning in the 1990s however, a tendency towards a replacement of standard employment relationships with more atypical forms of employment can be observed. Men have since also become more likely to work part-time or become self-employed, substituting these forms of work for standard full-time salary employment. However, permanent, dependent full-time employment is still the predominant form of work for men in Switzerland (Diekmann and Jann 2005; Allmendinger et al. 2013). Within the OECD context, Switzerland belongs to the top ranking countries with

regard to its share of part-time work (OECD 2010b)[15], which clearly has a gendered dimension. For women, the standard work arrangement in Switzerland is part-time employment[16] (Allmendinger et al. 2013).

In contrast to other advanced economies in Europe, fixed-term work did not expand until the year 2001, and has only recently come to be increasingly prevalent (Ecoplan 2010, 116-117; 2007; Diekmann and Jann 2005, 197; Henneberger, Sousa-Poza, and Ziegler 2004). In line with other OECD countries, rising fixed-term employment is observed among new hires (OECD 2014, 147, 150). However, increases in fixed-term employment have not been very steep in international comparison (see e.g. OECD 2015a), which may relate to the fact that the labour law in Switzerland is rather liberal and dismissal costs of the permanent work force are comparatively low (see e.g. OECD 2013; Henneberger et al. 2004). Therefore fixed-term employment may have, from an internationally comparative perspective, been adapted to a lesser extent by employers to circumvent stringent employment protection regulations governing permanent contract workers. Hence, in Switzerland permanent jobs may not differ as much from fixed-term employment with regard to job security and labour segmentation compared with countries that have more stringent employment protection of the permanent workforce.

Focusing further on the trending prevalence of temporary agency work, some select studies report a general expansion of temporary agency work in Switzerland [17] (Swissstaffing 2015; Rosinger and Djurdjevic 2007), while other statistics point to a slight increase in on-call work in the recent past (see BFS 2015c).

Ranking selected non-standard forms of work by their prevalence in the Swiss labour market, part-time work makes up the highest share of atypical employment; i.e., 36.7% of employees in 2014. Of these, 21.4% are engaged in long part-time (above or equal to 50% of the

[15] Across the OECD, part-time work is, for example, especially widespread in the Netherlands, Switzerland, Germany, the UK, Australia, and New Zealand (OECD 2010b).

[16] For female VET graduates part-time employment (<50%) gains in relevance only when they get closer to family formation but is not widespread at labour market entry (Sacchi and Salvisberg 2014). Hence, this domain of non-standard work is less relevant and widespread at the stage of labour market entry following completion of vocational education at upper-secondary level, which is the life course stage this dissertation focuses on.

[17] No such increase is reported for the period 2001-2014 based on the share of employees getting reimbursed through a temporary work agency (see e.g. BFS 2015c). Results on atypical-precarious employment in the Ecoplan study (2010, 60) suggest that boom years for temporary agency work were the years 1995-1998.

working week) and 15.3% are engaged in short part-time work (less than 50% of the working week). Fixed-term employment is prevalent in the Swiss labour market to a moderate extent with about 7% of all employees (excluding apprentices) engaged in work on a fixed-term contract in 2014 followed by work on call (3.8% of labour force). Temporary agency work (less than 1% of employees) plays a somewhat more minor role[18] (BFS 2015c, 121). This is in contrast to, for example, Switzerland`s neighbouring countries Austria, Germany and France where temporary agency work is twice to three times the Swiss rate (OECD 2014, 148). Compared to other advanced economies, besides having a high proportion of (female dominated) part-time employment, the Swiss labour market is characterised by moderate proportions of fixed-term employment[19] and temporary agency work (see e.g. OECD 2010b; 2014). Of course, different forms of atypical employment may not be seen as mutually exclusive but may, rather, need to be viewed as overlapping, leading to different configurations of atypical employment (see Bühlmann 2013).

Overall, atypical employment in its manifold forms and configurations is not confined to the peripheral workforce who lack bargaining power in the Swiss labour market, but affects people of different social standing. Thus, dualistic conceptualisations of the labour market (e.g. Doeringer and Piore 1971) which posit a well-protected core of insiders with high social standing as securing standard employment compared to a peripheral group of workers employed in atypical forms of work in secondary segments, do not really match the Swiss experience. A more nuanced picture allowing for some "social mix" may more realistically describe the Swiss situation (Bühlmann 2013). With this in mind, and not forgetting that atypical forms of work may overlap, some general findings on who is found to be overrepresented in some selected forms of atypical employment are briefly outlined in the following paragraphs.

With regard to characteristics of the workforce employed in fixed-term work in Switzerland, statistics show that fixed-term employment affects both low as well as highly educated

[18] It should be noted that categories of non-standard employment are not exclusive and that overlaps exist between non-standard forms of work.

[19] It should be noted that in labour force statistics for international comparison, training contracts are sometimes also subsumed under the category of fixed-term work (see e.g. OECD 2014, 146; OECD 2015b, 17), presumably explaining the somewhat higher shares of fixed-term employment for Switzerland in these statistics compared to national statistics excluding apprenticeship training contracts.

workers (see e.g. OECD 2014; Ecoplan 2007)[20]. This corresponds with the idea of a u-shaped distribution of flexibilised employment prevalent in the low-skill sector, as well as in the high-skill project-oriented employment sector (see e.g., Muffels 2015, 309). For Switzerland, findings suggest fixed-term employment to be even more prevalent among highly educated workers (see e.g., Henneberger et al. 2004), being a form of employment often found in managerial and professional positions as well as among technicians (OECD 2014). This stands in contrast with temporary agency work, which, as in other OECD countries, disproportionately affects lesser-educated workers in elementary occupations (OECD 2014, Ecoplan 2007). However, a trend away from predominantly auxiliary work towards more skilled labour has recently been reported based on a survey focusing on large employment agencies in Switzerland (Swissstaffing 2015). Many temporary agency workers seem to pursue this kind of work not as their first choice but, rather, in the hope of securing standard employment in the future, meanwhile preventing looming unemployment (see e.g., Holst 2012). Temporary agency employment is most prevalent in the secondary sector (e.g., in the building industry; see Prodolliet et al. 2001, 69).

Overall, young workers are found to be disproportionately affected by fixed-term employment, which also extends to temporary agency work and work on call (See Ecoplan 2007; Allmendinger et al. 2013; Swissstaffing 2015; Rosinger and Djurdjevic 2007)[21]. When it comes to fixed-term employment in Switzerland, the educational track pursued seems to be an important determinant. Workers with vocational qualifications have been found to be less exposed to fixed-term employment compared to workers who pursued a more general education track (e.g. baccalaureate school or academic university). This result has been interpreted as indicating that fixed-term employment among labour market entrants may more often be utilised by employers for screening purposes providing “stepping stones” for young people into the Swiss labour market rather than to simply achieve external (numerical) flexibility (Greppi et al. 2010). What should be further noted when focusing on the flexibilisation of work in the Swiss labour market is that besides external flexibilisation, work is in the process of being restructured towards increased internal (numerical) flexibility

[20] Findings suggest that lesser educated employees (lower secondary education) are disproportionately affected by fixed-term employment of a contractually short duration while more highly educated employees are particularly overrepresented in fixed-term employment of a contractually longer duration (Ecoplan 2007).
[21] Henneberger et al. (2004) and Greppi et al. (2010) find both young and old workers to be overrepresented in fixed-term work in Switzerland.

in terms of flexible working time arrangements. Results suggest flexible working time arrangements to be widespread in Switzerland (see Graf et al. 2007; Graf et al. 2000) and to be particularly prevalent among highly educated workers and those holding managerial positions (see e.g., Dorsemagen et al. 2012). Thus flexibilisation of working time regulations (which are not necessarily detrimental for the affected workforce; Graf, Henneberger, and Schmid 2000) may further need to be considered as being present among positions appearing as standard employment (permanent, dependent full-time employment) in labour statistics for Switzerland.

The evaluation of the Swiss situation—in terms of the level of job and employment insecurity that the workforce is exposed to—depends to some degree on one's perspective.
The rise in (long-term) unemployment and youth unemployment (see e.g., Bolli et al. 2015), liberalisation, and an increasing prevalence of non-standard forms of work compared to Switzerland's past during the the post-war period, are suggestive of an increasingly volatile labour market integration of larger shares of the workforce, undermining their bargaining power in the Swiss labour market (see e.g., Mäder and Schmassmann 2013).
Focusing on changes in the world of work from yet another angle, we may also note that Switzerland underwent a process of major occupational upgrading. Job creation mainly took place at the high-skill/high-paid end (Oesch 2015)[22], coinciding with educational expansion (see Sacchi, Salvisberg, and Buchmann 2005; Sheldon 1995). Viewed from this angle of occupational upgrading and educational expansion, there seems to be no general deterioration of career prospects accompanying a de-standardisation of employment.
One should note however, that occupational upgrading may lead to an increasingly risky labour market integration for low-skilled workers (on young people see e.g., Gangl 2003c). Comparing the previously outlined transformations in the Swiss labour market, it has been found that particularly low skilled and unqualified workers experienced a worsening of their employment prospects over the past few decades[23] (see Sacchi et al. 2005; Weber 2001; Bolli et al. 2015; Sheldon 1995). While highly qualified workers may be able to profit from flexible work arrangements (Prodolliet et al. 2001, 13), more vulnerable groups of workers

[22] Bolli et al. (2015) report, besides upskilling, some expansion in lower paid service occupations
[23] It should be noted that educational expansion also brought with it a declining share of low educated/unqualified people, to some extent offsetting higher increases in unemployment among low skilled workers (see e.g. Oesch 2015).

may particularly bear more negative socio-economic consequences of a de-standardisation of employment relationships[24].

Viewing the Swiss labour market situation not against its post-war period past but rather from an international comparative perspective, Switzerland can be characterised by stable and high employment rates and low unemployment throughout the past few decades (see Allmendinger et al. 2013). Despite above-average ratings in work-related stress factors such as deadline constraints and excessive pace of work, job satisfaction in Switzerland is high and the self-reported health of the workforce generally good. Furthermore, concerns about job loss are comparatively low in Switzerland (Krieger et. al 2012). With a youth unemployment rate below 10% (see e.g., Bolli et al. 2015; Eurostat 2009, 111-112; OECD 2015c), Switzerland is still one of the best faring countries with regard to labour market integration of young people (OECD 2010a). From this international comparative perspective, Switzerland still offers a good macro-economic environment for (skilled) newcomers to gain a foothold in the labour market. Besides the good state of the economy, the strong vocational orientation of the Swiss education system can, in this respect, also be seen as influencing Switzerland`s comparatively low youth unemployment rate. As noted in chapter 3, well-established vocational education systems (as for example known in Switzerland, Germany, and Austria) have proven to provide strongly co-ordinated pathways from school to work for many young people; supporting their quick labour market establishment. The following section portrays school to work transitions in the Swiss context, focusing in particular on Switzerland`s VET system.

4.2 Vocational Education and Labour Market Entry in Switzerland

Focusing on Switzerland, vocational education and training (VET) at upper secondary level- henceforth referred to as initial vocational education and training (IVET) - is the predominant form of upper secondary education and ensures the supply of skilled labour. Almost two thirds of young people pursue IVET at upper secondary level while only about one quarter

[24] In this respect, it should further be taken into account that employment protection regulations are generally liberal in Switzerland. Hence, permanent full-time jobs may not promise long-term labour market integration. Further, if jobs are remunerated at low levels, they may be accompanied by financial insecurity, even if carried out at (or almost at) a full-time basis on a permanent contract (for more on the situation of the working poor in the Swiss labour market see e.g., Mäder 2012).

follows a more general education track (SERI 2015, Stalder and Nägele 2011). General education in Switzerland encompasses baccalaureate programmes granting access to academic universities or studies at upper-secondary specialised schools (FMS), which are mainly geared toward a specific vocational field (chiefly social work, health, and education). The young people graduating from upper-secondary specialised schools (FMS) can further specialise in these vocational fields by following non-university programmes at tertiary B level or at universities of applied sciences (see SKBF 2014).

Parallel to or following on from IVET at upper-secondary level, young people may optionally obtain a federal vocational baccalaureate (Berufsmaturität), which qualifies them to enrol in vocationally oriented education at tertiary A level such as that provided by the universities of applied sciences (Fuentes 2011; Hoeckel, Field, and Grubb 2009; Stalder and Nägele 2011). After completion of IVET, Switzerland's professional education system further offers a wealth of professional development opportunities at tertiary B level. Completion of professional education and training (PET) at tertiary B level enables the gaining of further expertise in specific occupational fields and qualifies students for managerial positions in these areas (see e.g. SERI 2015; SKBF 2014).

In Switzerland, IVET is an attractive career choice for young people and should not simply be viewed as a "second-best", low-status option. IVET is stratified into tracks which demand differing levels of intellectual capability (Stalder 2011) and findings suggest that from VET programmes requiring the highest levels of intellectual ability, companies recruit students with above average school competencies compared to their peers who followed a baccalaureate programme (SKBF 2014, 118-119).

IVET programmes are highly occupation specific and young people can choose from around 230 occupations that they wish to be trained in (SERI 2015). Standard IVET programmes in Switzerland take about 3-4 years to complete and they are awarded with a federal IVET diploma (Eidgenössisches Fähigkeitszeugnis)[25] (SERI 2015; Hoeckel et al. 2009; Stalder and Nägele 2011). A characteristic of Switzerland's VET system is that a very high share of initial vocational education is organised in the form of dual-tracks (see Hoeckel et al. 2009) in

[25] There also exists a 2-year IVET programme option allowing students to obtain qualifications for certain occupational types which are awarded a (basic) federal IVET certificate. This is also an option for young people who do not easily meet the requirements for standard IVET programmes. After completion of a 2-year programme, graduates may then also enrol in a 3-4 year standard IVET programme (see SERI 2015; SKBFI 2014; Stalder and Nägele 2011).

which company-based training and school-based learning are combined. This company-based training allows students to learn the necessary skills to perform well in a specific occupation at a later stage. Of the young people pursuing a vocational education track at upper secondary level, almost 90% do so in the form of a dual-VET programme; while only about 10% enrol in a school-based vocational programme (see SERI 2015). Overall, dual VET enjoys widespread social recognition in Switzerland. Besides being equipped with occupation-specific skills, the young apprentices also undergo vocational socialisation at their training company (see e.g., Corsten and Lempert 1997) to become gifted craftspeople and experts within specific occupational fields.

Switzerland's tripartite VET system is governed by the Confederation, the cantons, and professional organisations[26] (see SERI 2015; SKBF 2014), ensuring high quality and the national standardisation of vocational programmes. Content of training and standards are strongly employer-driven[27], meeting labour market demand for specific occupational skills.

As outlined in chapter 3, allocation to jobs in the Swiss labour market follows an employment logic (Iannelli and Raffe 2007) where graduates from secondary-level education are not simply (vertically) sorted by their general academic achievement but rather (horizontally) by their occupation-specific skills. In Switzerland, school to work transitions of IVET graduates are thus highly regulated by occupational credentials, which qualify the young people to take up work in specific occupational segments, channelling them into the occupations that they have been trained for[28]. Occupational specificity of IVET programmes and the predominance of workplace-based training, in combination with employer's involvement in the elaboration of training content and the high standardisation of IVET, allows employers to rely heavily on vocational credentials as signals for occupation-specific skills (Breen 2005; Müller and Shavit 1998).

Besides promoting smooth school to work transitions, the formation of standardised occupation-specific skills during IVET also allows for inter-firm job changes within

[26] Areas of responsibilities of each partner are set forth in the *Federal Vocational and Professional Education and Training Act* and associated ordinances (see SERI 2015; 8-9)

[27] Professional organisations mainly set training and examination content (see SERI 2015; 8-9), whilst on-the-job training is taught to apprentices by the employers at their host companies.

[28] Company-based VET programmes depend to some degree on economic trends as these affect how many firms are willing to offer apprenticeships. Yet, as training companies are spread over different sectors, cyclical shocks and fewer training places in one sector can be cushioned by additional apprenticeship places in another (see SKBF 2014, 116 ff).

occupational fields. However, as IVET in Switzerland is geared at promoting occupation-specific skills, occupational mobility is limited. Occupation-specific skills gained during IVET may not be transferred to and utilised in other occupations (Müller and Schweri 2015). Processes of occupational closure characterise the occupationally structured Swiss labour market, confining mobility to clusters of occupational sub-segments with similar skill and task profiles (see e.g. Sacchi et al. 2016).

4.3 Reconsidering the Vocational Education Advantage in a changing World of Work

Discourse

In the light of sectoral shifts from an industrial towards a service-oriented economy, entailing increases in knowledge-intensive forms of work, educational expansion, and increasing job requirements (for Switzerland, see Sheldon 1995; Salvisberg and Sacchi 2013; 2014; Sacchi et al. 2005), the future viability of initial vocational education has come under scrutiny. A gradual weakening of the strongly regulated transitions to employment for dual VET graduates (see e.g., Weil and Lauterbach 2009) and a potential degradation of initial vocational credentials (Blossfeld 2006, 159; Baethge et al. 2007) are a concern because these factors undermine the vocational education advantage at labour market entry for IVET graduates. In this way, initial vocational education is seen as being in danger of losing its exemplary status of guaranteeing smooth school to work transitions which made it stand out from other more school-based educational tracks and transition systems nationally as well as internationally (Baethge et al. 2007). In addition, not only transitions into the labour market are affected, but there is also concern regarding the future employability of VET graduates and recognition of VET credentials in a globalised and knowledge-intensive economy (see e.g., Schellenbauer et al. 2010).

Focusing on transitions to the labour market, several concerns have been raised about increasing labour market insecurity for young people holding IVET diplomas.

As VET credentials are highly occupation specific, meeting the demands of an occupationally segmented labour market, changes in the demand for skilled labour from industrial production (which lies at the heart of apprenticeship training) towards a service-oriented economy (see e.g. Sheldon 1995) may lead to increasing occupational mismatch between skills acquired during IVET and those actually in demand (see e.g. Salvisberg and Sacchi 2013, 4-5; see further Pollmann-Schult and Mayer 2010). In the light of a comparatively decreasing industrial sector (particularly in low-tech industry) compared with an expanding service sector[29] (see e.g. Arvanitis, Veseli and Wörter 2014; BFS 2015b; Salvisberg 2010) where the

[29] Some caution is needed in delineating an overly simplistic picture of sectoral change. Besides expansion of the service sector there is, for example, also some expansion present in the knowledge-intensive fields of the industrial sector, such as in the high-tech industry, which by international comparison accounts for a relatively high share in the Swiss economy's added value (see e.g. Arvanitis et al. 2014). Similarly, occupational fields of engineering and technical occupations but also machine engineering have experienced some growth over the past few years in terms of employment prospects (see also B,S,S 2014,15;Sheldon 1995). The face of the

dual VET system has a weaker tradition (Schellenbauer et al. 2010; Maurer 2013) and is underrepresented in terms of available apprenticeship places (see e.g. Sheldon 2009), occupational closure may prove disadvantageous, leading to employment insecurity for those who due to their occupation-specific diplomas are constrained in occupational mobility (Blossfeld 2006: 159).

In contrast to occupational specialisation, broader general education is viewed as gaining in importance in a knowledge-intensive and service-oriented world of work, which is more rapidly changing in terms of jobs and skills in demand, requiring employees to be highly flexible and quick to adapt. The increasing importance of general rather than firm or occupation-specific skills poses new challenges for the organisation and marketing of the traditional VET (see e.g. Von Arx and Hollenstein 2003; Schellenbauer et al. 2010). With regard to an underrepresentation of dual VET in expanding service occupations, traditional VET has come under further pressure, as it is not unanimously viewed as the most adequate educational pathway to meet the growing demand in these occupational fields. Furthermore, to qualify for work in the knowledge-intensive fields of the service sector, tertiary-level education has come to be regarded as a potential necessity (see e.g., Bildungsdirektion Kanton Zürich 2009, 50-51; see also Sheldon 2009).

Besides a changing sectoral and industrial structure leading to changes in the occupational composition of labour and skill demands, diffusion of information technology also fuels the increased demand for highly skilled work across industries (Sacchi et al. 2005). Over the past decades, the Swiss labour market has experienced occupational upgrading, creating ample job opportunities at the high-skill end of the occupational structure, while fewer jobs have been created particularly in the middle range, mainly affecting office clerks and to a lesser extent production workers (Oesch 2015). Occupational upgrading, educational expansion, and, in parallel, a long-term, above-average demand for tertiary level credentials (Sacchi et al. 2005) shifting labour demand toward tertiary education, can lead to increasing difficulties for IVET graduates to directly enter the Swiss labour market after graduation without

industrial sector may also be considered to be changing towards professional activities that are characteristically more service-oriented (see e.g., Sheldon 1995), increasingly blurring clear-cut sectoral distinctions when it comes to actual professional activities performed. Furthermore, distinguishing between distributive, personal, social, and corporate related services shows that the knowledge-intensive fields of social and corporate related services (including, for example, financial services, education, health, and research) in particular are rising in terms of employment in Switzerland (Salvisberg 2010; 64-81).

obtaining further qualifications such as, for example, advanced vocational degrees at tertiary level. Also, a shortage of skilled workers ("Fachkräftemangel") is found in many occupations with above-average demand of qualifications at the tertiary level (see B,S,S 2014).

Besides the changes in the occupational structure and bias toward tertiary education, many jobs have also become more complex and there may be less capacity available for training new entrants for whom the on-the-job training undertaken during IVET may not be sufficient anymore to meet the more complex requirements of many jobs from the very outset. Therefore it is expected that companies will increasingly prefer to hire from the pool of experienced workers rather than employing new graduates, even if they hold dual IVET credentials guaranteeing their basic work experience (Salvisberg and Sacchi 2013). Jobs may nowadays involve a broader range of non-routine tasks and require employees to take on widened areas of responsibility such as soft skills in own initiative, cooperation, and communication skills. In addition, skills such as analytical and entrepreneurial thinking, flexibility, and stress resistance—to name a few—become increasingly important for job performance (Salvisberg 2010). Increasing demand for soft skills and broader requirements concerning the capability profiles of potential recruits (see Von Arx and Hollenstein 2003) may, in addition, lead to a growing significance of past work experience and continuous education or training which signals such skills at hiring. This may be a disadvantage for IVET graduates at labour market entry, having too little experience to qualify for these jobs (Salvisberg and Sacchi 2013).

Empirical findings

A brief look at empirical figures on transitions of young people who pursued initial vocational education and training (IVET) at upper-secondary level in Switzerland shows that in 2012 about 66% directly entered work life, about two out of five of whom stayed employed at their training firm. 20% of IVET graduates pursued further education, of whom about one quarter were simultaneously engaged in paid work (they are thus included among the 66% working). 9% of young people who graduated from IVET were unemployed and seeking work, while 5% of new graduates were not in the labour force and not seeking employment. Another 5% did their military service (see Sacchi and Salvisberg 2013: 2-3). As

these numbers show, there is quite some diversity of trajectories leading into the Swiss labour market after IVET.

Youth unemployment after IVET in Switzerland, as well as youth unemployment in general, is more responsive to cyclical fluctuations compared to unemployment rates of the older workforce (Sacchi and Salvisberg 2013: 3; 2011). Besides this higher responsiveness of youth unemployment to cyclical and seasonal fluctuations, a structural change in overall unemployment rates of IVET graduates in Switzerland can be observed (Sacchi and Salvisberg 2013; 2011). Even though Switzerland—with its well-established vocational education system—is recognised as a best-practice country concerning its low rates of youth unemployment in international comparison (OECD 2010a), there has been a rise in youth unemployment (see Bolli et al. 2015), which can also be observed for IVET graduates (Salvisberg and Sacchi 2013; Sacchi and Salvisberg 2011). Hence, instability at labour market entry no longer only affects the most marginalised entrants with no upper secondary qualifications. Nowadays, entrants with initial vocational education also face a rising (structural) risk of unemployment when transitioning to the labour market.

As yet, empirical evidence does not support rising occupational mismatches between IVET credentials acquired and those in demand. Nor do findings support a shrinking amount of IVET graduates who can, after graduation, remain employed at the firm they have been trained at or an increased hiring-and-firing behaviour of firms towards IVET graduates. While there is unchanged demand for skilled labour, empirical findings suggest that rising labour market insecurity affecting IVET graduates can be explained by the shrinking supply of suitable entry-level jobs accessible to newcomers. Employer's skill requirements for filling vacancies have substantially increased over the past decades. Increasing job requirements, which demand prior work experience and further/higher educational qualifications, have been found as mainly responsible for the increasing difficulties IVET graduates have in becoming quickly established within the Swiss labour market (Salvisberg and Sacchi 2013; 2014; Sacchi and Salvisberg 2013; 2011).

All in all, one should note that findings for the Swiss labour market do not suggest that demand for IVET credentials has generally declined. IVET credentials in conjunction with work experience are still in good demand (Salvisberg and Sacchi 2013, 18). Furthermore,

pursuing a vocational pathway may also not be seen as generally coinciding with increasing employment insecurity in the longer run. Combining, for example, IVET with further studies at a university of applied sciences offers good employment and career prospects (see e.g., BFS 2015a). Thus the empirical evidence reported in this section simply suggests that *initial* vocational education *alone* is no longer a guarantee for a smooth integration into the Swiss labour market (Salvisberg and Sacchi 2013; 2014; Sacchi and Salvisberg 2013; 2011). The idea of this section was to not draw an overly bleak picture of the integration of IVET graduates, who in international comparisons still fare very well in terms of their integration into the Swiss labour market. The aim was, rather, to show that recent socio-economic transformations affect the integration of IVET graduates, and to demonstrate the need for change in the discourse that often portrays (traditional) IVET as a simple solution to integrating young people into the modern changing world of work.

Digression: Social Stratification and Differences in Transition Patterns among IVET graduates

IVET graduates, although they have so far been portrayed from a macro perspective as following the same institutionalised pathway from education to employment and facing the same job and employment insecurity, should at a micro level not be regarded as a homogeneous group. In this regard, the risk of insecure labour market integration may not be expected to be evenly distributed among IVET graduates, but rather to follow the lines of pre-existing social inequalities and differing employment opportunities in the specific occupational fields graduates are trained in. The aim of this brief digression is to hint at some potentially relevant stratification characteristics with respect to the risk of job and employment insecurity that IVET graduates face, focusing on the Swiss labour market.

Vocational education and training in Switzerland should not be seen as a uniformly level track, as apprenticeships differ in their levels of intellectual requirements (see Stalder 2011). Furthermore, IVET graduates may have completed lower secondary education at differing levels and their grades obtained during both lower and upper secondary education vary. In relation to educational achievement that stratifies the risk of early job and employment insecurities, socio-economic background and socialisation processes within the family are important determinants of successful transitions from school to work. Growing up in an

environment with high socio-economic status—or to put it in other words, endowed with a lot of cultural capital (see e.g., Bourdieu 2005)—equips the young with social competencies and aspirations that support a successful social and economic integration (see Buchmann 2011; Neuenschwander and Kracke 2011).

Cultural beliefs about social categories such as gender and migrant background also play an important role. On the one hand, employers ascribe characteristics to these social categories based on social and cultural stereotypes when deciding upon new hires (Salvisberg 2012; Kriesi, Buchmann, and Sacchi 2010). On the other hand, socialisation experiences reflected in, for example, a gendered self-assessment of competencies and preferences lead to gender-typed occupational choices, while occupational gender segregation in the labour market accounts to a great extent for differential employment prospects and outcomes across gender (Buchmann and Kriesi 2009). IVET is known to foster gender-typed transitions into the Swiss labour market, as tight links between chosen (highly gendered) vocational programmes and future occupations exist, channelling young men and women into gender-segregated occupational segments (Imdorf and Hupka-Brunner 2015). Upon completion of IVET, young men and women often hold gender-typed occupational credentials. Job opportunities—and hence job and employment insecurity—vary by gender-typed occupational segments (see Kriesi et al. 2010). Moreover, gender-segregated job opportunities have been found to exist even when young men and women hold the same credentials, as employers also have gender-typed demands for the profile and occupational segment of the vacant position to be filled and assume differential capabilities and productivity across gender (see Kriesi et al. 2010). Empirical findings for Switzerland further show that young IVET graduates with migrant status are more prone to experience unemployment after graduation (Rüfenacht and Neuenschwander 2013)[30].

Further, "[t]he school to work transition is a typical example of the interplay between the individual and his or her context" (Neuenschwander and Kracke 2011, 99), with career goals and expectations of the young entrants shaping their transition processes (see

[30] One should note that gender, migrant background and additionally school competencies already play a role during the search for an apprenticeship in the first place, where, for example, chances of finding an apprenticeship place have been found to be lower for young women and migrants (see Haeberlin, Imdorf and Kronig 2004).

Neuenschwander 2012; Rüfenacht and Neuenschwander 2013)[31]. Perceptions of fit with regard to individual interests, competencies and the vocation a student is trained in have been found to influence both a positive occupational self-concept and a successful integration into the labour market after vocational education and training (Gerber-Schenk, Rottermann, and Neuenschwander 2010).

Overall, social, individual, and structural antecedents of early labour market insecurity not only shape transition processes but also influence future employment prospects and outcomes. Considering the (causal) impact of job and employment insecurity at labour market entry on subsequent careers, (e.g., scarring effects) it is crucial to take into account that among IVET graduates systematic differences may exist between those who experience job and employment insecurity in their early career and those who do not. This issue will be addressed in the methods section (5.2), where the analytical strategies employed are introduced.

[31] Of course individual agency may not be seen as independent of socialisation experiences and hence socio-economic background.

5. Empirical Studies: Job and Employment Insecurity Dimensions investigated

This chapter briefly introduces the empirical studies conducted (see appendix A-E):

Article (1): Transition systems and non-standard employment in early career: Comparing Japan and Switzerland

Job insecurities are assumed to be filtered differently by country-specific institutions, which channel them in specific ways onto different social groups (see e.g., Blossfeld 2006). In this empirical study, the focus is on the institutional embeddedness of school to work transitions, investigating whether educational pathways promote standard vs. non-standard entry level employment differently for school graduates in countries with differing transition systems. Japan and Switzerland are both characterised by comparatively low youth unemployment rates with non-standard forms of employment on the rise, in which young workers are overrepresented. Drawing on the pioneering French approach of societal analysis (Maurice et al. 1986) and the concept of transition systems derived therefrom (Raffe 2008), the empirical study (1) investigates how country-specific transition systems stratify the risk of non-standard employment in early career differently in Japan and Switzerland. While the Swiss transition system is classified as strongly vocationally orientated, where allocation to jobs follows an employment logic (Iannelli and Raffe 2007), the Japanese transition system has traditionally privileged general education and relied on companies that integrate school graduates holding academic credentials. Hence, while an institutionally paved way to work for IVET graduates to the Swiss labour market exists, in Japan it is more commonly the highly academically educated young people who enjoy an institutionalised pathway to employment. Against this backdrop we ask how non-standard employment relates differently to vocational vs. university education in Japan and Switzerland, two countries with different modes of allocating school graduates to jobs.

Own contribution to Article (1): As co-author of this article my contribution was the elaboration and implementation of the comparative analysis, the integration and description of the discourse on non-standard work among young people in advanced economies as well as the introduction of the method used and the description and presentation of the

empirical results. I further drafted the abstract, the introduction and the conclusion, which were then finalised in collaboration with Christian Imdorf (first author) and given final approval by Akio Inui (second co-author). Christian Imdorf was responsible for the data preparation and the theoretical elaboration and description of the Swiss and Japanese transition systems while Akio Inuis' expert knowledge on the Japanese context and data further fed into this work.

Article (2): Fixed-term jobs after vocational education and training in Switzerland: Stepping stone or impediment?

This empirical study focuses more closely on one form of atypical employment, namely initial engagement in fixed-term employment, and its related consequences for the careers of IVET graduates in Switzerland. Competing hypotheses on whether entering the labour market via fixed-term jobs is a stepping stone towards stable employment with good career prospects or a bad start to work life persist in the literature (see e.g., Scherer 2004; Giesecke and Groß 2003). In Switzerland, fixed-term employment is particularly prevalent among academically educated young people. For these people, fixed-term entry jobs are expected to encompass initial screening (see Greppi et al. 2010) and to provide entry ports into high-skilled employment. The operational logic behind fixed-term entry employment for IVET graduates, who have already proven themselves on the job during their vocational training, remains unclear. In an effort to close this research gap, the empirical study (2) sheds light on i) who among the IVET graduates are allocated to fixed-term entry employment, checking if this allocation follows lines of social stratification and ii) what consequences initial fixed-term employment may have for their future careers, focusing on their mid-term wage development. As IVET graduates face differing career prospects in Switzerland and fixed-term jobs may also differ in their operational logic and socio-economic consequences among IVET graduates, it is further investigated whether the occupational status of the initial fixed-term job moderates the impact of fixed-term entry employment on the future wage profiles of IVET graduates.

Own contribution to Article (2): I am single author of this article and hence responsible for the complete contribution. I am indebted to Christian Imdorf, Stefan Sacchi and anonymous peer-reviewers for their valuable critical feedback.

Article (3): Scarring effects of early unemployment among young workers with vocational credentials in Switzerland

As introduced above, IVET graduates are well known for experiencing comparatively smooth transitions and a well-coordinated labour market integration. In the recent past however, IVET graduates' transitions seem to have become more risky in that further education and work experience have become increasingly relevant as sorting criteria in addition to jobs for newcomers having become more scarce (Salvisberg and Sacchi 2013; 2014). Hence, IVET graduates are increasingly at risk of failing to enter continuous employment straightforwardly after graduation. Theoretical considerations and empirical findings suggest that early career unemployment in general leads to scarred careers as it negatively impacts future employment prospects. The empirical study (3) investigates whether early unemployment also scars careers of IVET graduates and hence puts to the test whether standardised vocational credentials, which usually guarantee job-education matches, manage to offset scarring where transitions and early careers of IVET graduates are, contrary to expectations, more turbulent and interspersed with some unemployment.

Own contribution to Article (3): I am first author of this article and mainly responsible for the manuscript, including the theoretical elaborations, the establishment of hypotheses and the empirical investigation. I am indebted to Stefan Sacchi, who is co-author of this study, for his assistance in programming the bootstrap procedure used and for the customisation of survey weights. With his methodological expertise and expert knowledge on the Swiss labour market Stefan Sacchi further provided valuable critical feedback, which fed into this contribution.

Article (4): Job opportunities and school-to-work transitions in occupational labour markets. Are occupational change and unskilled employment after vocational education interrelated?

Vocational education is highly occupation specific in Switzerland and IVET credentials qualify young people to take up skilled work in the occupational fields they have been trained in. In the occupationally structured Swiss labour market, job opportunities of IVET graduates hence crucially depend on strong labour demand in the occupational fields that these students were trained in. As IVET graduates may not utilise their human capital outside their subject area (see e.g. Müller and Schweri 2015; Buchs, Müller, and Buchmann 2015), facing weak labour demand in respective occupations may be a major risk factor for their integration. If they change their occupation at labour market entry to prevent unemployment, IVET graduates can no longer rely on an institutionalised path to work and since they do not hold qualifying credentials for skilled work outside their subject area, they may have to accept unskilled jobs in the periphery of other occupational segments.

Against this backdrop, the empirical study (4) investigates whether occupational change and unqualified entry-level employment are related transition outcomes among IVET graduates in the occupational labour market of Switzerland and, further, whether a low number of job vacancies in the occupational field of training drives occupational change and related engagement in unskilled entry-level employment.

Own contribution to Article (4): I share equal authorship with Helen Buchs for this manuscript. I was mainly responsible for preparation of the TREE data while Helen Buchs prepared the data from the Swiss job monitor, which were then matched to allow for a combined analysis that I was responsible for conducting. Helen Buchs was mainly responsible for the theoretical outline of the occupational segmentation of the Swiss labour market and its implications for job-education mismatching while I was responsible for delineating the background of the Swiss vocational education system as well as the method and results sections. Both of us contributed to the abstract, the introduction and the conclusion and we finalised the article in close collaboration.

Article (5) [Thematic Expansion]: Job insecurity - differential effects of subjective and objective measures on life satisfaction trajectories in Germany

Macro-economic changes in the world of work have not only led to an increase in forms of employment that deviate from the once prevailing standard employment relationship and that in some way offer less job security and leave workers in more volatile positions. An increasingly insecure macro system also permeates society in the form of a pervasive social threat of job and status loss, leading to a "subjective precarisation" that also affects those employed in still secure terms (Krämer 2008; Brinkmann, Dörre, and Röbenack 2006). In this regard, job insecurity may be seen as omnipresent in high-income economies (Bourdieu 1998). The supplemental empirical study (5) focusing on the German labour market workforce and drawing on data from the German Socio-Economic Panel (GSOEP), touches on divergences between objective conditions and worker`s subjective evaluation of job insecurity and highlights the longer term detrimental effects of perceived job insecurity on life satisfaction trajectories of young workers, which cut across educational groups.

