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How Cantonal Education Systems in Switzerland Promote Gender-Typical School-to-Work Transitions¹

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1 Introduction

Occupational gender segregation is the most pronounced and persistent form of segregation on the Swiss labour market (Deutsch et al. 2005). This segregation is considered problematic in Switzerland as it goes along with limited labour market mobility (Deutsch et al. 2005) as well as with social inequalities in career chances and possibly income to the disadvantage of women (Epple et al. 2012). Research on the determinants of occupational segregation in Switzerland is thus far limited to social, family, and labour-market policy spheres (Giraud and Lucas 2009), whereas the role of the education system has long been unreflected. Nevertheless, it seems likely that sex-typed opportunities for vocational training will promote traditional gender roles in the spheres of education, gainful employment, and, mediated through this, also in the sphere of house and family work. The research gap regarding possible institutional antecedents of gender segregation is especially deplorable in Switzerland, where the share of vocational education is very high by international standards. In 2010, 75% of the educational attainments on the upper secondary level were occupational certificates (Cortesi and Imdorf 2013), which is even more relevant in light of the relatively low share of enrolment in tertiary education.

With the prevalence of vocational education and training on the upper secondary level, the Swiss education system forces young school leavers to make major career choices early on. The wide variety of – often highly specialised – vocational education and training programs offered allows youths to make gender-typical career choices in a biographical stage, when gender is especially important for the shaping of identity. Because of the strong linkage of education and employment in Switzerland, these choices translate into different jobs for women and men later on (Buchmann and Charles 1995). In spite of this insight, sufficient research on the education system's role in creating gender segregation in education and on the

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labour market is still lacking, and the education system is hardly considered as a crucial factor for gender segregation on the labour market.

Our paper addresses this research gap and asks how cantonal education systems in Switzerland contribute to occupational gender segregation in education and at work. The educational offering of vocational education programs and baccalaureate schools (called *gymnasiums* or *lycées*) varies greatly across Swiss cantons. This variation in cantonal education policies is utilised as quasi-experimental education laboratory to demonstrate the significance of vocational education at the upper secondary level for gender-typed education and occupational careers. In doing so, we ask to what extent do cantonal education systems – through their different educational offers at the upper secondary level – generate gender-typed school-to-work transitions and horizontal gender segregation on the labour market.

The paper is structured as follows: In the next section we present the general theory that frames our research, which is followed by an application of this conceptual framework to the Swiss case (section 3). Section 4 describes the empirical and methodological procedures. Results are presented in sections 5 and 6. In the concluding section we interpret the findings with respect to our theoretical framework, identify lessons for further research, and reflect on the implications for educational policy making.

2 Education systems and gendered school-to-work transitions

There is substantial research on the relevance of education systems for individual school-to-work transitions (Shavit and Müller 1998; Gangl et al. 2003). International comparative transition research attests to the importance of vocational education and training and its certificates for the time to find a first job and for its quality upon career entry. However, the institutional perspectives applied in this research so far have largely been gender blind (Smyth 2005). The effects of stratification, academic selectivity, or occupational specificity of an education system on gender-(a)typical transitions from education to employment have hardly been an issue.

Studies on career choice so far have been the only ones to seriously adopt a gender perspective (Buchmann and Kriesi 2009; Cornelissen 2009; Oechsle et al. 2009). It is known that career orientations clearly follow gender-typical patterns already at child and adolescent age. Research in the area of career choice, in turn, has paid little attention to the institutional make up of the education system. The role of educational offers guiding choices in the transition to employment, has been considered as a context factor but not as variable in its own right in explaining gender-typical paths from school to vocational training and employment.

In this paper, we argue that one needs to systematically bring together gender-sensitive research on both career choice and institutionalised transition systems in

addressing gender-(a)typical school-to-work transitions. To understand the puzzle of labour market gender segregation from an educational perspective, we need to focus both on the opportunity structures of the education system and on gendered processes when students make their first career choices at different biographical points of time.

As far as gender-typical career decisions of students are concerned, we broadly take into account two different but complementary theoretical approaches (Achatz 2005). Based on *socialisation and gender identity theories* we assume on the one hand that career choices are a means for short- to medium term gender identity construction. Vocational choices may enable male and female students to represent themselves as boys and girls – or rather: as young men and women – *vis-à-vis* their peers, family and other significant others against the background of dominant heterosexual norms (Gianettoni et al. 2010). We assume that *heterosexual* gender identity constraints are especially pronounced for teens during adolescence, but less so for youth or *emerging adults*.² Whereas earlier occupational aspirations are especially determined by social background to deal with uncertainty during adolescence (Beinke 2002; Beinke 2004), they are probably less so during youth when individualization and strategic action become more prominent in career choice. Hence, on the other hand, students may also consider long-term costs and benefits when choosing an (academic or vocational) educational program. They may consider how an occupational career helps in achieving wealth, reconciling family and work (Wehner et al. 2012), or maintaining class-specific status (Becker and Hecken 2009). In line with earlier empirical findings, we expect *rational* long-term oriented *decisions* to be less prevalent in adolescence (Abraham and Arpagaus 2008) but of growing importance during youth and emerging adulthood (Oechsle et al. 2009).

