The impact of modernization and labor market conditions on the school-to-work transition in Switzerland: a dynamic analysis of the period from 1946 to 2002

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DOI: https://doi.org/10.1007/978-3-319-89557-4_10

Chapter 10
The Impact of Modernization and Labor Market Conditions on the School-to-Work Transition in Switzerland: A Dynamic Analysis of the Period from 1946 to 2002

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Introduction

The transition from the education system into the labor market is a significant and sensitive phase in the life course of young generations given the long-term consequences of work history and impact on future opportunities (Blossfeld 1985, 1987; DiPrete et al. 2001). It is undisputed that the school-to-work transition depends on individual resources, such as social background and attained educational qualification (Buchmann and Sacchi 1998; Jann and Combet 2012; R. Becker and Zangger 2013) and on the structure and organization of the education and the employment system as well as their institutional linkage (Allmendinger 1989; Kerckhoff 1995; Shavit and Müller 2000; Wolbers 2007). In addition, opportunities to attain specific educational credentials and returns to investments in education at the beginning of the occupational career vary over time (e.g., Blau and Duncan 1967). They affect the patterns of labor market entry and the status attainment in the course of people's occupational career, and indicate the openness of the class structure across birth cohorts (Blossfeld 1987; Sørensen 1986; Shavit and Müller 1998). However, this time dependency of these trajectories has often been neglected in previous empirical research. Therefore, there is limited information on the probability and process through which individuals accept profitable employment and the social status they achieve when they enter the labor market. In addition, it is important to understand how these factors are related to (1) the long-term social changes with respect to modernization (e.g., educational expansion, tertiarization of professions and

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R. Tillmann et al. (eds.), *Social Dynamics in Swiss Society*, Life Course Research and Social Policies 9, https://doi.org/10.1007/978-3-319-89557-4_10

industries, and increasing social welfare), (2) the economic business cycles in the post-war period (e.g., boom periods, recessions resulting from oil price shocks, dot-com and real estate bubbles, financial and bank crises), and (3) the fluctuating state of the labor market (e.g., decrease in full time employment, increasing youth unemployment).

In this chapter, the transition of different birth cohorts into the labor market is reconstructed as a dynamic process that is time-dependent on the (*a*) transition duration from the education system to the first job (age or life-cycle effect), (*b*) period-specific changes of labor market conditions, the level of modernity in the economy, and the social structure after completing education (period effect), and (*c*) the economic and social conditions at the time of achieving educational qualifications (cohort effect). The age-period-cohort (APC) analysis aims to answer the following questions with respect to Switzerland in the period from 1946 to 2002: (*1*) What is the role of the modernization trend and economic business cycles in determining the speed of transition and the likelihood of attaining a prestigious job? (*2*) Are there still direct effects of social background and educational qualification across cohorts on the likelihood of graduates starting their career and achieving status in their first jobs if the modernization trend and economic business cycle are taken into account? (*3*) Despite the increasing uncertainty due to globalization and labor market competition, are the institutional arrangements of the education system and its linkage to the labor markets effective in providing "safety roads" for young professionals to start their career?

The remainder of this contribution is organized as follows. In the next section, the theoretical background is briefly outlined. Subsequently, the data, operationalization of the variables, methodological design, and statistical procedure are presented. The empirical results are discussed in the fourth section and the findings are summarized in the final concluding section.

Theoretical Background and Hypotheses

Following Shavit and Müller (2000), the organizational structure of the education system and labor markets as well as their institutional linkages affect the extent to which a "safety net" for socially disadvantaged adolescents and a "safety road" for graduates to their first job is provided (Imdorf and Hupka-Brunner 2015; Buchs et al. 2015). Additionally, the attained educational qualification (in terms of credentials) and social background of adolescents (in terms of socio-economic status of parental home) are important factors in the transition from school to work (Müller and Kogan 2010). According to the human capital approach (G. S. Becker 1964), investment in education is a necessary precondition for access to privileged positions in the labor market. Furthermore, the signal theory emphasizes that labor market access depends on attained certificates that signal the productivity of young professionals. Both these theoretical approaches are consistent with the assumptions of the labor queue model (Thurow 1975): the better people are educated, the

better their position in front of the entry ports of firms and therefore the higher their chances to get hired in favorable positions.