Own contribution to Article (5): As co-author of this article, I was mainly responsible for the data preparation, the empirical investigation and the drafting of the method and results sections. Through a series of brainstorming sessions during which Shireen Kanji and I exchanged ideas about the topic, I was able to contribute to the establishment of the theoretical background and the hypotheses. Shireen Kanji (first author) was mainly responsible for the elaboration of the theoretical background and the writing and finalisation of the article.

5.1 Data

The analyses conducted in articles 1-4, which form the foundation of this dissertation's empirical investigation with respect to the focus on IVET graduates, make use of data provided by TREE (Transitions from Education to Employment). TREE is a unique, longitudinal survey that follows school to work transitions of pupils in Switzerland. The project is an ongoing prospective panel survey based on a sample of approximately 6000 adolescents who participated in PISA (Programme for International Student Assessment) in the year 2000 and who left Swiss compulsory schools in the same year (Stalder, Meyer and Hupka-Brunner 2011, 67). The sample was tracked in annual surveys from 2001-2007, with two additional follow-up surveys that took place in 2010 and in 2014 (TREE 2013). As data from the latest survey had not yet been released at the time the empirical analyses were conducted, these analyses are based on data collected up to the survey year of 2010. In the first phase concerning the years 2001-2003/2004, transitions were mainly observed from lower secondary to upper secondary education; while the years 2004-2007 mark transitions from upper secondary education to tertiary education or to the labour market for the cohort investigated. The additional survey in 2010, when the participants were about 26 years of age, allows for an investigation of subsequent career outcomes (see table 1).

Taking into account educational achievement during compulsory education and further making use of the wealth of information on social and individual characteristics provided by PISA/TREE, the focus of the empirical analyses lays on transitions from upper secondary (vocational) education to the Swiss labour market as well as on subsequent career outcomes.

Table 1. TREE Project overview and survey design

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
age	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Transition progress	End of compulsory school	Transitions from lower sec. to upper sec.														
				Transitions from upper sec. to tertiary level or labour market												
								Transitions from tertiary level to labour market or consolidation entry								
Surveys	PISA 2000	TREE panel 1	TREE panel 2	TREE panel 3	TREE panel 4	TREE panel 5	TREE panel 6	TREE panel 7			TREE panel 8				TREE panel 9	
Project organisation & funding		TREE phase 1				TREE phase 2				TREE phase 3			TREE phase 4			

Source: TREE 2013, p.5

As TREE was launched with the aim of allowing for a representative description and in-depth investigation of transitions from school to working life in Switzerland, special attention was paid to comprehensively collecting all relevant information necessary to describe and understand pathways from education to work in context. PISA 2000 provides abundant information on school competencies, social and familial background characteristics, as well as personality traits and career ambitions of pupils surveyed in the last year of compulsory schooling. The TREE survey instruments use the same analytical categories in many instances in order to allow for a longitudinal perspective with regard to various factors influencing education-employment pathways. Furthermore, TREE complements existing categories surveyed with additional ones, allowing for even more in-depth analyses of determinants and outcomes of school to work transitions (see Stalder et al. 2011). All in all, this makes the TREE data especially well suited for the empirical analyses conducted, which focus on risky transitions of IVET graduates to the Swiss labour market—reflected in the experience of early job and employment insecurity—and their impact on subsequent career outcomes.

5.2 Methods used

This section provides a very brief introduction of the different methods used in the empirical studies.

Logistic Regression and comparison of predicted probabilities (Article 1)

In article 1 (appendix A), we are interested in estimating effects of educational trajectories on the risk of entering non-standard employment in early career. In non-technical terms: we investigate which educational group, vocationally trained or academic school graduates, are most at risk of non-standard jobs in Switzerland and Japan and assess whether educationally stratified risks of non-standard entry-level work differ between these two countries.

Expressing this in more technical terms, the work arrangement young adults engage in after leaving school is measured by a binary outcome variable taking on the value 1 if school graduates entered non-standard employment and taking on the value 0 if young adults managed to become engaged in standard employment. Estimating effects on a binary dependent outcome variable, we make use of logistic regression (see Long 1997):

$$Y_i^* = X_i\beta + \varepsilon_i \ , \ Y_i = \begin{cases} 1 \ if \ Y_i^* > 0 \\ 0, otherwise \end{cases}$$

, where Y_i^* is a continuous latent variable (e.g. the propensity to enter non-standard work) assumed to underlie the observed binary variable Y_i, which indicates whether the young gained a foothold in either non-standard or standard employment. The error term ε_i is assumed to follow a logistic distribution with mean zero. Relying on latent underlying variables, the conditional variance of the error term ε_i cannot be estimated as no residuals are observed and instead needs to be set to an arbitrary value in order to identify the model. This leads to the coefficients β only being identified up to a scale factor (see Long 1997; 2009). Hence, the comparison of groups in logistic regression models (the same holds for probit regression) is complicated because coefficients cannot be easily compared and tested for equality across groups as the magnitude of coefficients is confounded with residual variation. If the amount of residual variation differs across groups, comparing these coefficients and testing them for equality may lead to wrong conclusions (see Long 2009; Mood 2010; Best and Wolf 2012). In this regard we follow recommendations by Long (2009) in article 1. To compare effects of educational trajectories on the risk of non-standard

employment across young adults in Switzerland and Japan we estimate predicted probabilities and test for significance in differences of predicted probabilities.

Bivariate probit analysis (Article 4)

Processes of occupational closure - so we assume in article 4 (see appendix D) - render it difficult for IVET graduates to gain a foothold in skilled work in occupational fields they have not been trained for. Not finding a job in the occupational field of training, IVET graduates may have to accept unskilled jobs in other occupational segments, as they do not possess the matching occupation-specific credentials qualifying them for skilled employment outside their respective training occupations. In this vein, a successful labour market integration of IVET graduates may be assumed to strongly depend on job opportunities in their respective occupational fields of training. In this regard the empirical study 4 investigates whether i) occupational change at entry and engagement in unskilled employment are related transition outcomes among IVET graduates (assessing if these transition outcomes concur) and ii) whether a low number of job vacancies in the respective occupational field of training and in overall labour demand at entry heightens the risk of experiencing job-education mismatch transitions.

Answering these research questions empirically, we make use of bivariate probit regression. Bivariate probit regression is an extension of the probit model (see Greene 2012), which makes it possible to deal with two binary dependent variables if these are correlated. Bivariate probit analysis allows the joint prediction of the two binary outcomes of occupational and educational mismatching and hence for i) testing for a potential correlation between the two transition outcomes (which is needed in order to check whether there are unobserved correlated determinants of the two outcomes) as well as the ii) estimation of the effects of relevant determinants on the probabilities of different transition outcomes.

Essentially, two separate probit models are estimated simultaneously in bivariate probit regression, allowing for a correlation between the error terms of the two equations. This recognises that there may be further unobserved characteristics that influence both.

The general specification for a bivariate probit model is as follows:

$$Y1_i^* = X_i\beta_1 + \varepsilon_{i1}\ ,\ Y1_i = \begin{cases} 1\ if\ Y1_i^* > 0 \\ 0, otherwise \end{cases}$$

$$Y2_i^* = X_i\beta_2 + \varepsilon_{i2}\ ,\ Y2_i = \begin{cases} 1\ if\ Y2_i^* > 0 \\ 0, otherwise \end{cases}$$

, where $(\varepsilon_{i1}, \varepsilon_{i2})$ are assumed bivariate normal [0, 0, 1, 1, ρ]. $Y1_i^*$ and $Y2_i^*$ are latent variables assumed to underlie the experience of occupational change and unskilled entry employment observed as binary measures $Y1_i$ and $Y2_i$. X_i is a vector of variables determining these two transition outcomes. The correlation coefficient ρ captures the correlation between unknown factors determining both occupational change and unskilled entry employment. If $\rho \neq 0$, then these two transition outcomes cannot be regarded as independent but may rather need to be viewed as related transition outcomes that are determined by similar (unobserved) factors. In addition, bivariate probit analysis allows for the estimation of average marginal effects of covariates on the (joint) probabilities of different combinations of the outcomes the binary dependent variables investigated may take on (Greene 2012; Christofides, Stengos, and Swidinsky 1997; Christofides, Hardin, and Stengos 2000). This allows for an investigation of whether or not a low number of job vacancies at entry may increase the probability of conjointly experiencing an occupational and educational mismatch.

Propensity score matching and treatment effects (Article 3)

Unemployment experiences in early career may leave scars on subsequent career advancement. Article 3 (appendix C) investigates whether young people who experienced early unemployment would have had more favourable career outcomes had they not experienced early unemployment. The aim is to evaluate whether the experience of early unemployment may have altered their career outcomes. Obviously, what would have happened to young entrants who experienced early unemployment had they not experienced it can not be observed. Simply comparing their actual career outcomes to those of their peers who did not experience early unemployment does not satisfactorily answer this question because worse early and later employment outcomes could have been driven by unobserved factors such as a lack in relevant social and individual resources in which

these groups differ. Hence, we would not know if found differences in employment outcomes between those who experienced unemployment and those who did not may have come to the fore because of group differences in other characteristics which we do not observe as opposed to being a result of the "trigger event" of early unemployment. To separate the "causal" effects of early unemployment on subsequent career outcomes from other factors influencing career advancement we make use of propensity score matching, which - in a nutshell -, is a method that allows us to set up a control group of young workers ("statistical twins") who experienced smooth transitions but who are otherwise comparable in relevant characteristics[32] to those who experienced early unemployment. As the control group of young workers who did not experience early unemployment is comparable in their characteristics to the group of young entrants who experienced early unemployment, the differences in their employment outcomes can be assumed to derive only from their differential early employment experiences[33]. Hence, the employment outcomes of the control group can serve as a proxy for the potential career outcomes of those who experienced early unemployment had they not experienced it and provide an insight into whether or not early unemployment "causally" alters career outcomes to the detriment of young workers.

Overall, propensity score matching may be thought of as an innovative set of methods that allows for the estimation of causal effects based on non-experimental survey data (Guo and Fraser 2010; Rosenbaum and Rubin 1983; Heckman et al. 1997) and may best be described in the form of a two-stage procedure. First, propensity scores, that is: conditional probabilities of experiencing early unemployment, are estimated based on a set of potentially confounding variables (applying e.g. logistic regression). Second, based on these propensity scores, a comparable control sample of individuals who have not experienced early unemployment but who are similar with regard to their propensity of experiencing early unemployment is created. Assessing scarring, the average treatment effect on the treated (ATT) is estimated. The ATT can be thought of as the estimated (hypothetical) difference between the employment outcomes of respondents who experienced early

[32] To be more precise: they need be comparable in relevant "pre-treatment" characteristics, which in this regard is in characteristics measured prior to their experience of early unemployment.

[33] This crucially depends on whether or not all relevant characteristics that influence early and subsequent employment outcomes were included in the analysis such that sample balance in all relevant characteristics across treated and control units could actually have been established.

unemployment (the treated) and their potential outcomes had they not experienced unemployment. This unobserved and thus hypothetical outcome is also known as the counterfactual outcome and is estimated based on the control group.

In the following paragraph propensity score matching is briefly introduced in some more technical terms, providing some notations:

The propensity score is defined as the conditional probability of receiving treatment given a vector of covariates (see Rosenbaum and Rubin 1983; Abadie and Imbens 2012; 2016):

$$p(X) = P(W = 1|\, X)$$

, where $W = 1$ indicates treatment assignment and X is a vector of covariates.

The Average Treatment Effect on the treated is the expected difference between the observed outcome of the treated and their hypothetical outcome, had they not been treated:

$$ATT = E[Y(1) - Y(0)|\, W = 1]$$

, where $Y(1)$ is the outcome under exposure to treatment while $Y(0)$ is the potential outcome under no exposure to treatment. $W = 1$ indicates exposure to treatment.

The necessary assumption of ignorable treatment assignment, which is also referred to as conditional independence assumption (CIA) (see Gangl and di Prete 2004), states that, conditional on a vector of potentially confounding covariates X, treatment exposure W is independent of the potential outcomes $Y(1)$ and $Y(0)$.

$$Y(1), Y(0) \perp\!\!\!\perp W|\, X$$

If the assumption of ignorability holds, then it is sufficient to adjust for the propensity score, which is estimated based on X, in order to remove confounding and balance the data (see Rosenbaum and Rubin 1983).

$$Y(1), Y(0) \perp\!\!\!\perp W|\, p(X)$$

Under the assumption of ignorable treatment assignment[34] the counterfactual outcome can be estimated based on control units given the propensity score. Thus, the average effect on

[34] Note that with regard to the estimation of the average treatment effect on the treated (ATT) it is enough to assume that conditional on X, the distribution of the potential outcome Y(0) given W=1 is the same as the

the treated can be derived based on the mean outcomes of treated and non-treated units conditional on the propensity score[35]. In other words: If the assumption of ignorability holds, then the difference between mean outcomes of treated and non-treated units at each value of the propensity score is an unbiased estimate of the treatment effect at that value (Rosenbaum and Rubin 1983, 42)[36]. Consequently, the average treatment effect on the treated can be identified as:

$$\text{ATT} = E\left[\bar{\mu}\big(1, p(X)\big) - \bar{\mu}\big(0, p(X)\big) \,\middle|\, W = 1\right]$$

, where $\bar{\mu}(w, p) = E\,[Y \mid W = w, p(X) = p]$. A corresponding estimator of the average treatment effect on the treated based on nearest-neighbour propensity score matching can be defined as:

$$\text{ATT*} = \frac{1}{\text{N}} \sum_{i=1}^{N} W_i \left(Y_i - \frac{1}{M} \sum_{j \in JM(i)} Y_j\right)$$

, where N is the number of treated individuals i in the sample investigated and JM(i) is the set of control units j matched to each treated individual i (see Abadie and Imbens 2012, 5-6; 2016, 783-784). In this way, propensity scores can be used to construct a control group for treated units with a similar propensity of treatment assignment. Concerning nearest-neighbour propensity score matching, the set of matches j for each treated unit i is chosen so that they are closest with respect to their propensity scores compared to the treated unit i.

$C[p(X_i)] = \underset{j}{min} \;||\; p(X_i) - p\big(X_j\big)||$, j ∈ $\{W = 0\}$, where $C[p(X_i)]$ defines neighbourhood in terms of the propensity score for each treated unit i (see Guo and Fraser 2010).

For a more thorough discussion and introduction to propensity score matching see, for example, Rosenbaum and Rubin 1983, Abadie and Imbens 2012; 2016, Heckman et al. 1997, Guo and Fraser 2010, Bryson, Dorsett, and Purdon 2002.

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conditional distribution of Y(0) given W=0 (see e.g. Heckman et al. 1997). This less strict identifying assumption is defined as: Y(0) ⫫ W |X and adjusting for the propensity score results in: Y(0) ⫫ W | p(X).

[35] Provided there is a positive probability that events W=1 and W=0 occur for all of the values of X (see Heckman et al. 1997; Rosenbaum and Rubin 1983).

[36] One should further note that for the estimation of causal effects based on propensity-score matching analyses the stable unit treatment value assumption (SUTVA), which assumes that no interdependencies and spill-over between treated and controls exist that affect their outcomes (see Gangl and di Prete 2004), need also be met.

Heckman endogenous treatment effect regression (Article 2)

Article 2 (appendix B) investigates whether entering the labour market via fixed-term employment means a bad start into work life for IVET graduates, diminishing their prospects for good quality jobs later on. This is assessed by evaluating whether fixed-term entry-level employment goes together with lower future wages for IVET graduates. The aim is to gauge the causal effect of fixed-term entry-level employment on subsequent wages empirically, and a similar problem as for the investigation of unemployment scarring in article 3 (described above) arises. The problem is that young entrants who select into first fixed-term jobs may systematically differ from young entrants who start their careers in permanent positions. Hence, we cannot simply compare their wages later on because these could, besides their differential initial work arrangements, have been driven by other factors these groups differ in. The investigation of causal effects of fixed-term employment among IVET graduates on their subsequent employment outcomes is further complicated because the crucial factors driving initial fixed-term employment among IVET graduates are not very well established. In such a setting, using propensity score matching (as is used in article 3) may not be a reliable way to investigate causal effects of initial fixed-term employment because it is highly likely that some important characteristics explaining selection into fixed-term employment and subsequent wage development will not be included when setting up a control group[37]. Due to this, the control group comprising of similar young workers who started their career in permanent positions may in the end still differ in relevant characteristics unobserved to the researcher from the group of young entrants who started their career in fixed-term jobs. Hence, the differences in wages found across these groups cannot unequivocally be reduced to differences in their initial work arrangements. A downside of propensity-score matching can be seen here, when investigating causal effects of early labour market experiences, in that one can only eliminate bias based on observable characteristics (or characteristics that are at least correlated with the observed factors included in the estimation of the propensity scores). If there is no in-depth theoretical knowledge on important determinants of a specific labour market experience or in case

[37] Of course, in non-experimental social sciences this is probably most often the case and to some degree may also affect the previously outlined analysis on consequences of early unemployment. However, in this study on effects of fixed-term employment it is theoretically and empirically much less clear what the main determinants of initial fixed-term contracts are and whether these can be sufficiently observed and measured with the data at hand than is the case with early unemployment.

important determinants are not be available in the data at hand, then an approximation of causal effects based on propensity-score matching may not be reliable.

As the sorting mechanisms into fixed-term entry employment are not very well established and selection on unobservables may persist, the (causal) impact of fixed-term entry work on future wages is approximated using endogenous treatment effect regression in article 2 (appendix B). In non-technical terms, this method takes into account that unobserved characteristics explaining selection into fixed-term employment may also have a share in explaining subsequent wages and allows for a "filtering" of the effects of such unobserved determinants. This however hinges strongly on parametric assumptions, which are not easily tested empirically. One should thus be aware that the resulting causal effects need to be interpreted with caution -- as is unavoidable when working with non-experimental survey data.

Endogenous treatment effect regression is based on the work of Heckman (1978) and is concerned with the two-stage consistent estimation of causal effects in the case of selection on unobservables. The Heckman model is based on two equations. The selection equation models the selection process of young entrants into fixed-term employment and, assuming bivariate normality of the error terms, allows the obtainment of an estimate for selection bias (based on the inverse Mills ratio). The outcome equation encompasses the estimation of a linear regression of wages $[\ln(wages)]$ in later career on fixed-term entry employment, including the obtained estimate for selection bias as an additional covariate to control for selection bias (see e.g. Heckman 1978; Briggs 2004; Vella 1998).

The basic setup[38]

The primary regression equation of interest:

$\ln(wage) = x_i\beta + \delta d_i + \varepsilon_i$, where $\varepsilon_i \sim N[0, \sigma^2]$

The selection equation:

$d_i^* = z_i\gamma + u_i \quad d_i = \begin{cases} 1, if\ d_i^* > 0 \\ 0, otherwise \end{cases}$, where $u_i \sim N[0,1]$ [Probit regression]

, where $d_i$is a binary treatment variable (fixed-term employment) and d_i^* is a latent variable assumed to underlie the treatment assignment process.

The error terms (ε_i, u_i) are assumed to be bivariate normally distributed $[0, 0, 1, \sigma^2, \rho]$, where ρ is the correlation between unobservables determining the propensity to become employed fixed-term at entry and unobserved determinants of future wage offers. If $\rho \neq 0$ then the variable d_i is endogenous due to the correlation between d_i and $\varepsilon_i$operating through the correlation between ε_i and u_i and estimating δ based on the primary equation of interest results in inconsistent estimates.

The strategy proposed by Heckman (1978) is to view sample selection bias as a form of omitted variable bias such that introducing a correction term for sample selection bias $(E[\varepsilon_i|x_i, d_i, z_i])$ as an additional variable in the primary regression equation allows for estimation of consistent treatment effects δ.

Assuming joint normality of errors (ε_i, u_i), the correction term for selection bias can be estimated based on the inverse Mills ratio λ evaluated at estimates $(z_i\hat{\gamma})$ from the selection function: $E[\varepsilon_i|x_i, d_i, z_i] = \rho\sigma\lambda_i$

$$\widehat{\lambda_i} = \begin{cases} \frac{\phi(z_i\hat{\gamma})}{\Phi(z_i\hat{\gamma})}\ if\ d_i = 1 \\ \frac{-\phi(z_i\hat{\gamma})}{1-\Phi(z_i\hat{\gamma})} if\ d_i = 0 \end{cases}$$

, where $\phi(\cdot)$ and $\Phi(\cdot)$ denote the density and distribution function of the standard normal distribution.

[38] One may note that parameters can be estimated following the outlined two-step estimation procedure or simultaneously by maximum likelihood. The latter was applied in the article reported.

The `selection bias' corrected outcome regression:

$\ln(wage) = x_i\hat{\beta} + \hat{\delta}d_i + \hat{g}\widehat{\lambda_i} + e_i$, where $\hat{g} = \hat{\rho}\hat{\sigma}$ such that testing the null for g in the outcome equation (under the maintained distributional assumptions) provides a test for presence of sample selection bias.

Growth Curve Modelling (Article 5)

In article 5 (see appendix E) we investigate whether the experience of objective and subjective job insecurities relates to differential life satisfaction trajectories. That is, we investigate whether young workers who are employed in fixed-term work and/or who perceive their jobs as being insecure are less satisfied with their lives and how their life satisfaction evolves over a period of five years compared to young workers in permanent positions and those who perceive their labour market integration as being secure.

To investigate differential life satisfaction trajectories in relation to subjective and objective job insecurity measures we employ latent growth curve modelling. Estimation of a latent growth curve model and investigation of inter-individual differences in life satisfaction trajectories may be seen as involving two steps. First, an unconditional growth curve model without explanatory variables is estimated to assess model fit and, if indicated, to establish a better fitting growth curve model. The second step is to estimate a conditional growth curve model introducing explanatory variables assumed to explain inter-individual differences in growth trajectories as predictors of the latent intercept and slope parameters.

Based on Bollen and Curran (2006), Kaplan (2009) as well as Willett and Sayer (1994) the basic setup of growth curve modeling may be described by the following (simplified) notations:

Unconditional model:

[1] Trajectory equation: $Y_{it} = \alpha_i + \lambda_t\beta_i + \varepsilon_{it}$

[2] Unconditional Intercept equation: $\alpha_i = \alpha_0 + \zeta_{\alpha i}$

[3] Unconditional Slope equation: $\beta_i = \beta_0 + \zeta_{\beta i}$

The vector Y_{it} includes repeated observed measures, e.g. life satisfaction scores for individual i over time t. Focusing on life satisfaction over the time period of 2007-2011 (see empirical study 5 in appendix E), the individual (latent) intercept α_i represents the initial life satisfaction score for individual i in the first year of observation, which is in 2007, while the individual (latent) slope parameter β_i represents the individual rate of change in life satisfaction over the period observed, which is from 2007-2011. The vector λ_t includes pre-defined regression weights allowing the estimation of the (latent) intercept and slope parameters. Assuming a linear trend based on 5 time points (2007-2011) with equally spaced intervals, λ_t includes the values (0,1,2,3,4). Estimating mean trajectories, $\alpha_0$represents the mean life satisfaction of the individuals investigated in 2007, while β_0 represents the mean rate of change from 2007-2011. The disturbances $\zeta_{\alpha i}$ and $\zeta_{\beta i}$ (with means of zero and variances of$\zeta_{\alpha i}$, $\zeta_{\beta i}$ as well as their covariance) represent individual deviations from the mean intercept α_0 and mean slope β_0. The variances of the latent growth parameters hence indicate whether there is inter-individual variation in initial life satisfaction and in the rate of change of life satisfaction.

Including predictors of latent growth parameters in the growth curve model (leading to the conditional model), the intention is to explain inter-individual variability in latent intercept and latent slope parameters describing subjective life satisfaction trajectories.

Conditional model:

[4] Conditional Intercept equation: $\alpha_i = a_\alpha + b_{\alpha 1} x_{1i} + b_{\alpha 2} x_{2i} + \zeta^*_{\alpha i}$

[5] Conditional Slope equation: $\beta_i = a_\beta + b_{\beta 1} x_{1i} + b_{\beta 2} x_{2i} + \zeta^*_{\beta i}$

$x_{1,2}$ represent explanatory variables, e.g. subjective and objective job insecurity, which predict the latent intercept and slope parameters. The coefficients $b_{\alpha 1,2}$and $b_{\beta 1,2}$ represent the effects of the explanatory variables on the latent growth parameters. Significance testing regarding the coefficients $b_{\alpha 1,2}$indicates whether there is an impact of the explanatory variables (e.g. subjective and objective job insecurity) on the latent intercept (e.g. initial life satisfaction in the year 2007) while significance testing of $b_{\beta 1,2}$ indicates whether explanatory variables (such as subjective and objective job insecurity) have an impact on the latent slope, i.e. the rate of change in life satisfaction. The terms $a_{\alpha,\beta}$ are regression

intercepts while $\zeta^{*}_{\alpha,\beta}$ represent disturbances. Variances of these disturbances no longer represent variances of the latent slope parameters (as is the case for the unconditional model) but rather represent individual noise after conditioning the latent growth parameters on explanatory variables. The intercept and slope equation of the conditional model can be thought of as being subsumed into the trajectory equation [1] reported above, leading to a single combined equation (see Bollen and Curran 2006).

6. Summary of Results and Discussion

Besides the importance of individual and social resources, successful labour market integration and career prospects crucially depend on existing opportunity structures within the labour market (Blossfeld 1985, 178; Mayer 1979; Granovetter 1981; Buchmann 2011; Gangl 2003c; McQuaid and Lindsay 2005; OECD 2000). In the light of macro-economic changes toward increased job and employment insecurities in advanced economies, this dissertation examines the increasingly risky labour market integration of young people, focusing mainly on young adults who pursued vocational education and training (VET) in Switzerland. Well-established VET systems are seen as institutional settings that shelter young people from a significant channelling of macro-economic insecurities to the early stage of career formation (Blossfeld 2006). Countries with a strong vocational orientation of their education systems – such as Switzerland- have become role models internationally due to their comparatively low youth unemployment rates (Gonon 2014; OECD 2010a). The empirical study (*article 1, appendix A*) focusing on job insecurities in early careers comparing Japan and Switzerland shows that IVET in Switzerland clearly promotes transitions into permanent full-time positions, in other words into standard employment. Compared to IVET graduates, academically educated young adults are at a higher risk of entering the Swiss labour market via non-standard jobs. These findings stand in sharp contrast to the findings for Japan, where academically educated young people are least at risk of first entering non-standard employment. We interpret these findings against the background of differing transition systems (Maurice et al. 1986; Raffe 2008), with Switzerland`s strongly vocationally-oriented transition system fostering tight links between education and employment for IVET graduates (Buchmann 2011). In the Swiss context, labour demand is occupationally structured and employers rely heavily on occupational credentials as indicators of occupation-specific skills at hiring, such that initial screening for non-standard employment may not be deemed necessary by employers when hiring from the pool of IVET graduates. Allocation to jobs in the occupationally segmented labour market of Switzerland (Sacchi et al. 2016) follows an employment logic (Iannelli and Raffe 2007), which favours IVET graduates who can show occupational skills, allowing them to directly access standard employment in their occupational fields of training. In contrast, in the transition system context of Japan it is the highly academically educated young adults in particular who can

rely on an institutionalised pathway - the Japanese graduate recruitment system-, increasing their chance of direct access to standard employment in their early careers.

IVET, in the transition system context of Switzerland, thus shelters IVET graduates from non-standard employment in their early careers.

Non-standard employment is a mercurial phenomenon (Bühlmann 2013), affecting people of different social standing in Switzerland, and differing operational logics may apply concerning an employer`s utilisation of non-standard forms of employment. Non-standard employment may thus not uniformly mean job insecurity and volatile labour market integration for the workforce engaged in these forms of employment. Non-standard employment in early careers is controversially debated in the literature as either a dead-end and a career hindrance or as part of the career progression and a stepping-stone toward stable employment. In this vein, the operational logic of entry-level non-standard employment for academically educated young adults may need to be assessed against the background of the Swiss transition system where these entrants first need to prove themselves on the job. Some initial screening and the potential to gain work experience rather than labour market exclusion processes and risk shifting may be characteristic of the non-standard entry-level employment in which highly educated entrants with good employment and career prospects in Switzerland engage (e.g. Greppi et al. 2010).

The social meaning of non-standard employment for IVET graduates is less clear, as these young adults have already proven their productivity during their vocational training in Switzerland. Do employers use non-standard employment as an external flexibilisation strategy to shift increased market risks onto vocationally trained newcomers - to the extent that engagement in initial non-standard employment means a bad start in working life for IVET graduates? Empirical results (*article 2, appendix B*) focusing on fixed-term entry jobs, suggest that the operational logic behind fixed-term entry employment may also vary for IVET graduates, affecting their career advancement differently. *Fixed-term entry jobs of low occupational status are found to be associated with detrimental wage development for IVET graduates, while initial fixed-term jobs that are not of low occupational status do not seem to hinder the career advancement of IVET graduates regarding their mid-term wage development.* This finding suggests that there are different operational logics behind fixed-term jobs IVET graduates engage in, in that those at the bottom of the occupational prestige

scale may more closely mirror secondary labour and labour flexibilisation, whilst fixed-term jobs of higher occupational prestige may even encompass some initial screening and provide access to jobs with increased requirements.

In the light of sectoral shifts from an industrial towards a service-oriented economy, increases in knowledge-intensive forms of work, educational expansion and labour demand shifts toward the tertiary level, a weakening of the strongly regulated school to work transitions for IVET graduates has become a concern (e.g., Weil and Lauterbach 2009; Blossfeld 2006: 159; Baethge et al. 2007; Schellenbauer et al. 2010). Job requirements have increased in Switzerland, with prosective employees being under pressure to demonstrate increased work experience and further education, to the extent that entry-level jobs for newcomers have become more scarce (Salvisberg and Sacchi 2013; 2014). Initial vocational education alone may no longer guarantee a smooth integration into the Swiss labour market, putting IVET graduates increasingly at risk of experiencing early career unemployment. Both theoretically and empirically it is a well-established fact that early career unemployment may lead to scarred careers for young people. Is this also the case for IVET graduates experiencing early unemployment or might their occupational credentials act as a buffer? Empirical findings (*article 3, appendix C*) suggest that *standardised occupational credentials do not shield IVET graduates from mid-term scars with regard to their labour market integration, their wage development and satisfaction with their career advancement*. Bumpy transitions and employment instability are thus also a risk for the career advancement and integration of IVET graduates – a finding that gains in relevance considering projections of increasingly risky transitions for IVET graduates in the future.

The Swiss labour market is characterised by processes of occupational closure, where the employment and career prospects of employees holding occupation-specific credentials are confined to occupational segments of similar skill and task profiles (Sacchi et al. 2016). In this respect a major macro-economic risk for the integration of IVET graduates is low labour demand in their respective occupational fields of training, as the occupation-specific credentials acquired do not qualify the young for skilled employment outside the occupational segment for which they were trained. Supporting the importance of occupation-specific labour demand for a successful integration of IVET graduates, empirical results (*article 4, appendix D*) show that *a low number of job vacancies in the respective*

occupational field of training at labour market entry drives occupational change among IVET graduates, and changing the occupational field of training is associated with engagement in unqualified employment in other occupational segments. This finding highlights how strongly a successful integration of IVET graduates in the occupationally segmented labour market of Switzerland depends on a match between apprenticeship training places offered in the respective occupational fields and actual (future) labour demand in these respective occupational fields of training. Hence, this finding emphasizes the high relevance and necessity of a good and "anticipatory" monitoring of apprenticeship places offered that match occupation-specific labour demand for a successful integration of IVET graduates in occupational labour markets. In the context of rapid changes regarding the skills in demand, occupational upgrading and shifts towards the tertiary level, the dual VET model as a "career-relevant model" (Gonon 2014, 248) opening up pathways to tertiary level education and preventing IVET from becoming a dead-end further gains in importance.

Changes in the macro-economic environment involving increased job and employment insecurities in advanced economies may also affect workers still employed on secure terms and make them fear for their future labour market integration (Krämer 2008; Brinkmann et al. 2006). In the supplemental article (*article 5, appendix E*) the focus is on the life satisfaction trajectories of young workers in the German labour market. Lending support to Bourdieu`s (1998) projection of subjective precarité being everywhere, *empirical results suggest subjective job insecurity to be widespread among young workers, also affecting workers in permanent positions. Findings further support the idea that subjective job insecurity undermines the satisfaction young workers feel with their lives, an association that persists in the longer term and holds across educational groups*. Objectively insecure jobs, such as fixed-term employment, accompany reduced life satisfaction, particularly for less educated workers. These supplemental findings thus underline the importance of taking into account potential divergences between objective and subjective job insecurities when investigating the effects of job insecurity on the evolution of workers' subjective well-being. Objective conditions may be subjectively assessed and experienced differently, and similar objective conditions may hold a different meaning for the workers involved. In addition, an increasingly insecure macro system, diffusing fears and uncertainty concerning the contemporary labour market integration of the workforce, undermines welfare of workers of different social standings.

Limitations

While the findings of this dissertation have contributed to the knowledge on job and employment insecurities in early career and their longer-term consequences, they are, of course, not without limitations. The empirical investigations (see appendix) could only shed light on a few selected job and employment insecurities and their consequences. This selection does not at all provide a complete depiction of the job and employment insecurities that affect early and later career outcomes of IVET graduates. In addition, the somewhat limited time dimension of the prospective survey when the analyses were conducted only allowed for an investigation of mid-term career outcomes of risky transitions, those being the available employment outcomes when the young people surveyed were about 26 years old. Future analyses may profit from an investigation based on a longer time dimension, allowing for an assessment of a potential fading or exacerbation of adverse consequences of early job and employment insecurities (scarring effects) in the longer run.

These longer-term consequences may additionally be heterogeneous across dimensions such as, for example, gender, migrant status or the field of the vocational training programme and occupation trained for. Taking this into account, the analyses provide only an overview of average effects, potentially hiding underlying differences in effects across lines of social stratification. This mainly has to do with small sample problems when investigating heterogeneous effects but deserves more attention in future research.

Using TREE data for the main analyses, only education-employment pathways of a single cohort could be analysed at the time this dissertation was completed. It was thus not possible to control for and exclude cohort effects. One should further keep in mind that there is no “statistical silver bullet” (see Briggs 2004, 418) regarding the estimation of causal effects based on non-experimental survey data. Estimation of causal effects based on non-experimental survey data is always a risky business and hence causal effect estimates need to be interpreted with caution.

7. Main contributions and outlook

This last section is dedicated to outlining how the five empirical studies and the overall dissertation work have contributed to and furthered sociological research in various subfields and to pointing towards possibilities for future sociological research.

With the aim of contributing to the understanding of how job and employment insecurities in early career depend on institutionalised school to work transition structures, the first empirical study (*article 1, appendix A*) adds to sociological transition system literature. It highlights that the risk of insecure entry jobs is moderated differently by educational trajectories as a consequence of operational logics of non-standard entry-level employment that vary across national contexts. In occupationally structured transition systems (e.g. Switzerland), those who are occupationally trained (e.g. graduates of vocational educational and training) are most protected from job insecurities, whereas higher education graduates face higher risks of job insecurity in their early careers. In contrast, in organisationally structured transition systems (e.g. Japan), educational and labour market organisations link on the grounds of their organisational status, with graduates from prestigious academic educations having better chances of transferring to stable employment in the more prestigious (larger) companies compared to vocational students from less prestigious VET colleges. Future sociological research evaluating chances and risks of non-standard entry employment for young people should therefore take into account variations in operational logics of non-standard entry employment across national school to work transition structures.

The second and third empirical studies (*articles 2 and 3, appendixes B and C*) were concerned with the investigation of potential longer-term career consequences of early job and employment insecurities among IVET graduates. The empirical studies provide evidence that initial job and employment insecurities negatively affect the careers of IVET graduates in the longer term and hence should not be dismissed as only temporary entry-level setbacks. The empirical studies thus underpin that, in addition to individual and social resources opening up or constraining individual employment prospects, opportunity structures in the job market are highly relevant for individual career advancement in their own right. In this respect, the empirical investigations contribute to the field of sociological labour market research, in which path dependencies of future employment prospects on initial labour

market placement and experiences are of core interest (see e.g., Dietrich and Abraham 2005).

The empirical contribution on scarring effects (*article 2, appendix B*) drew on interdisciplinary theoretical perspectives such as economic and psychological explanations of scarring, which were then related to the institutional context that structures the labour market integration of IVET graduates in order to allow for context sensitive hypotheses and research on scarring. In future research on scarring effects, this sociological angle of institutional variation and research that is sensitive towards differences in effects across social groups should be strengthened. As yet there exists little theoretically founded and empirically tested knowledge on institutional arrangements that may mitigate scarring effects. In addition, while analyses on scarring effects have become increasingly sensitive towards differences in effects across social groups such as across gender, educational attainment levels and migrant status, these studies are mainly based on ad-hoc theorisation as to why the experience of unemployment may cut deeper and leave longer-lasting scars on the careers of some social groups compared to others. In this regard, there seems to be room for sociologically inspired input and theoretical development in the otherwise mainly economically dominated investigations of scarring effects.