As far as the *institutionalised transition system* is concerned, we assume that the power of individual career choices to promote gender-typical school-to-work transitions depends at least on four institutional conditions well known from previous transition system research: (a) on the *quality and variety of educational programs* which an education system provides in terms of opportunity structures for students to make decisions; (b) on the institutionally defined *timing* when students are required to make their first career choice in their biographical context; (c) on the (lack of) institutional *opportunities to correct* one's career choice during or between educational programs; and (d) on the *institutional linkage* between the education system and the labour market.

Because education and training systems determine the range of available transition routes (Bynner 2001), we assume that any given institutional frame

2 See Arnett (2007) on the concept of emerging adulthood. Galland (2003) offers a sociological distinction between adolescence and youth, the intermediate, so far prolonging life-cycle space and continuity between adolescence and adulthood. As an operational definition in the present article, we use the term *adolescents* to refer to 14 to 18 year olds (with 18 being the age of majority in Switzerland), and *youth* or *emerging/young adults* for people older than 18 years.

interacts with different decision-making strategies as described above. Hence, it may enable and reinforce gender-(a)typical career orientations. Next, we present four hypotheses on how specific institutional characteristics may impact gendered school-to-work transitions:

- a) The degree of vocationally specific education and training (in terms of *occupational specificity*; see Shavit and Müller 2000) provides an opportunity structure for gender-stereotyped decision-making. Once educational programs are occupationally specified, they offer an arena for gender-typing and students may use them for their own gender identity construction. As many occupations are rather gender-typed, vocational programs offer particular opportunities for gender identity construction, especially for the construction of hegemonic masculine identities (in contrast to academic programs; see Connell 2005; Connell 2008). An education system with a low degree of occupational specificity will, on the other hand, have less institutional potential for gender disparities in educational orientation.
- b) As we assume different logics of occupational decision-making at different biographical time points, the institutionally required biographical *timing* for career choices seems crucial. If students are required to choose a vocational program at the end of lower secondary school, that is during adolescence at the age of 14 to 18 years, they may pay more attention to choose a program that matches their gender identity than students who choose a higher education (academic or professional) program a couple of years later, that is from ages over 18. Hence, we assume that the gendered self-images and gendered occupational expectations of students, especially impact youth transitions in education systems where vocational education is prominent on the upper secondary level. In contrast, students can prolong their occupational decision-making until they need to choose a tertiary level program in education systems where general education is more common. This is not to say that university level programs are not gender-segregated. Tertiary study programs can be segregated extensively (Charles and Bradley 2002; Smyth 2005). But educational statistics of several countries (Switzerland and Canada amongst others) show that tertiary programs are less gender segregated than upper secondary vocational programs. So, while both types of programs provide students with opportunities for realizing gendered self-images and gendered career expectations, this process seems to be more pronounced at upper secondary than at tertiary level.
- c) As we assume the logics of career choice of students to change between adolescence and early adulthood from more short-term (heterosexual) gender identity construction, towards more long-term life plan oriented decision-making, some students may change their professional interests over time from more to less gender-typed ones. However, to be able to correct gender-typical career

decisions students need institutional opportunities (e. g., to switch educational programs) that allow for career re-choice without starting all over again. A lack of such institutional opportunities impedes students to leave gender-typical vocational tracks towards the labour market that have been chosen at an earlier stage. Thus, the more permeability between and within educational and vocational programs, the less students are institutionally forced to follow gender-typed trajectories.

- d) Finally, the strength of the linkage between vocational training programs and jobs (Allmendinger 1989; Shavit and Müller 2000) is another condition to link gender-typical education decisions and degrees with gender-typical jobs. In Switzerland, jobs for skilled workers almost invariably require job-specific vocational training and the corresponding VET-certificate (Vocational Education and Training). Accordingly, qualified jobs outside the occupation for which one is trained for are hardly accessible. After graduation young adults might very well want to revise their early choice of occupation. However, opportunities to move into other, possibly less segregated occupations will be very scarce given the tight link between vocational education and employment. In such a context, graduates often will need to retrain in order to move into a different occupation. However this is very costly in terms of money and time. Hence, we conclude that a strong linkage between education and employment reinforces gender-segregated educational pathways into the labour market.

3 Gendered school-to-work transitions in Switzerland

National education systems in Europe pressure students into occupational decision-making at different points in time. Especially German speaking countries, including Switzerland, but also Scandinavian nations have traditionally valued initial vocational training at the upper secondary level. According to OECD (2009, Table c1.4) data, the vocational education rate at the upper secondary level is 77% in Austria, 65% in Switzerland, and stands at 57% in Germany and Norway. In contrast, this share is significantly lower in France (44%) and in Ireland (33%). In these countries, general education programs at the upper secondary level are relatively more frequent. At the same time, the countries that have a strongly established vocational education program are known for their marked gender segregation rates in their VET systems (Estevez-Abe 2006). In Switzerland, gender segregation in apprenticeship occupations persists since decades (SKBF | CSRE 2011).