In the course of the educational expansion, the tertiarization of professions and industries, and the upgrading of successive birth cohorts (Oesch and Rodríguez Menés 2010; Oesch 2013), the attained (vocationally or academically oriented) education has become increasingly important in securing the first job. This is because the supply of well-trained graduates has increased. In this respect, social background and familial social networks might have also become increasingly important for occupational beginners (Franzen and Hangartner 2005; Kramarz and Skans 2014). However, it has to be kept in mind that the institutional interpretation by employers of graduates' credentials, productivity, and desirable qualities depends on macro processes, such as modernization and economic business cycles (Gangl 2002). Crowding-out processes in the school-to-work transition might intensify because of tertiarization and increase in qualification requirements of jobs in the service and administrative areas. Consequently, younger school-leaver cohorts, who benefited from the educational expansion (R. Becker and Zangger 2013; Zangger and Becker 2016), are in a more advantageous position at the start of their career compared to older school-leaver cohorts. The percentage of persons who have completed at most compulsory education level has declined across birth cohorts and is remarkably low for the youngest cohorts. In addition, the Swiss case is characterized by a rather smooth school-to-work transition (OECD 2015): The majority of adolescents who have completed upper secondary education gain access to permanent, secure, and suitable jobs within a short timeframe (Buchs et al. 2015; de Lange et al. 2013).

If the dynamics of the entry process in the labor market are considered in context of the timing and speed of transition and the macro-level situation during this time period, then the process of modernization and the fluctuations of economic cycles will affect labor markets and therefore the school-to-work transition and returns to education in the early phase of employment (Raaum and Røed 2006; Gangl 2002). Presumably, under better economic conditions, the opportunities to enter the labor market immediately after graduation and attain employment in a high-level position will improve (cohort effect). In addition, better economic conditions will lead to a smooth transition into the labor market after leaving the education system (period effect). However, the insider-outsider approach (Lindbeck et al. 1988) provides an additional perspective: If there is a decline in the economy, the situation of recent graduates will become more challenging as they will have to compete against groups that are already employed. Under these conditions, the competition between school-leavers will intensify. Graduates with vocational and academic training increasingly displace the less educated people in the labor market. Furthermore, if the economic recession lasts longer, then the competition among school-leavers that have attained vocational education and training will increase. In contrast, people who have attained a higher education may continue their education, thus, gaining a foothold in the labor market for the future.

Finally, the linear trend of modernization in Switzerland – the combination of educational expansion, size of the labor force, changes in the occupational structures

during tertiarization, and increases in qualification requirements – is associated with substantial differences in the patterns of the school-to-work transition between cohorts. On one hand, it is assumed that higher levels of modernity at the time of graduation and training increases the graduates' chances of being hired in a high-level position (cohort effect). On the other hand, continuous modernization during the job search will result in more favorable outcomes (period effect).

In sum, we expect that the school-to-work transition is influenced by age, period, and cohort effects. The age effect will be observed when a long-lasting job search worsens the labor market outcomes of school-leavers in terms of lower employment opportunities and lower chances of being hired in a high-status position (Gebel 2009). Period effects will be observed with the increasing level of modernity and favorable labor market conditions during the job search that will smoothen the transition into the labor market and provide access to prestigious jobs. In addition, and due to the higher level of modernity, we assume that younger school-leaver cohorts are in a more advantageous position at the start of their career (cohort effect).

Data, Variables, and Statistical Procedure

In the following section, we present the data, the operationalization of variables, and the statistical procedure used to test our research hypotheses.

Data and Variables

This study uses data from the retrospective biographical calendar collected in 2002 as part of the Swiss Household Panel (SHP). It allows the identification of respondents' stages across the life course in terms of education, employment, civil status, and housing. Thus, the data are suitable for this study since they allow a time-dependent modeling of the transition from education into employment. The participants include those who left education prior to entering the labor market between 1946 and 2002, which corresponds to birth cohorts born between 1912 and 1986. After excluding missing values, the total sample size consists of 2344 individuals. Education is defined as a categorical variable comprising the following educational levels: "compulsory schooling," "vocational education," "general education," "higher vocational education," and "university (of applied sciences)." The dependent variable is the respondents' status in the labor market after leaving education and is based on the International Socio-Economic Index (ISEI) scores of the first job. However, since not all subjects entered the labor market, this variable was divided into categories in order to include those who were not part of the labor market and those who were unemployed. This resulted in a categorical variable with six values: those not in the labor market, the unemployed, those in the first (lowest),