Investigating the allocation of IVET graduates to insecure entry-level jobs and evaluating their future career implications (*article 3, appendix C*), a disciplinary contribution of this empirical study lies in challenging dual labour market theory (e.g. Doeringer and Piore 1991), which assumes insecure jobs to be generally located in the secondary labour segment, offering little prospect for professional development, as well as being conducted by people holding low bargaining power. The empirical study suggests that fixed-term entry jobs among IVET graduates are of different occupational prestige and are pursued by IVET graduates holding differential bargaining power. The empirical results also provide evidence that career consequences of fixed-term entry-level jobs are moderated by the occupational status of these entry jobs.

Sociological research on the allocation to insecure jobs and the correspondent career consequences has primarily focused on socially stratified labour market prospects, assuming constrained job alternatives to force individuals to take up insecure work. This neglects individuals as active agents in structuring their careers. The interplay and interrelation

between structures constraining and enabling individual alternatives and choices and the active agency of individuals in structuring their environment and life courses is a core sociological question and lies at the heart of long-standing debate. Focusing on school to work transitions, which are a typical example of the interplay between the individual and his/her context (Neuenschwander and Kracke 2011, 99), future sociological research on transitions into and consequences of insecure entry jobs could also consider and integrate the agency perspective to gain more insight into young people`s negotiation of their careers, their self-selection processes, and their motives and reasoning for why they "choose" insecure work – asking, for example, whether this is simply and universally due to a lack of alternatives.

The fourth empirical study (*article 4, appendix D*) contributes to institutionally sensitive sociological transition research by shedding light on the opportunity-constraining aspects of the institutionalised pathway to work for IVET graduates in strongly vocationally oriented transition systems. While the institutionalised pathway from vocational training programmes to specific occupational fields allows for smooth transitions on the one hand, it, on the other hand, constrains IVET graduates' prospects for skilled employment in occupations other than those they were trained in. This institutionalised mode of job allocation thus renders IVET graduates' chances for skilled work strongly dependent on good labour demand in their occupational fields of training. This empirical contribution thus stands in contrast to mainstream comparative research on education-employment transitions that is led by a discourse mainly emphasising the "enabling" side of the institutionalised pathway to work for young people in vocationally orientated transition systems, a discourse that disregards the "constraining" part of this socially regulated channel to work.

The fifth empirical contribution (*article 5, appendix E*) advances sociological research on the consequences of job insecurity by drawing attention to the divergence in objective and subjective job insecurity. Following sociologists Bourdieu (2000) and Burawoy (2012) in arguing that objective conditions of labour exploitation and inferior work conditions are not necessarily reflected in workers` subjective evaluations of their jobs, this study points to differential consequences of objective and subjective notions of job security on individual subjective welfare. In this way, it reminds sociological research on consequences of job insecurity not to assume subjectivities to be inherently reflected in objective conditions.

Overall contribution and concluding remarks

Overall, school to work transitions have become more diverse in advanced economies (see e.g. Shanahan 2000). Less linearity in entering continuous full-time employment after initial education may on the one hand be attributed to processes of educational expansion. Increasing proportions of young people not only stay in school longer but also return to higher education at different stages after labour market entry or combine continuing education with work. On the other hand, heightened variability and less linearity in labour market entry transitions may also be seen in the light of changing macro-economic conditions (see Buchmann 2011, 307). Portraying school to work transitions as following a "linear" pathway along which several *thresholds* are bridged (see e.g. Mertens 1976) no longer corresponds to reality. This approach neglects to account for (increasing) employment instability coinciding with increased job mobility in early career as well as experiences of unemployment and participation in further education. Initial employment may only be of intermediate status and potential overlap between education and work may exist (see e.g. Raffe 2003; Dietrich and Abraham 2005). Due to this development, school to work transitions have also become conceived of as sequences, involving multiple transitions (see Buchmann 2011; Brzinsky-Fay 2007; 2014).

The main combined contribution of the different empirical studies of this dissertation consists of underpinning that these recent trends do not spare IVET graduates. Smooth and in a sense "linear" transitions have become established as the hallmark of dual VET in cross-national comparative research on school to work transitions. This resulted in an (international) discourse mostly blind to "non-linearity" in trajectories of IVET graduates and to changes in the world of work that pose new challenges for the institution of dual VET. In order to continue to guarantee future generations' integration into a world of work that is changing ever more rapidly, where job requirements increase and where the life-long pursuit of one and the same job and occupation increasingly diverges from reality, dual VET clearly faces the challenge of needing to prove itself as a "career-relevant model" (Gonon 2014, 248), opening up pathways to the tertiary level and allowing for re-orientation when demand in the occupation initially trained for shrinks. Future research on school to work transitions may benefit from more sensitivity toward contemporaneous changes that

challenge the institution of dual VET in order to more comprehensively frame and investigate configurations of job and employment (in-)securities faced by IVET graduates.

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Appendix A: Article 1

Transition systems and non-standard employment in early career: comparing Japan and Switzerland

Christian Imdorf, Laura Helbling and Akio Inui

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Abstract

Even though Japan and Switzerland are characterised by comparatively low youth unemployment rates, non-standard forms of employment are on the rise, posing a risk to the stable integration of young labour market entrants. Drawing on the French approach of societal analysis, this paper investigates how country-specific school-to-work transition systems stratify the risk of non-standard employment in early career differently in Japan and Switzerland. Our results reveal that in Japan, young entrants who completed university education are least at risk of becoming employed in non-standard work. On the contrary, it is the highly educated university graduates who mainly enter the labour market via non-standard employment in Switzerland, where vocational education promotes smooth transitions into standard employment relationships. Our findings suggest that the transition systems of the two countries differ in the way they revert to non-standard forms of employment. However, while job insecurities may not endanger labour market integration of highly skilled university graduates holding good career prospects in Switzerland, they may go hand in hand with social exclusion processes for the low-educated young entrants lacking bargaining power in the segmented Japanese labour market.

Keywords: transition system; non-standard employment; early career; Japan; Switzerland

Introduction

This paper investigates how educational trajectories stratify the risk of non-standard employment for youth at labour market entry in Japan and Switzerland, two countries with distinctive education-to-work transition systems. Even though both countries have relatively low youth unemployment rates of 7–9%, school graduates face increasingly risky labour markets. In addition to increases in (youth) unemployment (Sacchi and Salvisberg 2011; Bolli et al. 2015; Weber 2001; Genda 2003; Goodman 2012), jobs deviating from the traditional 'male breadwinner model' (Meier 2014) of continuous, full-time employment have become an integral part of both economies (Ecoplan 2010; OECD 2010, 2014; Yu 2012; Toivonen and Imoto 2012, 4; Inui 2009).

With reference to the pioneering French approach of societal analysis (Maurice et al. 1979; Maurice 2008) – which provided the basis for further education and transition system research (see, e.g., Allmendinger 1989; Shavit and Müller 1998) and which fed into the concept of transition systems (Raffe 2008) – a coherent intertwinement of education and employment structures, which leads to smooth school-to-work transitions, needs to be viewed differently for Switzerland, which represents an Occupational Labour Market (OLM, or a 'qualification space') and Japan, where the Internal Labour Market (ILM, 'organisational space' [Müller and Shavit 1998]) is more prominent. While the Swiss transition system relies on the vocational principle as the main link between education and work, the Japanese transition system has traditionally relied much more on companies that integrate academically prepared school graduates and train them on the job. Whereas the transition system literature has intensely analysed the different mix and functionality of vocational and general education in ILM and OLM, the impact of transition systems on non-standard employment has only very recently been problematised (Busemeyer and Thelen 2015).

To help close this research gap, the aim of this paper is to gain an initial understanding and encourage further thinking about how different education-to-work transition systems may relate to recent labour market insecurities surrounding the establishment of newcomers. More specifically, we ask how non-standard employment relates to vocational vs. university education in the different transition systems of Switzerland and Japan. We use comparable youth panel data in our analysis in order to compare early labour market destinations of young school graduates. Our findings point to remarkably different patterns of non-standard employment among vocational and university graduates in the two countries. These findings are interpreted against the background of different transition systems, suggesting differential operational logics of non-standard forms of entry-employment.

Investigating the stratifying impact of educational pathways on the risk of non-standard entry employment during one's early career in Japan and Switzerland, we briefly define non-standard employment and outline, in a first step, competing perspectives on the operational logics and consequences of non-standard entry work for youth as either 'stepping-stones' or 'dead-ends'. In a second step, we embed the operational logics of non-standard entry employment in the context of differential transition systems that structure the allocation of school graduates to their first jobs. Following this, the method and data used are introduced. Finally, the results are presented, followed by a discussion and conclusion.

Non-standard employment and school-to-work transition systems

Different functions and consequences of non-standard employment

In the context of economic slowdown, globalisation, tertiarisation and technological progress, standards such as the traditional 'male breadwinner model' (Meier 2014), established throughout the post-war period in advanced economies, have come under increased pressure. Demand for more flexible forms of work, departing from the formerly established standard of

continuous, full-time, and dependent employment, has increased. Formerly well-established workers are nowadays facing 'new' insecurities concerning their labour market and social security system integration across advanced economies.

Overall, different definitions of standard employment exist. Most definitions are based on aspects such as dependent employment, the contractual status (permanent) and regular working hours (full-time), which are in accordance with the definition applied in this study. *Non-standard employment* (also referred to as atypical work) is defined negatively against the standard employment relationship. Thus non-standard employment includes a heterogeneous conglomerate of different forms of work that deviate in one or several respects from standard employment, including part-time work, fixed-term employment, temporary agency work, or work on call (Ecoplan 2007; Meier 2014; ILO 2015).

Despite increased educational attainment, labour market entrants in particular are encountering increasing difficulties in finding stable employment across the OECD countries. In addition to increased unemployment risks, youth are disproportionately affected by non-standard forms of work, such as fixed-term work, part-time employment and temporary agency work (Eurofound 2013; ILO 2012; OECD 2014). This extends to labour markets that are otherwise characterised by low youth unemployment rates in international comparison, such as those in Switzerland or Japan (Ecoplan 2007; Inui et al. 2007; Standing 2011). As non-standard forms of employment have been found to be inferior compared to standard employment in terms of job security, wage level, promotion aspects, and occupational upward mobility, as well as continuing training possibilities (OECD 2014, 2010; Giesecke and Groß 2003, 2004; Booth et al. 2002; Inui 2009; Yu 2012), and they may prove to be traps evolving into unstable careers, concern has been raised about the increasingly risky and volatile labour market integration of youth in advanced economies.

What complicates a uniform association of non-standard employment with job and employment insecurities (Chung 2015) is that similar types of non-standard forms of

employment may serve different purposes from the employer's perspective (Giesecke and Groß 2006), resulting in differential consequences for the careers of those engaged. On the one hand, non-standard employment may be utilised by employers as a screening device allowing for access into high-skill work with good career prospects after an initial probationary period. In this case, non-standard forms of work may function as *stepping-stones* into regular work and thus ease the school-to-work transitions for youth who get a chance to gain work experience and prove themselves on the job. On the other hand, non-standard employment may be utilised by employers as a numerical flexibilisation strategy (Atkinson 1984), allowing for the employment of a buffer stock of workers, which can be more easily adjusted to changes in demand. This clearly undermines the job security for those employed in such (more peripheral) work arrangements. From this perspective, atypical employment needs to be viewed as *a trap*, hindering stable labour market integration and professional development of youth who bounce back and forth between insecure work and unemployment (see, e.g. Scherer 2004; OECD 2014, 179 ff.).

School-to-work transition systems and non-standard employment

Rather than considering these two different perspectives on the operational logics and linked consequences of non-standard employment on the labour market integration of youth as competing, we argue that they need be assessed in the light of country-specific systems of school-to-work transitions. In short, such transition systems may be described as the relatively enduring features of a country's institutional and structural arrangements, which shape the transition from education to early employment (Raffe 2008).

The societal analysis approach (Maurice et al. 1979; Maurice 2008) – distinguishing between 'qualification space' (OLM) and 'organisational space' (ILM) – has strongly influenced international transition systems research (Raffe 2008). It proposes country-specific

relationships between the organisation of education (general vs. vocational education, type of degrees offered, the nature of competition, tracking and selection, etc.), on the one hand, and the labour market structures and processes (job hierarchy with regard to training and qualification, variation between the branches of industry, behaviour of firms etc.), on the other hand. Hence, different ratios of general and vocational education on the upper-secondary and tertiary levels have to be understood in a wider context of how the educational system and the employment system (the standard model of employment, its various categories of qualification and forms of employment, and occupational mobility) consistently relate to each other. Along this vein, different operational logics of non-standard forms of work in the early career period and the educational profiles of the affected youth may be thought to relate to country-specific logics in allocating school graduates to jobs.

Thus far, only a few studies have looked at how patterns of non-standard employment might be linked to country-specific systems of education and employment. Nohara (2008) analysed the different functions of part-time work for women in France and Japan as a function of the respective employment systems. Busemeyer and Thelen (2015), with a special focus on initial vocational education and training (IVET) systems, demonstrated that skill formation regimes matter with regard to youth unemployment and low-pay employment. The authors distinguished four different skill formation systems – statist, collectivist, liberal, and segmentalist – by taking into consideration the degree of public commitment to vocational training and the involvement of firms in IVET (Thelen 2004; Busemeyer 2009). In liberal skill formation regimes (e.g. the United Kingdom), both public commitment to and firm involvement in IVET are low, and the education system promotes academic skills. Whereas the involvement of employers is similarly limited in statist skill formation regimes (e.g. France, Denmark), the latter show higher public commitment to IVET. Within systems with a high firm involvement, collectivist systems (e.g. Germany and Switzerland), where a wider range of firms, including small and medium-sized enterprises, typically train ‘above need’,

can be distinguished from segmentalist systems (e.g. Japan), where on-the-job-training is primarily offered by firms for their own recruitment and retention purposes. Busemeyer and Thelen (2015) found that even though firm-based IVET in collectivist systems is more effective in reducing youth unemployment, school based IVET of statist systems seems to be more effective in mitigating labour market stratification through wage inequality. Liberal skill formation regimes, in turn, perform better than average with regard to the inclusion of young people in the labour market, but they seem to produce a higher risk of low pay. In the following, we ask how collectivist and segmentalist systems may differ with respect to relegating youth to non-standard employment by analysing the cases of Switzerland and Japan.

Contrasting school-to-work transition systems in Switzerland and Japan

While young people's school-to-work transitions in Switzerland and Japan show some similarities, they occur within different transition systems. In Switzerland, IVET is the most popular form of upper-secondary level education and training. Mainly organised in the form of apprenticeships, upper-secondary IVET programmes provide over two-thirds of young people with the knowledge and skills needed to carry out and qualify for a specific occupation (SERI 2013). In contrast, Japan's upper-secondary graduation rate figures for 2011 are opposite those of Switzerland, with three out of four first-time upper secondary graduates having enrolled in general programmes and only one out of four in (pre-) vocational programmes (OECD 2013, 51). Accordingly, first-degree tertiary enrolment is considerably higher in Japan compared to Switzerland. While Japan has a tertiary graduation rate of 69%, the respective figure for Switzerland amounts to 47%[39].

[39] Total number of tertiary types A and B programme graduates according to OECD (2013) (author's calculation).

The coherence of education and employment in 'collectivist' Switzerland

The traditional coherence of the education and employment systems in Switzerland is similar to that of Germany. In both countries, the way employees acquire labour market qualifications is centred on the concept of *Beruf* (professionality or vocation), which has several dimensions: a formal knowledge base, mastery of practical skills, membership in an association, and formal recognition of IVET qualifications within the labour market. The Swiss apprenticeship system is highly valued by the public and has a strong corporatist trait. The regulation of IVET is based on a complex collaboration between the state, industrial and professional associations (e.g. local chambers of industry and commerce, or handicraft guilds), and trade unions. The adjustment of supply and demand is made through joint initiatives of the industry and the IVET system. The IVET system leads to recognised qualifications (Federal VET Diploma) that closely match the needs of an occupationally segmented labour market, both in terms of occupational skills and the number of jobs that are available. As a consequence, access to qualified employment is highly regulated by recognised occupational certificates within specific industries. Therefore, Switzerland represents a collectivist skill formation regime embedded in a liberal, but occupationally segmented, labour market ('qualification space').

In turn, higher education programmes, especially academic university programmes, are less occupationally specific and nationally standardised (Imdorf and Hupka-Brunner 2015), which may result in job–education mismatches at labour market entry (Diem and Wolter 2014). Furthermore, universities often conform their offer of study programmes to the students' demands rather than to labour market needs. As university graduates (long higher education) cannot rely on strong institutional links between education and work in the collectivist transition system of Switzerland – since allocation to jobs follows an employment logic (Iannelli and Raffe 2007) – we expect university graduates to be more often affected by

non-standard employment at labour market entry compared to IVET graduates who have already proven themselves 'on-the job', but also compared to graduates of short higher education programmes. In contrast to longer (academic) higher education, the latter (e.g. studies at universities of applied sciences or at PET colleges) require a vocational baccalaureate or respective work experience and are therefore more closely linked to labour market needs.

The coherence of education and employment in 'segmentalist' Japan

In Japan, post-World War II, the central actors in the development of workers' job skills have not been schools or the state, but rather the employers of private enterprises (Thelen 2004; Brinton 2011). Training has been provided without state regulation in mostly large and medium-sized companies (Goodman 2012). According to their own needs and demand, companies *de facto* took over vocational education to develop the skills of high school graduates who were supposed to learn on the job (Inui 2003; Maurice 2008). Accordingly, public vocational education and training prior to employment was hardly developed and its lack has remained a distinctive characteristic of the Japanese education system (Inui 1993). Based on the production of company-specific skills in the primary segment of the labour market, the Japanese transition system is referred to as a segmentalist system (Thelen 2004). The (occupational) distinction between different jobs is of much less importance in this system than is the distinction between internal (primary) and external (secondary) labour market segments (Doeringer and Piore 1971; Inui 1993).

Up until today, the Japanese educational system has only provided some (mostly private) specialised training colleges and courses at vocational high schools in agriculture, fishery, industry, home economics, and commerce, which remain devaluated and aligned according to the needs of external markets (Brinton 2011). Rather than promoting vocational

education and training, the system has privileged general education (Inui and Hosogane 1995), which led to widespread higher education (Maurice 2008). The main function of education in Japan has been the development of general human capital based on strong academic competition in accessing senior high schools and higher education (Inui 1993). The competition between students within the whole school system (including vocational education) is therefore almost completely aligned according to academic criteria, the main social and educational streaming criteria for Japanese youths. To the employers, academic credentials signal a general 'potential' and capacity for social and professional adaptation (Maurice 2008) and are given precedence over (job-) specific skills and qualifications at hiring. This is very different than the Swiss collectivist system, where competition for jobs among young adults holding upper-secondary level education is primarily based on well-developed occupation-specific skills. Swiss companies, first of all, look for graduates holding a VET diploma indicating such skills, which are often valued more than are general skills, especially as far as upper-secondary level education is concerned.

From the perspective of societal analysis, Japan's highly examination-centred, intensely competitive education system is linked to the distinct organisation of the Japanese employment system (Maurice 2008). The recruitment of young – especially male – workers was traditionally done through the high school graduate recruitment system, a quasi institution of the employment system for Japanese high school graduates. Conceptually, the graduate recruitment system is part of a lifetime employment model (with permanent full-time employment as one of its central features) that offers social security and includes additional subsystems, such as a training system within the firm, a seniority promotion system and a retirement system (Inui 1993).

In this segmentalist school-to-work transition system, schools, colleges and universities allocate their students directly to employers who sign informal job contracts with fresh graduates months before their graduation, based on academic criteria (Toivonen and

Imoto 2012). Schools traditionally recommend a selection of their best students to some companies that they have been in contact with for several years. The more academically successful the high school and university graduates, the better the chance to get hired by a company in the Japanese employment system, which offers stable forms of employment in the internal labour market. As Goodman (2012, 164) stated, 'top employers drew their new workers from the top universities, which in turn took their students from the top secondary schools, which admitted their students on the basis of how well they had done on entrance examinations at the age of 15. The Japanese graduate recruitment system covered nearly 80% of each cohort from the middle of the 1960s to the end of the 1970s, and the figure was still nearly 70% in the 1980s (Inui 2003).

One should note, however, that the segmentalist Japanese transition system has experienced increasing imbalance and disintegration in a changing, globalising labour market, with considerable expansion of the external labour market for young workers since the late 1980s. Temporary, part-time, and casual work (individuals that fall into this category are called 'freeters') has become more frequent among young people, and the share of insecure 'non-standard' workers in terms of the total employment pool increased from approximately 20% to 46% for 15–24 year olds between 1990 and 2009 (Inui 2009; Toivonen and Imoto 2012). In light of the persisting segmentalist Japanese transition system, where it is (at best) the academically educated youth that benefit from an institutionalised pathway to stable jobs, one can therefore expect a higher risk of non-standard employment the lower the academic achievement of young Japanese adults.

Against this backdrop of two differing – segmentalist vs. collectivist – school-to-work transition systems, we empirically investigated how vocational training and academic education promote entry into non-standard employment to different degrees for youth who enter the labour market in Japan and Switzerland.

Data and methods

Data

Our analysis draws upon data from two comparable longitudinal surveys: the Swiss youth panel survey *Transition from Education to Employment* (TREE) and the *Youth Cohort Study of Japan* (YCSJ). TREE surveys the post-compulsory educational and labour market pathways of a school graduates' cohort in Switzerland, based on a sample of approximately 6,000 young people who participated in the PISA survey for the year 2000 and left compulsory school the same year, at the age of 15 or 16. This sample was followed up using TREE by means of seven waves in an annual rhythm between 2001 and 2007 and an eighth one in 2010. The Swiss findings are based on the eighth survey wave in 2010, when the respondents were about 26 years old. At that time, 54% (N=3,424) of the 2001 sample were still covered by the survey (TREE 2013). Panel weights were used to compensate for sample bias and to maintain the representative nature of the sample (Sacchi 2011).

A research project group from the Japanese Educational Research Association conducted the YCSJ panel study, which was funded by the government's academic research fund. All of the respondents were 20 years of age in April 2007 and were selected randomly from the national register of residents. The first wave of data collection occurred in autumn 2007, with subsequent annual waves until 2011 (five survey waves). The response rate for the first survey wave was 40.2%, leading to 1,687 completed questionnaires. Although the response rate was not high, the analysis of respondents' main activities (education, employment and other) and employment status (regular, fixed-term and 'freeter') closely matched the recorded rates of the population at that age in official statistics (Furlong et al. 2012). The Japanese findings are based on the fifth survey wave in 2011, when the respondents were 24 years old.

The focus of our analysis is on young adults employed in the labour market[40] who are not still in education or training programmes and of whom we have information on their highest level of educational attainment. This amounts to a sample of N=1,979 young workers in Switzerland, of which 1,122 are female and 857 are male. For Japan, the final sample consists of N=687 young employees, of whom 384 are female and 303 are male. In the case of Japan, non-standard employment, our dependent variable, is defined with regard to an individual's main job (self-reported, according to the most hours worked) and captures self-reported part-time work, fixed-term employment, jobs through employment agencies, self-employment, work in family businesses, and artisanry in private households. In the Swiss case, non-standard employment is defined with regard to the main job (which is the job encompassing the most hours worked per week) and includes part-time work (<30 hours per week, which is less than 70%), fixed-term employment, self-employment, work on call, work in family businesses and private households. Based on these measurements, we found that 31% of Japanese respondents were employed in non-standard jobs compared to 24% of Swiss respondents (weighted).

Independent variables

The attained type of *education* is categorised into general education, vocational education, short higher education, and long higher education. General education refers to workers with completed general studies at the upper-secondary level (Japan: senior high school level), holding neither a vocational nor a tertiary degree. Vocational education (IVET) refers to the completion of vocational education at the upper-secondary level. Short higher education in Japan encompasses degrees from junior colleges, specialised training colleges, and colleges of

[40] This includes the self-employed. With respect to the Swiss sample, young adults who work more than seven hours per week and are not in education or training programmes anymore are regarded as working.

technology. In the Swiss case, we compare degrees from universities of applied science, universities of teacher education, and professional colleges. Long higher education refers to four-year university studies in Japan and to academic study programmes at universities in Switzerland.

Table 1 shows the educational attainment across the Swiss and the Japanese samples. In all, 8% of respondents in Switzerland and 10% in Japan completed upper-secondary general education without labour market orientation. The percentage of vocational degrees in Switzerland is five times higher compared to in Japan (62% compared to 12%). Workers with higher education degrees are remarkably overrepresented in Japan, especially with regard to long higher education (46% compared to 12% in the Swiss data)[41].

Table 1: Educational attainment across countries

Educational attainment	*Switzerland*[a]	*Japan*
General Education	8% (213)	10% (67)
Vocational Education (IVET)	62% (953)	12% (81)
Short higher Education	18% (396)	32% (222)
Long higher Education	12% (417)	46% (317)
	100% (1979)	100% (687)

a) TREE data are weighted to correct for sampling design and panel attrition

In our analysis, we *controlled* for the duration of time that a respondent has been out of school (*duration*), which is measured in months and captures the time span between the date of the survey and the completion of a case's highest educational degree. *Parental higher*

[41] The remarkably lower tertiary graduation rates (short and long higher education) derived from the TREE sample compared to the official Swiss statistics on tertiary graduation rates reported above are due to the fact that many young adults in the cohort investigated via TREE are still in higher education programmes at age 26 and therefore are excluded from our analysis.

education is a dichotomous variable that is coded 1 if at least one parent completed a (short or long) higher educational degree and is coded 0 if no parent graduated from higher education. *Gender* is a binary variable that is coded 0 for female and 1 for male workers. We further included a variable capturing the *firm size*, which is classified as small (headcount: 0–99), medium (headcount: 100–499), and/or large (headcount: 500+). In addition, we included *industrial sectors*, classified as manufacturing, construction, sales, finance and real estate, transportation and electricity, restaurant and hotel, information and communication, education and research, medical and welfare, government, primary and others, and various services. *Region of living* is a dichotomous variable that is coded 1 if the young workers' geographical origin is a rural area and is coded 0 if they lived in an urban area when they enrolled in upper-secondary school.

Method

The comparison of groups in non-linear regression models is complicated, as regression coefficients reflect residual variation, which is likely to vary across models and groups (Long 1997; Mood 2010; Best and Wolf 2012; Karlson et al. 2012). Thus, when applying a logistic regression analysis in order to model the risk of non-standard employment in Japan and Switzerland, log-odds and odds-ratios cannot be compared across countries. In order to compare the effects of educational attainment on the probability of non-standard employment, we will therefore report average marginal effects (AMEs) (Mood 2010; Best and Wolf 2012). This helps to shed some light on the different average effects of educational attainment on young employees' risks of exposure to labour market insecurities within and across countries. To assess whether or not significant differences exist in the way that educational tracks stratify the risk of non-standard employment across countries, we further followed Long's (2009) recommendations and computed differences in predicted probabilities of non-standard

employment at different educational levels. In contrast to log-odds and odds-ratios, predicted probabilities are not confounded by differential residual variation (Long 2009) and can be compared across groups. With respect to the Swiss sample, weights that adjust for disproportionality due to the sampling design of the PISA/TREE survey and panel attrition (Sacchi 2011) were applied in order to allow for a generalisation of the results regarding the target population of young employees in Switzerland.

Results

Our multivariate results reveal significant differences in the effects of educational attainment on the risk of non-standard employment within both countries, even if gender, duration since leaving school, parental educational background, type of industry, firm size, and region of living were controlled (*Table 2*). Furthermore, our findings suggest that educational tracks differ in their effect on future labour market insecurities across institutional settings. In Switzerland, those who pursued a vocational education or a short higher education are, on average, 22–25% less likely to be exposed to non-standard work compared to those who pursued a long higher education (reference group). In contrast, in Japan, young adults who pursued a short higher, vocational or general educational track are, on average, between 13–39% more likely to attain non-standard work when controlling for further covariates that were included in the model. Therefore, while long higher education protects youth from non-standard work in Japan, the reverse seems to be true for Switzerland.

We did not find significant gender differences with regard to non-standard employment in either country. However, we found parental educational background to be significantly positively related to non-standard employment in Switzerland. Young workers whose parents are highly educated have, on average, about a 7% higher risk of attaining non-standard work in Switzerland, while again, the reverse situation applies to Japan. In Japan,

parental higher education is negatively associated with non-standard employment (weak statistical significance). Our results therefore suggest that while non-standard work seems to be an ‘upper class’ phenomenon in Switzerland, it is a ‘lower class’ phenomenon in Japan.

Table 2: Non-standard employment: average marginal effects (AME)

Non-standard employment	*Switzerland*[a]	*N=1789*	*Japan*	*N=557*
	AME	*SE*	*AME*	*SE*
Education[b]				
General education	0.03	0.07	**0.39*** **	0.09
IVET	**-0.22*** **	0.06	**0.22***	0.09
Short higher education	**-0.25*** **	0.05	**0.13***	0.05
Gender				
Male	0.03	0.03	-0.05	0.04
Time out of school				
Duration (Month)	0.001	0.001	-0.002	0.002
Family Background				
Parental higher education	0.07*	0.03	-0.07(*)	0.03
Industry[c]				
Construction	0.15(*)	0.09	0.07	0.10
Sales	0.08(*)	0.05	0.16**	0.06
Finance	0.02	0.07	-0.28(*)	0.16
Transport/Electricity	0.18**	0.06	0.15(*)	0.08
Restaurant/Hotel	0.19*	0.09	0.15	0.10
Information/Comm.	0.05	0.07	-0.003	0.09
Education/Research	0.13*	0.06	0.21**	0.07
Medical/Welfare	0.18*	0.07	-0.04	0.07
Government	0.28***	0.08	0.16(*)	0.09
Primary/Others	0.27**	0.09	0.19(*)	0.11
Various services	0.34***	0.09	0.10	0.07
Firm size[d]				
Medium [100–499]	0.002	0.04	-0.07(*)	0.04
Large [500+]	0.004	0.05	-0.06	0.04
Region of living				
Urban area	-0.004	0.03	-0.03	0.03

(*) p<0.1 *p<0.05 * p<0.01 ***p< 0.001

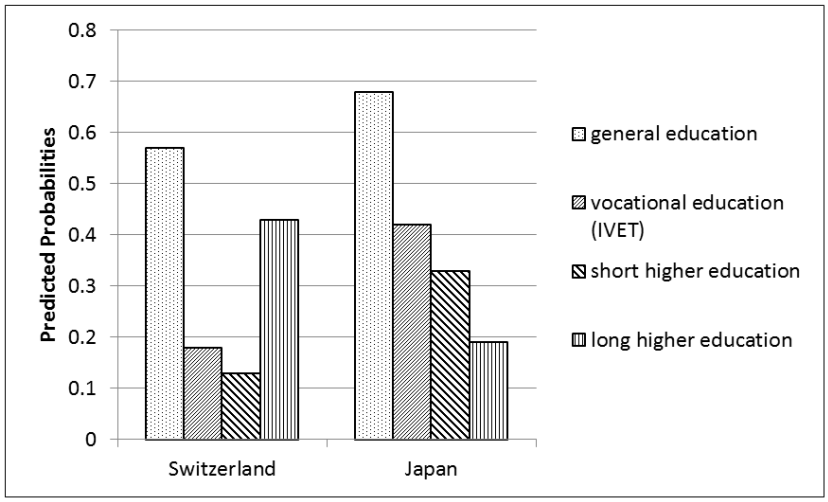
a) Weight (wt8_kal) applied and corrected for the complex survey design of the PISA-TREE data; b) Reference category: long higher education; c) Reference category: manufacturing; d) Reference category: Small firm size [1-99]

Industries matter considerably. In Switzerland, young workers in the manufacturing (reference group), finance and information/communication sectors show the lowest risks of attaining non-standard work, whereas the risk for those in the transport/electricity, restaurant/hotel, medical/welfare, government, primary/others, and various services sectors is considerably higher. In Japan, the sectors where workers face the highest risk of non-standard work are sales, transport/electricity, education/research, government, and primary/others. In contrast, the finance sector offers a high degree of regular employment, followed by the medical/welfare, information/communication sectors, and the reference sector manufacturing.

Institutional discrepancies

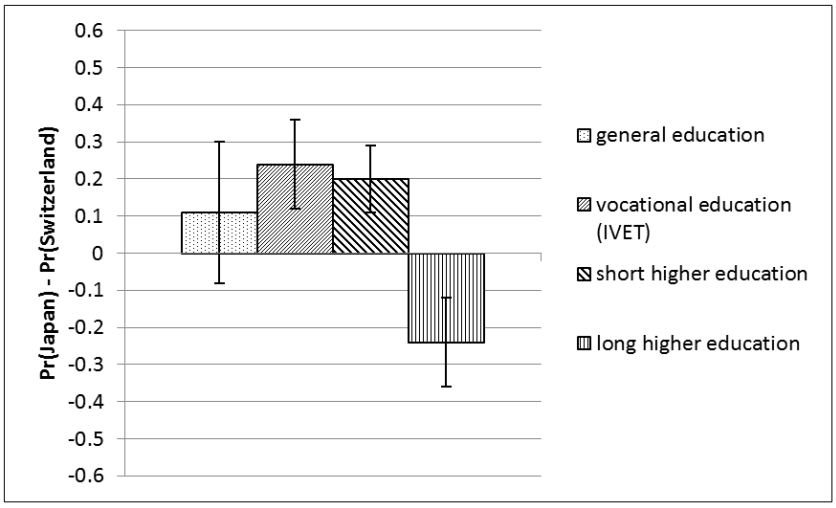
Comparing differences in predicted probabilities of non-standard employment across educational groups and countries reveals distinct patterns regarding the impact of educational tracks on the probability of non-standard employment (*Figure 1*).

Figure 1. Predicted Probabilities comparing Switzerland and Japan



Note: Probability of non-standard employment for young employees by educational attainment across countries.

Figure 2. Differences in Predicted Probabilities



Note: Differences in the probability of non-standard work by educational attainment, across countries. Tick marks indicate 95% confidence intervals: significant differences in predicted probabilities ($p < 0.05$) at the levels of vocational, short higher, and long higher education across countries.

While in Switzerland, the predicted probability of exposure to non-standard work for young employees with long higher education amounts to about 0.43, in Japan the risk of non-standard work for young adults who hold long higher educational credentials is only about 0.19. Yet, the reverse pattern emerges when focusing on young adults who pursued vocational and short higher education. While in Japan, the probability of exposure to non-standard work for young employees with vocational or short higher education is about 0.42 and 0.33, respectively, in Switzerland, these educational groups are least at risk of non-standard work, with an estimated probability of 0.18 and 0.13, respectively. In both countries, the risk of non-standard work is highest for young employees who completed upper-secondary general education without labour market orientation (CH: 0.57; JP: 0.68).

Significance testing of differences in predicted probabilities that compares young adults with similar educational credentials across countries suggests that in Switzerland, young adults that hold higher educational credentials have a significantly higher probability of

being exposed to non-standard employment compared to young adults with comparable credentials in Japan (*Figure 2*). In contrast, young adults that hold vocational and short tertiary degrees in Switzerland are less likely to be in non-standard work compared to young workers with similar credentials in Japan. These results hold true when controlling for gender, parental educational background, industry sector, firm size, and region of living at their means (*see Appendix A, Figures 3–4*).

Conclusion

In this paper, we asked how educational trajectories mediate the risk of non-standard employment for young people in Japan and Switzerland, two countries that have different institutionalised modes of allocating school graduates to jobs. While in the wider international context, both countries show low youth unemployment rates, and from this point of view, can be seen as good places in which to be progressing through their respective transition system, the labour market entrants are nevertheless increasingly facing non-standard entry jobs. Against the background of the increasing risk for school graduates of not being able to find stable employment, we were interested in finding out whether different types of (general, vocational, higher) education have a differential impact on non-standard employment of young workers in countries with differing transition systems.

Based on comparable youth panel data, our results suggest there are remarkably different patterns of non-standard employment among vocational and university graduates across both countries. In Switzerland, those who pursued a vocational education or a short higher education are much less likely to be exposed to non-standard employment compared to those who pursued a long higher (academic) education or other forms of general education. In contrast, in Japan, young adults who pursued a short higher, vocational (or a general) educational track are more likely to become exposed to non-standard work. Therefore, while

long higher (academic) education protects youth from non-standard work in Japan, the reverse seems to be true in Switzerland, where vocational and short higher education offer the best chances for standard employment upon labour market entry. Leaving school with only a general education results in pronounced disadvantages in job security upon labour market entry in both countries. All in all, our findings suggest that educational tracks stratify the risk of exposure to non-standard forms of employment in the early career period differently in countries with differing transition systems, indicating differential operational logics of non-standard employment and consequences for the labour market integration of youth in differing contexts.