With respect to the above stated hypotheses as well as in connection to education- and labour-market related sociological research of the 1990s (Charles and Buchmann 1994), we can presume that in Switzerland gender segregation on the labour market originates from gender-typical occupational orientations of young

school leavers. In the long run, these career orientations – mediated through opportunity structures of the vocational education system and through the linkage between education programs and jobs – lead to and solidify gender differentiated work placements and work chances. The significance of the Swiss education system for the reproduction of gender segregation might consist of the central role of vocational programs at the upper secondary level, which pressures three quarters of all school leavers biographically early (usually during adolescence) to an institutionally locked career choice (institutional opportunities for occupational reorientation are missing).

The Swiss cantons significantly differ however in terms of the relative weight of VET and general education (such as baccalaureate schools) within upper secondary education. The VET rate (rate of certified vocational educations at the upper secondary level) have ranged between slightly under 50% (48.8% for Geneva) to over 80% (82.7% for Aargau) between cantons in the first half of the last decade (cf. Table 1).³

Table 1 Cantonal share of vocational education and training (VET)

Canton	Share of VET (in %)	Canton (continued)	Share of VET (in %)
Geneva	48.8	Thurgau	73.2
Basel-Landschaft	57.6	Zug	73.8
Fribourg	60.9	Solothurn	75.9
Ticino	63.6	Nidwalden	76.2
Vaud	64.2	Schaffhausen	76.6
Obwalden	65.9	Graubünden	77.0
Appenzell (AI & AR)	66.2	Glarus	78.7
Neuchâtel	69.0	Bern	80.6
Jura	69.3	Lucerne	80.7
Valais	70.3	Saint Gallen	82.3
Schwyz	70.4	Zurich	82.5
Basel-Stadt	72.6	Aargau	82.7
Uri	72.7		

Source: Federal Statistical Office, Statistics on pupils and students, by canton, 2000/01 to 2004/05 (authors' calculation).

3 Our calculations of the cantonal VET rates are based on data from the Federal Statistical Office on upper secondary education student statistics per canton. We use pooled data for five school years 2000/01 to 2004/05. Included are all students under the age of 20 years that are in their first year of training in a certifying program that lasts a minimum of 2 years (without bridge-year courses). Aside from VET, the statistics also distinguish among baccalaureate schools and upper secondary specialised schools.

With their varying proportions of vocational and general education, the cantons differ with respect to their institutional opportunities for gender-typical career choices (hypothesis a) as well as with respect to the biographical point in time when cantonal education systems expect their students to make their career choices (hypothesis b). Accordingly, the Swiss life-size VET laboratory (Meyer 2009) allows a simultaneous testing of both hypotheses (in the Swiss case, the two mechanisms are confounded on a cantonal level and can therefore not be tested separately). The institutional design of vocational education at the upper secondary level, regulated by the Federal Vocational and Professional Education and Training Act, occurs at the federal level and the cantons therefore do not differ in their rather limited horizontal permeability between educational programs,⁴ nor in their institutional opportunity structures to change selected occupational paths with limited efforts (hypothesis c). Similarly, the institutional linkage between occupational certificates and jobs are standardised Swiss-wide at the supra-cantonal level (hypothesis d). Therefore, we can study the simultaneous effects of vocational education offers and institutionally early demanded career choices on gender-typical transitions in the labour market, while holding constant those context characteristics typical for the whole of Switzerland, that is, the low horizontal permeability between educational programs and the tight link between educational programs and jobs.

In the backdrop of this cantonal variation we ask to what extent do cantonal education systems generate gender-typed school-to-work transitions and horizontal gender segregation on the labour market. We expect gender-typed transitions to be more pronounced in cantons where VET offers are more frequent and where students are forced to take career decisions at an earlier stage in their educational career. In contrast, we assume that cantons with more general education programs generate less gender-typed transitions and (horizontal) gender segregation on the labour market, because their opportunity structure for gender-typed career decision-taking is less pronounced, and because students take career decisions on average later in their career.

4 Data and method

We test our hypotheses with data from the Swiss Youth Panel Study, TREE (<http://tree.unibas.ch>). TREE is based on a sample of over 6 000 young people who participated in the PISA survey of the year 2000 and left compulsory school the same year. Between 2001 and 2007, the panel has been surveyed in an annual rhythm and an eighth wave has been carried out in 2010. For our analysis we use a sub-

⁴ Also training dropout, a relatively frequent phenomenon in Switzerland (dropout rates vary from 20% to 30%; Stalder 2012), provides opportunities to change occupational tracks. However, no data on cantonal differences in dropout rates are available.

sample of $n = 5\,611$ students who were in grade 9 and between 15 and 17 years old in 2000. The data allows for answering how cantonal education offerings structure the individual transitions in education and labour market, shaping those transitions to varying degrees as gender typical.

We use a two-tiered research design to test our hypothesis that gender-typed transitions are more frequent in cantons with higher shares of VET. The typical transition patterns from school to work are first separately identified for men and women through Optimal Matching Analysis. We distinguish between the following statuses, which people in their transition from school to work can occupy: gymnasium (without Federal Vocational Baccalaureate), VET, higher education (tertiary levels A and B), employment, as well as a heterogeneous bridge status, which includes bridging of transitions from school to apprenticeship as well as from apprenticeship to gainful employment (10th school year; pre-apprenticeship; au-pair; bridge-year, language and preparatory courses; work placement; military or civilian service; neither in education, employment nor training).