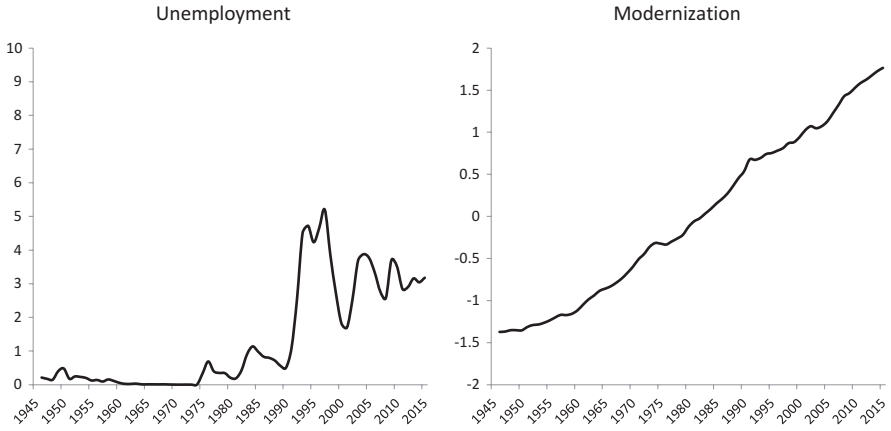

Fig. 10.1 Labor market conditions (unemployment rate in %) and modernization (factor scores) in Switzerland (*Source*: Federal Office of Statistics; Historical statistics of Switzerland online)

second, third, and fourth (highest) quartile in the status distribution. Since the unemployed category was marginal, it was merged with those who are not in the labor market.

Other variables include the respondents' gender, citizenship as a substitute for migration background, and a measure of social background (the highest education of the primary income earner at the age of fifteen years, operationalized the same way as respondents' education). Descriptive statistics for all the variables are listed in the Appendix. Of main interest, however, are the measures for cohort and period effects. In the theoretical section, it was outlined that the changing labor market conditions might have an impact on the successful transition of entrants to their first job. Therefore, the trend of changes in labor market conditions is an important indicator, and is measured in terms of the unemployment rates (left side in Fig. 10.1). Based on the analysis using the historical observation window from 1946 until 2002, it was observed that the most remarkable changes of labor market conditions occurred in the 1970s, 1980s, and 1990s. The unemployment rate at the time of graduation is considered as the first cohort effect and the changing unemployment rates between graduation and entry into the labor market indicate period effects.

It is suggested that the process of modernization is an additional secular development affecting labor market outcomes of graduates. Since modernization is a complex process with different interrelated developments, this process is measured by a combination of different indicators, such as educational expansion, tertiarization, individual and general welfare, population, and economic dynamics (see Table 10.1). In order to prevent an identification problem resulting from highly correlated time series, confirmatory factor analysis is used on the fifteen time series (Kolenikov 2009; Harrington 2009). The factor, modernization, is the result of the main component method and orthogonal factor rotation. The factor explains 96 per cent of the variance in the different time series (last row in Table 10.1). The change in the

Table 10.1 Factor loadings (pattern matrix) and unique variances

Variables	Factor: Modernization	Uniqueness	Kaiser-Meyer-Olkin scores
Educational spending	0.9824	0.0348	0.8162
No. of students eligible for university	0.9862	0.0273	0.9569
No. of students in universities	0.9944	0.0112	0.9106
No. of PhD	0.9754	0.0486	0.8344
No. of employees	0.9851	0.0295	0.8811
Share of employees in tertiary sector	0.9817	0.0362	0.8099
Labor volume	0.9759	0.0477	0.8859
Index of real income (1939 = 100)	0.9304	0.1344	0.7842
Consumer price index of private households	0.9885	0.0299	0.9279
No. of employees in public and private banks	0.9653	0.0682	0.8812
Population	0.9747	0.0499	0.8205
Gross domestic product (GDP; 1990 = 100)	0.9897	0.0204	0.9268
Private consume	0.9931	0.0137	0.8806
Public consume	0.9882	0.0234	0.8793
Investments	0.9852	0.0294	0.8892
Overall			0.8876
Eigenvalue	14.4023		
Variance	0.9602		

Source: Federal Office of Statistics; Historical statistics of Switzerland online – own calculation

period-specific factor scores is shown in Fig. 10.1 (right side) from 1946 to 2015. The trend of modernity levels is monotonic and almost linear. The level of modernity at the time of graduation is an indicator of the second cohort effect, while the changing modernization levels in the period between graduation and entering the first job reflects the second period effect.

Statistical Procedure

The time dependent process of entering the labor market is modeled using survival (or event history) models. More specifically, we estimate the propensity of an event (labor market entry) in a given time interval $(t, t + \Delta t]$ using an exponential proportional hazards model of the form $h(t_i) = h_0(t) \exp [\boldsymbol{X\beta}]$, where $\boldsymbol{X}$ is a $n \times p$ matrix of covariates and $\boldsymbol{\beta}$, a $p \times 1$ column vector of parameters. However, in order to consider the time-varying covariates, namely, cohort and period effects in terms of modernization and unemployment after graduation and prior to labor market entry, we make use of the well-established procedure of episode splitting (Blossfeld et al. 2007). As a result, the process of entering the labor market is modeled as a

stochastic and time-varying function of individual resources (micro level) and as the change of the modernization process and labor market conditions of business cycles (macro level).