In Switzerland's collectivist transition system, public commitment to and the involvement of employers in vocational education and training are high and an employment logic (Iannelli and Raffe 2007) prevails, resulting in the allocation of mainly vocationally-trained and certified young adults to jobs. In addition to investment in education (vertical dimension), occupation-specific skills (horizontal dimension) constitute a major sorting criterion upon labour market entry, with occupation-specific credentials (primarily gained in IVET) qualifying individuals to take up work in the respective occupational segments of the Swiss labour market. In this context, the operational logic behind non-standard forms of employment, which mainly affects academically-educated entrants, seems to be one of 'initial screening' and an opportunity for the latter to gain some initial work experience. While IVET graduates have already proven their occupation-specific skills and motivation in standardised 'on-the-job' training schemes, university graduates first need to prove themselves as suitable for specific occupations by entering less secure and less standard forms of employment as a transitional phase. Hence, in the Swiss case, non-standard jobs of young academics may be viewed as stepping-stones rather than as dead-ends (Greppi et al. 2010) and may be combined with further training. Indeed, findings from the Swiss graduate survey highlight a considerable decrease in fixed-term employment within five years after graduation, whereas

part-time employment remains unchanged (BFS 2015). Furthermore, Switzerland has a relatively low proportion of graduates who do not find a suitable job compared with other countries. In all, 1 out of 11 people with a university degree are unable to find a job in their field of education in the medium term and face a job–education mismatch (overeducation), which is associated with a wage penalty (Diem & Wolter 2014).

In contrast to Switzerland, employers have traditionally guaranteed the development of skills in the segmentalist Japanese transition system, without notable state intervention, through on-the-job training. In their hiring decisions, the latter value academic credentials, which signals the highly valued general learning potential of graduates. Accordingly, recruiters from top Japanese employers draw graduates from top universities (Goodman 2012, 164). However, as a consequence of the flexibilisation of the Japanese economy and the respective expansion of the secondary labour market segment, transitions from school to work have become more risky for Japanese youth, who lack (long) higher education, but especially for senior high school graduates who were formerly recruited for the internal labour market. Many employers have upgraded their academic criteria for employee selection to the university level, and good grades in senior high school are no longer sufficient for accessing standard employment.

Hence, one should note that for tertiary education graduates, the prospects for stable employment have also become bleaker in recent years in Japan. The former have increasingly been employed by smaller companies over the last two decades, where employment stability and working conditions are poorer than in large companies[42]. With an increased allocation of labour market entrants holding little bargaining power in the Japanese labour market in terms of non-standard jobs in the secondary labour market segment, the operational logic of non-

[42] This development can be observed since the 1980s according to the annual reports (Survey on Employment Trend) of the Japanese Ministry of Health, Labour and Welfare. The reports are accessible at http://www.mhlw.go.jp.

standard entry level employment does not coincide with an ‘integration’ logic. Non-standard entry-level employment in Japan, rather, seems to mirror ‘exclusion’ processes of those who lack an institutionally paved way to work in the internal labour market segment. With non-standard work mainly present in secondary segments, where a logic of numerical flexibilisation prevails, non-standard entry level employment for youth in Japan goes hand in hand with employment insecurities, manifesting itself in a ‘precariousness’ that infects the future course of their lives (Inui et al. 2015; Yu 2012).

To conclude, contrasting the skill-related composition of youth in non-standard employment in early career in Japan and Switzerland suggests country-specific relationships between educational trajectories and non-standard entry-level employment, which relate to different (collectivist vs. segmentalist) transition systems governing the allocation of youth to jobs. With regard to the differing levels of bargaining power of youth that are allocated to non-standard jobs in the respective labour markets of Japan and Switzerland and the distinctive sorting criteria of a ‘general learning potential’ compared to ‘professionality’, different operational logics behind non-standard entry level employment seem to prevail in the two countries. Viewing non-standard entry work against the background of differential skill formation regimes allows for going beyond a competing conception of non-standard employment as either stepping-stones or dead-ends for youth. Rather, distinctive operational logics of non-standard employment can be considered as something that characterises different school-to-work transition systems.

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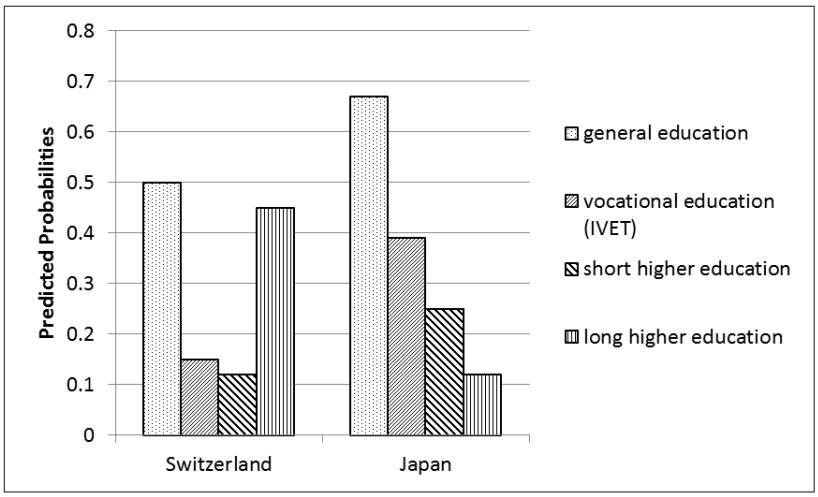
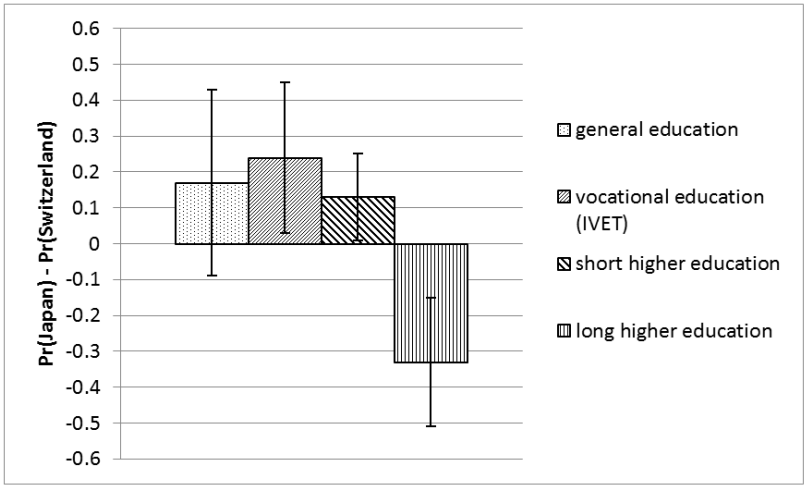
Appendix A.1

Figure 3. Predicted Probabilities comparing Switzerland and Japan/Controls



Note: Probability of non-standard employment for young employees by educational attainment across both countries, holding gender, duration since leaving school, parental education, industry, firm size, and region of living constant at their means.

Figure 4. Differences in Predicted Probabilities/Controls



Note: Differences in the probability of non-standard work by educational attainment across both countries, holding gender, duration since leaving school, parental education, industry, firm size, and region of living constant at their means. Tick marks indicate 95% confidence intervals: significant differences in predicted probabilities of non-standard work ($p<0.05$) for the educational levels of vocational, short, and long higher education across both countries.

Appendix B: Article 2

Fixed-Term Jobs after Vocational Education and Training in Switzerland: Stepping Stone or Impediment?

Laura Helbling

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Abstract

Competing assumptions about whether entering the labour market via fixed-term jobs is a good or bad start into work life persist in the literature. Based on the longitudinal survey TREE, this article sheds light on 1. who enters the Swiss labour market via fixed-term jobs after graduating from initial vocational education and on 2. the consequences regarding their future returns. Results indicate that vocational education graduates entering the work force via fixed-term jobs of low occupational status must expect lower future wages.

Keywords

Fixed-term jobs, job insecurity, labour market entry, vocational education and training, wages

1 Introduction

In response to an increased demand for flexible employment, greater flexibilisation and deregulation are characteristic of recent changes in the world of work. In this context, the erosion of standard employment relationships in favour of an increase in new flexible forms of employment (see e.g., Diekmann and Jann 2005), has become a controversially debated topic and a *core contemporary concern* (Kalleberg 2009).

Despite increased educational attainment, transitions from school to work seem to be particularly affected by these recent trends. Young labour market entrants encounter increasing difficulties in finding stable employment across OECD countries (Blossfeld 2006; Blossfeld et al. 2008), a phenomenon which no longer only affects the most marginalised entrants who lack educational qualifications. Focusing on Switzerland, with its strong vocational orientation of the education system (see Stalder and Nägele 2011) and comparatively low youth unemployment rates (OECD 2013a), recent findings suggest that vocational education and training (VET) graduates face increasing difficulties in setting foot in the Swiss labour market due to increasing job requirements (Salvisberg and Sacchi 2014). While fixed-term employment may, in this regard, help newcomers to bridge the transition from school to work, the downside may be that fixed-term entry jobs become a trap leading to cycles of repeat fixed-term work and unemployment (OECD 1998). Besides career instability, fixed-term jobs may further be associated with inferior work, providing fewer opportunities for professional development (Booth et al. 2002; Giesecke and Groß 2003; Wilkens and Leber 2003; Giesecke and Groß 2004). Overall, theoretical expectations concerning the integrational power of temporary work at labour market entry are contradictory and empirical findings are mixed.

As graduates from vocational education have already proven their productive skills during their training, incentives to screen labour market entrants with VET credentials are presumably low, such that labour market entrance via fixed-term jobs is comparatively less prevalent among vocationally educated young adults (Giesecke and Groß 2003; Giesecke and Groß 2004; McGinnity et al. 2005). As yet, little is known about the role fixed-term contracts play among labour market entrants who pursued vocational education and training, a group which constitutes the majority of young labour market entrants in Switzerland.

To help towards closing this gap, the focus of this paper is on both the determinants and consequences of entering the Swiss labour market via fixed-term jobs.

The following research questions are investigated:

1) Who is selected into fixed-term employment after graduating from initial vocational education and training in Switzerland?
2) Does entering the labour market via fixed-term work indicate a bad start into work life in terms of lower wages later on?

Besides focusing on general effects of initial fixed-term employment on future wage profiles, a further distinction is made between "low" and "not low" status fixed-term entry jobs. This distinction allows for a potential heterogeneity of consequences of fixed-term entry employment depending on the occupational status of the jobs entered.
Investigating these research questions, first fixed-term work and school to work transitions in the Swiss context are briefly outlined. Secondly, a review of the controversial theoretical perspectives and mixed empirical findings is given, introducing competing hypotheses on the integrational potential of fixed-term entry employment. Following this, the method and data used are introduced. Finally, results are presented, followed by a conclusion.

2 The Swiss context: Fixed-term jobs and labour market entry

After the post-war period, which was characterised by the organisation of work in the form of standard employment relationships[43] (such as dependent permanent, full-time work), flexible forms of work have become an integral part of the Swiss labour market. Since 2001, fixed-term employment is increasingly prevalent (Ecoplan 2007; Ecoplan 2010). Overall, 7.2% of employees were engaged in fixed-term work in 2012, with large discrepancies across sectors (SFSO 2013). Both young and older employees have been found to be disproportionately engaged in fixed-term employment, as well as many highly educated[44] employees (Henneberger et al. 2004). As dismissal costs of the permanent work force are comparatively low in Switzerland (Henneberger et al. 2004; OECD 2013b), permanent jobs may not differ as much from temporary work in terms of job security and aspects of labour segmentation as in countries with a stronger protection of the permanent work force.

[43] This particularly concerns male employment.
[44] Ecoplan (2007) points towards an overrepresentation of both low (lower secondary education) and highly educated (tertiary education) workers in Switzerland, where the former are more often employed on short-run fixed-term contracts.

Controlling for individual heterogeneity, no wage penalty for temporary jobs or lower participation in continuing professional training of fixed-term employees is found. The flip side of temporary work is, however, the higher unemployment risk associated with it (Henneberger et al. 2004). Overall, only little is known about the determinants and consequences of fixed-term work in Switzerland, particularly when it comes to fixed-term employment at entry to the Swiss labour market.

Focusing on school to work transitions in Switzerland, vocationally trained young workers form the majority of labour market entrants. Two thirds of youth pursue vocational education and training at upper secondary level in Switzerland. Standard VET programmes in Switzerland take about 3–4 years to complete and are awarded with a federal VET diploma (*Eidgenössisches Fähigkeitszeugnis*). Optionally and additionally, young people can obtain a federal vocational baccalaureate (*Berufsmaturität*), which qualifies them to enrol in vocationally oriented education at tertiary level such as provided by the universities of applied sciences. Characteristic of Switzerland's VET system is that a very high share of initial vocational education is organized in the form of dual-tracks (apprenticeships), in which company-based training and school-based learning are combined (Stalder and Nägele 2011; SERI 2015).[45] There are close links between VET programmes and occupations, channelling VET graduates into the occupations they were trained in at entry. Due to occupational specificity, company-based training and standardisation of vocational education, less on-the-job screening is necessary at labour market entry. Hence, VET graduates are generally less likely to be allocated to fixed-term employment compared to young adults who pursued a more general education (see e.g., Giesecke and Groß 2003; Giesecke and Groß 2004; McGinnity et al. 2005; Greppi et al. 2010). The role fixed-term contracts play among VET graduates remains as yet an open question.

3 Fixed-term jobs: Integration or bad start?

Competing perspectives concerning the integrational or disintegrational potential of fixed-term employment persist in the literature. Hiring workers on fixed-term contracts has for example been described as a numerical flexibilisation strategy allowing employers to more easily adjust the size of their workforce to fluctuations in demand and to shift increased

[45] Differences exist across linguistic regions. VET and in particular dual VET have a very strong tradition in the German-speaking area, while it is somewhat less wide-spread and socio-culturally rooted in the Italian and French speaking parts of Switzerland (see e.g., SERI 2015).

market risks to employees who are not their regular core workers (Atkinson 1984; Kalleberg 2003). Employment relationships may also be divided into open and closed positions, where the latter are more sheltered from competitive market forces. In addition to higher job security, closed positions are characterised by above-market wages as well as internal career ladders (Sørensen 1983; Sørensen 2000). Distinguishing employment relationships based on their degree of closure, fixed-term employment is regarded as more open compared to permanent employment (Giesecke and Groß 2004) and thus less advantageous with regards to wealth acquisition and promotion prospects. Based on segmentation theories, which posit a division of the labour market into primary and secondary segments, a similar picture of fixed-term work can be drawn. Jobs located in primary segments offer good career prospects and high wages, whereas job insecurity is thought to characterise inferior work in secondary segments. Barriers on mobility are assumed to exist between segments, hindering upward mobility out of insecure and inferior work (Doeringer and Piore 1971; Sengenberger 1979).

In addition, the transfer of labour market risks, for which employees are not compensated, is not regarded as being evenly distributed among employees, following lines of pre-existing social inequalities instead (Breen 1997). DiPrete et al. (2006) argue that European labour markets deal with increased macro-economic uncertainties especially through the allocation of low-skilled workers to insecure jobs. When searching for jobs, it can be expected that people tend to refuse unfavourable job offers when chances are good for alternative and more attractive job opportunities. In this vein, besides socially stratified risk shifting, employees' willingness to accept fixed-term job offers and compromise on job security may also be assumed to depend on their relative bargaining positions in the labour market (see Auspurg and Gundert 2015). Following this reasoning, *allocation to fixed-term employment may be expected to particularly affect workers with lower bargaining power (hypothesis 1),* intensifying existing social inequalities.

Not confining increased job insecurity to the peripheral workforce, other theoretical perspectives posit a more general expansion of *precarisation processes* (Marchart 2013), affecting more and more workers who in former times would have been well integrated, enlarging the *zone of vulnerability* (Castel 2000). What connects these perspectives is the association of fixed-term jobs with insecure and presumably instable labour market integration. In line with this, *fixed-term jobs are expected to indicate a bad and precarious start for labour market entrants (hypothesis 2.1)* – be it in terms of their location in

secondary segments and lower career prospects or because of employment instability in early career which hinders continuous accumulation of work experience.

Empirical evidence generally supports the fact that labour market entrants and young workers are overrepresented in insecure employment (see e.g., Blossfeld 2006). Investigating people's willingness to accept fixed-term employment based on an experimental vignette study conducted in Germany, findings further support the hypothesis that low bargaining power fosters the propensity to accept fixed-term job offers. Low qualifications and social class position as well as less financial resources and the experience of unemployment have all been found to increase the willingness to accept fixed-term employment (see Auspurg and Gundert 2015). Findings also show that the skill-related composition of the workforce in temporary work differs across European countries and institutional settings (Gebel and Giesecke 2011). Overall, findings suggest that vocationally skilled graduates are comparatively less affected by fixed-term employment at entry to the labour market (see section 2). It remains an open question, however, whether certain groups among VET graduates with presumably lower bargaining power may still be disproportionately affected by employment of a contractually limited duration in comparison to their peers. Factors determining the bargaining power of VET graduates may relate to their socio-economic standing with regard to their family background, migrant status, their gender or the level of demand at which they pursued lower secondary education and vocational education. While socio-economic standing and educational achievement is assumed to be positively related with bargaining power, migrant status and female gender may be connected to lower bargaining power vis-à-vis employers. Further, experiences of unemployment and extended job searches may influence VET graduates' willingness to accept fixed-term job offers and diminish their bargaining power due to human capital depreciation or stigmatisation (see Auspurg and Gundert 2015).

In addition, fields of vocational programmes that are closely linked to occupations open up differing employment prospects for VET graduates (Kriesi et al. 2010).

Different empirical findings support an association between fixed-term work, employment instability and social inequality across different national contexts and institutional settings. In both the UK and Germany, temporary jobs have been found to lead to increased risks of unemployment, repeat fixed-term work and worse pay (Booth et al. 2002; Giesecke and Groß 2003; Giesecke and Groß 2004), with wage penalties already extending to initial wages

(see Gebel 2009; Gebel 2010). Moreover, fixed-term employees have been found to be less satisfied with their jobs with regards to job security and promotion prospects as well as to receive less work-related training (Booth et al. 2002; Wilkens and Leber 2003). For Switzerland (see section 2), findings are suggestive of a higher unemployment risk associated with fixed-term work (Henneberger et al. 2004). Focusing on school to work transitions, the introduction of fixed-term contracts in France is not seen as a successful strategy in reducing youth unemployment as it goes together with a high turnover in entry-level jobs (Blanchard and Landier 2002). All in all, these empirical findings are suggestive of negative effects of initial fixed-term work on subsequent employment prospects, lending support to hypothesis 2.1., assuming fixed-term jobs to indicate a bad start for labour market entrants.

In contradiction to theoretical assumptions positing a link between fixed-term employment and unfavourable employment prospects, the viewpoint of an *integration scenario* (Giesecke and Groß 2003) also exists. In this perspective, contracts of limited duration serve as screening devices that allow labour market outsiders, such as e.g. new entrants and unemployed, to more easily (re-)enter the labour market. If there are initial disadvantages, such as lower wages, less training opportunities and higher job insecurity attached to fixed-term entry jobs, these are thought to be overcome in the subsequent career. In line with the integration scenario, McGinnity et al. (2005) find that unemployment rates of those who start their occupational career on a temporary contract converge after five years with those who started their career on a permanent job in Germany. Furthermore, fixed-term jobs have been found not to hinder upward mobility in terms of occupational prestige (see Scherer 2004) and initial wage differentials vanish over time (see Gebel 2010). As screening via fixed-term entry jobs may particularly apply to academically educated entrants who first need to prove their performance on-the-job, it may be questionable whether the integration scenario also applies to VET graduates (see e.g., Gebel 2010). According to the integration scenario, however, *temporary jobs at labour market entry may also be thought of as easing the school to work transition for young VET graduates (hypothesis 2.2)*, who, after a prolonged probation period, have good chances of becoming employed on permanent contracts, experiencing no impediment to their career advancement and subsequent wages.

Workers employed in non-standard work arrangements differ in terms of their autonomy and control over their work and skills (Kalleberg 2003) and their employability (McQuaid and Lindsay 2005) in case of job loss. Thus, job insecurity may not uniformly mirror employment

insecurity (see Chung 2015). Further, different operational logics of fixed-term employment (see Giesecke and Groß 2006) – as to whether employers utilise fixed-term hiring for reasons of flexible adjustment or as initial screening – may co-exist and their utilisation may vary across industries and according to the bargaining power of employees. Going beyond an either-or perspective on the implications of fixed-term employment, the concept of a *two-tier* labour market of fixed-term jobs encompassing high and low wage fixed-term employment (Mertens and McGinnity 2003) is suggestive of a division of temporary jobs into secondary and primary work (Kunda et al. 2002). *While low status fixed-term jobs at the bottom end may hinder subsequent career prospects, contracts of limited duration pertaining to jobs of a "not low" status may be part of a career progression, not hindering career advancement of young people (hypothesis 2.3)*.

In *summary,* competing theoretical expectations about the consequences of fixed-term entry jobs exist. When fixed-term work is associated with employment instability and secondary labour, entering the labour market via fixed-term jobs is expected to hinder career advancement and to endanger labour market integration of young people. In this context it can be assumed that particularly young entrants who lack bargaining power are allocated to fixed-term jobs at entry. Based on the integration scenario, which associates fixed-term employment with prolonged probationary periods, no lasting adverse consequences should be expected. Beyond these conflicting theoretical perspectives, fixed-term entry jobs may also be regarded as heterogeneous in their integrational or disintegrational potential. Depending on young entrants' employability and the occupational status of jobs entered, different scenarios may apply.

4 Method

When investigating the consequences of fixed-term entry jobs, particular attention needs to be paid to non-random selection of VET graduates into fixed-term entry employment, making causal inference about effects of fixed-term entry jobs on subsequent career outcomes equivocal. This study tries to approximate the (causal) impact of fixed-term entry work on future wages (in 2010) applying endogenous treatment effect regression. Endogenous treatment effect regression is based on the work of Heckman (1978) which is concerned with two-stage consistent estimation of causal effects in the case of selection on unobservables (see e.g. Heckman 1978; Vella 1998; Briggs 2004). The basic setup of the Heckman endogenous treatment model is as follows[46]:

The primary regression equation of interest:

$\ln(wage_{2010}) = x_i\beta + \delta d_{i(entry)} + \varepsilon_i \qquad , \varepsilon_i \sim N[0, \sigma^2]$ and $i = 1 \ldots n$ (individuals)

The selection equation:

$d^*_{i(entry)} = z_i\gamma + u_i \quad d_{i(entry)} = \begin{cases} 1, \ if \ d^*_{i(entry)} > 0 \\ 0, \ otherwise \end{cases} \qquad , u_i \sim N[0,1]$ [Probit regression]

, where $d_{i(entry)}$ is a binary treatment variable (fixed-term entry employment) and $d^*_{i(entry)}$ is a latent variable assumed to underlie the treatment assignment process while z_i and x_i are vectors of variables determining selection into fixed-term entry employment or subsequent wages respectively. The errors (ε_i, u_i) are assumed to have a bivariate normal distribution with correlation ρ, which is the correlation between unobservables determining the propensity to become employed fixed-term at entry and unobserved determinants of future wage offers. If $\rho \neq 0$ then the treatment variable $d_{i(entry)}$ is endogenous as it is correlated with ε_i due to the correlation between ε_i and u_i. Estimating δ based on the primary equation of interest would hence result in biased treatment effect estimates.

The strategy proposed by Heckman (1978) is to view sample selection bias as a form of omitted variable bias such that introducing a correction term for sample selection bias $\left(E\left[\varepsilon_i \middle| x_i, d_{i(entry)}, z_i\right]\right)$ as an additional variable in the primary regression equation allows for estimation of consistent treatment effects δ.

[46] Parameters can be estimated by either a two-step estimation procedure (following the basic setup outlined) or by maximum likelihood. The latter was applied in the analysis reported (for the formula of the likelihood function see Stata 2013, 28).

Assuming joint normality of errors (ε_i, u_i), the correction term for selection bias can be estimated based on the inverse Mills ratio λ evaluated at estimates $(z_i\hat{\gamma})$ from the selection equation: $E\left[\varepsilon_i | x_i, d_{i(entry)}, z_i\right] = \rho\sigma\lambda_i$

$$\widehat{\lambda_\iota} = \begin{cases} \frac{\phi(z_i\hat{\gamma})}{\Phi(z_i\hat{\gamma})} & if\ d_{i(entry)} = 1 \\ \frac{-\phi(z_i\hat{\gamma})}{1-\Phi(z_i\hat{\gamma})} & if\ d_{i(entry)} = 0 \end{cases}$$

, where $\phi(\cdot)$ and $\Phi(\cdot)$ denote the density and distribution function of the standard normal distribution.

Including this correction term for sample selection bias, *the "selection bias" corrected outcome regression* is:

$\ln(wage_{2010}) = x_i\hat{\beta} + \hat{\delta}d_{i(entry)} + \hat{g}\widehat{\lambda_\iota} + e_i$, where $\hat{g} = \hat{\rho}\hat{\sigma}$

Concerning identification, the covariates included in the selection equation may not necessarily differ from those included in the outcome equation, as the Heckman endogenous treatment model is identified through the nonlinearity inherent in the inverse Mills ratio. However, identification based solely on the inverse Mills ratio is weak (see e.g. Vella 1998; Briggs 2004). Several authors thus recommend exclusion restrictions, such as the inclusion of (at least) one variable within the selection equation which is excluded from the second-stage outcome regression. This comes down to finding potential "instrumental" variables explaining selection into fixed-term employment while not directly impacting on future wages. As one may not easily find an incontestable "instrumental variable" for selection into fixed-term entry employment and as results based on the Heckman endogenous treatment model may be sensitive to violations of the distributional assumptions, drawing causal inference on effects of fixed-term entry employment on future wages stays a risky business. As the Heckman model is known to be sensitive towards the model specification (exclusion restrictions) (see e.g. Briggs 2004), results based on different model specifications (M1–M3) are reported. For further comparison, estimates from a linear model (OLS) with no Heckman correction are shown. The latter model relaxes assumptions of normality of the error term while it requires the assumption of no selection on unobservables to be met. The detailed list of variables (see appendix B.1) allows controlling

for a diverse set of potential confounders and hence increases the credibility of these results.

To further allow for potentially heterogeneous treatment effects among VET graduates who enter "low" or "not low" status fixed-term entry jobs, an interaction term between contractual and occupational status of the entry job is additionally included in the outcome regression model. Based on this interaction, separate treatment effects for the subgroups of VET graduates who entered the labour market via jobs of "low" or "not low" occupational status are estimated.[47]

5 Data and sample

The analysis is based on data provided by TREE (Transition from Education to Employment), which is a unique, longitudinal survey that follows school to work transitions of approximately 6000 pupils who participated in PISA 2000 (Programme for International Student Assessment) and who left compulsory schools in the same year. These pupils were then followed annually from 2001–2007 by TREE, with two additional surveys taking place in 2010 and 2014[48] (TREE 2013). The analysis is restricted to a subsample of labour market entrants who completed a first vocational education and who entered the labour market by the year 2007. The focus is on the first significant job (of more than three month tenure) entered after graduation from VET. This first job had to be reported in both the job episode data and the yearly survey of TREE, such that information on contractual status is available. Concerning vocational education, both standard three-to-four year apprenticeship programmes as well as apprenticeship programmes followed by a vocational baccalaureate are included.

The main sample on which the investigation of selection into fixed-term employment after vocational education is based consists of 1462 young entrants (782 women and 680 men). Out of these young entrants 232 started their careers on a contract of limited duration.

[47] For estimation, the etregress command in the software framework of stata 13 is used. Making use of the svy-commands provided by stata, correction for the complex survey design of the PISA/TREE survey regarding variance estimation, as well as weights correcting for disproportionality due to sampling design and panel attrition are applied (see Sacchi 2011).

[48] Data for the latest survey has not been released at submission of this article. Response rates of the survey in 2010 amount to 75% responding of those contacted in 2010 and to 54% responding compared to the sample contacted in the first TREE survey in 2001 (see TREE 2013, 11).

Focusing on their initial vocational education reveals that 1143 pursued an apprenticeship programme[49] while 319 additionally obtained a vocational baccalaureate.

Endogenous treatment effect analysis focusing on wages earned in the year 2010, when the young adults were about 26 years old, is restricted to the 563 young adults still followed up by TREE and who answered the complementary employment questionnaire providing information on their earnings.[50]

5.1 Variables and model specifications

The binary variable *fixed-term contract* is coded as 1 if the first significant job after graduating from VET is reported to be of a contractually limited duration, while it is coded 0 if the contractual status of the first job is of a permanent nature.[51] Wages are measured as *monthly full-time equivalent gross earnings*, which were calculated according to Bertschy et al. (2014). In order to allow for heterogeneity in consequences of fixed-term employment, a distinction between "low" and "not low" status fixed-term entry jobs is made based on the *international socio-economic index (ISEI)* (see Ganzeboom et al. 1992). ISEI scores below 40 (which corresponds to the mean occupational status of those starting their career on fixed-term jobs) are regarded as "*low" status fixed-term entry jobs*, while those equal to or above an ISEI of 40 are regarded as "*not low" status fixed-term entry jobs*.

Making use of endogenous treatment effect regression, different model specifications (M1–M3) were introduced (details concerning covariates included as well as descriptive statistics can be found in the appendix B.1).

In the *first model specification (M1)* the fixed-term employment rate among young people holding a VET diploma (aggregate measure based on SAKE data) and the youth unemployment rate (see SFSO 2016) at year of graduating from VET enter the selection

[49] 54 young adults pursued two apprenticeship programmes successively, while 75 young VET graduates pursued another (non-certifying) education (e.g. language courses, trainings etc.) before entering a first significant job.

[50] Two persons who indicated earning exceedingly high incomes in 2010, which did not match their occupations and education, were excluded. Actual numbers on which the analysis is conducted further diverge as respondents with missing values on relevant covariates are excluded.

[51] The variable on fixed-term jobs encompasses different forms of contractually limited employment, including e.g. seasonal/casual work, substitution, project work, temporary agency work conducted on a fixed-term contract as well as work that could in principle be carried out on a permanent basis but is done so on a fixed-term contract. Training episodes are not included as fixed-term entry jobs.

equation while these covariates are excluded from the outcome equation. Thus it is assumed that these entry conditions predict selection into fixed-term employment while they are not confounders at the second stage. After inclusion of further covariates in the selection function, no significant effect of these entry conditions on selection into fixed-term entry employment is found. Thus these entry conditions are only weak predictors of assignment to fixed-term employment of VET graduates in the data at hand.

M1: *Selection eq. (fixed-term entry job):* (*explanatory variables:* gender, migrant background, parental ISEI, PISA index of social communication at home (soccom), lower secondary education track, PISA reading literacy (wleread), level of VET, tertiary education, dual VET, field of VET, further diploma, transitional unemployment, duration until first job, firm size, self-efficacy and persistency, linguistic region, year of labour market entry, *fixed-term and youth unemployment rate at year of graduation*[52]), *Outcome eq. (ln[wage$_{2010}$]):* (*explanatory variables:* excluding fixed-term rate and youth unemployment rate at graduation, otherwise same covariates as in the selection equation + tertiary education)

In the *second model specification (M2)* covariates included in the outcome equation are further reduced compared to the selection equation. This further reduction in order to improve on meeting exclusion restrictions comes at the cost of stronger assumptions concerning possible confounding. Variables excluded from the second stage such as e.g. social background factors may exert a direct effect through social contacts and networking on job quality and wages, initial unemployment experiences may be scarring and initial placement in firms of differential sizes may also be assumed to determine future careers and wages. Hence, while this model specification technically meets exclusion restrictions, assumptions about the absence of confounding effects of covariates excluded from the outcome equation are not incontestable.

M2: *Selection eq. (fixed-term entry job):* (*explanatory variables*: as in M1), *Outcome eq. (ln[wage$_{2010}$]):* (*explanatory variables reduced to*: gender, migrant background, level of VET, tertiary education, field of VET, linguistic region, year of labour market entry)

[52] Youth unemployment rate and fixed-term rate at graduation (aggregate measures) are to some extent correlated with the year of labour market entry (year of first job). Excluding the year of entry from the selection equation and/or the outcome equation as well as including either only fixed-term rate or only youth unemployment rate at graduation does not alter the results. In addition, measures for yearly and cantonal youth unemployment rates were included but these do not provide a stronger predictor for initial fixed-term employment and results remain the same.

Concerning the *third model specification (M3)*, a model is estimated which does not meet exclusion restrictions concerning the selection function. Here, no strong assumptions on the absence of confounding of excluded variables are necessary. This however comes at the cost that this model is only weakly identified:

M3: *Selection eq. (fixed-term entry job):* (*explanatory variables*: as in M1), *Outcome eq. (ln[wage$_{2010}$])*: (*explanatory variables*: same as in selection equation + tertiary education)

Furthermore, as a fourth model for comparison *linear regression (OLS) with no Heckman correction* is applied, assuming that after adjusting for the covariates reported (see appendix B.1) there is no further confounding due to unobservables.

6 Results

6.1 Who enters the Swiss labour market via fixed-term employment after VET?

Focusing first on those among the VET graduates who enter the labour market via fixed-term employment, this section provides insight into whether or not such more insecure entry jobs may be targeted at vocationally skilled young entrants with presumably lower bargaining power in the Swiss labour market (hypothesis 1). In Table 1, average marginal effects (AMEs) are presented, which were estimated based on a probit regression analysis. The covariates included in this probit regression represent those of the selection equation introduced in the following endogenous treatment effect analysis.[53] Contrary to hypothesis 1, the empirical results do not support the idea that fixed-term contracts are more often assigned to VET graduates who lack bargaining power.

Findings reveal that young graduates born in Switzerland are on average 9% more likely to become employed fixed-term at labour market entry, when controlling for further covariates included in the model. Moreover, results suggest that parental socio-economic status is significantly positively related to starting a career on a fixed-term job.[54] Focusing on reading

[53] To describe the selection process (hypothesis 1), all VET graduates for whom there is information on relevant variables to model their entry into their first job (contractual status) are included. One may note that the endogenous treatment effects analysis (selection and outcome regression), which is concerned with employment outcomes some years later (hypotheses 2.1–2.3) is applied to a reduced sample comprising of those still in the TREE survey in 2010, providing information on their wages. To correct for panel attrition, respective survey weights are applied (see Sacchi 2011).

[54] Not controlling for other variables still reveals an overrepresentation of Swiss born VET graduates in fixed-term employment but the effect of country of birth is not significant. Similarly, when not controlling for further

skills of the young shows that, when controlling for further covariates included, reading skills of those assigned to fixed-term jobs seem to be somewhat lower. Young VET graduates who pursued vocational education at a level of high demand as well as those who completed a vocational baccalaureate are on average 15% more likely to become employed on a fixed-term first job compared to young entrants who pursued vocational education at a low level of demand. To some degree this also applies to those who completed a vocational education at a medium level of demand, who are 6% more likely to become employed on a fixed-term contract compared to young entrants who pursued vocational education at a low level of demand (significant at $p \leq 0.1$).

The higher exposure to fixed-term entry employment of VET graduates who completed VET at a higher level of demand particularly comes to the fore when controlling for fields of the vocational training pursued. Overall, the majority of VET graduates pursued their vocational education in the fields of business & sales and mechanics, electronics & construction. Particularly within these two fields, it is those who pursued VET at a high level of demand or who further obtained a vocational baccalaureate that are more likely to start their career on a fixed-term job compared to their peers who completed VET at a lower level of demand.

The fields of vocational education and training also matter in themselves. Young VET graduates who pursued their training in the field of printing & design or those who pursued their training in the field of information technology are 10% resp. 8% less likely to become employed on a first temporary contract compared to young entrants who pursued their education in the field of business & sales. On the other hand, young entrants who pursued their training in the field of agriculture & gardening or in the field of gastronomy & hairdressing are 38% resp. 27% more likely to start their career on a contract of limited duration.[55] In these occupational fields, higher prevalence of fixed-term employment may mirror employers' needs for more flexible adaptation to fluctuations in demand. Overrepresentation of fixed-term entry employment in these respective fields of training may relate to lower bargaining power of graduates who pursued vocational training mainly at a low level of demand and do not face very good employment and career prospects in the

covariates, parental socio-economic status is still positively but not significantly associated with initial fixed-term employment.

[55] Some caution in the interpretation of results for differing fields of VET is required, particularly for the fields of printing & design, information technology and agriculture & gardening, due to small numbers.

Swiss labour market (see e.g., Sacchi and Salvisberg 2014 on employment prospects in the field of services). This result is suggestive of some division in the selection of VET graduates with differing levels of bargaining power into fixed-term employment, which may coincide with differential operational logics behind fixed-term entry work.