We distinguish between female typical, male typical, and a gender-mixed status for initial vocational training⁵ as well as for employment. Gender typical vocational training and jobs are identified on the basis of detailed occupational categories (5 digits-codes) of the Swiss Standard Classification of Occupations 2000 (Meier 2003). Occupations, both in vocational education and in the labour market, with over 70% of either men or women are defined as gender typical, whereas those with a 30% to 70% female share are in the gender mixed type. The gender-type of the apprenticeships for the years 2000–2010 were calculated based on pooled statistics of certificates and diplomas for 2000–2010. The determination of the gender-type of the occupation held after graduation is based on Swiss Census data (2000) of 15–35 year old employees. Employment status is assumed if respondents worked more than 15 hours per week, including people with double status (higher) education and employment. An age restriction of 35 years was applied to model occupational gender segregation among young workers and to control for possible historical dynamics affecting gender segregation in older cohorts. Finally, the ten level status variable includes a missing category, which represents panel dropouts and item non-responses.⁶ The missing category also consists of apprenticeships and jobs for which the female share could not be estimated due to limited number of cases in the structural data.

5 Mainly federal VET diplomas, but also including semi-qualifying upper-secondary specialised schools. The latter are classified as female typical VET, as the respective schools have often emerged from traditional girls' schools (Imdorf 2005). At the time of the survey, those schools (*Diplommittelschulen*) prepared mainly young women for further education in the health and education sector.

6 The missing data problem that emerges due to panel dropouts and item non-respondents is addressed by using a respective category of the status variable. An alternative treatment of the problem by using imputed data is currently being tested by the authors.

On the basis of the status variable we can model typical transitions over all eight analyzed data points separately for men and women through Optimal Matching Analyses using STATA's module for sequence analysis (Brzinsky-Fay et al. 2006). Our preferred four-cluster solution on transitions suggests similar transition types for men and women (see section 5).

In a second step we apply multinomial logistic regression analyses separately for women ($n = 3\,122$) and men ($n = 2\,486$) to assess how the cantonal VET rates as well as individual school attainments (school type, reading competency) affect the transition types (dependent variable) of men and women, controlling for linguistic region and urban-rural differences.⁷ The cantonal share of VET serves as explanatory variable to measure the impact of the cantonal education system on different transitions (see Table 1 for the respective cantonal values; mean = 69% and standard deviation = 11% for both women and men).

The linguistic region (dummy variable for the German speaking region)⁸ is considered in order to control for the cultural (linguistic regional) explanation for gender-typical educational careers. Our hypotheses compete with the culturalistic approach, which explains regional differences in gender segregation through differences in gender cultures between the German and French speaking regions of Switzerland. The urban-rural variable (dummy variable for rural place of residence of respondents)⁹ captures the regional accessibility of educational programs within a canton: gymnasiums are primarily located in urban areas. Finally, we take interest in the relevance of the attended lower secondary school type (dummy variable for schools with basic requirements)¹⁰ as well as in school achievement (dummy variable for PISA low achievement in reading)¹¹ to explain the gender-typical transitions in Switzerland. On the one hand, sufficient school achievement is necessary to access baccalaureate schools and thus to benefit from the cantonal gymnasium offer. On the other hand, Abraham and Arpagaus (2008) show that gender-mixed training occupations require higher academic achievement than segregated training programs. Hence, sufficient school achievement seems necessary to escape gender-typed school-to-work transitions on both counts. The results of the multinomial logistic regression analyses are summarised in section 6.

7 We prefer separate models for men and women because (a) the dependent variable has been constructed separately for both genders, and (b) the research question focuses on gender-typed transition outcomes, which requires a different construction of the dependent variable for women and men. We use STATA estimation procedures for complex survey data to run both models.