Results

Before presenting the results of the multivariate analyses, we briefly discuss the temporal patterns of educational attainment and labor market entry against the background of the educational expansion in Switzerland. In line with previous research (R. Becker and Zangger 2013; Zangger and Becker 2016), the respondents demonstrate a gradual increase in the level of qualification across birth cohorts in the twentieth century–especially women. With regard to the purpose of this study, Fig. 10.2 depicts the education of the respondents before their entry into the labor market. By comparing this figure to the well documented higher qualification across birth cohorts, it is apparent that successive birth cohorts differ less in terms of their education when entering the labor market than what would be expected from the general trend of an increasing higher qualification as a result of the educational expansion in Switzerland (Becker and Zangger 2013; Zangger and Becker 2016). This suggests an early labor market entry for younger cohorts since they rarely postpone their entry until they complete their highest education. While this pattern might be the result of different processes (e.g., high costs of continuing education

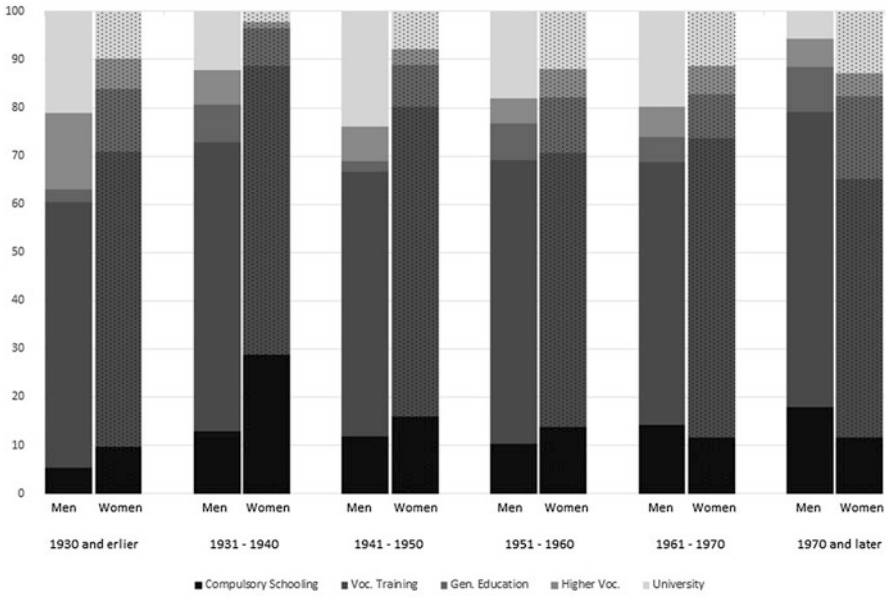

Fig. 10.2 Education prior to labor market entry by birth cohort and sex

makes it necessary to work alongside), it suggests that we need to introduce a control for further education in the multivariate analyses.

Turning to the multivariate results, we focus on three different outcomes: (1) The propensity of entering the labor market (as opposed to being unemployed/ not being part of the labor market), (2) the likelihood of being in the highest, and (3) the likelihood of being in the lowest quartile. Regarding the individual characteristics of interest–education of the individual before entering the labor market and that of the main income earner at the age of 15 years–the expected results were obtained, which is a higher probability of entering the labor market and being in the highest quartile of the status distribution with higher levels of educational achievement.[1] Besides this, there is also evidence of the impact of one's social background, especially with respect to the propensity of entering the highest and the lowest quartile (increasing likelihood of respondents from a higher social status background entering the highest quartile and a decreasing propensity of the same group entering the lowest quartile).

Focusing on the parameters of main interest, first, we observe that the probability of entering the labor market increases monotonically with the level of modernity at the time of graduation. This is the first cohort effect (first three columns of Table 10.2). Thus, younger cohorts are more likely to enter the labor market. On the other hand, the labor market conditions, in terms of unemployment at that time, do not seem to have an effect. Regarding period effects, the opposite result is indicated: With the increasing level of modernity in the years after an individual's graduation, its likelihood of entering the labor market seems to decrease (second and third column). However, this unexpected effect is most likely a methodological artifact. The biographical data used in this analysis only allow the identification of years with distinct events. About ¾ of all respondents entered the labor market within the first year after completing their education; therefore, cohort and period effects overlap in these observations. This collinearity is revealed by the stunning increase in both effect size and standard error of the cohort effects after controlling the period effects. Furthermore, since modernization increases linearly with time, the negative effect of modernity levels after entering the labor market might reflect longer search duration for those who did not directly enter the labor market.[2] Finally, further education (indicated by the positive effect of the dummy variable "Further education after labor market entry") also seems to increase the likelihood of entering the labor market. However, contrary to the impression from the descriptive analysis above, significant interaction of the cohort measure (level of modernity) with further education

[1] Additional analyses (available on request) further illustrate the dependence of one's own education prior to entering the labor market on the education and, to a lesser extent, the social status of the main income earner at the age of 15 years. This suggests a strong indirect effect of one's social background on respondents' labor market performance.