Results further show that the size of the firm one starts one's occupational career in also plays an important role in determining the type of first contract. Young adults entering work life in a small-sized firm are 10% less likely to enter a fixed-term entry job compared to those who start their career in a large-sized firm, which may be indicative of higher exposure of large firms to international competition (see Gebel 2010). Last but not least, results suggest some discrepancies regarding selection into fixed-term jobs across entry years as well as pointing to the fact that young entrants living in the Italian speaking part of Switzerland are somewhat less likely to become employed on a fixed-term contract compared to those living in the German speaking part.[56]

[56] Results reported were estimated applying a customized and truncated weight (for details cf. Sacchi 2011, 22) based on the panel weights for the survey years of labour market entries observed. One may note that applying a weight (basewt) which only corrects for disproportionality due to the sampling design but not for panel attrition would lead to the additional finding that male graduates might be somewhat overrepresented in fixed-term entry jobs as well as leading to the finding that those who completed a dual VET (company and school-based) are less likely to start their career on a fixed-term job compared to those who did a purely school-based VET.

Table 1 *Probit Regression/ selection into fixed-term employment*

Fixed-term entry job *N= 1284*	***AME***	***SE***
Gender (male=1)	−0.02	0.03
Migrant background (yes=1)	0.08	0.07
Country of birth (CH=1)	**0.09***	0.04
Parental ISEI	**0.002****	0.001
Soccom (PISA-index)	0.02	0.02
Lower secondary education (ref. basic requirements)		
Extended requirement	−0.03	0.03
Non formal	−0.06	0.05
PISA Literacy score	**−0.0004***	0.0002
Upper secondary education (ref. low level of VET)		
Medium skill VET	**0.06(*)**	0.04
High skill VET	**0.15*****	0.04
BMS (vocational baccalaureate)	**0.15****	0.05
Dual VET (yes=1)	−0.03	0.06
Further Education/Training before entry (yes=1)	0.07	0.08
Self-efficacy (high=1)	−0.02	0.04
Persistency (high=1)	0.003	0.03
Unemployment experiences (yes=1)	−0.02	0.06
Duration in months	−0.001	0.003
Field of VET (ref. business & sales)		
Printing & design	**−0.10*****	0.02
Information technology	**−0.08****	0.02
Mechanics, electronics & construction	−0.01	0.03
Agriculture & gardening	**0.38*****	0.11
Medical assistance	−0.04	0.05
Gastronomy & hairdressing	**0.27*****	0.07
Firm size (headcount) (ref. large [100+])		
Small [0–9]	**−0.10***	0.04
Medium [10–99]	−0.03	0.04
missing	0.02	0.07
Year of labour market entry (ref. 2003/2002)		
2004	**0.10****	0.03
2005	**0.09***	0.04
2006	0.01	0.05
2007	0.001	0.07
Fixed-term ratio at graduation	0.001	0.01
Youth unemployment at graduation	0.02	0.02
Region of residence (ref. German speaking part)		
French speaking part	0.01	0.03
Italian speaking part	**−0.06****	0.02

Notes: *** p≤0.001 **p≤0.01 *p≤0.05 (*) p≤0.1 ; AME = average marginal effects, SE = standard errors.
Source: TREE, own calculations

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6.2 Fixed-term entry jobs – do they adversely impact wage development?

Turning to wages earned later in career, findings reveal a negative average treatment effect (ATE) of entering work life via fixed-term employment (significant at p≤0.1). Controlling for selection on unobserved factors as well as for the covariates additionally included in the second-stage outcome regression based on the endogenous treatment effects models specified (M1–M3), starting a career on a fixed-term contract is found to be associated with a predicted earnings disadvantage of about 9–10%[57] (around CHF 470) in the year 2010, when the former entrants are about 26 years old (see Table 2). The correlation coefficient ρ is found to be not significant in all three models (M1–M3) specified. This suggests that no selection bias on unobservables is present (under the maintained distributional assumptions and the covariates included). Estimates based on linear regression (OLS) with no Heckman correction suggest lower earnings of about 8% for those who entered the labour market via fixed-term employment (statistically significant at p≤0.05) (see Table 2).[58]

Estimation of separate average treatment effects for VET graduates who entered "low" versus "not low" status fixed-term entry jobs allows for further insight into potentially heterogeneous effects of fixed-term employment at labour market entry. Results suggest that average treatment effects estimated for VET graduates who entered "low" versus "not low" status jobs differ significantly in size. While average treatment effects estimated for those who entered a "low" status first job reveal a significantly negative impact of starting a career in a fixed-term job on later wages, there seem to be no disadvantages attached to starting the career on a fixed-term contract in a "not low" status first job (see Table 3). On average, VET graduates who enter a fixed-term "low" status job earn a predicted 13–14%[59] (about CHF 680) less compared to VET graduates who entered a permanent "low" status job at first. In contrast, VET graduates who enter a fixed-term job of a "not low" occupational status do not earn less than their peers who started their career in a permanent job of comparable occupational status. Thus results suggest that effects of fixed-term entry

[57] Transformation of ln(wage)-coef. into Δ%-earnings: $100(e^{\beta} - 1)$.

[58] Descriptively comparing wages earned in 2010 across those initially employed fixed-term (earning CHF 4921) vs. permanently (earning CHF 5226), a wage difference of (6%) CHF 305 to the disadvantage of those initially employed fixed-term is found. Hence, while this descriptive result points in the same direction as the multivariate results, the descriptive wage gap may be biased slightly downward due to the positive (although not significant) selection into initial fixed-term employment present in the data.

[59] See footnote 16.

employment on future wages depend on the status of the entry job.[60] The negative impact of entering work life via fixed-term jobs seems to mainly affect VET graduates who do so in lower status fixed-term jobs.[61]

Table 2 *ln(wage) differences by fixed-term entry employment*

Model specification	***ATE***: Fixed-term entry job	***SE***	$\boldsymbol{\rho}$ (ε_i, u_i)	***SE***
M1: ln(wage) difference	**−0.09(*)**	0.05	0.04	0.07
M2: ln(wage) difference	**−0.10(*)**	0.05	0.06	0.10
M3: ln(wage) difference	**−0.09(*)**	0.05	0.03	0.08
OLS: ln(wage) difference	**−0.08***	0.03	--	--

Notes: N= 510; (*) p≤0.1 *p≤0.05, see model specifications (M1–M3, OLS) in section 5.1; ATE = average treatment effect, SE = standard errors.
Source: own calculations.

Table 3 *ln(wage) differences: Heterogeneous effects of fixed-term entry jobs*

First job (fixed-term vs. permanent)	***ATE:*** *Fixed-term entry job*	***SE***
M1: ln(wage) difference: "not low" status entry jobs	0.01	0.05
M1: ln(wage) difference: "low" status entry jobs	**−0.14***	0.07
M2: ln(wage) difference: "not low" status entry jobs	−0.01	0.05
M2: ln(wage) difference: "not low" status entry jobs	**−0.15***	0.06
M3: ln(wage) difference: "not low" status entry jobs	0.02	0.06
M3: ln(wage) difference: "not low" status entry jobs	**−0.14***	0.07
OLS: ln(wage) difference: "not low" status entry jobs	0.02	0.04
OLS: ln(wage) difference: "low" status entry jobs	**−0.14***	0.05

Notes: * p≤0.05, see model specifications (M1–M3, OLS) in section 5.1; ATE = average treatment effect, SE = standard errors.
Source: TREE, own calculations.

[60] Descriptive statistics support a similar conclusion. Comparing wages earned in 2010 of those initially employed fixed-term who entered the labour market in "low" status jobs (earning CHF 4921) to those who engaged in permanent jobs of not a low status (earning CHF 5260) a wage difference of (16%) CHF 839 to the disadvantage of those initially employed fixed-term is found. Comparing wages of young workers who entered the labour market in "not low" status fixed-term jobs (earning CHF 5397) to wages of young workers who first engaged in "not low" status permanent jobs (earning CHF 5224) no wage disadvantage to the detriment of initially fixed-term employed is found – rather, they seem to even earn slightly higher wages of (3%) CHF 173.

[61] Heterogeneous average treatment effects (Table 3) are estimated based on small group sizes. Of those who started their career on a fixed-term job and of whom their later wages are known, about 44 respondents did so in a "not low" status fixed-term entry job compared to 52 who entered the labour market via a "low" status fixed-term job. Thus, estimated separate average treatment effects should be regarded with caution and may only serve as an indication of potential heterogeneity in effects of initial fixed-term employment.

7 Conclusion

In the literature on consequences of fixed-term entry jobs, two contradictory expectations persist. On the one hand, fixed-term employment is associated with inferior work, fewer career prospects and employment instability (see e.g. Booth et al. 2002, Giesecke and Groß 2003; Wilkens and Leber 2003; Giesecke and Groß 2004), such that unfavourable employment outcomes of entering work life via fixed-term jobs are to be expected. In a similar vein, it is often assumed that fixed-term employment – as a dimension of precarious work (see ILO 2012) – is particularly targeted at workers with lower bargaining power. On the other hand, based on the *integration scenario* (see Giesecke and Groß 2003), fixed-term entry jobs may be regarded as easing the transition from school to work for the young; not hindering their future career advancement and labour market integration. As vocationally trained young entrants (forming the majority of labour market entrants in Switzerland) are presumably less affected by initial screening, the role fixed-term contracts play after graduating from VET remains unclear. This article sheds light on (i) who among VET graduates enters the labour market via fixed-term employment in Switzerland and (ii) investigates whether fixed-term jobs after graduating from VET may be seen as career launching or hindering in terms of subsequent wages earned.

Empirical results contradict hypothesis 1, which assumed fixed-term jobs to be particularly assigned to VET graduates lacking bargaining power, such as e.g. those who grew up in families with lower socio-economic status, migrants and young adults who pursued lower secondary education and vocational training at a lower level of demand. VET graduates with better career prospects in general, such as those who pursued vocational education at a high level of demand and graduates who further obtained a vocational baccalaureate as well as Swiss-born VET graduates and those with higher parental socio-economic standing, are more likely to take up fixed-term employment at first, with differences existing across fields of vocational training. Drawing on findings and considerations by Gebel (2010), one potential explanation may be that VET graduates who completed vocational education at a high level of demand and in particular those who obtained a vocational baccalaureate, may plan to enrol in education at tertiary level after gaining some initial work experience, such that they may not in all cases be in search of a first permanent position. In the light of increasing job requirements affecting job prospects for VET graduates in Switzerland (Sacchi and Salvisberg 2014; Salvisberg and Sacchi 2014), another explanation may be that entry into more

demanding jobs open to VET graduates who pursued their vocational education at a higher level of demand may also be governed by some initial screening. Some occupational fields of training mainly pursued at low levels of demand, offering comparatively worse employment and career prospects, such as agriculture and gardening as well as gastronomy and hairdressing also show some overrepresentation of VET graduates in fixed-term entry employment. Here, the operational logic of fixed-term employment as initial screening may not apply, suggesting that differences in operational logics and potential effects of fixed-term entry employment on subsequent careers across occupational segments and bargaining power of VET graduates may exist.

Focusing on consequences of initial fixed-term employment, making use of endogenous treatment effect regression, a tendency towards lower earnings in the mid-term for those who started their career on a fixed-term contract was found. Disentangling this tendency towards lower earnings by including occupational status as a moderator, findings are suggestive of heterogeneous effects of fixed-term entry jobs and thus favour hypothesis 2.3. It is particularly those young entrants who started their career in a "low" status fixed-term entry job that earn lower wages in the mid-term compared to their peers.

Why and how "low" status fixed-term entry jobs relate to lower future wages as yet remains an open question. Operational logics of fixed-term employment that VET graduates engage in may differ, with lower status fixed-term jobs mirroring employers' needs for flexibilisation more closely, not providing an entry port into stable employment after initial contracts expire. Further, employment stability and internal career ladders may matter particularly for those who enter the labour market via lower status jobs. If employability and bargaining power of workers engaging in lower status entry jobs is generally lower, they may also have more difficulties in quickly finding stable and good quality jobs after their initial fixed-term contracts expire. For young workers with a lower status job of short tenure, these short employment spells may also be regarded as bad signals by future recruiting employers, who may see them as indicating lower productivity or motivation and thus hindering quick re-integration and career advancement. However, these are just assumptions and empirical validation is left for future research.

As the occupation-specific VET diplomas acquired, qualifying the young for work in the occupational fields they were trained in, offer differential employment prospects and are to varying degrees affected by fixed-term (entry) work, future research may focus more

specifically on differential effects of fixed-term entry jobs across occupational segments. While in some occupational segments and industrial sectors fixed-term entry jobs may be part of a career progression, not hindering upward mobility, they may endanger labour market integration of the young in others. Due to sample size restrictions, the data at hand did not allow for a more in-depth analysis regarding this point. Besides labour market segmentation or employers' flexibilisation and screening strategies, motives of the young themselves to engage in fixed-term work have so far been largely neglected in theoretical considerations and empirical research on fixed-term entry employment. Allowing more room for active agency, future research may also investigate the extent to which the young themselves look for or may even "bargain" for a fixed-term position due to plans of e.g. further education, traveling or military service. The present investigation was further concerned with differences in career advancement among VET graduates in the mid-term (when they were about 26 years old) and only future research can show whether the discrepancies found in wages will persist or if they are overcome in the longer run – potentially lending support to an integration scenario.

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9 Appendix B.1

Gender (male=1 vs. female=0), *migrant background* (modelled in terms of the language spoken at home, national language=0 vs. foreign language=1), *country of birth* (Switzerland, Liechtenstein=1 vs. abroad=0). *Parental ISEI*: Parental socio-economic status (*ISEI*). *PISA index of social communication at home* (*soccom*). *Lower secondary education track*: Educational track pursued at lower secondary level (classified as basic, extended or no formal requirements). *PISA literacy score*: PISA-measure on literacy skills (*wleread*). *Level of VET:* As vocational education and training in Switzerland is not a uniform level track but is instead stratified according to differing levels of demand, following Stalder (2011), upper secondary vocational education is distinguished into low, medium and high level of demand of vocational education and training. Low skill VET comprises levels 1 & 2, medium skill VET comprises levels 3 & 4 and high skill VET comprises levels 5 & 6 according to Stalder's (2011) classification. Certificates of vocational baccalaureates (BMS = "Berufsmaturität") are added as a further distinct category. *Dual VET*: Binary variable indicating whether the young pursued a dual VET (company and school-based) vs. a solely school-based VET. *Fields of vocational education and training*: divided into the broad categories of 1) printing & design, 2) business & sales, 3) information technology 4) mechanics, electronics & construction, 5) agriculture & gardening, 6) medical assistance and 7) gastronomy & hairdressing. *Firm size*: size of the entry firm based on the headcount (small [0–9], medium [10–99], large [100+] or missing). *Self-efficacy and Persistency*: binary measures on individual characteristics (measured prior to labour market entry). *Self-efficacy* is operationalised based on disagreement vs. agreement with the following statement from the TREE survey: *I can always manage to solve difficult problems if I try hard enough*. Coding is 1= moderately or exactly true vs. 0= not at all or hardly true. *Persistency* is operationalised based on the following statement: *Even if I encounter difficulties, I persistently continue*. Coding is 1= moderately or exactly true vs. 0= not at all or hardly true. The *linguistic region* of residence is divided into German, French and Italian speaking part. *Transitional unemployment*: Indicator variable on unemployment experiences before finding a first job. *Duration until first job*: duration between graduating from VET and entering a first significant job in months, capturing early difficulties at labour market entry. *Year of labour market entrance* is the year when the first job is entered. As aggregate measures representing labour market entry conditions the *share of fixed-term employment* present among young (18–24) employees

holding a VET diploma in Switzerland (SAKE data) as well as the *youth unemployment rate* (ILO definition, SFSO 2016) at the year of graduating from VET are included.

As it is well-known that *tertiary education* is an important predictor of future career advancement of VET graduates, education completed at tertiary level (after labour market entry) is further controlled for in the outcome equation when focusing on employment outcomes in 2010.

Table A1 *Descriptive statistics*

Variables (binary or metric scale)	**min**	**max**	**mean**
Gender (male=1)	0	1	0.47
Migrant background (yes=1)	0	1	0.11
Country of birth (CH=1)	*0*	*1*	*0.89*
Parental ISEI	16	90	41.1
Soccom (PISA-index)	−3.7	1.2	−0.17
PISA Literacy score	27.6	741.9	496.8
Dual VET (yes=1)	0	1	0.96
Unemployment (yes=1)	0	1	0.06
Duration (months)	0	46	4.7
Self-efficacy (high=1)	0	1	0.91
Persistency (high=1)	0	1	0.89
Tertiary education (yes=1)	0	1	0.15

Variables (categories)	Share in %
Lower secondary education	
Basic requirements	34%
Extended requirements	61%
No formal requirements	5%
Level of VET	
Low	24%
Medium	29%
High	25%
BMS (vocational baccalaureate)	22%
Field of VET	
Printing & design	4%
Business & sales	44%
Information technology	3%
Mechanics, electronics & construction	30%
Agriculture & gardening	3%
Medical assistance	6%
Gastronomy & hairdressing	10%
Firm size (headcount)	
Small [0–9]	36%
Medium [10–99]	38%
Large [100+]	18%
missing	8%
Region of residence	
German-speaking part	59%
French-speaking part	31%
Italian-speaking part	10%

Notes: This table includes unweighted sample statistics. On the sampling design, panel attrition and the construction of panel weights see Sacchi (2011).
Source: TREE, own calculations.

Appendix C: Article 3

Scarring effects of early unemployment among young workers with vocational credentials in Switzerland

Laura Helbling and Stefan Sacchi

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Abstract

Background: Using a unique, longitudinal survey that follows school-to-work transitions of pupils who participated in PISA 2000, this paper investigates adverse consequences, so-called scarring effects, of early unemployment among young adults who acquired vocational credentials in Switzerland.

Method: As social, individual and contextual factors influence both early unemployment and later employment outcomes, taking into account endogeneity is of utmost importance when investigating scarring effects. In this regard we make use of nearest-neighbour propensity score matching and set up statistical control groups.

Results: Our results suggest that young adults who hold vocational credentials are more likely to be neither in employment nor in education, and to earn less and be more dissatisfied with their career progress later in work life than they would be, had they not experienced early unemployment.

Conclusion: We conclude that unemployment scarring also affects young adults with vocational credentials in a liberal labour market setting that otherwise allows for smooth school-to-work transitions. This finding runs counter to expectations that standardised vocational degrees, a liberal and flexible labour market structure, and predominantly short unemployment spells protect young skilled workers from scarring in case they happen to experience early career instability.

Keywords

Scarring effects, Early unemployment, School-to-work transition, Vocational education and training (VET).

Background

The 2008-09 recession has hit youth hard in terms of their employment prospects across the OECD (OECD 2010). With regard to its low youth unemployment rates, Switzerland is often recognized as a country that performs well in international comparison (OECD 2010, 2013b; Hoeckel et al. 2009). Institutional settings such as comparatively weak employment protection legislations (EPL) (see OECD 2013a) that allow school leavers to more easily set foot within the labour market (see Breen 2005) as well as the strong vocational orientation of the upper secondary education system both have a share in this. Vocational education and training (VET) is the dominant form of upper secondary education in Switzerland and equips the majority of youth with vocation specific certificates that foster smooth transitions to the labour market. About two thirds of youth pursue a vocational education at upper secondary level in Switzerland while only about one fourth takes up a general education (SERI 2014; Stalder and Nägele 2011). In international comparison, Switzerland stands out in terms of the share of school leavers who pursue a dual-vocational education (Hoeckel et al. 2009: 10-11), which is an apprenticeship that combines school and workplace-based training. Most apprenticeships take three to four years to complete and are awarded with a federal certificate of vocational education and training that qualifies one for taking up work in the occupation trained in. About a quarter of the students who pursue vocational education at upper secondary level further obtain a federal vocational baccalaureate, which is an optional qualification that allows them to enrol in tertiary vocational education such as at the universities of applied sciences (Fuentes 2011; Hoeckel et al. 2009; Stalder and Nägele 2011). Overall, the Swiss VET system can be described as highly standardised as it equips the young with vocational training and certificates that meet similar standards nationwide (see Müller and Shavit 1998: 6-7). These vocational certificates send clear signals to employers about the occupation-specific skills and suitability of the young entrants for particular jobs (Breen 2005), further fostering smooth transitions.

Even though skilled workers, particularly those who have undergone vocational education and training, fare comparatively well when transiting to the labour market, they are nevertheless increasingly facing problems at labour market entry in Switzerland (Salvisberg and Sacchi 2013, 2014). The fact that early unemployment may not only be a temporary blemish but can evolve into permanent scars (Ellwood 1982) is theoretically and empirically

well established. However, while negative long-term consequences of unemployment experiences, so-called scarring effects, have been the focus of research conducted in a lot of industrialised and industrialising countries (see e.g., Arulampalam et al. 2000; Mroz and Savage 2001; Nordström-Skans 2004; Gregg and Tominey 2005; Luijkx and Wolbers 2009; Vandenberghe 2010; Nilsen and Holm Reiso 2011, Cruces et al. 2012), little is known about unemployment scarring concerning those who pursued vocational education and training. To help towards closing this gap, this paper looks at scarring effects of early unemployment among young workers who have completed vocational education and training in Switzerland. As institutional settings such as weak employment protection legislations (OECD 2013a) and high standardisation of VET presumably do not provide strong incentives for employers to base their hiring and wage-setting decisions on the young applicant's short work histories and transition processes, we expect that in the Swiss context VET graduates will not be substantially affected by unemployment scarring. This assumption finds further support in that unemployment spells of young skilled workers are generally of short duration in Switzerland (see Sacchi and Salvisberg 2012). Whether these potentially advantageous institutional settings indeed manage to offset unemployment scarring will be put to the test within this paper.

Besides focusing on a group of skilled young workers that has so far been assumed to be mainly sheltered from various labour market risks, we go beyond previous research in that we not only investigate unemployment scars with respect to objective dimensions of labour market outcomes but also take individual`s assessments of their career progress into account. Young adults who are to some extent worse off in the mid-term due to the exposure to early unemployment may still be satisfied with their careers, if the experience of early unemployment was a prolonged job search or welcome career-adjustment such that they are happy with the job-matches found and the way their career unfolded. For this reason we complement our analysis of unemployment scarring on objective employment outcomes with the analysis of how the young themselves perceive their career progress. This allows for a more comprehensive understanding of the impact of early unemployment in terms of both objective and subjective notions. Against this backdrop, we investigate the following research questions:

1.) Are young skilled adults who experienced unemployment in early work life disadvantaged in terms of their subsequent employment outcomes (such as labour market integration and wages) compared to a similar group of young skilled adults who did not experience early unemployment?

2.) Do young skilled workers who experienced unemployment in early work life perceive their career progress as less satisfying compared to a similar group of young skilled workers who did not experience early unemployment?

In order to investigate these research questions we first briefly review theoretical explanations and expectations as well as we report the current state of research concerning unemployment scarring. Following this, we introduce the analytical strategy employed, which is propensity score matching, and move on to describe the data, model and variables used. We then present our findings and add some concluding remarks. Finally we outline the need for future research and discuss some limitations of our analysis.

Theoretical Considerations and Empirical Findings

What Drives Unemployment Scarring?

Different competing explanations have been proposed in order to frame unemployment scarring, such as economic assumptions about returns on accumulation of human capital (Becker 1964), human capital depreciation (see e.g. Pissarides 1992; Edin and Gustavsson 2008) or statistical discrimination (Aigner and Cain 1977) and signalling (Spence 1973). Becker`s (1964) economic approach to returns on human capital assumes that specific on-the-job training is an investment in human capital and thus goes together with higher wages in later career. Those who experience spells of early unemployment can be seen as missing out on the possibility of acquiring job specific training and thus have a lower market value when hired compared to their cohort members (see Becker 1964). Over and beyond differing job prospects due to missed accumulation of human capital, it is further assumed that human capital depreciates during periods of economic inactivity. Loss of work specific

skills due to unemployment periods is seen as leading to lower productivity and thus to worse occupational prospects when returning to the labour market (see Edin and Gustavsson 2008; Mooi-Reci and Ganzeboom 2012). Yet, as skilled labour market entrants in Switzerland mainly experience short spells of unemployment (see Sacchi and Salvisberg 2012), human capital depreciation is presumably not very important as missed work experience may not be extensive. The duration of unemployment is further considered to drive unemployment scarring from an application-behavioural viewpoint. Following wage search perspectives (Mortensen 1986), unemployed are thought to lower their reservation wages with search tenure. As time spent in unemployment passes, individuals become more prone to apply for jobs and to accept job offers that do not match their initial expectations. Thus not only the incidence of unemployment but also its duration may be seen as mechanisms driving unemployment scarring.

Statistical discrimination (Aigner and Cain 1977) and signalling theory (Spence 1973) draw on the assumption that hiring is an uncertain investment since the worker`s productivity is unknown to the employer. Therefore the employer has to rely on observable characteristics, so-called signals (Spence 1973), which serve as a proxy for worker`s unknown productivity. These signals then determine to a great deal job offers and the job quality attached to these (see Spence 1973). In line with this theoretical argument, employers may not attribute early unemployment to structural problems and shortages in the demand for newcomers, but rather take prior unemployment as a "signal" about these worker`s lower capabilities, productivity or motivation. Following Aigner and Cain (1977) employer`s assumptions about differential reliability of credentials to proxy true productivity across different groups of workers in combination with risk-aversion may be thought to result in statistical discrimination. Thus, irrespective of their individual ability and productivity, young adults who experience unemployment at an early stage of career formation can be assumed to have worse employment prospects since they are less attractive to hire. Particularly in the absence of reliable information on ability as well as if costs to overcome imperfect ability assessments are high, firms may be assumed to take diverse individual characteristics as proxies for ability. On the other hand, where standardised and reliable credentials of individual skills are available, incentives to use and gather additional information may be weak (see Müller and Wolter 2014).

In addition, experiences of unemployment may also leave a psychological scar. Following Erikson (1959), a healthy psychological ego development during the transition from adolescence to adulthood comprises identity formation that encompasses the formation of an occupational identity (see Erikson 1959: 94-100). In this perspective, early unemployment may be regarded as conflicting with the formation of an occupational identity, harming perceptions of self-worth (see Goldsmith et al. 1997). Additionally, social comparison processes adversely impact self-esteem and foster depression among unemployed (Sheeran et al. 1995). Drawing on Seligman (1975), the exposure to events perceived as uncontrollable, such as unemployment, bring about a feeling of helplessness, which diminishes psychological well-being and self-esteem and further undermines the motivation to control outcomes (Seligman 1975; Goldsmith et al. 1997). Such poor psychological adjustments are thus in turn thought to affect job search strategies and success so that a vicious circle may ensue (Furnham 1985).

In contrast to these theoretical explanations concerning unemployment scarring, there exist assumptions about potentially positive effects of early unemployment. Following e.g. Kahn and Low (1982) it is argued that off-the-job searches (searching for jobs while economically inactive), may be more efficient, resulting in better job matches that go together with higher re-employment wages and good career prospects. According to this theoretical perspective, early episodes of economic inactivity and career-adjustment may be regarded as prolonged matching processes leading to better job matches in the longer run. In this sense, periods of early economic inactivity are not necessarily damaging with regard to future occupational outcomes.

Focusing on the proposed mechanisms driving unemployment scarring while taking into account the institutional setting of Switzerland it is ambiguous whether or not these mechanisms really impact the careers of VET graduates who experienced bumpy transitions. Firstly, in a country with high standardisation of VET, where high vocational specificity and transparency of skills allows employers to rely on credentials of occupation-specific skills (see Müller and Shavit 1998: 6-7), one may argue that employers will not further base their hiring and wage-setting decisions on the young applicants' short and uninformative work histories. Where vocational training systems provide tight linkages between education and

occupational status, post-unemployment job matches should be of higher quality preventing severe scarring (see Dieckhoff 2011: 237). Furthermore, the Swiss labour market is rather liberal, with weak employment protection of the workforce (see OECD 2013a). Low employment protection allows labour market outsiders such as entrants and unemployed to more easily (re-)enter the labour market (see van der Velden and Wolbers 2003; Breen 2005; Bukodi et al. 2006) as there are no high dismissal costs and work contracts can be terminated easily in case employers are not satisfied with their newly hired employees. In line with this, investment in screening based on prior work histories as well as stigmatisation of those formerly unemployed may be assumed to be not as pronounced in liberal and flexible labour markets. In a similar vein it has been argued that prolonged job searches may indeed be thought to increase job quality in more liberal labour markets compared to rigid labour markets with strict employment protection legislation (EPL) (see Schmelzer 2012). Therefore prolonged job search and career-adjustment in early work life may not negatively impact subsequent employment outcomes of the young in Switzerland. The assumption that there are no distinct scarring effects further finds support in the fact that, for many skilled young entrants in Switzerland, unemployment spells are short in duration (see Sacchi and Salvisberg 2012). Thus foregone work experience due to early unemployment among young skilled entrants is generally low, and no profound psychological scars may be expected in this regard. Against this backdrop, we expect no or only negligible scarring effects regarding vocationally skilled workers in countries with highly standardised VET and liberal labour market structures such as Switzerland.

If this hypothesis were to be rejected then this would suggest that even within an advantageous institutional context, early unemployment inflicts scars. Which would mean that either firms already consider short unemployment spells among VET graduates to be negative signals or that the experience of short unemployment may be enough to exert a psychological scar and to alter the application behaviour and job search success of the young.

Scarring Effects: Current State of Research

Controlling for selection bias, evidence for several industrialised and industrialising countries suggests that unemployment at both labour market entry as well as in later career is in general scarring. For Germany, Britain, New Zealand, the Netherlands, Sweden, Norway, Finland and the U.S. as well as the developing countries Argentina and Brazil, past unemployment and early economic inactivity have been found to be positively related to the risk of future unemployment, suggesting significant state dependence (see Niedergesäss 2012; Arulampalam et al. 2000; Maloney 2004; Luijkx and Wolbers 2009; Nordström Skans 2004; Nilsen and Reiso 2011; Hämäläinen 2003; Mroz and Savage 2001; Cruces et al. 2012). Focusing on VET graduates in Germany, Schmillen and Umkehrer (2013) find that the total length of unemployment experienced in early career significantly predicts unemployment tenure later in career. Scarring further not only emerges in form of state dependence but also with regard to future occupational outcomes such as earnings. Evidence for the U.S. points towards positive effects of job stability in early career on adult wages (Neumark 1998) and spells of unemployment in early work life have been found to go together with reduced future earnings (Mroz and Savage 2001). Results for several western European countries, such as e.g. Britain, Sweden and Germany, as well as for Latin American countries, similarly suggest that unemployment experiences have a damaging effect on post-unemployment earnings (see Arulampalam 2000; Gregg and Tominey 2005; Nordström Skans 2004; Schmelzer 2012 Gangl 2006; Cruces et al. 2012). Conducting a field experiment, Eriksson and Rooth (2011) find that Swedish employers do not take past unemployment of young applicants as a negative signal when deciding upon invitations to job interviews. They find, however, that employers sort young applicants based on their prior work experience. In addition to monetary scarring effects, there also exists evidence suggesting a psychological impact of past unemployment on psychological distress and life satisfaction in later life (see Daly and Delaney 2013; Clark et al. 2001; Young 2012; Lucas et al. 2004). On the one hand, individual resources such as self-efficacy, self-esteem and a positive attitude towards life shape transition processes (see e.g., Rüfenacht and Neuenschwander 2013; Neuenschwander 2012; Neuenschwander and Kracke 2011; Gerber-Schenk et al. 2010). On the other hand, the very same individual resources may also be adversely influenced by unemployment experiences, further manifesting themselves in worse occupational outcomes (Furnham 1985).

With respect to Switzerland, there exist several studies pointing towards increased state dependence amongst the unemployed (see e.g., AMOSA 2010; Sheldon 1999). However, these studies do not fully take into account the potential confounders among the unemployed. Djurdjevic (2005) identified two types of unemployed for the Swiss context. The "higher risk" unemployed include less-skilled, foreign and female workers, while young, skilled, Swiss, male workers constitute the "lower risk" unemployed. The "lower risk" unemployed have better employment prospects and leave unemployment more quickly for employment. They further succeed in moving to better paid jobs after some initial earning losses (Djurdjevic 2005: 57-58).

Even though a lot of studies conducted in different institutional settings point into the direction of unemployment scarring in early and later career, scars may be heterogeneous regarding different groups of workers (see e.g., Arulampalam 2000; Gangl 2006; Burgess et al. 2003; Schmelzer 2011; Schmillen and Umkehrer 2013). So far, only little is known about the existence of unemployment scarring concerning young workers with vocational credentials. While Schmillen and Umkehrer (2013) shed some light on unemployment scarring affecting VET graduates in the rigid labour market of Germany, it still remains an open question whether a liberal market structure combined with highly standardised VET not only allows for smooth transitions but may also protect the young from scarring. This question will be investigated in the following.

Methods

Essentially, the idea of this paper is to identify the causal effects of early unemployment on subsequent employment outcomes among VET graduates. The problem we face is that both early unemployment as well as subsequent employment outcomes may depend on similar social, individual and contextual characteristics that bias the estimation of causal effects. Thus it is crucial to properly control for endogeneity when assessing causal effects of early unemployment. In this regard we make use of propensity score matching, which allows for the estimation of causal effects based on non-experimental survey data (Guo and Fraser 2010; Rosenbaum and Rubin 1983). The question we investigate using this technique is whether or not young people who pursued a vocational education would have had more

favourable career outcomes had they not experienced early unemployment. However, we do not know what would have happened to these young entrants had they not experienced early unemployment. Addressing this problem, propensity score matching allows us to set up a statistical control group of young workers who experienced smooth transitions but who are comparable in relevant characteristics to those who experienced early unemployment. The employment outcomes of the control group then serve as a proxy for the potential career outcomes of those who experienced early unemployment, had they not experienced it.

Overall, propensity score matching may be thought of as a two stage procedure. First, propensity scores, that is conditional probabilities of experiencing early unemployment, are estimated based on a set of potentially confounding variables. Second, based on these propensity scores, a comparable control sample of individuals who have not experienced early unemployment but who are similar with regard to their propensity of experiencing early unemployment, and with this their relevant characteristics, is created (for a more thorough discussion of this equalisation see Rosenbaum and Rubin 1983; Heckman et al. 1997). The estimate we focus on to assess scarring is the average treatment effect on the treated (ATT). The ATT can be thought of as the estimated (hypothetical) difference between the employment outcome of respondents who experienced early unemployment (the treated) and their potential outcome had they not experienced unemployment. This unobserved and thus hypothetical outcome is also known as the counterfactual outcome and is estimated based on the matched control group. Two assumptions are highly important for the estimation of causal effects within the context of propensity score matching. First, the stable unit treatment value assumption (SUTVA) assumes that there exists no spill-over between treated and controls such that e.g. processes within the group of controls affect the outcome among treated and vice versa. If this is the case then causal inference may not be possible (see Gangl and di Prete 2004). With regard to the conditional independence assumption (CIA) it is assumed that after controlling for confounding covariates based upon which propensity scores are estimated, treatment-assignment is independent of potential outcomes so that a counterfactual outcome can be estimated without bias based on the matched controls. In the literature on propensity score matching,

this assumption is also referred to as “ignorability assumption” (see Gangl and di Prete 2004; Rosenbaum and Rubin 1983; Heckman et al. 1997). The rich data at hand allows us to control for a wide variety of potentially confounding variables in order to make the CIA assumption plausible. Yet, irrespective of the fact that we control for a diverse set of potentially relevant characteristics, unobserved factors that are not related to the variables based on which we balance the sample always pose a potential risk when assessing causal effects based on non-experimental survey data.

Defining Treatment: early unemployment

We define all young adults who are economically inactive as unemployed if they are either officially registered as unemployed or if they are actively in search of a job. By this definition, inactive young adults in search of an upper secondary education are not regarded as unemployed. This definition of unemployment corresponds to the ILO definition (see ILO 1982).

Data

We make use of data provided by TREE (Transition from Education to Employment), which is the first longitudinal survey aimed at surveying patterns of post-compulsory educational pathways and transitions to the labour market of young people in Switzerland. TREE is an ongoing prospective panel survey based on a sample of approximately 6000 youths who participated in the PISA survey (Programme for International Student Assessment) in the year 2000 and who left Swiss compulsory schools in the same year. The sample was followed in annual surveys from 2001-2007, while an additional survey took place in 2010 (Stalder et al. 2011; TREE 2013). We restrict our analysis to a subsample of labour market entrants who have completed a first vocational education by the year of 2007, which encompasses the vast majority of those who pursued a vocational education after compulsory schooling in the cohort investigated. Concerning vocational education, both standard three to four year apprenticeships[a] and vocational baccalaureates are included. We focus on early unemployment experiences after completion of upper secondary vocational education that occur during the main transition period for the cohort investigated – which is between the

years of 2003-2007 when the young are about 19-23 years old (see Bertschy et al. 2008). We then assess whether or not unemployment within the first (one to four) years after graduation from VET between the ages of 19-23 adversely affects employment outcomes of the young in 2010 when they are 26 years old[b]. Young adults who report no unemployment experiences for the time observed but for whom there exist no full records on their transition period as well as a few unclear cases[c] are excluded from the analysis as we do not know whether or not they really have experienced smooth transitions. In order to increase the homogeneity within treated and non-treated groups (see Imbens 2003) we further excluded 18 cases who experienced unemployment when trying to set foot in the labour market before finishing a first vocational education[d].