8 Mean = 0.46 (std.dev. = 0.50) for both women and men (non-weighted).

9 Women: Mean = 0.34 (std.dev. = 0.47). Men: Mean = 0.46 (std.dev. = 0.47).

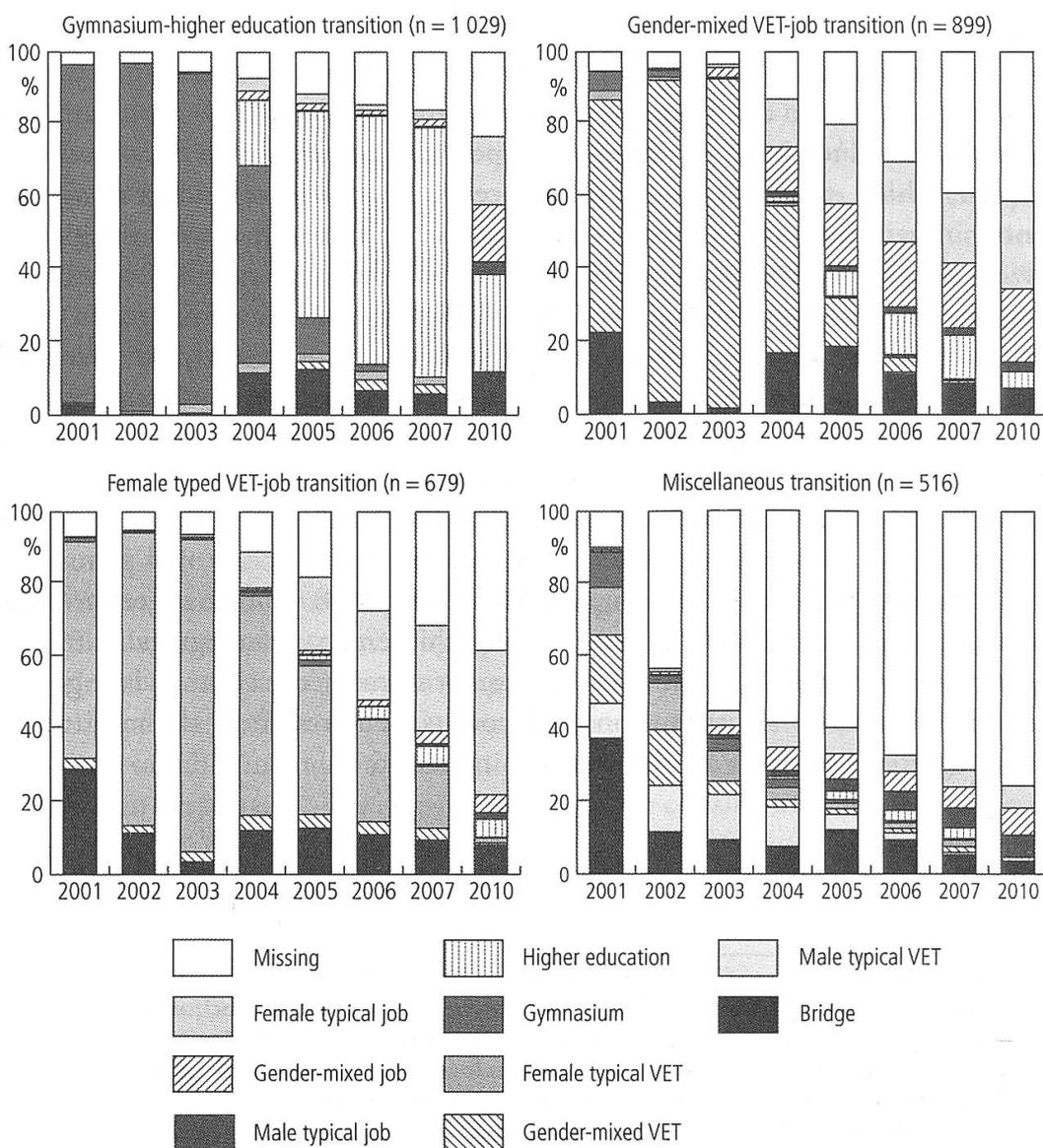
10 Women: Mean = 0.22 (std.dev. = 0.41). Men: Mean = 0.26 (std.dev. = 0.44).