[2] This interpretation is strengthened by the fact that on controlling for search duration (negative impact), the period effect of the level of modernity completely disappears. For the very same reason we do not include search duration in any of the models. Due to the collinearity of search duration and the aggregated time dependent process of modernization, measured in years, it is therefore not possible to model an independent age effect.

Table 10.2 The dynamic process of entry into the labor market and status attainment

	Labor market entry			Highest quartile			Lowest quartile		
Education prior to entry (*Ref.: Compulsory Schooling*)									
(Some) Vocational education	2.009*** (0.132)	1.775*** (0.120)	1.768*** (0.120)	3.018*** (0.658)	2.942*** (0.660)	2.944*** (0.661)	1.042 (0.108)	0.994 (0.108)	0.983 (0.107)
General education & maturity	1.130 (0.111)	1.098 (0.107)	1.095 (0.107)	4.023*** (0.997)	4.055*** (1.010)	4.067*** (1.012)	0.382*** (0.084)	0.376*** (0.083)	0.371*** (0.082)
Higher vocational education	1.852*** (0.203)	1.676*** (0.185)	1.671*** (0.184)	11.775*** (2.841)	11.521*** (2.836)	11.544*** (2.842)	0.153*** (0.070)	0.146*** (0.067)	0.144*** (0.066)
University (of applied sciences)	1.695*** (0.153)	1.538*** (0.140)	1.516*** (0.139)	14.636*** (3.292)	14.385*** (3.303)	14.306*** (3.287)	0.157*** (0.047)	0.151*** (0.045)	0.144*** (0.043)
Social origin (*Ref.: Compulsory Schooling*)									
(Some) Vocational education	1.186** (0.076)	1.141* (0.073)	1.139* (0.073)	1.454* (0.251)	1.455* (0.251)	1.451* (0.250)	0.773* (0.085)	0.760* (0.084)	0.754* (0.083)
General education & maturity	1.210* (0.116)	1.158 (0.111)	1.158 (0.111)	1.478 (0.322)	1.467 (0.320)	1.465 (0.320)	0.696 (0.137)	0.687 (0.135)	0.681 (0.134)
Higher vocational education	1.146 (0.092)	1.113 (0.090)	1.110 (0.089)	1.821** (0.343)	1.827** (0.345)	1.821** (0.344)	0.580*** (0.095)	0.572*** (0.094)	0.568*** (0.093)
University (of applied sciences)	0.974 (0.095)	0.965 (0.094)	0.967 (0.095)	1.487* (0.292)	1.497* (0.294)	1.495* (0.293)	0.367*** (0.099)	0.364*** (0.100)	0.371*** (0.102)

(continued)

Table 10.2 (contined)

	Labor market entry			Highest quartile			Lowest quartile		
Further education after labor market entry	1.254*** (0.058)	1.215*** (0.057)	1.167** (0.059)	1.021 (0.100)	1.012 (0.099)	1.017 (0.100)	0.995 (0.102)	1.268* (0.119)	1.240* (0.118)
Cohort effects									
Modernization	1.098* (0.050)	6.337*** (2.099)	6.521*** (2.163)	0.922 (0.086)	1.037 (0.673)	1.053 (0.684)	1.494*** (0.141)	2.904* (1.445)	3.179* (1.591)
Unemployment	0.997 (0.024)	1.067 (0.063)	1.061 (0.062)	1.108* (0.048)	1.263* (0.132)	1.256* (0.132)	0.937 (0.049)	0.928 (0.113)	0.917 (0.112)
Period effects									
Modernization		0.177*** (0.058)	0.180*** (0.059)		0.916 (0.585)	0.932 (0.596)		0.512 (0.253)	0.541 (0.269)
Unemployment		0.919 (0.053)	0.925 (0.053)		0.866 (0.089)	0.871 (0.089)		1.009 (0.118)	1.023 (0.120)
Cohort (modernization) * further education			0.856* (0.060)			0.879 (0.132)			0.673** (0.094)
Number of sub-episodes	3834	3834	3834	3582	3582	3582	3582	3582	3582
Number of events	2247	2247	2247	564	564	564	536	536	536
Log-likelihood	−2705.25	−2685.64	−2683.19	−1180.89	−1179.75	−1179.38	−1264.54	−1263.51	−1259.51