The estimation of propensity scores is based on an extended sample including all youth and young adults who have completed a first upper secondary vocational education by the year 2007, regardless of whether or not they respond to the TREE survey in 2010. The final sample we derive the propensity scores from consists of 1588 young persons (777 women and 811 men) with vocational credentials, of whom 344 (152 women and 192 men) have experienced unemployment in early career. For matching and the investigation of scarring effects we restrict our sample to those young adults who respond to the TREE survey in 2010, when they are about 26 years of age[e].

The main sample based upon which we investigate whether or not previously unemployed young adults are more likely to be neither in employment nor in education (NEET) consists of 1269 skilled young persons. With regard to these respondents, 244 young persons have experienced a spell of unemployment in early career at the age of 19-23 years. Overall, of those formerly unemployed 31 persons are NEET in 2010 while of those who experienced smooth transitions 35 are NEET in 2010. With regard to the analysis on wage scarring and subjective career assessment, we further restrict our analysis to skilled young adults who have succeeded in finding a job in the labour market and who respond to the complementary employment questionnaire of the TREE survey in 2010. The main sample based on which we investigate wage scarring and persisting differences in career assessment consists of 773 skilled young workers. Within this group of respondents, 119 young persons have experienced early unemployment.

Variables used

A necessity for yielding unbiased estimates when applying propensity score matching is a thoroughly considered model based on which the propensity scores are estimated (see Shadish and Steiner 2010; Bryson et al. 2002; Smith and Todd 2005)[f]. Since the TREE survey has been designed particularly with respect to the investigation of school-to-work transitions, it offers a rich source of data to estimate the propensity scores and balance samples. The following variables are included in the estimation of propensity scores based on which we then match a control group: We include social categories such as *gender* (coding is 1=male and 0=female) and *migrant status* modelled in terms of the *language spoken at home* (coding is 1=national language vs. 0=foreign language) as well as the *country of birth* (coding is 1=Switzerland, Liechtenstein vs. 0=other country). As *educational qualifications* further play an important role in terms of labour market integration and future job prospects we include measures of *competencies* (PISA literacy scores and mark in math) and the *type of track at lower secondary education* (coding is 1=basic requirements, 2=extended requirements/pre-gym and 3= no formal tracking). As vocational education and training should not be seen as a uniform level track in Switzerland (Stalder 2011), the *level of vocational education and training* is furthermore taken into account (coding is 1=low-skill VET, 2=medium-skill VET, 3=high-skill VET and 4=vocational maturity). The coding of the level of demand of the vocational education is based on a coding scheme proposed by Stalder (2011). As a successful transition and career advancement are also influenced by family background (see e.g., Buchmann 2011; Neuenschwander and Kracke 2011) we include *socio-economic status* (Isei), familial possessions of *poetry literature* (coding is 1=poetry at home vs. 0=no poetry at home), a PISA index for *social communication* within the family (Soccom), *family structure* (coding is 0=nuclear family, 1=single parent and 2=mixed/other) and the *number of siblings* (coding is 0=no siblings, 1=one sibling, 2=two siblings and 3= three or more siblings). Important individual resources that determine labour market integration of the young (see Rüfenacht and Neuenschwander 2013; Neuenschwander 2012; Neuenschwander and Kracke 2011; Gerber-Schenk et al. 2010) are also taken into account by the inclusion of measures for *self-efficacy*, *persistency* and a *positive attitude towards life* (measured prior to labour market entry in order to avoid bias due to reversed causality). The dummy-variables are coded 1 if the individual resource is available vs. 0 if it is not. Attendance and punctuality are important behavioural resources with regard to a successful

entry into an apprenticeship (see Hupka et al. 2006) and thus they may also be regarded as indicators for transitional outcomes and success in later work life. Therefore we include measures for behaviour at lower secondary level such as *skipping classes* (coding is 1=yes vs. 0=no) and *finishing homework on time* (coding is *1=yes vs. 0=no)* in the estimation of propensity scores. As the demand for newcomers varies according to the field trained in (see Sacchi and Salvisberg 2012), we also include measures for the *field of vocational education and training*. The classification of educational fields is based on an international ISCED-coding scheme proposed by Andersson and Olsson (1999). Overall, different traditions concerning the orientation of educational systems across linguistic regions in Switzerland exist (Seibert et al. 2009; Meyer 2009). Thus, we further include the *region of residence* (coding is 1=German speaking part, 2=French speaking part and 3=Italian speaking part) as well as *average cantonal youth unemployment rates* between 2003-2007, which is for the main entry period we look at.

Outcome variables, based on which we assess scarring are monthly full-time equivalent gross earnings in 2010, a dichotomous variable coded 1 if a person is neither in employment nor in education or training (NEET) in 2010 and coded 0 otherwise, as well as a binary variable indicating whether or not a person is dissatisfied with the progress made in career towards meeting his/her overall career goals. The variable on career dissatisfaction is coded 1 if young adults report to be not satisfied or only partially satisfied with their career progress and it is coded 0 if young adults report to be satisfied with their career progress. A more detailed report of the variables included in the analysis can be found in the Appendix.

Analysis

In a first step we estimate propensity scores based on a logistic regression, taking into account the complex survey design of the PISA/TREE sample regarding variance estimation[g]. We further apply customized weights[h], which we derived based on sampling weights provided by TREE (see Sacchi 2011). Besides the estimation of propensity scores, the logistic regression allows for insight into the determinants of early unemployment among VET graduates in Switzerland. Following the estimation of propensity scores, we move on to matching and the estimation of average treatment effects on the treated (ATT). For matching and for the estimation of average treatment effects on the treated (ATTs), nearest-

neighbour matching of at most 5 nearest-neighbours (with replacement) within a caliper of 0.05 is applied. We further impose the criteria of a common support. This means we set up a statistical control group by matching up to five young adults who experienced smooth transitions, who are closest with respect to their propensity scores, to each respondent who experienced unemployment (treated). However, we do not match anyone whose propensity score falls outside a common support and we further restrict the number of potential matches for a respondent to a caliper, meaning a limited range of propensity scores close to the treated respondent, in order to avoid matches of poor quality (see Bryson et al. 2002). The same control individual may be matched multiple times (for more details see e.g., Guo and Fraser 2010).

In order to assess the quality of sample balance between treated and matched controls, we follow recommendations by Stuart (2010) and test for differences in mean and variances of propensity scores across treated and control groups. We find no significant mean-differences and the ratio of variances of propensity scores (with a value of 1.3) further indicates good sample balance.

Regarding significance testing of average treatment effects on the treated (ATT), commonly applied bootstrap procedures have proven to be not valid (see Abadie and Imbens 2008). Therefore, we apply a bootstrap procedure proposed by de Luna et al. (2010). We bootstrap estimated individual causal effects (EICE) over circular block-differences (under the less rigid assumption of heterogeneous causal effects) (see de Luna et al. 2010). In order to obtain estimates that can be generalised to the population of young skilled adults, we apply a sampling weight (wt8_kal) for the TREE sweep in 2010 when estimating ATTs and their sampling distribution (see Du Goff et al. 2014). This sampling weight corrects for both the disproportionality due to sampling-design and panel attrition. We further report results when applying a weight (basewt), which only corrects for the disproportionality of the sample but does not adjust for panel attrition. The analysis is run in the software framework of STATA (12) using the programme package psmatch2 (see Leuven and Sianesi 2003).

Results and discussion

In *Table 1* we present findings from logistic regression analysis, modelling the risk of early unemployment among skilled young adults. We report average marginal effects (AME), which are, in contrast to odds-ratios, intuitively interpretable and robust towards unobserved heterogeneity due to scaling issues that arise in non-linear regression analysis (see Best and Wolf 2012; Mood 2010). Based on this model we also estimate propensity scores for the following analysis on scarring effects.

Table 1. *Logistic Regression/ Early Unemployment*

Early Unemployment *N=1351*	***AME***	***SE***
Social Categories		
Gender (Male)	**0.11****	0.04
Migration Background (foreign language)	**0.22****	0.08
Country of Birth (abroad)	0.05	0.06
Social and familial Background		
Socio-economic Background (Isei)	0.00	0.00
Poetry at home	-0.01	0.03
Social communication with parents	0.00	0.02
Family structure (single parent)[a]	**0.18***	0.08
Family structure (mixed/other)[a]	**0.21****	0.07
Number of siblings(1)[b]	-0.06	0.07
Number of siblings(2)[b]	-0.05	0.08
Number of siblings(3)[b]	**-0.13(*)**	0.07
Education		
Lower secondary education (extended requirements)[c]	0.01	0.04
Lower secondary education (no formal tracking)[c]	-0.01	0.07
Reading Literacy (Wleread)	-0.00	0.00
Math mark (at average)[d]	**0.08(*)**	0.05
Math mark (below average)[d]	-0.06	0.04
Level of VET (medium)[e]	-0.09	0.05
Level of VET (high)[e]	**-0.11***	0.05
Level of VET (occupational baccalaureate)[e]	**-0.11(*)**	0.06
Field of printing and design (2)[f]	0.12	0.11
Field of business and sale (3)[f]	**0.22*****	0.05
Field of applied computer science (4)[f]	**0.19***	0.09
Field of agriculture and gardening (6)[f]	-0.04	0.06
Field of medical assistance (7)[f]	-0.02	0.06
Field of gastronomy and hairdressing (8)[f]	0.05	0.05
Field of other (9)[f]	-0.08	0.05
Individual Resources		
Self-efficacy	-0.11	0.07
Positive life attitude	**-0.15***	0.06
Persistency	-0.01	0.06
Skipping classes	-0.05	0.05
Finishing homework on time	**-0.08(*)**	0.04
Demographics		
Region of residence (French)[g]	**0.13***	0.06
Region of residence (Italian)[g]	0.12	0.09
Cantonal unemployment rate	0.01	0.02

(*) <0.1 *<0.05 **<0.01

a) Ref. category: nuclear family, b) Ref. category: no siblings, c) Ref. category: basic requirements, d) Ref. category: above average, e) Ref. category: Low skill VET, f) Ref. category: field of mechanics and electronics (5), g) Ref. category: German speaking part

Results on the determinants of early unemployment among VET graduates reveal that young men are on average 11% more likely to experience early unemployment controlling for the other confounding covariates included in the model. This finding may reflect differing job opportunities for male and female VET graduates according to their often highly gender-specific occupational credentials (Kriesi et al. 2010). Our findings further suggest that young persons with vocational credentials who speak a foreign language at home (migrant background) are on average 22% more likely to be exposed to unemployment in early work life. We further find that young adults who were raised in single parent or mixed/other households are about 18-21% more likely to experience early unemployment compared to young adults who grew up in nuclear families. Young adults who have three or more siblings are 13% less likely to experience early unemployment compared to young persons who have no siblings (weakly statistically significant at $p < 0.1$). Looking at the impact of educational credentials and school competencies our results suggest that those who achieved average marks in math at lower secondary level are by 8% somewhat more likely to experience unemployment in early career compared to skilled young workers who achieved above average marks (significant at $p<0.1$). With regard to differing levels of demand across vocational education and training tracks we find that young adults with high levels of upper secondary vocational education (VET) are 11% less at risk of experiencing unemployment compared to young entrants who hold a low-skill VET diploma. This finding also holds for young adults who absolved an occupational baccalaureate (significant at $p<0.1$). In addition, labour demand (for newcomers) varies considerably across occupational segments in Switzerland (Sacchi and Salvisberg 2012). This variation in demand across occupational segments is also reflected in our findings, which show that not only the level of vocational education but also the field trained in matters in terms of smooth transitions to work. Young skilled adults who pursued an apprenticeship in the field of (3) business and sale and those who pursued their training in the field of (4) [applied] computer science are 22% resp. 19% more likely to experience a bumpy labour market entry period compared to those who did their training in the field of (5) mechanics and electronics. Our results further support that individual resources play an important role in determining the risk of early unemployment. We find that young graduates who have a positive attitude towards life (measured prior to the labour market entry period) are 15% less likely to experience unemployment in early career. One may note that if we do not control for a positive attitude towards life then self-

efficacy becomes significant. Furthermore young entrants who have been sincere and reliable students in terms of finishing their homework on time at lower secondary level are on average 8% less likely to experience unemployment during their career formation (weak statistical significance at $p<0.1$). In addition to social and individual resources, the region of residence also matters. Young entrants from the French speaking part are on average 13% more likely to experience early unemployment compared to young labour market entrants from the German speaking part. One may note that not including the region of living in the logistic regression results in a statistically significant finding for average cantonal youth unemployment rates, indicating that these variables are somewhat confounded.

Overall, these findings suggest that social, structural as well as individual resources simultaneously shape transition processes of skilled young adults. Therefore, accounting for heterogeneity in the exposure to unemployment when investigating scarring effects seems to be a necessity in order to yield unbiased results.

Unemployment Scarring

Looking at scarring effects of early unemployment based on balanced samples from propensity score matching, we find that young skilled adults are by 9% somewhat more likely to be neither in employment nor in education or training (NEET) at the age of 26 years in 2010, compared to a comparable group of young workers who experienced smooth transitions. Yet, using a weight (wt8_kal) correcting for panel attrition the result we find is not statistically significant. One may note, however, that we find a significant effect if we applied a weight (basewt) correcting only for the disproportionality of the sample. All in all, we interpret these results as evidence pointing towards a scarring effect on later labour market attachment. Looking at young persons who are engaged in the labour market in 2010 our results further suggest that young skilled adults would earn higher wages at the age of 26 years, had they not experienced unemployment at the early stage of career formation. On average young adults who experienced some unemployment in early work life earn about 360 CHF (monthly gross wage) less compared to a comparable group of young skilled workers who did not experience early unemployment. This wage scar amounts to 7% of their average monthly gross earnings of 4861 CHF. Hence, young skilled adults would earn about 7% higher wages at the age of 26 years, had they not experienced unemployment in early

work life, between the ages of 19-23 years. Furthermore we find that those who experienced early unemployment are on average about 18% more dissatisfied with the progress they made toward meeting their overall career goals compared to a similar group of young skilled workers. Therefore young skilled workers do not only earn less but scarring effects are also reflected in their subjective assessment of career progress. Main results are the same if we apply a weight not correcting for panel attrition (see Table 2).

Table 2. *Average Treatment Effects on the Treated*

Outcomes:	Weight[a)]	N_T	N_C	$Outcome_T$	$Outcome_C$	**ATT**	SE	ATT/SE
NEET-ratio	wt8_kal	205	560	0.15	0.06	**0.09**	0.06	1.5
	basewt	205	560	0.10	0.04	**0.06***	0.02	3.0
Wage level	wt8_kal	95	289	4861	5221	**-360***	143	-2.5
	basewt	95	289	4887	5255	**-368***	139	-2.6
Career	wt8_kal	103	320	0.45	0.27	**0.18***	0.06	3.0
Dissatisfaction	basewt	103	320	0.41	0.24	**0.17***	0.06	2.8

* $p < 0.05$, ^{T} refers to Treated, ^{C} refers to matched Controls

a) wt8_kal corrects for both, panel attrition and the disproportionality of the sample, basewt corrects only for the disproportionality of the sample

Conclusion

Dual-education systems that equip the young with standardised diplomas and liberal employment protection legislations, such as in Switzerland, are well known to allow for smooth transitions from school-to-work (see Fuentes 2011; De Lange et al. 2014; van der Velden and Wolbers 2003; Gangl 2003; Breen 2005). However, as our results show, this does not necessarily mean that standardised vocational credentials and liberal market structures protect the young from adverse consequences in case they happen to experience unemployment in early work life.

Investigating causal effects of early unemployment, it is crucial to control for endogeneity. Based on balanced samples from nearest-neighbour propensity score matching, our results suggest that vocationally skilled young workers, who experience unemployment in early work life, are more likely to be neither in employment nor in education or training (NEET). They also earn less later in their careers compared to a similar group of skilled young workers who did not experience early unemployment. In addition, we find that also from a subjective point of view, skilled young workers who experience early unemployment are more dissatisfied with the progress they made toward meeting their overall career goals than they would be had they not experienced early unemployment. In this way, our findings run counter to the expectation that early unemployment does not have much of an impact when vocational degrees are sufficiently standardised, dismissal costs are low and unemployment is of generally short duration.

Drawing this conclusion, we must keep in mind that we only observe that young workers with vocational credentials who experienced some unemployment are worse off in the mid-term compared to a similar group of young workers who experienced smooth transitions. Mechanisms behind unemployment scarring still remain a black box and may only be theorised about. It may be that employers take transitory unemployment as a relevant sorting criterion even if degrees are sufficiently standardised and dismissal costs are low. As early unemployment experiences may also exert a psychological impact, scarring effects may also stem from reduced self-efficacy and self-esteem due to the experience of early unemployment, which in turn influence future job search effort and success (see Furnham 1985). Over and above this, those who experience early unemployment may be more prone to apply for and accept jobs that offer worse career advancement and employment

prospects (see e.g., Mortensen 1986). In this case it may be self-selection rather than sorting by employers that is at play. Whatever the driving forces of unemployment scarring are, our results clearly contradict assumptions about improvement in job-matching quality as proposed by search and matching theories (see Kahn and Low 1982). Therefore, we conclude that even a potentially advantageous institutional setting, which on the one hand allows for smooth transitions, does on the other hand not protect the young from adverse consequences in case they happen to experience bumpy transitions. As vocationally skilled entrants are not sheltered from unemployment scarring even within a favourable institutional setting, they should not be left unattended within research and policy considerations addressing labour market vulnerability.

In order to understand scarring effects more comprehensively, future research is needed with regard to the mechanisms driving unemployment scarring among (vocationally skilled) young workers and the development of employment scars in the longer run. It is further not exclusively clarified in which way standardised and vocation specific degrees affect unemployment scarring. Where unemployment is less prevalent, one may hypothesise unemployment to be more stigmatising (e.g., Nilsen and Reiso 2011). Since unemployment rates for young entrants holding standardised vocational degrees are comparatively low, one may for this reason also assume scarring to be more pronounced among VET graduates. In addition, scarring effects among VET graduates may be heterogeneous. Focusing on potential gender differences with respect to scarring our results (not reported in this paper) point in the direction that wage scars are more pronounced among male graduates while differences in career satisfaction are to some extent more distinct among female graduates. However, due to small group sizes, we cannot stably confirm these results and need to leave the investigation of potentially heterogeneous scarring effects among VET graduates for future research. Paying attention to differences in wage growth and unemployment experiences, comparing those who stay with the same employer where they pursued vocational education and those who need to search for a job at a new firm after graduation (see e.g., von Wachter and Bender 2006), may also allow for further insight in future research.

Last but not least we must keep in mind that assessment of causation is a risky business. As we have a lot of information on social and individual characteristics of the young entrants,

we have the advantage of removing bias based on a comparably comprehensive set of relevant variables. Nevertheless, estimates of causal effects based on non-experimental data may always be affected by unobserved confounders and therefore should be interpreted with caution.

Endnotes

[a] 39 young adults completed a two year pre-apprenticeship program. They are not included in the analysis in order to increase sample balance and reliability of results.

[b] This definition of early unemployment includes all unemployment spells observed between 2003-2007, the main transition period of the cohort investigated. This includes unemployment experienced directly after graduation as well as unemployment experienced in the first one to four years of working life, depending on the date of graduation. Scarring effects are then estimated at a cross-section in 2010, which is not the same amount of time after graduation for all respondents. A design in which we focused on unemployment and employment outcomes after the same time span following graduation was, even though preferable, not feasible because no interviews were conducted in 2008 and 2009 as well as because we face small sample sizes concerning those who experienced early unemployment and of whom we observe subsequent employment outcomes (treatment group). Due to these restrictions, the effects we look at should to some extent be seen as combined effects, assessing scarring in a universal way. They do not, however, indicate the exact size of scarring for a certain elapsed period after the experience of early unemployment.

[c] 4 cases do not report any unemployment spells during the main transition period but retrospectively indicate that they actually have been unemployed at some stage during their transition period or report having been unemployed shortly after transition in 2008.

[d] These young adults may be seen as interim drop-outs as they were trying to set foot in the labour market after lower secondary education and therefore may not be classified as either unemployed after secondary education nor can they be classified as "never unemployed during transition".

[e] As substantial results are the same whether or not we exclude those who retrospectively indicate having experienced some unemployment in 2008/2009, we leave those who experienced unemployment in 2008/2009 in both treatment and control group.

[f] Note: A perfect or "close to perfect" prediction of treatment assignment would cause problems in finding a control group (see Heckman et al. 1997; Bryson et al. 2002). The aim is not only to find good predictors to model the risk of early unemployment but to include particularly those variables in the estimation of propensity scores which are further expected to be related to future employment outcomes. However, over-parameterized models should be avoided due to arising support problems and possibly increased variation in the matching estimates (see Bryson et al. 2002).

[g] The initial sample of the TREE-Panel was a disproportionally stratified two-stage sample of ninth-graders, where schools and school classes served as primary sampling units (PSU's). Hence, in order to obtain unbiased population inference and correct estimates of their sampling variance it is necessary to take into account survey weights, stratification, multi-stage-sampling, and finite population corrections (PSU-stage). We use Stata's svy-commands to accomplish this.

[h] For the logistic regression analysis (estimation of propensity scores), we apply a customized and truncated survey weight (for details cf. Sacchi 2011: 44). For cases with unemployment spells, the panel weight of the first panel wave with a record of unemployment is used. For the censored cases without unemployment spells up to TREE wave 7 (end of the observation period), we employ the panel weights of this wave. Main results regarding the analysis of scarring effects are the same if no weights are included when estimating the propensity scores.

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Appendix C.1

Variables used

Gender and Migrant background

-*Gender*, coding is 1=male and 0= female

-*Migration background* modelled by *language spoken at home* (st17n01), coding is 0= National languages and High German vs. 1= other language

- *Migration background* operationalised by *country of birth* (st16n01), coding is 1= Switzerland vs. 0= abroad

Family background

-*Socio-economic status* (ISEI)

-*Familial possession of Poetry literature* (st21q10), coding is 1= yes vs. 0= no

-PISA Index of *Social Communication within family* (Soccom)

- *Family structure* (Coding is 0=nuclear family, 1=single parent and 2=mixed/other family structure)

- *Number of siblings* (Coding is 0=no siblings, 1=one sibling, 2= two sibling and 3= three or more siblings)

Individual resources

- *Self-efficacy* (measured prior to the labour market entry period)

Question: To what extent does the following statement apply to you? I can always manage to solve difficult problems if I try hard enough. Coding is 1= moderately or exactly true vs. 0=not at all or hardly true.

- *Persistency* (measured prior to labour market entry period)

Question: To what extent does the following statement apply to you? Even if I encounter difficulties, I persistently continue. Coding is 1= moderately or exactly true vs. 0=not at all or hardly true.

- *Positive life attitude* (measured prior to the labour market entry period)

Question: In general, what do you think about your life? My life seems to be meaningful. Coding is 1= rather, very or totally right vs. 0= totally, very or rather wrong.

Lower secondary educational track/ School competencies

- *Type of school*, coding is 1=extended, 0= basic (reference category), 2= no formal tracking
- PISA *Literacy skills* (wleread)
- *Mathematical skills* measured by self-reported school mark, coding is 0= below average (reference category), 1=average, 2=above average

Upper secondary Education (VET)

-*Classification of vocational education*

The classification of upper vocational diploma is based on Stalder (2011) "The Intellectual Demands of Initial Vocational Education and Training in Switzerland". Stalder (2011) distinguishes between 6 different levels of demand of vocational education in Switzerland. We summarize these 6 different levels of vocational education into 3 levels and add a 4th level including vocational maturity.

1 Low VET comprises level 1 and 2 according to Stalder (2011)
2 Medium VET comprises level 3 and 4 according to Stalder (2011)
3 High VET comprises level 5 and 6 according to Stalder (2011)
4 Vocational Maturity (BMS)

-*Field of occupational training or education*

The categories of occupational training are coded into 9 broad fields of education and training (one-digit) and one rest-category. This coding is based on the ISCED-97 classification scheme revised by Andersson and Olsson (1999). The fields 0 (general programmes) and 1 (education) are not included as the focus of this paper is on VET graduates and thus no-one is observed pursuing an educational track in these fields. One may note that the

classification of educational fields as proposed by Andersson and Olsson (1999) differs from the ISCED-97 coding scheme insofar as the coding into educational fields is independent of educational level as well as it is more detailed.
The coding of the field of occupational training is based on the first occupational credential achieved. For those who indicated having absolved a vocational maturity, which is not a field of occupational training on it`s own, we base coding on the vocational education pursued in 2002. We renamed the ISCED blocks of educational fields so that they fit to the dominant forms of vocational education and training in our sample which make up these educational fields.

The following blocks of broad educational fields are built:
2 Humanities and Arts (referred to as printing and design)
3 Social Sciences, Business and Law (referred to as business and sale)
4 Science, Mathematics and Computing (referred to as [applied] computer science)
5 Engineering, Manufacturing and Construction (referred to as mechanics and electronics)
6 Agriculture and Veterinary (referred to as agriculture and gardening)
7 Health and Welfare (referred to as medical assistance and care)
8 Services (referred to as gastronomy and hairdressing)
9 Field of occupational training unknown (referred to as other)

Deviant behaviour

- *Finishing home work* in time during lower secondary education, coding is 0= never or sometimes vs. 1= mostly or always
- *Skipping classes* during lower secondary education, coding is 0= never during the last two weeks, 1= one or more times during the last two weeks

Demographics

- *Language region*, Coding is: 1=German(reference category), 2= French and 3=Italian speaking part
- *Average cantonal youth unemployment rates* for the period of 2003-2007, calculations are based on SECO (2013)

Outcomes

NEET in 2010

We measure labour market attachment based on a dichotomous variable coded 1 if a person is neither in employment nor in education or training (NEET) in 2010 and coded 0 otherwise. The category of NEET includes among others unemployed (whether officially registered or not), housewives/housemen, those who are in search of a job or education place as well as those engaged in voluntary work and who are neither in paid work, education nor training besides. Thus the category of NEET comprises heterogeneous situations. (Due to sample size restrictions we could not investigate separate groups but need to use this more global measure to address scarring concerning the future labour market attachment of the young)

Wage

Calculation of monthly fulltime equivalent gross earnings for the TREE data is based on the BELODIS project (see Bertschy et al. 2014).

Career dissatisfaction

The subjective assessment of career progress is measured based on agreement vs. disagreement regarding the following statement: "I am satisfied with the progress I have made toward meeting my overall career goals". Respondents were asked to indicate how strongly they agreed with this statement based on an ordinal scale of 5 categories. If they reported to strongly disagree, disagree or only half and half agreed with this statement we take this as an indication of dissatisfaction with the career progress and coded our binary outcome variable on career dissatisfaction as 1. If the respondents reported to agree or to strongly agree with this statement we take this as an indication of satisfaction with the career progress and correspondingly coded our binary outcome variable on career dissatisfaction as 0. (One may note that about two-thirds of the sample investigated reports to be satisfied or very satisfied with the progress made towards meeting their overall career goals)

Appendix D: Article 4

Job opportunities and school-to-work transitions in occupational labour markets. Are occupational change and unskilled employment after vocational education interrelated?

Helen Buchs and Laura Helbling

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Abstract

Background: This study links TREE panel data surveying school-to-work transitions in Switzerland with unique job advertising data from the Swiss Job Market Monitor that mirrors individual job opportunities. We investigate: (i) whether occupational change and unskilled entry level employment are two related transition outcomes among graduates from initial vocational education and training (IVET) in the occupational labour market of Switzerland. Our analysis further focuses on (ii) the impact of a low number of occupation-specific job opportunities on the risk of such a combined horizontal and vertical job-education mismatch, and (iii) the extent to which overall labour demand facilitates occupational changes to skilled employment.

Method: We make use of bivariate probit analysis to investigate occupational change and unskilled entry employment among IVET graduates as interrelated transition outcomes.

Results: The empirical results suggest that occupational change and unskilled entry employment are two interrelated transition outcomes among IVET graduates in Switzerland. The results further support our hypothesis that a low number of occupation-specific job vacancies at labour market entry increase the risk of simultaneously experiencing both forms of job-education mismatches for IVET graduates. High overall labour demand enables occupational changes to skilled employment.

Conclusions: We conclude that for an integration of IVET graduates into occupationally and educationally matching positions it is crucial that the IVET programmes offered match labour demand on an occupational basis.

Keywords: Initial vocational education and training, school-to-work transition, job-education mismatch, occupational change, unskilled employment, vacancies, job opportunities, labour demand

Background

Introduction

Well-established vocational education and training systems (VET) have become widely recognised as facilitating smooth school-to-work transitions (Buchmann 2011). One main reason for successful labour market entry can be found in institutionalised pathways from specific vocational programmes to the occupations trained for. However, what happens if qualified job opportunities in the occupational field in which young adults have trained are scarce at the time of graduation? Facing low occupation-specific demand, IVET (initial vocational education and training) graduates may have to switch occupations or accept unskilled employment (meaning employment not requiring an IVET diploma or other educational qualifications) to avoid possible unemployment. In doing so, they may, however, lose some of the skills they have acquired during training. On taking up unskilled employment they stand to lose their investment in a qualifying education at upper-secondary level and on changing occupations they may not be able to transfer occupation-specific skills gained during IVET to the labour market (Mueller and Schweri 2015). Moreover, lacking the corresponding occupation-specific certificate that allows access to skilled employment in the new occupation, young people that switch occupations immediately after IVET graduation may have to accept unskilled jobs that do not require any certifying education. This may happen especially when overall demand is low as employers in a situation of plentiful choice might not be disposed to hiring candidates with non-matching occupational credentials. Hence, in occupational labour markets occupational change and unskilled entry employment are likely to be related transition outcomes.

Understanding how occupational changes and unskilled employment at entry to an occupational labour market could be interrelated is crucial for our knowledge of the effects of IVET on young adults' labour market prospects and hence on social stratification. An occupational change concurring with unskilled employment may hamper IVET graduates' career advancement and future employment prospects. Skill underutilisation and work experience in unskilled jobs may be a negative signal at future hiring (see Pedulla 2016; Salvisberg and Sacchi 2013). Furthermore, the human capital accumulated on-the-job in unskilled positions may be of a lower "market-value" than that accumulated in skilled positions (Mincer 1974). Therefore, the young people that only gain work experience in

unskilled work are probably less competitive with regard to future employment prospects than those who can prove work experience in skilled jobs. Thus, unskilled employment at entrance to the labour market may hinder subsequent upward mobility into skilled jobs. In this vein, research has demonstrated that unskilled employment at entrance to an occupationally segmented labour market tends to persist throughout individual careers (Baert et al. 2013; Pollmann-Schult and Büchel 2002; Scherer 2004). In Switzerland this entrapment effect is especially strong as the country's training system is very specific (Verhaest and Van der Velden 2012). Similarly, entering an occupational labour market during economic recessions, when overall labour demand is low and graduates risk of having to accept unskilled employment is high, has been shown to crucially hamper future occupational and social positioning (Blossfeld 1985; Vandenberghe 2010; Verhaest and Van der Velden 2012).

Against this background, the present study aims to assess how far occupational change and unskilled employment at entry to an occupational labour market - the Swiss labour market - are interrelated. Furthermore, this study seeks to shed light on the role that occupation-specific job opportunities available to IVET graduates play in increasing or decreasing the risk of a twofold job-education mismatch at labour market entry. Finally, this study looks at how far a high overall labour demand favours occupational changes into skilled employment.

In answering these questions, we aim to shed light on the relation between occupational change and unskilled employment at entrance to an occupational labour market and hence on how occupational change may represent a pattern of an unsuccessful transition. Moreover, by closely looking at the amount and composition of vacancies, we highlight the important role the demand side plays for the transition to the labour market. In this way, this is one of the first studies about the transition from IVET to the labour market to integrate occupation-specific labour demand at the micro level, measuring the individual job opportunities of young people (with the exceptions of Buchs and Müller 2016; Buchs et al. 2015). Given the institutionalised pathways from particular IVET programmes to corresponding occupations, this refined consideration of the demand side should allow for a better understanding of job-education mismatches at labour market entry.

This research paper is structured as follows: we first shed light on the transition from vocational education to an occupational labour market and describe IVET in Switzerland. We

then outline some theoretical considerations of job-education mismatches among IVET graduates and thereby the role of the strength of labour demand in the occupation for which the young people were trained and in the overall labour market. We then move on to describe the data and methods used before we report our empirical findings. Finally, the results are discussed and conclusions drawn.

IVET and employment entry

Vocational education and training is the basis for occupationally segmented labour markets and it therefore structures pathways to employment along vocational lines. Work experience, occupational specificity and a high standardisation can be detected as the main factors preparing the ground for labour market entrance. In the following paragraphs we will use the example of Switzerland to describe the role of these factors for the connection between IVET and employment. Switzerland provides an excellent case study as IVET is its predominant form of upper secondary education and the labour market has been shown to be strongly segmented along vocational lines (Kriesi et al. 2010).

Standard IVET programmes in Switzerland take 3 or 4 years and completion is certified with a federal IVET diploma (Eidgenössisches Fähigkeitszeugnis)[i]. Concurrently, or following on from IVET at upper-secondary level, young people have the option of obtaining a federal vocational baccalaureate (Berufsmaturität), qualifying them to enrol in the universities of applied sciences (SERI 2015; Stalder and Nägele 2011). Close to 90% engage in dual IVET programmes where company-based training and school-based learning are combined (apprenticeship) (see e.g. SERI 2015; Wolter and Ryan 2011). However, this rate differs by region. Since young people pursuing dual IVET gain some initial work experience, induction costs for prospective employers are fairly low and graduates from dual IVET can compete more easily for jobs at labour market entry with older job seekers who have a longer work history.

In addition, vocational education in Switzerland is highly occupation-specific. Around 230 training occupations exist and, apart from some general skills, each provides predominantly occupation-specific competences and skills. However, training programmes differ greatly in occupational specificity. In any case, occupational skills in combination with practical experience prepare IVET graduates for entering employment in the corresponding

occupation, but broad training might allow for greater occupational mobility than specific trainings as the provided skills are more general and thus the loss of occupation-specific skills when switching occupations might be smaller (Eggenberger et al. 2015).

Furthermore, the content of training and the standards in Switzerland are strongly employer-driven, so as to meet labour market demand for specific occupational skills. The VET system is tripartite being governed by the Confederation, the cantons, and the professional organisations (see SERI 2015; SKBF 2014), thus ensuring national standardisation of vocational programmes. Standardisation of vocational training programmes leads to reliable signalling effects of occupation-specific credentials for occupation-specific knowledge and skills. Employers therefore mainly recruit on the basis of IVET certificates. Accordingly, occupational credentials play by far the biggest role in job opportunities in the Swiss occupational labour market (Kriesi et al. 2010) and they establish a pathway from a specific training programme to employment in the corresponding occupational field.

In sum, the allocation of IVET graduates to jobs in the Swiss labour market follows an *employment logic* (see e.g. Gangl 2003; Iannelli and Raffe 2007) in which occupation-specific credentials qualify them for employment in the respective occupations. The strongly institutionalised pathway from school to work promotes smooth transitions into the labour market that are reflected in a high chance of finding skilled employment within the occupation for which they trained (see e.g. Buchs et al. 2015; OECD 2013).

Mismatch and job opportunities in occupational labour markets

The firm link between the vocational training programme and allocation to an occupational labour market implies that, in addition to overall demand, occupation-specific job opportunities are a decisive factor in job-education matches at labour market entry. In the following section we stress the approach of occupationally segmented labour markets to outline how occupational change and unskilled employment can be understood as related outcomes. We then discuss the role of the number of occupation-specific job opportunities and overall demand for occupational and educational mismatch at labour market entry.

Occupational labour markets are characterised by a division into a peripheral and an occupation-specific segment (Sengenberger 1978). The peripheral segment includes

unskilled jobs for which employers do not require a post-obligatory educational credential. All job seekers can therefore access this segment, but this type of employment is characterised by unfavourable conditions (Sengenberger 1978; Sacchi et al. 2016). The occupational segment of the labour market consists of several occupation-specific sub-segments. Each offers different conditions and employment prospects, which leads to the varying attractiveness of taking up a job in the corresponding sub-segment. However, access to occupational sub-segments is limited to job seekers holding the appropriate occupation-specific certificate (Blossfeld and Mayer 1988; Sengenberger 1978; Kriesi et al. 2010).