11 Women: Mean = 0.27 (std.dev. = 0.44). Men: Mean = 0.36 (std.dev. = 0.48).

5 Gendered transitions and gender segregation on the labour market

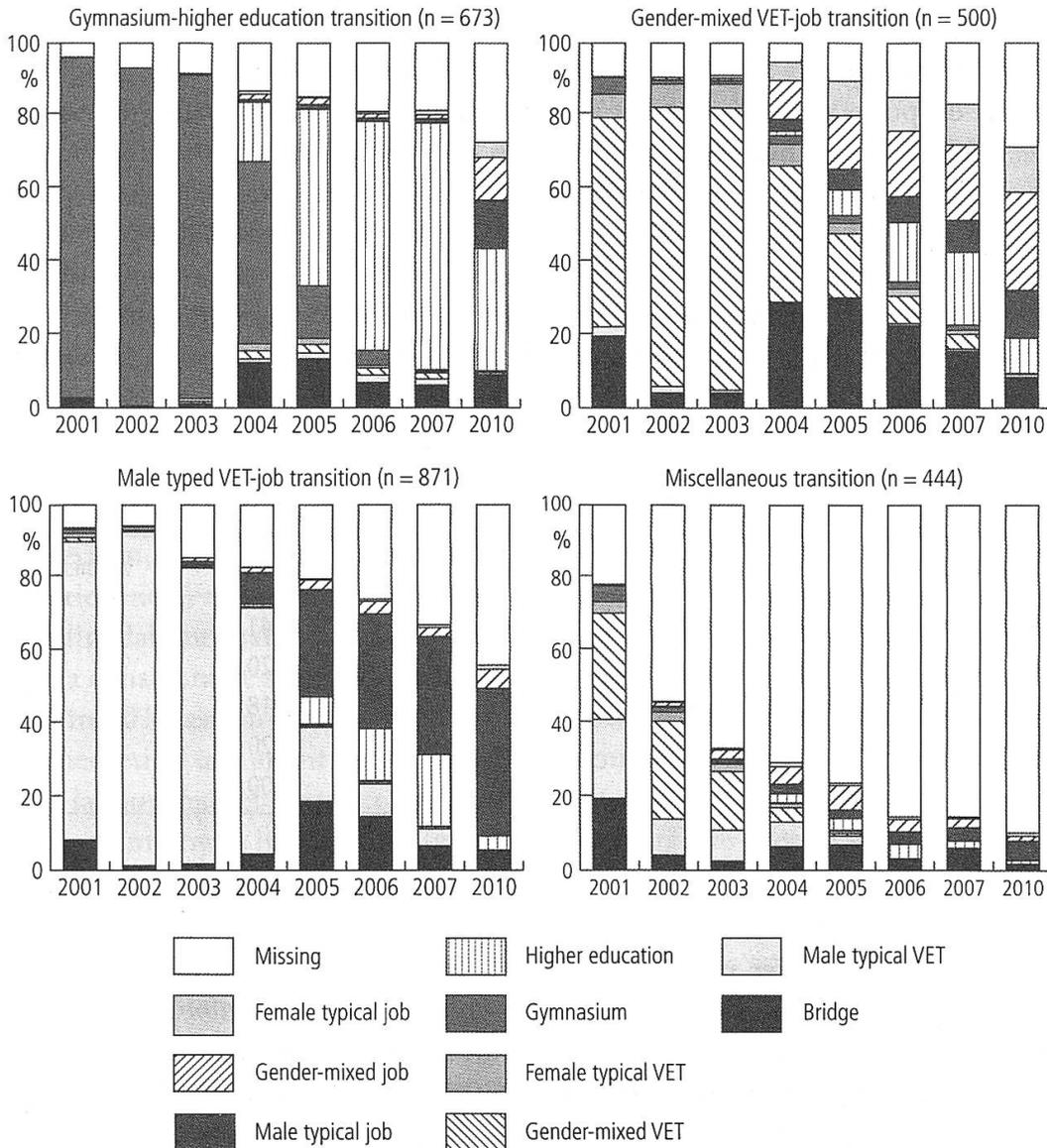
A first descriptive analysis (not shown) of the annual status variable for men and women points to the importance of gender-typical and gender-mixed VET and employment for both women and men. On the contrary, women and men are only marginally represented in gender a-typical apprenticeships and jobs. In addition, both genders are prominently represented among gymnasium students during the first three years, and, starting with the fourth year, increasingly as students in higher education.

Figure 1 Four-cluster solution of transition types for women



Source: TREE, Data Release 2011.

Figure 2 Four-cluster solution of transition types for men



Source: TREE, Data Release 2011.

Figure 1 and Figure 2 show the results of the preferred four-cluster solution of the sequence analyses estimated separately for men and women.

For both gender groups, we can distinguish a cluster of people that have predominantly visited gymnasium in the first four years and then transitioned into tertiary education (*gymnasium-higher education transition*). A significant segment of this group is in the labour market by year 2010. Moreover, for both genders emerges a cluster with transitions from gender-mixed VET especially to gender-typical or mixed professions (and for men to female-typed jobs) as well as to tertiary education

(*gender-mixed VET-job transition*). For both genders a clear cluster emerges with transitions from gender-typical VET to gender typical jobs as well as to tertiary education especially for men (*female-typed and male-typed VET-job transition*). Finally, the fourth cluster captures a heterogeneous group of transitions, including a high share of panel dropouts as well as gender atypical transitions (*miscellaneous transition*).

Table 2 shows how men and women distribute proportionately across the investigated transitions. Noteworthy is the far higher importance of gender-typed VET-job transitions for men, which may point to a higher relevance of our theoretical expectations for men than for women. Women, on the other hand, find themselves more frequently in mixed-gender transitions compared to men. Lastly, what is apparent is the well-known prevalence of women in the *gymnasium-higher education transition*.

Table 2 Distribution of men and women by transition type (weighted)

Transition type	Men (in %)	Women (in %)
Gender-typed VET-job transition	41.4	18.1
Gender mixed VET-job transition	20.5	29.8
Gymnasium-higher education transition	18.0	25.0
Miscellaneous transition	20.1	27.1
Total	100.0	100.0

Source: TREE, Data Release 2011.

However, the descriptive results in Figure 1, Figure 2 as well as Table 2 are to be interpreted with caution since the category *miscellaneous transition* includes a substantial share of panel drop-outs and item-non-responses. We assume that percentages for gender-typed transitions are possibly underestimated, while the gymnasium transitions may be overestimated due to the differential panel-dropout rates in those affected transition groups.

In the 2010 distribution of the status variable per sequence cluster, shown in Figure 1 and Figure 2, differential patterns of employment emerge additionally. Accordingly, women in the female-typed VET-job transition pattern find themselves disproportionately in female typical employment in 2010. At the same time, the share of female-typed employment is significantly lower for those women that completed a gender-mixed VET or gymnasium. In both those cases, women are more likely to enter gender-mixed work environments. For men analogously reversed patterns emerge.