N: 2344; Exponentiated coefficients; additionally controlled for gender and citizenship; standard errors in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

suggests a decreasing likelihood of entering the labor market for younger cohorts in cases where they have pursued further education in later stages in their lives. Including additional higher order terms (especially a three-way interaction of the cohort measure with education prior entry and further education) shows an increasing likelihood of being employed for higher educated graduates who are pursuing further education across time (not reported). Thus, the result in Fig. 10.2 is confirmed: Younger cohorts, who subsequently attain higher education, enter into the labor market earlier than older cohorts do.

While the evidence presented so far is in line with the hypotheses in the theoretical section, the results with regard to entering the highest quartile are puzzling. There is no evidence to support the linear cohort effect in terms of modernization. However, there is a higher likelihood of entering the most favorable labor market positions with an increasing unemployment rate in the year of completing education: With a one percent increase in the unemployment rate, the likelihood of entering the highest quartile increases by about 25% (5th and 6th column in Table 10.2). However, a closer examination of this effect suggests that it is caused by the group of people who graduated between 1992 and 2000. This is by no means surprising since Fig. 10.1 suggests low variation in the unemployment rate in the reference period–with an exception of the 1990s.[3] Thus, it is disputable whether this result reflects the effect of the higher unemployment rate in this period or the (dichotomous) difference between younger and older cohorts, which would be in line with the hypotheses. However, based on the data, we cannot exclude either of the explanations.

Finally, we focus on the third outcome under study, the risk of entering the lowest quartile in the status distribution. Similar trends are observed as reported earlier in the case of entering the labor market. The positive and significant cohort effect of modernization, which are again inflated once controlling for subsequent period effect due to the mentioned collinearity, suggests an increasing hazard of entering the lowest quartile for younger cohorts. Importantly, further examination of the negative cohort-further education-interaction does not provide any evidence in line with the descriptive evidence presented in Fig. 10.2 when including higher order terms. However, the increasing risks for younger cohorts need explanation. The analysis only focuses on those entering paid employment; therefore, the increasing risk of entering the lowest quartile might barely reflect the increase in number of jobs in this segment. This interpretation is supported by the data where we find–although rather weak–evidence for an increasing share of the lowest quartile segment across birth cohorts (Table available on request from the authors). However, the absence of any significant interaction effect (not reported) of the cohort measure and respondents' education prior to labor market entry rejects a polarization hypothesis: Thus, in our analysis we find no evidence for an increasing risk over time of entering the lowest quartile for a particular group (e.g., the lower educated).

[3] We remind the reader that as the data was collected in 2002; therefore, the high increase in the unemployment rate post 2002 does not enter the analysis.

Conclusion

This study aimed to analyze the impact of the level of modernity and the labor market conditions on the school-to-work transition in Switzerland for the historical period from 1946 to 2002. Based on our knowledge, this is the first analysis on the time dependency of the labor market entry across cohorts in Switzerland. In addition, we addressed the direct effects of social background and educational qualification across cohorts on their entry into professional life and whether the institutional arrangement of the education system and its linkage to the labor markets will provide "safety roads" to employment. In order to address these questions, we used data from the life calendar collected in 2002 as part of the Swiss Household Panel, along with administrative data to control for changing labor market conditions (unemployment rate) and constructed a scaling variable that represents the level of modernity. An event-history analysis was conducted on the school-to-work transition of a sample of 2344 individuals born between 1912 and 1986. The aim was to determine the effect of the level of modernity and labor market conditions for different cohorts on: (a) the propensity to enter the labor market, (b) the likelihood to be in the highest quartile, and (c) the probability of being in the lowest quartile of the status distribution in the first job.

While a strong and consistent link has been observed between educational qualifications and labor market outcomes, there was also considerable evidence for a continuous and independent effect of respondents' social background, especially with respect to entering the highest or lowest quartile of the status distribution. Furthermore, we find support for the suggested positive linear influence of the level of modernity at the time of graduation on the likelihood of entering the labor market (cohort effect). However, the corresponding cohort effect of the unemployment level is not statistically significant in most of the models. This could be due to the minor variation in the covered period. On the other hand, the period effects in terms of subsequent levels of modernity between graduation and entrance into employment are of the opposite sign. Instead of describing a true period effect, this result most likely reflects the negative impact of a longer search duration as the level of modernity is a (almost strictly) positive linear function of the underlying time axis. Finally, there is little evidence to support the interaction effects between respondents' prior education and the cohort measures on any of the outcomes under study. Thus, in line with findings of Oesch (2013), there is no evidence for a polarization or displacement at the time of transition into the first job within the covered time window. Although the empirical results emphasize the effects of persistent social inequality on entering the highest or lowest quartile of the status distribution across cohorts, the institutional arrangement of the education system and its linkage to the labor markets seems to protect the majority from precarious employment conditions. However, these concluding remarks are restricted to the school-to-work transition. Factors in the professional careers of people such as further occupational mobility and access to further education and prestigious jobs have not been considered in this analysis. Thus, the afore mentioned outcomes need to be considered in order to draw conclusions related to the long-term consequences of period and cohort effects on people's life chances.