In occupationally segmented labour markets, young IVET graduates who cannot find a skilled job in the occupation for which they have been trained are not provided with an institutionalised pathway to skilled employment in other occupational sub-segments. Access to occupational segments that do not match the certificate obtained is constrained because occupational mobility would require the acquisition of an additional occupational certificate. Therefore, occupational changes at labour market entrance will direct young IVET graduates into the peripheral segment where no specific certificate is required to take up employment. Following this argument, we can expect occupational changes after IVET to be accompanied by engagement in unskilled employment.

Occupation-specific labour demand, according to the occupational segmentation of the labour market, can be seen to shape appropriate job opportunities for IVET graduates. Hence, the number of occupationally matching job vacancies may be a main driving factor behind occupational and educational mismatch at labour market entry (see also Buchs et al. 2015). According to labour queue theory (Thurow 1975), employers arrange applicants for a vacant position in an imaginary queue and consider the individual with the highest expected productivity. In occupational labour markets employers expect job seekers holding an IVET certificate that vocationally matches the vacant position to have higher productivity and they are usually prefer them over those holding a non-fitting certificate. In addition, work experience might be used as a further ranking criterion whereby labour market entrants with no work experience are probably ranked behind more experienced colleagues. If occupation-specific skill demand is high, despite the competition with more experienced job seekers IVET graduates can be expected to find a skilled job within the occupation for which they trained. However, in the event that qualified occupation-specific job opportunities are

scarce, labour market entrants may be hindered in accessing skilled employment within the trained occupation because employers will prefer more experienced applicants. Young graduates in this situation will be confronted with the choice between an occupational change, which is probably related to engagement in unskilled work, or unemployment. As unemployment will usually be the least favourable outcome young graduates will try to switch occupations. The number of qualified occupation-specific vacancies at the time of completing IVET will thus be the overriding factor deciding whether or not IVET graduates can gain a foothold in occupationally matching and suitably skilled employment.

Drawing further on labour queue theory, we can argue that a high overall labour demand can negate the interrelation between occupational mismatch and unskilled employment. In situations of excess supply, employers can be more selective when recruiting. They then increase their requirements for taking up a certain job and will probably only recruit experienced individuals holding a specific occupational certificate. However, if employers have urgent personnel needs and are struggling to fill a vacancy they might reduce their requirements. Occupation-specific certificates, which, as we have argued, are usually regarded as a compulsory prerequisite, may in such situations not be a necessary prerequisite and any other vocational certificate might suffice. High overall labour demand may thus lead employers to accept young job applicants holding a non-matching occupational certificate in skilled positions. This may be to the advantage of young people who after completion of IVET switch to a new occupation. Further, high overall demand might pull IVET graduates into occupations for which they have not been trained. Existing research proposes that young people who completed a rather broad training programme may particularly profit from high overall labour demand, whereas those with very specific training might struggle more in accessing skilled jobs outside of the field of their IVET programme (Eggenberger et al. 2015). In short, upon graduation, the greater the number of vacant positions in the overall labour market, the more likely it is that graduates will be diverted to skilled employment outside of the occupation for which they trained.

Hypotheses

Based on this theoretical background, we derive the following three hypotheses to test:

*Hypothesis 1: O*ccupational change upon graduation from IVET and unskilled employment are positively related transition outcomes.

Hypothesis 2: A low number of occupation-specific job opportunities at labour market entry drives job-education mismatching (unskilled employment accompanying occupational change) among IVET graduates.

Hypothesis 3: A high overall labour demand at labour market entry increases young people's chances to take up a skilled job outside of the occupational field for which they were trained.

Data and Method

Data

The analyses are based on the TREE database (Transition from Education to Employment). TREE is a longitudinal survey that follows the school-to-work transitions of about 6,000 pupils who participated in PISA 2000 (Programme for International Student Assessment) and left compulsory schooling in the same year. These pupils were then followed annually from 2001–2007, with two additional surveys taking place in 2010 and 2014 (TREE 2013). Job-episode data is also available. Our analyses are restricted to young people who completed dual vocational education (apprenticeships) and entered the labour market between the years of 2003–2007. Young adults who began further education before entering the labour market are excluded. The main sample consists of 1277 individuals.

The analyses focus on the first significant job, which, in accordance with the literature, we define as the first job upon completion of IVET that has a minimum of six months' tenure and does not represent transitional employment such as practical training or an extended job search (see e.g., Blossfeld et al. 2015; Gebel 2010). This first job has to be reported in both the job episode-data and the yearly survey of TREE, such that information on the adequacy of the employment is available. A total of 284 IVET graduates in our sample did not engage in a first job that matched their occupational field of training (occupational change) and 287 entered the labour market via unskilled employment.

Accessible job opportunities at the time of graduation from IVET are measured at the micro level using job advertising data from the Swiss Job Market Monitor (SJMM) (www.stellenmarktmonitor.uzh.ch). The SJMM data contains annual representative random samples of around 4000 job advertisements from all parts of Switzerland, published across all relevant media channels, and covering all types of companies and occupations in Switzerland. The continuous monitoring spans the period from 1950 to 2016 (and onward) providing annual information on advertised jobs specified by location and occupation. Job advertisements allow for the adequate measurement of the personnel needs of employers in terms of specific occupational skills because job advertisements usually contain detailed information on job characteristics and the requirements that applicants must meet (Kriesi et al. 2010). Furthermore, the number of job advertisements approximately corresponds to excess demand because the more difficulties employers encounter in finding an appropriate employee, the more advertisements they publish for a vacant job. Therefore, the likelihood of a job being included in the dataset increases when a particular skill demand exceeds supply. Finally, linking this data to TREE data, we can measure job opportunities at the micro level and, unlike most existing research, we no longer need to rely on aggregate macro level data such as regional unemployment rates.

Variables

Our dependent variables are occupational change and unskilled employment. *Occupational change* is measured as a change from an IVET training occupation to a work occupation on the 2-digit level of occupation codes constructed by the Swiss Federal Statistical Office (39 categories). For this purpose, we first converted IVET training programmes into occupational codes. To ensure that similar jobs are not classified as occupational changes we also compared text information on training and jobs. Together with the use of rather broad occupational categories, this generates a valuable indicator that should not biased by differences in how specific skills are provided in training programmes or by how much occupations are differentiated within the classification system (for a similar approach see Buchs et al. 2015; Mueller and Schweri 2015). *Unskilled employment* is defined as employment not requiring a certificate. We identify unskilled employment if a young person

states that his/her employment does not require completed training in any occupation and/or a completed education.[ii]

The covariates on occupation-specific job opportunities and overall labour demand are constructed linking the job advertising data to individual transition data at the micro level. *Occupation-specific job opportunities* correspond to the number of qualified job advertisements available in the vocational field of the young person's training, the region of residence, and the year of graduation. Thus, qualified vacancies are those that address job seekers holding a certificate at the upper secondary level. Given that IVET certificates, to a certain extent, allow for access to different occupations, we weight all job advertisements within a certain occupation by drawing on transition probabilities and add them to the occupation-specific vacancies. To this end, we use a training-employment matrix of 18 to 25 year old IVET graduates from the Swiss census date of the year 2000.[iii] The smaller the transition probability from a training programme to a certain occupation, the less the vacancies in this occupation are weighted. Equally, living in a certain region allows for taking up jobs in different locations but individuals will favour short distances between residence and employment. We therefore further weight job advertisements according to driving distances between regional capitals (Kantonshauptstädte), with the lowest weights for vacancies furthest away from the district of residence.[iv]

$$O_{axj} = \sum_{b=1}^{B} (w_{ab} * w_{xz} * n_{bzj})$$

O_{axj} Number of vacancies in year j accessible from training a and location x weighted with individualised occupational and geographical transition probabilities

w_{ab} Transition probability from training a to occupation b

w_{xz} Distance weight from location of residence x to location of job z

n_{bzj} Number of vacancies advertised in year j in occupation b and location z

Overall labour demand is defined as the number of all job advertisements accessible to a job seeker based on residence. In building this indicator we use the sum of all job advertisements in the year of graduation and account for geographical distance, as described above, giving vacancies far away from location of residence a lower weight.

$$O_{xj} = \sum_{b=1}^{B} (w_{xz} * n_{zj})$$

O_{xj} Number of vacancies in year j accessible location x weighted with individualised geographical transition probabilities

w_{xz} Distance weight from location of residence x to location of job z

n_{zj} Number of vacancies advertised in year j with location z

In addition to occupational pathways into the labour market and related job opportunities, diverse features of the training completed and individual characteristics will determine a young person's prospects for occupationally and educationally matching entry-level jobs. With this in mind we control for some factors that the literature has shown to be influential: educational achievement and competences, which are mirrored in *reading literacy* skills (PISA score) at lower secondary education, and the *level of the lower secondary education track* pursued (basic, extended or no formal requirements). As a measurement for the cognitive requirement of vocational training programmes we include the *intellectual level of IVET* (distinguished by six differing levels of cognitive demand, according to Stalder [2011]) and a binary variable on whether or not a *vocational baccalaureate* was obtained in addition to the IVET diploma. In addition, the *occupational fields of IVET* are distinguished into eight broad categories. Furthermore, an aggregate measure of the *ratio of unskilled employment* within occupational segments in the Swiss labour market, drawn from the Swiss Labour Force Survey (SLFS), characterises the share of the peripheral segment in the respective occupations. We include *gender*, *migrant background* (0 = Swiss vs. 1 = first and second generation migrants, operationalised by the country of birth and the language spoken at home), and *parental socio-economic status* (*ISEI*) as individual categories in our analysis. In addition, *self-efficacy* and s*atisfaction with the vocational training* (both measured prior to labour market entry during IVET) are included, depicting non-cognitive competences and motivation respectively. Furthermore, the *region of living* distinguishes the German-, French- and the Italian-speaking areas of Switzerland.

Method

We used bivariate probit regression to test the hypotheses empirically. Bivariate probit regression is an extension of the probit model (see Greene 2012) and allows for dealing with two binary dependent variables that are correlated. We assumed occupational change and unskilled employment at entry to occupational labour markets to be related transition outcomes, jointly determined by some similar factors. Some of these determinants of occupational change and unskilled employment may not be observed in survey data because the transition into the labour market is marked by a complex interplay of opportunities and motivation. Bivariate probit analysis allows us to jointly predict the two transition outcomes and thus to: (i) test for a potential correlation between the two transition outcomes, and (ii) estimate the effects of explanatory factors (such as the impact of the occupation-specific and total labour demand).

Essentially, in bivariate probit regression two separate probit models are estimated simultaneously, allowing for a correlation between the error terms of the two equations. The general specification for a bivariate probit model is as follows:

$$Occ_i^* = X_i\beta_1 + \varepsilon_{i1}\ ,\ Occ_i = \begin{cases} 1\ if\ Occ_i^* > 0 \\ 0, otherwise \end{cases}$$

$$Inad_i^* = X_i\beta_2 + \varepsilon_{i2}\ ,\ Inad_i = \begin{cases} 1\ if\ Inad_i^* > 0 \\ 0, otherwise \end{cases}$$

where $(\varepsilon_{i1}, \varepsilon_{i2})\sim$ bivariate normal [0, 0, 1, 1, ρ]. The binary variable Occ_i takes on the value 1 if occupational change occurs. The binary variable $Inad_i$ takes on the value 1 if entrance into unskilled employment is observed. Occ_i^* and $Inad_i^*$ are latent variables assumed to underlie the experience of respective transition outcomes, with X_i as a vector of variables (including the number of job vacancies) that determine these mismatch situations. The correlation coefficient ρ captures the correlation between unknown factors determining both occupational change and unskilled entry employment. If $\rho \neq 0$, then occupational change and unskilled entry employment must be regarded as interrelated transition outcomes that are determined by similar (unobserved) factors.

Based on bivariate probit regression, we estimate and report the average marginal effects of covariates on the joint probabilities of different transition outcomes (see Christofides et al. 1997; 2000; Greene 2012). With regard to the two binary variables of interest to this study,

there are four possible combinations of transition outcomes. In this respect we can investigate the effects on the according probabilities of experiencing (1) both unskilled employment and occupational change $P(Occ = 1, Inad = 1)$, (2) no mismatching $P(Occ = 0, Inad = 0)$, (3) a qualification mismatch only $P(Occ = 0\,, Inad = 1)$ and (4) an occupational mismatch only $P(Occ = 1, Inad = 0)$. To test hypothesis 2, we are most interested in the effects of occupation-specific job opportunities on the joint probability of experiencing both occupational and educational mismatch $P(Occ = 1, Inad = 1)$. In testing hypothesis 3, we focus on the effects of overall labour demand on the joint probability of experiencing occupational change while engaging in educationally adequate employment $P(Occ = 1, Inad = 0)$. The effects of further contextual and individual factors included in the model are only reported but not discussed in more detail as this goes beyond the scope of this study.

The analysis is employed using the software framework of Stata 13, making use of the biprobit-command. Throughout the analysis we applied customised weights,[v] derived based on survey weights provided by TREE (see Sacchi 2011). These correct for both the disproportionality due to the sampling-design of PISA/TREE, as well as for panel attrition. The analysis takes into account the complex survey design of PISA/TREE for variance estimation, applying Stata SVY-commands.

Results and Discussion

Based on descriptive results, we find significant differences in the ratio of unskilled young people employed in first jobs across IVET graduates who changed their occupational field of training and those who engaged in a first job within it. Of those who switched occupations, 43% are concurrently employed in unskilled entry jobs, whereas of those who found employment within their occupational field of training, only 17% are in unskilled employment (see Table 1). This descriptive result thus suggests that occupational change and unskilled entry employment among IVET graduates coincide. In the next paragraph we present the results of multivariate probit models to test this assumption further. The influence of individual job opportunities on the transition to the labour market is then discussed.

Table 1 Transition Outcomes

Transitional outcomes	**Adequate employment**	**Unskilled employment**	Total
Occupational Change	163 (57%)	121 (43%)	284 (100%)
Stay within Occupation	827 (83%)	166 (17%)	993 (100%)

Absolute numbers with weighted row percentages in brackets, design based $F(1, 336) = 11$, $p<0.001$

A bivariate probit model on constant terms (including no explanatory variables in the model) yields an estimate of the tetrachoric correlation, which is a correlation measure for a pair of binary variables (see Greene 2012) between the two transition outcomes. We find, as expected, occupational change upon graduation and labour market entry via unskilled employment to be significantly positively correlated (rho = 0.57). Including diverse structural and individual explanatory variables (as described in the methods section of this paper and presented in Table 2), we can still find a positive and significant disturbance correlation. Therefore, common unobserved factors promote both occupational changes upon IVET graduation as well as labour market entry via unskilled employment. These results are in line with hypothesis 1. Occupational segmentation seems to hinder young graduates from accessing skilled employment outside of the occupation of their training. It seems that they cannot find an institutionalised pathway from their IVET programme to occupations outside of the occupation of their training. Instead they are likely to have to accept unskilled employment in the peripheral segment of the labour market when switching occupations shortly after graduation. Therefore, our results confirm that occupational change and unskilled entry employment may need to be viewed as related transition outcomes among IVET graduates.

At entry to an occupational labour market the number of qualified job opportunities in the occupational field of training, as we identified in our theoretical discussion, has the potential to drive both occupational and educational mismatch. Furthermore, we expect overall labour demand in the year of graduation to promote skilled employment when switching occupations. In Table 2 we present average marginal effects of occupation-specific and overall labour demand on the probabilities of different job-education mismatch situations. For ease of interpretation, the effect of occupation-specific job opportunities and of overall

demand on the transition to the labour market is highlighted in Figures 1 and 2. The following discussion focuses mainly on the joint probability of an occupational change and engaging in unskilled entry employment (column 1), as this is the mismatch outcome of most interest to this study.

Table 2: Average Marginal Effects on Joint Probabilities of Transition Outcomes

Joint Probabilities	$(Occ = 1, Inad = 1)$ N = 108		$(Occ = 0, Inad = 0)$ N = 729		$(Occ = 0, Inad = 1)$ N = 145		$(Occ = 1, Inad = 0)$ N = 135	
	AME	s.e.	AME	s.e.	AME	s.e.	AME	s.e.
Occ-specific job opportunities	**-0.54****	0.18	**0.91****	0.31	0.18	0.18	**-0.55*****	0.15
Overall labour demand	0.006	0.007	-0.008	0.014	-0.009	0.007	**0.012***	0.005
Ratio of unskilled work	**0.44***	0.21	**-0.83***	0.40	0.40	0.31	-0.01	0.23
Field[b]: construction	0.07	0.05	**-0.17(*)**	0.09	0.09	0.06	0.00	0.03
Field[b]: business & sales	**0.17*****	0.04	**-0.29*****	0.06	0.03	0.05	**0.09***	0.04
Field[b]: services	0.07	0.06	-0.14	0.11	-0.01	0.06	0.08	0.05
Field[b]: printing & design	0.01	0.04	-0.03	0.10	0.01	0.06	0.00	0.04
Field[b]: medical care	0.03	0.05	-0.10	0.10	0.10	0.07	-0.02	0.03
Field[b]: informat. tech.	-0.04	0.02	0.07	0.08	0.02	0.07	**-0.05***	0.02
Field[b]: agricult. & gardening	-0.01	0.03	-0.00	0.09	0.05	0.06	-0.03	0.03
Occ. baccalaureate	0.02	0.03	-0.04	0.05	-0.00	0.03	0.02	0.03
Level of IVET	0.01	0.01	-0.01	0.02	-0.01	0.01	**0.02(*)**	0.01
Lower secondary[a] (basic)	**0.05(*)**	0.03	**-0.10***	0.05	**0.06(*)**	0.03	-0.02	0.02
Lower secondary[a] (not formal)	-0.02	0.04	0.02	0.09	-0.04	0.03	0.04	0.07
Reading literacy	0.00	0.00	-0.00	0.00	0.00	0.00	-0.00	0.00
Gender (male)	**0.045***	0.02	**-0.08(*)**	0.04	-0.02	0.03	**0.05***	0.02
Migrant background	0.02	0.04	-0.05	0.07	0.07	0.05	-0.04	0.03
Parental ISEI	-0.00	0.00	0.00	0.00	-0.00	0.00	0.00	0.00
Satisfaction with IVET	-0.01	0.01	0.02	0.02	**-0.02(*)**	0.01	0.01	0.01
Self-efficacy	0.01	0.03	-0.02	0.05	-0.01	0.02	0.02	0.02
Region[c]: French	-0.00	0.03	-0.01	0.05	0.04	0.04	-0.03	0.03
Region[c]: Italian	0.01	0.05	-0.02	0.09	-0.00	0.04	0.01	0.05

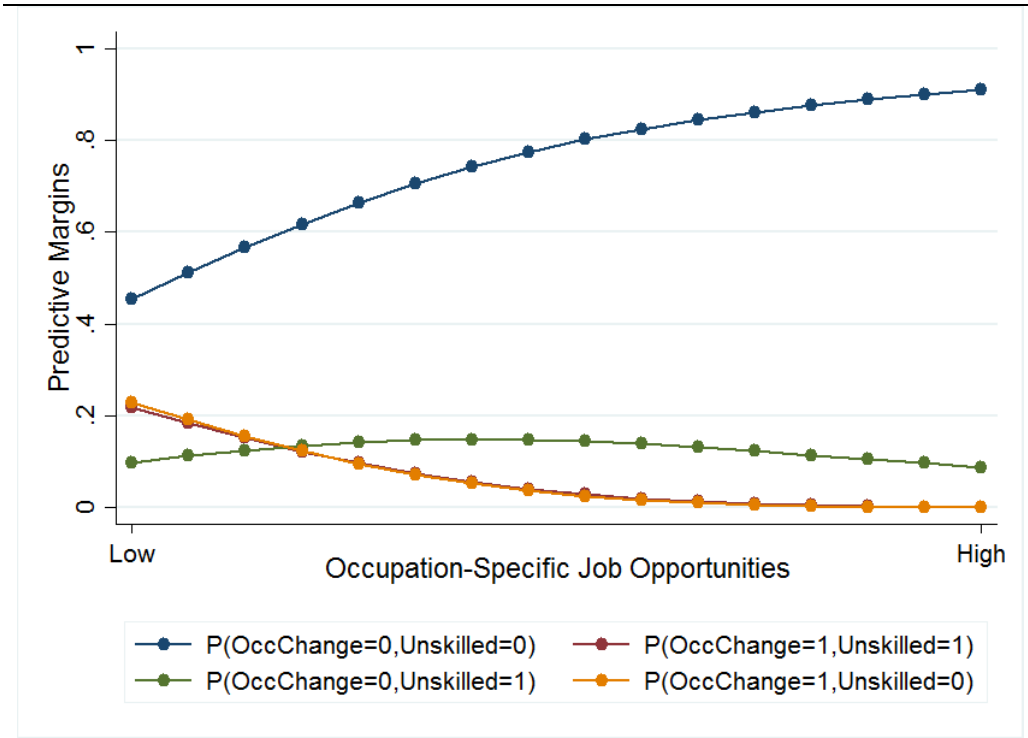
a) Ref.cat: Lower secondary with extended requirements, b) Ref. cat: Field of technical occupations, c) Ref.cat: German speaking region

(*) p≤ 0.1 * p≤0.05 **p≤0.01 ***p≤0.001

Note: The number of cases differs slightly from those reported in Table 1 due to list wise deletion on missing values in some explaining variables.

The results further confirm that a small number of adequate job opportunities in IVET graduates' respective field of training at the time of graduation increases the risk of not finding a job that corresponds to training both in occupation and in the level of qualification. A high number of occupation-specific job opportunities significantly reduces young labour market entrant's risk of experiencing a transition that is *both* occupationally and educationally mismatched (hypothesis2) (see column 1 of Table 2 and Figure 1). With a focus on adequate transitions, the results are also in line with expectations. A larger number of occupation-specific job opportunities is related to a higher chance of engagement in skilled employment within the trained occupation (see column 2 of Table 2 and Figure 1). The results indicate that in situations of low occupation-specific demand, labour market entrants might be crowded out of skilled employment within their field of training by more experienced job seekers because employers can more readily choose between applicants. To avoid unemployment, they may have to accept unskilled employment or an occupational mismatch. Further, the results suggest that fewer job vacancies in the occupational field of training generally favours occupational change among IVET graduates, also into skilled positions (see also Buchs et al. 2015). All in all, constraints occupation-specific job may be seen as an important determinant of the conjoint transition outcome of changing the occupational field and entering the labour market by accepting unskilled employment.

Figure 1: Number of job opportunities in the VET occupation and the transition to the labour market

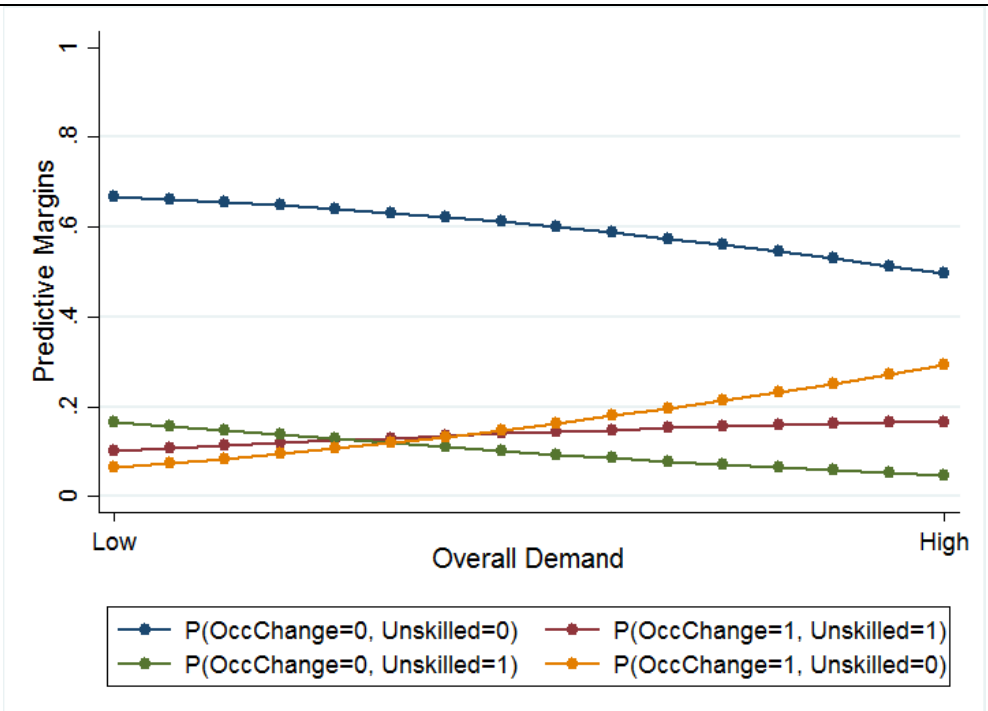


High overall labour demand, as proposed in hypothesis 3, increases the chances of young graduates accessing skilled employment when leaving the occupation for which they trained. Column 4 in Table 2 shows a significant positive effect of the number of job opportunities in the overall labour market on skilled employment outside the occupational field of training. This result is in line with the expectation gained from labour queue theory that the higher the demand for specific skills, the more employers are willing to reduce their requirements regarding matching occupational certificates. When overall demand is high, young people switching occupations can thus profit because in this situation they have a higher chance of accessing skilled employment. Yet, a high overall labour demand at the time of completion of IVET does not reduce the risk of taking up employment that is marked by both an occupational change and inadequate educational requirements. Furthermore, additional analyses show that high overall demand in the labour market particularly increases the probability of changing occupations when occupation-specific job opportunities are few.[vi]

A high number of job opportunities in the overall labour market does however not pull all IVET graduates to switching occupations to the same extend. Focusing on further structural determinants of entering the labour market via occupationally and educationally

mismatched employment (column 1, Table 2), we find the experiences of occupational, as well as educational mismatch after graduation, are related to the characteristics of the occupational field of training. Similar to the results presented by Eggenberger et al. (2015), young people with training in occupational fields that impart rather broad skills, such as business and sales, have a higher chance of switching occupations than do their peers who completed training in fields that impart rather specific skills, such as technical occupations (concurring with both educationally adequate or unskilled employment outside their occupational field of training). This probably means that they can profit more readily from a high overall labour demand if they have to leave the occupation for which they trained. A higher share of unskilled work in the occupation for which the graduates trained, drives occupational change and labour market entry via unskilled employment. It seems that general employment prospects in the occupation for which they trained, and hence the attractiveness of this segment, influences the decision of young people to switch occupations.

Figure 2: Overall demand and the transition to the labour market



Conclusions

In general, institutionalised pathways from IVET to work guarantee smooth transitions from school to occupational labour markets, preventing job-education. However, in the event that graduates do not find qualified job opportunities in their occupational field of training and have to change occupations at labour market entry, these pathways may prove disadvantageous for young peoples' integration into skilled employment. Highlighting the link between occupational changes and unskilled employment is crucial in order to understand processes of social stratification in occupational labour markets as unskilled employment may hamper their career prospects. The present study aims to show in how far these two transition outcomes are related and which role individual job opportunities play.

The most important insight gained from the present study is that occupational change upon graduation from IVET and unskilled entry employment, that is, employment not requiring any vocational education or other qualifying educational credentials, are interrelated transition outcomes. IVET graduates changing occupations at labour market entry thus not only risk losing occupation-specific knowledge and skills acquired during training, they may also be unable to utilise any of their educational investment as they risk entering the labour market via unskilled employment. Moreover, unskilled employment at entry to an occupational labour market may have a negative signalling effect and may prevent young people from accumulating work experience in skilled positions, both aspects likely to constrain upward mobility to skilled employment. Therefore, occupational mismatch concurring with unskilled employment may prove to be rather persistently detrimental with regards to the future labour market positioning of young adults (see e.g., Baert et al. 2013 Pollmann-Schult and Büchel 2002; Scherer 2004) and thereby severely hamper their social positioning (see e.g., Blossfeld 1985; Bukodi and Dex 2010). Our study thus contributes to a more comprehensive understanding of how institutionalised pathways into occupational labour markets may lead to unfavourable employment outcomes among IVET graduates.

This contribution is also one of the first studies to assess the role of job opportunities measured at the micro level for transitions to an occupational labour market. It sheds light on the crucial importance of qualified job opportunities in the occupation for which young IVET graduates trained as well as on overall labour demand upon completion of training with regards to adequate employment. In doing so, it highlights that a scarcity of vacancies in the

occupational field of training drives occupational changes among IVET graduates (see also Buchs et al. 2015). As moving out of the occupational field of training often coincides with unskilled employment, few occupation-specific job opportunities thus promote a twofold job-education mismatch. Further, the present study shows that strong overall labour demand at completion of IVET enables young people to find employment in occupations for which they have no specific training, thereby also opening up the possibility of them gaining access to skilled employment. A high number of job opportunities in the overall labour market may thus be a bulwark against having to accept unskilled employment or even unemployment when demand in the occupation of training is weak. The results support the idea, taken from labour-queue theory, that a high demand in the overall labour market increases firms' readiness to employ young graduates not holding an occupation-specific certificate, whereas in situations of low demand such a certificate is a prerequisite for IVET graduates entering occupations they have not been trained for.

An important insight gained from this study is that the "exogenous" structure of available job opportunities is, besides widely discussed individual and social resources, crucial for IVET graduates' successful integration into occupational labour markets. The preeminent importance of occupation-specific job opportunities indicates that vocational training systems need to provide the occupational skills demanded by employers to prevent their graduates from having to change occupations and to thus shelter them from the risk of entering the labour market via unskilled employment. In this regard, and also in light of shifts in demand towards the tertiary level (Sacchi, Salvisberg and Buchmann 2005), pathways from IVET to higher education that enable the young to increase their negotiating power for skilled positions and professional development – also outside their fields of their first training – are highly important. This study also highlights that further research analysing entries to occupational labour markets should take the structure of available job opportunities at the micro level into account. Not depicting the demand side adequately would mean leaving out one of the main driving factors behind transitions to occupational labour markets.

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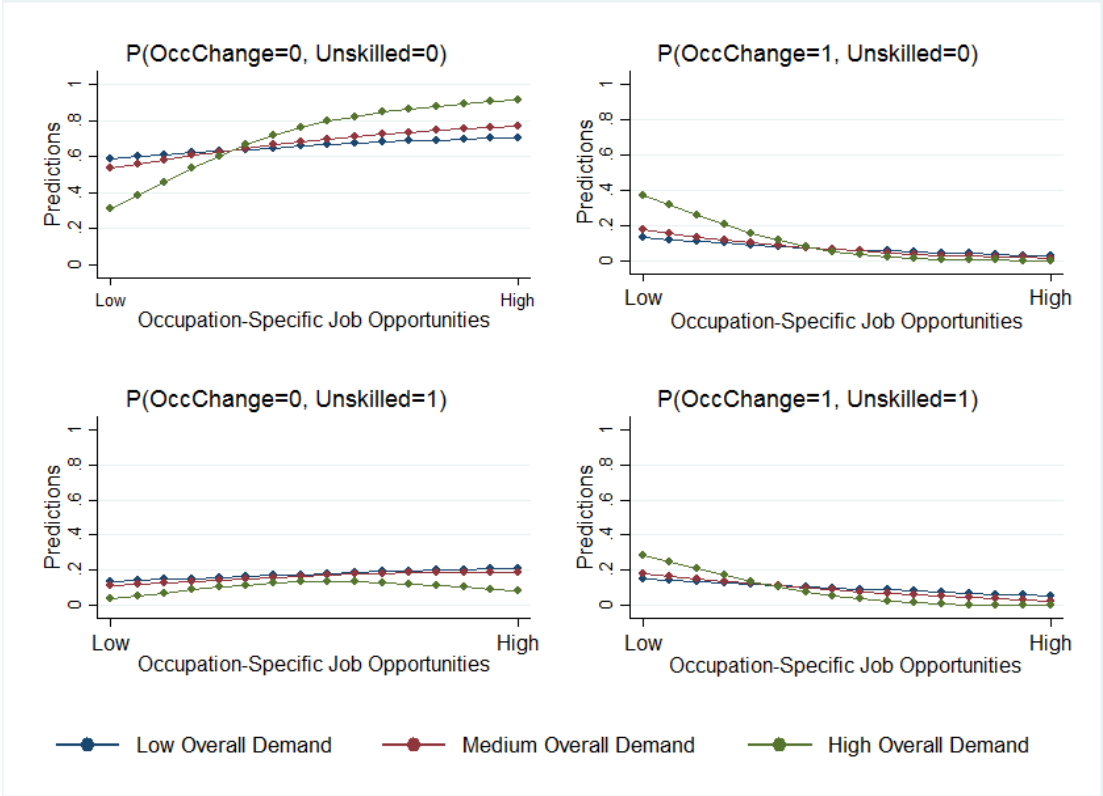
Appendix D.1

Table 3: Sample descriptives

Metric or binary characteristics	**min**	**max**	**mean**	**sd**	**N**
Occ. change	0	1	0.31	0.46	1375
Inad. work	0	1	0.25	0.43	1277
Job vacancies in occ. field	0.01	0.77	0.17	0.14	1387
Total job vacancies	2.48	18.14	6.77	3.40	1387
Ratio of unskilled work	0.01	0.39	0.15	0.09	1387
Occupational baccalaureate	0	1	0.15	0.36	1387
Level of IVET	1	6	3.33	1.90	1386
Reading literacy	81.39	741.90	436.24	116.61	1385
Gender (male)	0	1	0.69	0.46	1387
Migrant background	0	1	0.24	0.43	1335
Parental isei	16	90	39.34	13.39	1337
Satisfaction with IVET	1	7	5.24	1.16	1367
Self-efficacy	2	4	3.01	0.61	1299
Categorical characteristics	Percent (%)	N			
Field: construction	16	103			
Field: business & sales	38	623			
Field: services	8	140			
Field: printing & design	2	51			
Field: medical care	4	82			
Field: Informat. Tech.	1	29			
Field: agricult & gardening	10	96			
Field: technical occupations	21	257			
Lower secondary (extended)	48	846			
Lower secondary (basic)	50	472			
Lower secondary (not formal)	2	68			
Region: German	72	871			
Region: French	26	388			
Region: Italian	2	128			

Note: a weight was applied to derive the descriptive statistics reported

Figure 3: The interplay of occupation-specific job opportunities and overall demand in promotion job-education mismatches at labour market entry



Endnotes

[i] A 2-year VET programme option also exists that allows for qualifications for certain occupational profiles awarded with a (basic) federal IVET certificate. This is also an option for young people who may not easily meet the demands of standard VET programmes. Following completion of a 2-year programme, graduates may then enrol in a 3–4 year standard VET programme (see SERI 2015; SKBF 2014; Stalder and Nägele 2011).

[ii] To check for the robustness of this indicator we compared the occupational prestige (isei) of the jobs taken up across respondents reporting to be employed in skilled versus unskilled work. On average, respondents classified as working in unskilled employment hold jobs of significantly lower occupational prestige compared to their peers that are classified as employed in skilled work. Furthermore, some respondents that report to be engaged in unskilled labour indicate that they work in fields that seem to generally require an upper-secondary education. Given that they may have misunderstood the question we recoded them as being engaged in skilled employment.

[iii] See also Buchs et al. 2015.

[iv] For constructing occupational transition probability weights we draw on the same two-digit code that we used for constructing the dependent variable of occupational change. Geographical distance weights are constructed as follows:

$$w_{xz} = {}^{10}/_{driving\ distance\ in\ minutes}$$

Vacancies in the district (Kanton) of residence (or with a driving distance below 10 minutes) are assigned a weight of 1.

[v] For each respondent a customised and truncated weight was used that was based on the panel weight for the survey year of his/her labour market entry (year of first job) (for details cf. Sacchi 2011: 22).

[vi] We test this proposition by checking for differential effects of overall labour demand across varying levels of occupation-specific demand. Therefore, we include an interaction term between occupation-specific labour demand and overall labour demand in the analysis. See also Figure 3 in the appendix.

Appendix E: Article 5

Job insecurity: differential effects of subjective and objective measures on life satisfaction trajectories in Germany

Shireen Kanji and Laura Helbling

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Abstract

Job insecurity has been increasingly evident in European countries in recent times, particularly in Germany where legislation has enabled the erosion of the standard employment relationship. Fixed-term contracts are central to definitions of insecurity based on atypical or precarious work but there is still limited understanding of what creates insecurity and how it affects workers. Drawing on Bourdieu's thesis that "insecurity is everywhere", the relationships between subjective and objective measures of insecurity are examined in relation to their impact on the five-year life satisfaction trajectories of men and women in the age group 27-33. Latent growth-curve analysis of data from the German Socio-Economic Panel highlights the adverse and lasting effects of subjective concerns about job insecurity on life satisfaction. This association cuts across educational groups, with far reaching implications as subjective concerns about job security permeate young worker`s lives to a much greater extent than the objective condition of being employed on a job of a contractually limited duration.