Caution is in order, however, with the interpretation of the unweighted relative frequencies of different patterns in Figure 1 and Figure 2 as they are potentially

biased by disproportional sampling and nonresponse. Still, weighted descriptive analysis of the shares of gender-typed jobs among men and women with a given transition type in 2010 confirm the strong connection of gender-typical transitions and job segregation in the Swiss labour market. 76% of women in the female-typed VET cluster find themselves in female-typed work environments. For those of the mixed VET cluster however this rate is only 51%. With a gymnasium education, women find themselves to 43% in a female typical job. Even more pronounced are the transition patterns for men. Those following a male-typical VET find themselves to 87% in a male typical job. In case of a gender mixed VET however only to 28%. When men complete a gymnasium education, they find themselves later still to 56% in a male typical employment. Although that is a slightly higher rate compared to women, a gymnasium career does tend to prevent men from a marked male-typical labour market entry. Noteworthy also is that gender-mixed vocational training as well as gymnasium careers markedly raise the chances for women and especially for men to seize a gender a-typical job.

Again, the estimations for women and men with gymnasium and higher education need to be interpreted with caution. As VET education is shorter, the according labour market transitions are better captured with the available data. Indeed, a considerable share of gymnasium graduates still remain in higher education (HE) in 2010 as can be seen from Figures 1 and 2. However, as we are not aware of a theoretical argument why a later HE graduation may result in a more gender-typed labour market entrance, we assume that a HE career reduces the probability of being employed in a gender typed job compared to a gender typical VET-job career for both men and women.

We interpret the findings of a strong entanglement of gender-typical VET transitions with gender-typical employment conditions on the one hand with the high-ranking standardization and occupational specificity of the Swiss VET certification and its institutional interlock with the labour market. On the other hand, due to the VET-system's lack of institutional options for changing occupations, once students commenced a gender typical apprenticeship, they have little opportunity to withdraw from a gender typical career.

6 Cantonal education systems and gendered school-to-work transitions

In the following we present the results from the multinomial logistic regression (MLR) analyses through which we investigated, separately for men and women, how the cantonal share of VET promotes the transition of school leavers accounting for their academic background, language region, and rural-urban differences. All estimates of the full MLR models are presented in the Tables A1 and A2 in appendix.

The estimates show a significant effect of the *cantonal share of VET* on gender-typed VET-Job transitions for men but not for women. Men are more likely to undergo male-typed transitions compared to other transitions in cantons with a higher share of VET (see Table A1 in appendix). Additional tests of significance (adjusted Wald tests) for the male sample show that the cantonal VET offer essentially discriminates between *male-typed VET-job transitions* versus all other transitions: gender-mixed VET-job, gymnasium-higher education, and miscellaneous, yet not within those three transitions. A higher cantonal VET-offer increases men's representation in male-typed vs. all other transitions. Based on this finding, we can conclude that our theoretical argument, – that cantonal VET-offers impact labour market gender segregation – holds true for men. The situation looks different, however, for females. Table A2 in appendix as well as further Wald tests show that females in cantons with fewer VET-offers find themselves significantly more frequently in *gymnasium-higher education transitions* compared to both gender-mixed VET-job and miscellaneous transitions – but not compared to female-typed VET to work transitions. As gender-mixed VET-job transitions (but not necessarily female-typed VET-job transitions) are more frequent in cantons with a higher VET-share, we cannot conclude that females increase their representation in female-typed jobs in those cantons.

To illustrate and summarise our main findings, Table 3 presents predicted transition type probabilities for women and men who once were average or good students, defined as students who completed school with extended (not basic) requirements and who were at the same time not PISA low achievers in reading (holding language region and geography constant).

Table 3 shows how the upper secondary educational offer, as defined by the cantonal share of VET, impacts the probability to pass through different transition types. It illustrates that the VET-share strongly influences the transition paths. For example, 63% of women make a *gymnasium-higher education transition* in a canton with a 50% VET share (such as Geneva). In contrast, that percent is substantially smaller, only 34%, in cantons with VET-share equal to 80% (e.g., Bern). In contrast, women seem to raise their representation in gender-mixed VET-job transitions with a rising cantonal-VET share (from 15% to 32%), whereas this is much less the case for female-typed VET-job transitions.

In contrast, the findings for men show that their representation in male-typed VET-job transitions considerably increases from 13% to 36% if the cantonal share of VET increases from 50% to 80%. No impact of cantonal VET shares can be observed on gender-mixed VET-job transitions for men. Furthermore, we observe a decline in men's representation in *gymnasium-higher education transitions* by 20% (from 52% to 31%) if the cantonal VET-share grows from 50% to 80%.