Finally, there are several concerns regarding the validity of our results. First, the data on events is available in years only; therefore, an accurate identification of the period and age effects is not possible. Furthermore, the sample size considerations impede the identification of the hazards of unemployment across time. These considerations are particularly problematic in the present case of the labor market entry since three-quarters of all cases entered the labor market within the first year after graduation.

Appendix

Variable	Observations	Mean	SD	Min.	Max.
First job (Dependent variable)					
Unemployed/Not working	2344	0.041	0.120	0	1
First (lowest) quartile	2344	0.229	0.420	0	1
Second quartile	2344	0.228	0.420	0	1
Third quartile	2344	0.262	0.440	0	1
Fourth (highest) quartile	2344	0.241	0.428	0	1
Gender	2344	1.529	0.499	1	2
Year of birth	2344	1955.516	12.987	1912	1986
Education prior to labor market entry					
Compulsory schooling	2344	0.139	0.346	0	1
(Some) Vocational education	2344	0.587	0.493	0	1
General education	2344	0.084	0.278	0	1
Higher vocational education	2344	0.056	0.230	0	1
University (of appl. Sciences)	2344	0.134	0.341	0	1
Citizenship					
Swiss	2344	0.826	0.379	0	1
Northern & Western Europe	2344	0.015	0.121	0	1
South & Southwestern Europe	2344	0.023	0.149	0	1
Central & (South) Eastern Europe	2344	0.026	0.161	0	1
Rest of the world	2344	0.110	0.313	0	1
Social origin (Education)					
Compulsory schooling	2344	0.159	0.365	0	1
(Some) Vocational education	2344	0.527	0.499	0	1
General education	2344	0.080	0.271	0	1
Higher vocational education	2344	0.143	0.350	0	1
University (of appl. Sciences)	2344	0.091	0.288	0	1
Education after entering labor market	2344	0.348	0.476	0	1
Modernization (cohort effect)	3834	−0.354	0.663	−1.373	1.071
Labor market (cohort effect)	3834	0.680	1.142	0	5.2
Modernization (period effect)	3834	−0.301	0.661	−1.373	1.071
Labor market (period effect)	3834	0.758	1.245	0	5.2

References

Allmendinger, J. (1989). Educational systems and labor market outcomes. *European Sociological Review, 5*(3), 231–250.

Becker, G. S. (1964). *Human capital. A theoretical and empirical analysis with special reference to education*. New York: Columbia University Press.

Becker, R., & Zangger, C. (2013). Die Bildungsexpansion in der Schweiz und ihre Folgen. Eine empirische Analyse des Wandels der Bildungsbeteiligung und Bildungsungleichheiten mit den Daten der Schweizer Volkszählungen 1970, 1980, 1990 und 2000. *Kölner Zeitschrift für Soziologie und Sozialpsychologie, 65*(3), 423–449.

Blau, P. M., & Duncan, O. D. (1967). *The American occupational structure*. New York: Wiley.

Blossfeld, H.-P. (1985). Berufseintritt und Berufsverlauf: Eine Kohortenananlyse über die Bedeutung des ersten Berufes in der Erwerbsbiographie. *Mitteilungen aus der Arbeitsmarkt- und Berufsforschung, 18*(2), 177–197.

Blossfeld, H.-P. (1987). Entry into the labor market and occupational career in the Federal Republic: A comparison with American studies. *International Journal of Sociology, 17*(1/2), 86–115.

Blossfeld, H.-P., Golsch, K., & Rohwer, G. (2007). *Event history analysis with Stata*. New York: Lawrence Erlbaum.

Buchmann, M., & Sacchi, S. (1998). The transition from school to work in Switzerland: Do characteristics of the educational system and class barriers matter? In Y. Shavit & W. Müller (Eds.), *From school to work: A comparative study of educational qualifications and occupational destinations* (pp. 407–442). Oxford: Oxford University Press.