Keywords

Fixed-term employment, job insecurity, subjective indicators, life satisfaction

Introduction

Job insecurity has become a key concern in recent decades in Europe. In relation to Germany, the Employment Promotion Act of 1985 (OECD 2004) and the various Hartz Laws signalled a sea change in employment relations and a move away from the standard employment relationship (SER) (Bosch 2004; Brehmer and Seifert 2007). The new types of work that these policies heralded have been collectively and interchangeably termed atypical or non-standard work. They include part-time employment (particularly very short hours), agency and fixed-term employment. These types of work differ from each other but what unifies them is that they are usually considered to be less secure than the SER and inferior in quality (Keller and Seifert 2013), as indicated by their association with low income throughout the period 1989-2005 (Brehmer and Seifert 2007; Kalina and Weinkopf 2008).

Researchers have argued that the inequalities in job security signified by the increase in fixed-term contracts have become the European counterpart of the USA's wage inequality (Di Prete 2005). The focus on fixed-term contracts is clear. For example the International Labor Organisation (ILO) placed fixed-term contracts as one of the pillars in its definition of precarious work, a term encompassing a plurality of less secure employment forms (ILO 2012; Keller and Seifert 2013). The concern with insecurity is understandable because of its well-established adverse effects on health. A range of conceptualisations of insecurity, namely employment insecurity (Virtanen 2002), flexible employment (Benach et al. 2000) and precarious work (Quinlan et al. 2001) have all been found to take their toll on health.

The reported effects of job insecurity on work and life satisfaction are less conclusive. Life satisfaction is a cognitive aspect of subjective well being (Diener et al 2013) which has been linked to a number of important outcomes, including the domains of health (as summarised in Erdogan et al 2012) and job performance (Jones 2006). .Evidence suggests that objective and

subjective concepts of insecurity diverge in their effects on life-satisfaction. De Witte and Näswall's (2003) study found that temporary work, an objective measure, in itself was not related to lower job satisfaction, but that individuals' subjective perception of job insecurity affected job satisfaction negatively. Some research has even shown that workers on temporary contracts report higher well-being than that reported by permanent workers, which the authors interpreted as indicative of the worsened conditions of those on permanent contracts (Guest et al. 2010). Indeed, researchers have argued the conditions of those on permanent contracts may not be any more secure than those on permanent contracts in contemporary contexts (Pedulla 2013; Cappelli and Neumark 2004). Subjective measures provide a view into well being, which is important of its own right. They are of particular additional value where objective measures provide ambiguous results.

In this article we draw on Bourdieu's (1998) work on insecurity. Bourdieu (1998) specifically identified fixed-term contracts, amongst other insecure work forms, as hindering planning for the future, thus "putting life on hold". It is perhaps surprising that Bourdieu pinpointed fixed-term contracts, an objective indicator of insecurity, because he was a key exponent of the argument that subjectivities are key to understanding outcomes and that "precarity is everywhere" Bourdieu (1998). Empirical research certainly bears out the importance of subjectivities in understanding how job insecurity affects life satisfaction (see for example Green 2009; Carr and Chung 2014). However, in the main research on employment insecurity has focused on the detrimental effects of fixed-term contracts which arguably has masked the nature and full impact of insecurity as it is currently experienced. Indeed, our research responds to Baron's (2013) call to develop an understanding of how changing employment systems impact individual well-being. In this research we probe the effects of both employees' subjective assessments of their employment security, fixed-term contracts and the

interrelationships between these two constructs in their impact on trajectories of life satisfaction. Life-satisfaction provides a measure founded on satisfaction with a number of domains in life and thus provides a better guide than other subjective measures of whether life is 'put on hold'. Moreover life-satisfaction provides a measure of the extent to which work conditions impact on workers' broader satisfaction.

The contribution of the study is twofold. First we look at workers' own evaluations of their job security, which serve as one aspect of the insecurity of the macro-system, and we investigate to what extent they permeate young workers lives and relate to engagement in fixed-term employment. Second, we examine life satisfaction trajectories which provide an insight into how insecure conditions measured at one point in time impact longer term outcomes. In this task we build on studies which have found unemployment experienced at one point in time and frequent job turnover to have scarring effects, for example in relation to future employment and wages (Bills 1990; Arulampalam et al. 2000; Arulampalam 2000; Niedergesäss 2012). The approach is by intention different from studies which examine how many workers manage to make a transition from fixed-term to permanent employment, which implies permanent jobs to be the yardstick of success. For workers transitions out of fixed-term work into permanent jobs may not necessarily be satisfaction-enhancing if they were only taken to prevent looming unemployment and repeat fixed-term work (Giesecke and Groß 2003; Gash 2008) but are not the jobs and careers these workers had wished and hoped for. Moreover, even permanent jobs may not last long. Job insecurity experienced at one point in time may be a marker of an inferior career trajectory which impacts life satisfaction over the longer term. The contribution of this study is an attempt to gauge if felt job insecurity and objective job insecurity, which is measured as fixed-term employment "puts life on hold" (Bourdieu 1998) in the sense of leading to lower life satisfaction over a period of time.

Theoretical

Bourdieu (1998) used the term precarity (*precarité)* to explain the existence of a pervasive and contemporary social threat that is all-present in high-income economies. He went so far as to describe it as "establishing of a generalized and permanent state of insecurity that leads towards obligating workers into submission and the acceptance of exploitation" (1998: 82). If this state of insecurity is ubiquitous, then the precariously employed, those in contingent or atypical employment, may not be in a worse position than those whose work is governed by the SER. The conditions of the SER may have deteriorated, at least in terms of the security it affords, to match the conditions of work that is objectively precarious (Pedulla 2013). As Marchart (2013) sees it, *precarization processes* extend the reach of precarity to affect those employed on secure terms. The implication is a convergence in how workers in each of these objective conditions subjectively view their conditions; for example, Cappelli and Neumark (2004) demonstrate the equivalent likelihood of involuntary labor-market turnover in the core and periphery of the dual labor market, undermining the thesis of the segmented labor market. Essentially, the argument is that an insecure macro-environment induces worries about job security across all workers. This argument would lead to the expectation that *employees in insecure work, such as those on fixed-term contracts, are not more worried about job insecurity than those on permanent contracts* (hypothesis 1).

In explaining how the current system of insecurity sustains itself, both Bourdieu (2000) and Burawoy (2012) have argued that the objective conditions of labor exploitation diverge from workers' subjective evaluations. As Burawoy (2012) explains, the non-monetary rewards workers derive from the very fact of having a job lead them to comply with their objective exploitation. Workers do not fully take into account the inferiority of their objective conditions. The subjective and the objective are closely related, in that they support a system of exploitation but they are likely to have different effects on workers' self-perceptions. Thus,

contingent work, which is generally inferior in its wages and prospects (Kalleberg 2011), might not have the expected negative effect on self-reported life satisfaction.

Applying this idea further, it is possible to see how young people with expectations of a future career that is superior to their current objective condition of a fixed-term contract might not experience adverse effects on their well-being. The objectively inferior conditions of fixed-term contracts in Germany are well established: they are associated with lower occupational status and wages (see Gash and McGinnity 2007; Giesecke 2009; Giesecke and Groß 2004; Mertens and McGinnity 2003), higher risk of subsequent unemployment (Giesecke and Groß 2003) and a higher risk of continuing in serial temporary jobs (see Gash 2008; Giesecke and Groß 2003). Although young workers are at a higher risk of insecure work (Blossfeld at al. 2008), they may accept that uncertainty is an aspect of a necessary stage of their career trajectory. Workers who perceive that precarious work can lead to something better may feel empowered to be in such work or, at least, not feel badly about it. As in Bourdieu's (2000) and Burawoy's (2012) explanations, workers derive benefits from work that are additive to its current value. Therefore, the effects of insecure contractual status on well-being may diverge from the effects of subjective experiences and fears.

The evidence of whether precarious work in Germany acts as a conduit to better work is mixed (Gash 2008; Hohendanner 2010; Scherer 2004). Men working on fixed-term contracts, for example, are somewhat more likely to become unemployed or to be re-employed on a fixed-term contract as well as suffering a wage penalty, but these differences dissolve over time (Gash and McGinnity 2007). The higher subsequent unemployment risk of young workers who start work on a fixed-term contract diminishes over time (McGinnity et al. 2005), and no negative effects of the initial fixed-term contract are found on later

occupational positions or prestige (McGinnity et al. 2005; Scherer 2004) while initial wage differentials diminish (Gebel 2010). Many workers in low-paid temporary jobs in western Germany experience high wage growth (Mertens and McGinnity 2003). The evidence seems to show that there is a high probability of fixed-term contracts acting as a stepping-stone, a situation which co-exists with the high probability of fixed-term contracts leading to unemployment (Gundert and Hohendanner 2014). Little is known about whether fixed-term contracts impact workers' life satisfaction in Germany and how these effects evolve and endure over time, an important shortfall in our understanding that this article aims to address.

The evidence suggests that contractual insecurity does not necessarily impede young workers' longer-term occupational integration and career advancement but it is possible that there is a strong educational gradient to the future prospects of those on fixed-term contracts. In many European countries, low-skilled workers face a higher relative risk of holding a fixed-term contract than higher-skilled people. Germany differs in that those with high educational attainment have been found to have the same or even a higher risk of being employed on a fixed-term contract (Gebel and Giesecke 2011; Mertens and McGinnity 2003), especially in relation to new labor-market entrants (McGinnity et al. 2005). There could be a dichotomy in the effects of fixed-term contracts for those with low and high education, consonant with Kunda et al's (2002) thesis of a dichotomy between low-skilled and highly skilled workers in contingent employment (see also Marler et al. 2002). This dichotomy could be reinforced by diverging years of experience in the labour market by educational qualification which would imply that someone who was 29 with low educational attainment would have experienced more years in the labour market than someone with higher qualifications and therefore interpret the experience of insecurity differently from one of their peers with higher education.

The psychological contract provides further insight into how objectively inferior conditions could have little impact on well-being (De Witte 2005). Again, expectations play a critical role, but they operate differently, in that objective conditions suppress what workers might expect. In a sense, this is the problem of adaptive preferences, for example, when preferences reflect feasibility and constraint (Sen 1999) or discrimination (Nussbaum 2000). Empirical research seems to bear out that those on temporary contracts have lower expectations, which mediate their job insecurity experiences such that they do not experience negative well-being effects (De Witte 2005; Khattab and Fenton 2009). The psychological contract between workers and employees differs for temporary as opposed to permanent workers, who expect more from their employers, as research studies using data for Belgium (De Cuyper and De Witte 2006) and seven European countries (Guest et al. 2010) suggest. Thus as expectations between permanent and temporary workers may differ, those on fixed-term contracts may not experience lower life satisfaction than those in permanent work.

Although these theories about the connections between subjective and objective conditions differ in their proposed mechanisms, they lead us to predict that *fixed-term contracts are not per se associated with lower reported life satisfaction* (hypothesis 2.1).

Bourdieu's thesis that precarity is everywhere and is undermining workers' welfare leads us to predict

Subjective worries undermine life satisfaction regardless of whether workers are employed on objectively insecure terms (hypothesis 2.2).

We set out above the argument that some workers are more satisfied with their work and lives than their objective conditions would imply, because they factor in a better work future. If this

argument is well founded, it is possible that there is an interaction between feeling insecure and being on a fixed-term contract. Those who do not envisage their work acting as a bridge to better employment are likely to experience worse well-being outcomes, which are exacerbated by being on a fixed-term contract. Thus *we would expect the detrimental effect of workers` worries on life satisfaction to be heightened by the objective experience of contractually insecure work* (hypothesis 2.3).

Data

The German Socio-Economic Panel (GSOEP) is a longitudinal survey of households and individuals conducted annually since 1984. It consists of various samples, such as western German; eastern German; households headed by someone with Turkish, Greek, Yugoslavian, Spanish, or Italian citizenship; and people who migrated during the period 1984-1993, as well as a wealth supplement and substantial refreshment samples (Haisken-DeNew and Frick 2005). This analysis makes use of all these samples and applies the sample weight supplied by the GSOEP to adjust for over- and under-sampling.

We use data from 2007-2011 to focus on young employees born between 1974 and 1979, whose ages ranged from 27 to 33 in the first year of observation. Examining this age group allows us to study the phase of labor-market experiences that encompasses the labour market experience of those with low and high qualifications. By this age, the vast majority of young people in Germany have completed their higher education (OECD 2012: 60-63), having followed differing educational and labor market pathways. The unweighted number of observations in this age range is 1,578 young people, of whom 730 are men and 848 are women. Migrants account for 359 people in the sample. We excluded from the sample those who were not working in regular employment, such as those who were in education or training, unemployed, in government subsidized jobs, the economically inactive, and people

with special needs. Among the excluded observations there were 118 women on maternity leave and another 59 women with children who reported they were not working in 2007, plus 52 young people who were not working and still in education or training. We also excluded 86 young adults who were self-employed and 61 people who reported that they did not have a labor contract. The final analysis sample consisted of 1,055 young employees, of whom 491 were women and 564 were men; 829 of these employees held German nationality and were born in Germany with no parental migrant history, while 225 (one missing value) had what is referred to in Germany as "a migration background." Only 86 young workers had attained only a very low level of qualifications (ISCED 1-2), 608 workers had a medium education (ISCED 3-4), while 353 were highly educated (ISCED 5-6) (8 missing values). Overall, in this age category of 27-33, 172 workers were employed on a fixed-term contract in 2007 while 883 were employed on a permanent contract.

Variables

Contractual status is coded as 1 if the individual is employed on a fixed-term contract, and 0 if he or she is employed on a permanent contract. The subjective measure of job insecurity uses the answer to the question, "*Are you concerned about your job security*?" This item is a measure of affective job security (see Chung and Mau 2014 for a full discussion of the categorization of types of job insecurity). To draw a clear distinction between those who are concerned from those who are not, we coded the variables as 1 if the person is very or somewhat concerned, and 0 if he or she is not concerned. Recognizing the potential overlap between objective and subjective measures, we also include an interaction term between being on a fixed-term contract and being concerned about job security. All measures of employment insecurity relate to the initial year of observation in 2007. The variable for life satisfaction is based on the question, "*How satisfied are you with your life, all things considered?"* Responses are coded from totally unhappy (coded 0) to totally happy (coded 10). The

estimated life satisfaction trajectories use data from five consecutive years. Previous studies have found considerable stability in this single item measure over shorter rather than longer time intervals (Fujita and Diener 2005). Gender is a dichotomous variable coded 0 for female and 1 for male. Living with a partner is coded 0 if the respondent is not living with a partner and 1 if the partner lives in the same household. Having a child under 18 living in the household is coded 1 if there is a child under 18 living in the household and 0 otherwise. Employment status indicates whether the person works full-time, regular part-time, or marginal/irregular part-time, which are self-reported categories. Furthermore, we include a binary variable capturing previous unemployment exposure in the respondent's career as previous experiences of unemployment are known to be associated with life satisfaction (Lucas et al. 2004). A variable is included for region distinguishing East and West Germany as it is known that life satisfaction is lower in East Germany (Easterlin and Plagnol 2008). Work experience is measured in separate variables as years and months of full-time and part-time work experience while tenure in the current firm forms an additional control. Education is classified as low, medium, and high using the International Standard Classification of Education (ISCED). We code those whose highest level of attainment is ISCED level 2 and below as having a low educational achievement, those who have attained ISCED level 3-4 as having a medium level of attainment, and those who have attained ISCED level 5-6 as having a high level. We further include a dummy variable coded 1 if the person has a direct or indirect migrant background and 0 otherwise[1]. In addition, we include hourly wage rates[2] as a measure of job quality and because income has been associated with life satisfaction (Diener and Oishi 2000).

Analytical Strategy

To test hypothesis H1 and investigate the first research question about the overlap and connections between objective conditions and subjective perceptions of job insecurity, we report cross-tabulations produced using Stata 12 in Table 1. The reported χ^2-values and design-based F statistics, which account for the survey design, indicate whether there is a statistically significant relationship between objective and subjective measures of job insecurity.

We next explore the group of hypotheses set out in H2 which relate to whether contractual insecurity, again defined in subjective and objective terms, manifests in differential well-being trajectories. Latent growth curve modelling is used to distinguish individual well-being trajectories in relation to job insecurity over a period of five years. Growth curve analysis models inter-individual variability in intra-individual patterns of change over time (Curran et al. 2010).

The process of running the latent growth curve model involves two steps. First, we estimate an unconditional growth curve model without explanatory variables to assess the average evolution of life satisfaction of young workers in Germany between 2007 and 2011. The latent intercept represents average initial life satisfaction in 2007, and the latent slope parameter represents average rates of change in life satisfaction over the 2007-2011 period. The variances of the latent growth parameters indicate whether there is inter-individual variation in initial life satisfaction and in the rate of change of life satisfaction across young workers (see Bollen and Curran 2006; Byrne 2012).

The second step is to estimate a conditional growth curve model introducing fixed-term contracts and concern about job security as predictors of the latent intercept and slope

parameters, based on the baseline model established in the first step. This model enables us to test whether these types of insecurity are related to differential life satisfaction trajectories (testing hypotheses 2.1 and 2.2). The inclusion of an interaction term between objective conditions and subjective representations of contractual insecurity enables us to test whether the impact of contractual insecurity on life satisfaction on young employees' perceptions of whether their work is insecure (testing hypothesis 2.3).

The latent growth-curve modeling is executed using MPlus and is based on full information maximum likelihood (FIML) (Enders and Bandalos 2001) and robust maximum likelihood (MLR). We take into account the complex survey design by using the psu and strata variables, as well as a sampling weight provided by the GSOEP. Model fit is indicated by χ^2-values. As χ^2-test statistics strongly depend on sample size (see Bollen and Curran 2006: 44-45), we base our assessment of model fit on further fit indices, such as the comparative fit index (CFI) (Bentler 1990), as well as the root mean square error of approximation (RMSEA) (see Browne and Cudeck 1993).

Results

Descriptive Characteristics

Employment on fixed-term contracts (15.2% of women and 14.7% of men in the age category) affects men and women about equally, as was found by Brinkmann et al. (2006: 26), who reported that 13.1% of female workers and 12.5% of male workers were on fixed-term contracts across all age groups. There are almost no differences in the exposure of migrants and non-migrants employed on fixed-term contracts (15%). Regional disparity is evident. A higher proportion of young people in eastern Germany (20%) are on a fixed-term contract than in western Germany (14%). Educational attainment differences are also notable: 23% of those with high educational attainment (ISCED 5-6), while only 12% of those with

low educational attainment (ISCED 1-2) are employed in fixed-term work and 11% of young workers who have medium educational qualifications (ISCED 3-4) hold a fixed-term contract job (as the group of young workers holding only low educational qualifications is small, caution is needed regarding the estimate of fixed-term employment for this group)

Overlap: Objectivity and Subjectivity concerning Contractual Insecurity

While only 15% of young employees in the 27-33 age range hold a fixed-term contract, 59% of these workers worry to some degree about their job security (see Table 1). Anxiety about job security permeates the lives of workers in this age category to a much greater extent than the condition of having a fixed-term contract. Findings reported in Table 1 indicate that a higher share of workers in fixed-term contract work are worried about their job security than workers in permanent jobs based on χ^2-values and design-based F statistics (significant at $p<0.1$). This seems to go against the assumption in hypothesis 1 that the relationship between concerns about job security and fixed-term employment does not differ between those who are on fixed-term contracts and those who are worried about their security. The result that stands out, however, is that worries are clearly not confined to those on fixed-term contracts as the majority of young workers employed on permanent contracts also experience worries about job security.

Table 1.*Worries about Job Loss and Contractual Insecurity*

	Permanent Contract	*Fixed-term Contract*	*Total*
Not Worried	43% (373)	29% (51)	41% (424)
Worried	57% (498)	71% (114)	59% (612)
Total	100% (871)	100% (165)	100% (1036)

Percentages are weighted values, number in brackets refers to unweighted sample sizes
$X^2_{Uncorrected}$= 10.6, Design-based F (1, 618) = 2.9, sign. at $p < 0.1$

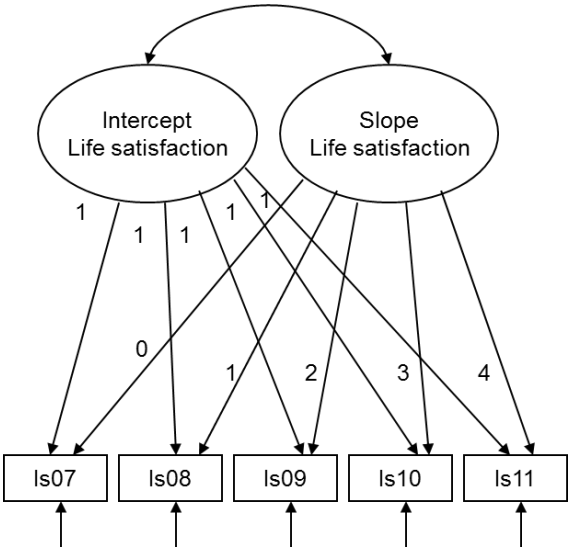
The subsequent employment trajectories of young workers who were employed in permanent or fixed-term work in 2007 are diverse and complicated involving transitions between fixed-

term and permanent jobs as well as self-employment and unemployment. About 54% of those employed on a fixed-term contract in 2007 transited to a permanent job at some point over the five-year period (but they may have subsequently left this permanent employment) . 31% of the sample remained employed fixed-term as long as we observe them. About 15% of those employed on a fixed-term contract experienced some spell of unemployment or non-employment (not including maternity-leave or further education) during the period observed. Of those employed on a permanent contract in 2007 the majority of about 83% of young workers remained employed on a permanent contract as long as we observed them over the period investigated, a minority of about 7% moved from a permanent contract to a fixed-term contract while about 10% experienced some unemployment or non-employment. The employment trajectories of the sample are even more diverse than these figures suggest and include movements from permanent employment to unemployment and re-engagement in fixed-term work or fixed-term workers may engage in a permanent position and transit back to a fixed-term job as well as fixed-term employees experiencing some unemployment then gaining a foothold in a permanent position, or workers may also become self-employed. The interest of this study does not lie in disentangling all of these diverse objective trajectories. Rather, its focus is in whether fixed-term employment and felt job insecurity "put life on hold" (Bourdieu 1998) with young workers experiencing their current labor market integration and subsequent trajectories as less rewarding, spreading to their satisfaction with their lives.

Unconditional Growth-curve Model

The unconditional latent-curve model matched the data well, according to goodness-of-fit statistics (MLRx^2= 17.6, df= 10, x^2/df= 1.8, CFI= 0.99, RMSEA= 0.027, P-close = 0.97) (see Figure 1).

Figure 1. *Unconditional growth curve model*



In Figure 1, following structural equation convention, ellipses represent unobserved factors (latent growth parameters), rectangles represent observed factors (repeated observed measures for life satisfaction over the 2007-2011 period), single-headed arrows represent regression paths, including the values of the introduced regression weights, and curved double-headed arrows represent covariances. Arrows without sources denote the residuals.

The results point to very limited change in mean scores of life satisfaction over the 2007-2011 period for 27-33 year old employees (see Table 2). This uniformity is found even against the backdrop of recession, although it is important to consider that there was hardly any reduction in employment in Germany, in sharp contrast to the United States (Hoffman and Lemieux 2013). Masked by this apparent uniformity in experience is the significant inter-individual variability with regard to the latent growth parameters, which indicates that there are differences between individuals in initial life satisfaction as well as in change over time.

On average, higher initial life satisfaction scores coincide with a slightly steeper decline in life satisfaction over time as is indicated by the negative relationship between the latent intercept of life satisfaction and the (negative) latent slope of life satisfaction.

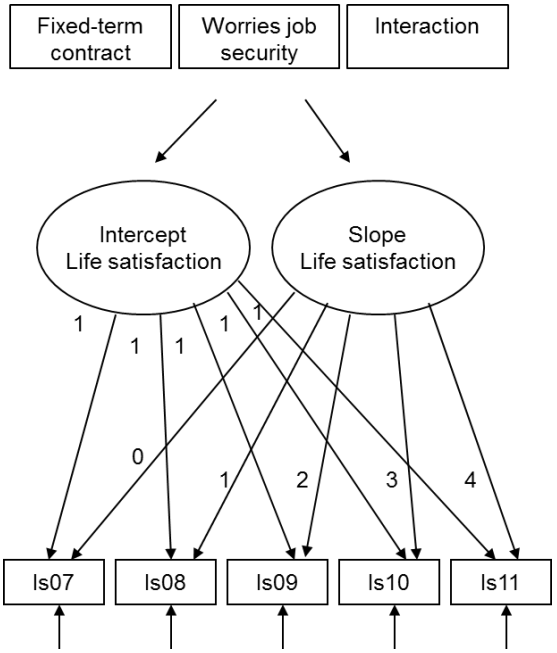
Table 2. *Life Satisfaction(mean scores)*

Mean scores	2007	2008	2009	2010	2011	*Rate of change (Mean slope)*
Life satisfaction	7.3	7.1	7.2	7.3	7.2	-0.02 *n.s.*

Conditional Growth Curve Model

Introducing measures of objective and subjective job insecurity and their interaction as predictors into the baseline growth-curve model, described above, we estimate the conditional latent growth curve model represented in Figure 2. The aim of this approach is to explore and describe the life satisfaction trajectories associated with subjective and objective notions of job insecurity, rather than to establish causation.

Figure 2. *Conditional growth curve model*



For illustration purposes, the covariance among growth parameters as well as paths from each explanatory variable and control variables to latent growth parameters are not shown. Underlying this conditional growth-curve model is the baseline model illustrated in Figure 1.

In order to understand the results better we also control in an additional model for factors which are likely to be associated with objective and subjective job insecurity and well-being. Comparison of models with and without controls (see Table 3, M1 and M2) enables us to gauge whether the effects for job insecurity found in the model with no additional controls are driven by or even confined to other factors which could be the drivers of insecurity. Previous research has established educational level, gender, migration, the presence of children, having a co-resident partner and region as key predictors of well-being (see for example Easterlin and Plagnol (2008) and Frijters et al.(2004) in relation to Germany), all factors that could also be related to work insecurity. In relation to job characteristics and different work histories of young employees we add controls for full-time and part-time work experience, and tenure with the current employer as well as employment status (full-time, part-time and

irregular/marginal part-time), because part-time and mini-jobs (Keller and Seifert 2013) are characteristics of peripheral jobs that could overlap with fixed-term employment (Giesecke and Groß 2003) and fears about job security. In order to account for the association between non-standard work and inferior-quality jobs (Brehmer and Seifert 2007; Kalina and Weinkopf 2008), we include hourly wage rates, Previous unemployment experience is included because the effects of unemployment on well-being are well documented (Jahoda 1988). Those who were previously unemployed are more often in insecure work at re-entry (Giesecke and Groß 2003; 2004) and potentially suffer heightened fears about future job loss. In Table 3 we report the main findings from the models with (M2) and without (M1) controls. It is notable that we obtain the same substantive results across both models which indicates that the results for fixed-term contracts and subjective employment insecurity are robust to the inclusion of this wide range of additional variables The exception is in relation to the effect of fixed-term employment on the evolution of life satisfaction, the magnitude of the effect is similar across both models but in the model without controls the coefficient is weakly significant, but is not significant at $p<0.1$in the model with full controls.

Focusing first on the effects of commencing the period on a fixed-term contract, following H2.1, the lack of a significant result for the latent intercept of life satisfaction in Table 3 shows that fixed-term contract work is not per se associated with initially lower life satisfaction. The weakly significant association between fixed-term work and the latent slope for life satisfaction (Table 3, M1) indicates however that those initially employed fixed-term who did not worry about their job security do experience some decline in life satisfaction over the period investigated.

Table 3 reports that concern about job security is significantly negatively related to the latent intercept of life satisfaction but not with the latent slope of life satisfaction, meaning that

subjective insecurity is related to the initial status but not the process of change in life satisfaction over time. Those initially worried about job loss in 2007 report lower initial life satisfaction and do not experience any closure of the initial gap in life satisfaction between themselves and those who did not worry. This result supports hypothesis H 2.2, which proposes that workers' feelings about their job security, even if employed on objectively secure terms, undermine their life satisfaction. We can add to this that these effects last over the time span we observe.

Contrary to our prior expectations, we find no significant interaction effects between objective and subjective notions of job insecurity. On average, the negative effect on life satisfaction that fear of job loss brings is not significantly heightened by holding a fixed-term contract, even though these workers (employed on fixed-term contracts and worried about job security) have on average the lowest life satisfaction. On these grounds we reject hypothesis H 2.3.

Focusing in addition on significant effects ($p<0.05$) of control variables included in M2 we find young workers from West Germany to be more satisfied with their lives than those from East Germany. The formerly unemployed have lower initial life satisfaction, but are catching up in terms of their life satisfaction over the period we investigate. We also find those in the low and medium educated categories to have lower life satisfaction than the more highly educated. Firm tenure is positively related to the evolution (slope) of life satisfaction.

Table 3. *Job Insecurity and Life satisfaction*

	Effect (M1)	***SE***	***Effect (M2)***	***SE***
Intercept life satisfaction	7.62***	0.09	8.03***	0.28
Slope life satisfaction	-0.02	0.02	-0.17*	0.08
Intercept life satisfaction				
Fixed-term contract	0.05	0.17	-0.08	0.21
Worries about job security	**-0.56*** **	0.13	**-0.45*** **	0.13
Interaction	-0.19	0.27	-0.003	0.25
Low education[a]	--	--	**-0.68****	0.24
Medium education[a]	--	--	**-0.31***	0.14
Previous unemployment	--	--	**-0.55*** **	0.13
Region (West Germany)	--	--	**0.38***	0.18
Slope life satisfaction				
Fixed-term contract	**-0.13(*)**	0.08	-0.15	0.09
Worries about job security	0.01	0.03	0.01	0.03
Interaction	0.13	0.10	0.13	0.11
Previous unemployment	--	--	**0.12****	0.04
Firm tenure	--	--	**0.01***	0.01

(*) < 0.1 * < 0.05 ** < 0.01 *** < 0.001

M1 (no controls), N=1024: MLRx^2= 25.3 df= 19, x^2/df= 1.3, CFI= 0.99, RMSEA= 0.018, P-close = 1.00

M2 (controls added), N=995: MLRx^2= 71.9 df= 61, x^2/df= 1.2, CFI= 0.99, RMSEA= 0.013, P-close = 1.00

Control variables include gender, migrant status, education, children at home, partner, previous unemployment, work experience (full-time and part-time), firm tenure, full-time vs. regular/marginal part-time, wage, region

Only significant effects (p<0.05) of control variables are displayed in Table 3, M2.

a) Ref. cat is: high education

In order to understand better the above results we further explore the possibility of educational differences through a multigroup analysis (Table 4) of two educational groups: the low/medium educated (ISCED 1-4) and highly educated (ISCED 5-6) Worries about job insecurity, which are not confined to permanent jobs, go together with lower life satisfaction across both educational groups. Educational differences are seen in that highly educated young workers initially employed fixed-term do not experience any decline in life satisfaction over the period investigated. Fixed-term contracts negatively impact the evolution of life satisfaction over time for those in the low and medium education group who do not express initial worries about their job security (weakly significant at p<0.1, see Table 4). Hence the

negative impact of fixed-term work on the evolution of life satisfaction reported in Table 3 seems to occur among the low/medium educated group only, lending some support for the proposition that they are employed in the periphery. (It is difficult to interpret the somewhat contradictory finding that in the low and medium education group the negative impact of fixed-term employment on the evolution of life satisfaction does not carry over to those who were initially employed in fixed-term work and also expressed concern about job security (not significant but positive point estimate for the interaction term on the latent slope, see Table 4). Perhaps these workers had already incorporated the expectation of worse outcomes into their initial evaluation of life satisfaction.

Table 4. *Job Insecurity and Life satisfaction (by education group)*

	Medium/ Low Education *(N=671)*		***High Education*** *(N=345)*	
	Effect	***SE***	***Effect***	***SE***
Intercept life satisfaction	7.53***	0.12	7.76***	0.14
Slope life satisfaction	-0.01	0.03	-0.03	0.03
Intercept life satisfaction				
Fixed-term contract	-0.10	0.27	0.13	0.20
Worries about job security	**-0.61*** **	0.17	**-0.37***	0.16
Interaction	-0.36	0.36	-0.09	0.36
Slope life satisfaction				
Fixed-term contract	**-0.29(*)**	0.18	0.003	0.06
Worries about job security	0.01	0.04	-0.01	0.05
Interaction	0.27	0.19	0.02	0.12

(*) < 0.1 * < 0.05 ** < 0.01 *** < 0.001
MLRx^2= 53.2 df= 38, x^2/df= 1.4, CFI= 0.98, RMSEA= 0.028, P-close = 0.99

Discussion and conclusion

In this study we examined how subjective and objective concepts of job insecurity affected the five year trajectory of young workers' life satisfaction in Germany. The results show that subjective insecurity is clearly related to a diminished starting point for life satisfaction, which is not bridged over the five-year period we examine. Therefore the adverse starting point for these workers endures. The association between subjective insecurity and well-being is concerning because subjective insecurity permeated young people's lives (59% of workers were concerned about job security) to a great extent. The objective condition of an insecure contractual status only applied to 15% of workers. The widespread existence of subjective fears about job security and their negative well-being effects lend support to Bourdieu's argument that worries permeate the environment to the detriment of workers.

Previous research conducted in the United States has also found that insecure conditions extend to those on ostensibly secure contracts (Pedulla 2013; Broschak and Davis-Blake 2006). Furthermore, we found that concern about job security adversely affects both those with higher and lower educational attainment. This result in relation to education is all the more striking because previous studies have found education to be a good predictor of subjective insecurity with those with higher levels of education being more protected from adverse effects (Green 2009). Subjectivities have often been neglected in studies of non-standard work or have been taken as inherently reflected in objective conditions, which our study shows is not the case. Indeed we find grounds that a kind of "subjective precarisation" has taken place. Subjectivities are not and should not be the only yardstick for evaluating insecure work conditions, but we join Chung and Mau (2014) and Lübke and Erlinghagen (2014) in arguing they can help to deepen our understanding of how changing employment systems affect workers' lives. Moreover using life satisfaction trajectories as an indicator of

well-being adds to the understanding gained from more objective measures such as wages (Diener et al. 2013).

The objective condition of a fixed-term contract was reflected in a deterioration in the trajectory of life satisfaction for those in the lower-qualification group who were not initially concerned about job security. It takes low education *and* a fixed-term contract to pinpoint workers in the periphery, at least from the perspective of subjective welfare. In this case we do find some support for a separation between the core and the periphery (Doeringer and Piore 1971). We can speculate that those with higher qualifications may sustain their objectively inferior conditions by factoring in their own positive expectations for their future, which is well-founded according to previous research (Hohendanner 2010). Through subjectivities which reflect positive wage and career expectations and actual advancement over the period observed, higher educated workers may avoid the negative well-being consequences from fixed-term contracts that their peers with lower qualifications experience. Further, initial fixed-term employment for the highly educated may be associated with successful career progression and hence the careers these workers wished and hoped for. This is left for future research.

We employed latent growth curve modeling to examine trajectories of life satisfaction rather than looking at snapshots in time. Our interest was to gauge differences in initial life satisfaction and evolution of life satisfaction by objective and subjective insecurity at the stage when most workers had made the transition to the labor market. Gender differences were not the focus of our research, in part because fixed-term contracts are not obviously gendered in the same way as part-time work and mini-jobs. Yet, we recognize that the wider phenomena of atypical and low-wage work in Germany are highly gendered and that this is an area in need of much further work.

Insecurity is a feature of work for the youngest workers in Germany, but we addressed the next stage in the labor market, looking at how insecurity affects the well-being trajectories of those in the 27-33 age group. The challenge of future research will be to continue this focus on the effects of insecurity over the life-course, particularly for younger cohorts that have been highly exposed to contract insecurity in the first stage of the transition from education to employment. Furthermore, it is necessary to recognize the differentiated and changing meanings of contract status: that for some highly educated workers a fixed-term contract is not detrimental per se, while for those with lesser educational attainment, a fixed-term contract negatively impacts well-being. What is really notable is that the subjective feeling of job insecurity negatively impacts workers as an overall group, an effect that also holds separately for highly educated workers and those with low and medium education. Moreover, the lower initial life satisfaction of those who experience subjective job insecurity at one point in time is lasting.

Notes

[1] The GSOEP (2012) defines migrants as having a direct or indirect migration background, the latter referring to a person born in Germany whose parents were migrants.

[2] Hourly wage rates are derived from monthly Gross salary and actual weekly working hours, including overtime. Monthly Gross salaries are divided by monthly hours to obtain hourly wage rates, following Kalina and Weinkopf (2008: 467) although excluding retrospective data on special payments. We use the generated variable Labgro to compute hourly wage rates, 8.5% of the monthly incomes are imputed. Excluding the imputed income values does not change the results, and therefore we keep cases with imputed income values.

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