Buchs, H., Müller, B., & Buchmann, M. (2015). Qualifikationsnachfrage und Arbeitsmarkteintritt in der Schweiz. *Kölner Zeitschrift für Soziologie und Sozialpsychologie, 67*(4), 709–736. https://doi.org/10.1007/s11577-015-0342-5.

de Lange, M., Gesthuizen, M., & Wolbers, M. H. J. (2013). Youth labour market integration across Europe. *European Societies, 16*(2), 194–212. https://doi.org/10.1080/14616696.2013.821621.

DiPrete, T. A., Goux, D., Maurin, E., & Tåblin, M. (2001). Institutional determinants of employment chances. The structure of unemployment in France and Sweden. *European Sociological Review, 17*(3), 233–254. https://doi.org/10.1093/esr/17.3.233.

Franzen, A., & Hangartner, D. (2005). Soziale Netzwerke und beruflicher Erfolg: Eine Analyse des Arbeitsmarkteintritts von Hochschulabsolventen. *Kölner Zeitschrift für Soziologie und Sozialpsychologie, 57*, 443–465.

Gangl, M. (2002). Changing labour markets and early career outcomes. Labour market entry in europe over the past decade. *Work, Employment & Society, 16*(1), 67–90. https://doi.org/10.1177/09500170222119254.

Gebel, M. (2009). Fixed-term contracts at labour market entry in West Germany: Implications for job search and first job quality. *European Sociological Review, 25*(6), 661–675. https://doi.org/10.1093/esr/jcp005.

Harrington, D. (2009). *Confirmatory factor analysis*. Oxford: Oxford University Press.

Imdorf, C., & Hupka-Brunner, S. (2015). Gender differences at labor market entry in Switzerland. In *Gender, education and employment. An international comparison of school-to-work transitions* (pp. 267–286). Cheltenham: Edward Elgar Publishing, Inc.

Jann, B., & Combet, B. (2012). Zur Entwicklung der intergenerationalen Mobilität in der Schweiz. *Swiss Journal of Sociology, 38*(2), 177–199.

Kerckhoff, A. C. (1995). Institutional arrangements and stratification processes in industrial societies. *Annual Review of Sociology, 21*, 323–347.

Kolenikov, S. (2009). Confirmatory factor analysis using confa. *Stata Journal, 9*(3), 329–373.

Kramarz, F., & Skans, O. N. (2014). When strong ties are strong: Networks and youth labour market entry. *The Review of Economic Studies*. https://doi.org/10.1093/restud/rdt049.

Lindbeck, A., Snower, D., & Assar Lindbeck, D. S. (1988). *The insider-outsider theory of employment and unemployment*. Cambridge, MA: Cambridge University Press.

Müller, W., & Kogan, I. (2010). Education. In S. Immerfall & G. Therborn (Eds.), *Handbook of european societies. Social transformations in the 21st century* (pp. 217–289). New York: Springer.

OECD. (2015). Switzerland. In *Education at a glance 2015: OECD indicators*. Paris: OECD Publishing.

Oesch, D. (2013). *Occupational change in Europe. How technology and education transform the job structure*. Oxford: Oxford University Press.

Oesch, D., & Rodríguez Menés, J. (2010). Upgrading or polarization? Occupational change in Britain, Germany, Spain and Switzerland, 1990–2008. *Socio-Economic Review, 9*(3), 503–531. https://doi.org/10.1093/ser/mwq029.

Raaum, O., & Røed, K. (2006). Do business cycle conditions at the time of labor market entry affect future employment prospects? *The Review of Economics and Statistics, 88*(2), 193–210.

Shavit, Y., & Müller, W. (Eds.). (1998). *From school to work. A comparative study of educational qualifications and occupational destinations*. Oxford: Clarendon Press.

Shavit, Y., & Müller, W. (2000). Vocational secondary education, tracking, and social stratification. In M. T. Hallinan (Ed.), *Handbook of the sociology of education* (pp. 437–452). Boston: Springer US.

Sørensen, A. B. (1986). Theory and methodology in social stratification. In U. Himmelstrand (Ed.), *The sociology of structure and action* (pp. 69–95). London: Sage.

Thurow, L. C. (1975). *Generating inequality: mechanisms of distribution in the U.S. economy*. New York: Basic Books.

Wolbers, M. H. J. (2007). Patterns of labour market entry: A comparative perspective on school-to-work transitions in 11 European countries. *Acta Sociologica, 50*(3), 189–210. https://doi.org/10.1177/0001699307080924.

Zangger, C., & Becker, R. (2016). Die Bildungsexpansion in der Schweiz – eine Reanalyse unter besonderer Berücksichtigung geschlechtsspezifischer Bildungschancen. *Schweizerische Zeitschrift für Soziologie, 42*(3), 429–441.