From our control variables, we observe strong effects of prior school achievement (both school type, language skills) on different transition types. Not surpris-

Table 3 Predicted transition type probabilities for women and men, who were once average or good students, for hypothetical cantonal shares (in %) of VET

Transition type	Cantonal share of VET (in %)			
	0.5	0.6	0.7	0.8
Women				
Female-typed VET-job transition	12.5	14.2	15.6	16.5
Mixed VET-job transition	14.9	20.1	25.9	32.1
Gymnasium-higher educ. transition	62.5	53.1	43.4	34.0
Miscellaneous transition	10.0	12.6	15.1	17.5
Total	100.0	100.0	100.0	100.0
Men				
Male-typed VET-job transition	13.2	19.2	26.9	36.1
Gender-mixed VET-job transition	22.2	22.4	21.8	20.4
Gymnasium-higher educ. transition	51.5	44.9	37.8	30.5
Miscellaneous transition	13.0	13.5	13.5	13.0
Total	100.0	100.0	100.0	100.0

Note: weighted estimates based on the design weight, cf. Sacchi (2011).

Source: TREE, Data Release 2011.

ingly, to accomplish a school with only basic requirements does reduce the chances for both men and women to make *gymnasium-higher education transitions* compared to both gender-typed and gender-mixed VET-job transitions. While there are no differential effects of the school type to make gendered vs. gender-mixed VET-job transitions for women, we find that men with only basic secondary schooling make significantly more often male-typed than gender-mixed transitions. As far as the effect of low reading achievement on differential transitions from school to work is concerned, we find a negative effect on making *gymnasium-higher education transitions* holding all else constant.

When it comes to the geography of school leavers (i. e. place of residence at the end of compulsory school), we find that, in general, VET-job transitions are more frequent in rural areas than in urban areas. This holds especially true for male-typed VET-job transitions with men, and for gender-mixed VET-job transitions with females. These differential effects for men and women rather point to differential educational offerings (hardly any gymnasium schools in rural areas) than to cultural factors (more marked gender stereotypes linked to apprenticeships on the countryside). Finally, we do not find any differential effect of language region on the investigated transition types, neither for men nor for women. Again, rather

than cultural norms, specific educational offerings seem to trigger gender-typed school-to-work transitions in Switzerland.

7 Interpretations and conclusions

Data from the Swiss TREE youth panel study allowed us to empirically clarify whether the cantonal education systems in Switzerland differ in the extent to which they structure individuals' transitions from school to work along gender lines. In a first step, we have reconstructed (gender) typical transitions of school leavers in Switzerland using Optimal Matching Analysis. This descriptive sequence analysis highlights, amongst others, the strong linkage between gender-typed educational programs and gender segregated labour market positions after graduation. Gender-typical training and transitions are especially prevalent among men, but they are also common amongst women. We make sense of this finding on the one hand with the strong linkage of (gender-typical) educational careers and (gender-segregated) jobs in the Swiss labour market. On the other hand, the Swiss education system doesn't offer its students institutional opportunities to switch from a gender-typed program to a non-typical (e. g., mixed) one in case of interest and need. Students are channelled from early on in educational tracks towards the labour market.

However, Swiss cantons differ considerably as far as the enrolment of students in vocational vs. general education on the upper secondary level is concerned. Different mixtures of educational offers thereby point to different educational policies between cantons. Hence both their institutional opportunities to take gender-typical career decisions as well as the point in time when students are asked to make decisions vary with the cantonal provision of general education programs in gymnasiums and vocational programs offered by training companies and vocational schools. In case school leavers head for a vocational program at the end of compulsory school they already have to decide for a training occupation during adolescence. Gymnasium students in contrast can choose (and re-choose) a field of study at the university level a few but important years later.

Our framework does not explain *why* the Swiss cantons have chosen different combinations of academic and vocational programs on the upper secondary level. Structural VET supply is indeed likely to be related to historical development, cultural preferences as well as to regional labour force demands. Put another way, cultural norms and economic demands need to be supported by and embedded in appropriate educational structures in order to be effective. However, our argument is that education systems matter for gendered school-to-work transitions irrespective of their historical, cultural or economic background.

The Swiss "life-size VET laboratory" allows for testing the hypothesis that the cantonal share of VET at the upper secondary level impacts the frequency of

gender-typed school-to-work transitions. The findings confirm our theoretical assumption for men, but not for women: the statistical analyses show that education systems with higher VET rates have higher allocations of men in male-typical educational and labour-market careers. Having attended a low qualifying school track during the compulsory school time additionally strengthens gender-typical transitions into the labour market for men, but less for women. Hence, cantonal upper secondary education policy primarily seems to impact gender segregation for men. In contrast, cantons with a less prevalent vocational education system allocate women to gymnasiums and higher education rather than to vocational education.

According to our theoretical framework, more academically vs. more vocationally organised education systems offer different opportunity structures for gender-stereotyped career decisions at different biographical points of time. Vocational education and training systems are said to be particularly gender-segregated because they offer highly gender-stereotyped programs that girls and boys can identify with. Still, the fact that VET programs are more gender segregated than fields of study at the university level (which theoretically have a potential for becoming gendered too) needs further explanation.

We argue that VET programs, especially those conventionally geared to male apprentices, are particularly gender segregated precisely because they are traditionally implemented at the upper secondary level of a country's education system. So far, we are aware of two conflicting theories to make sense of this fact. First, VET systems at the upper secondary level may be more segregated than university programs because the education system forces school leavers to take their occupational decision at an earlier biographical point of time (during adolescence), when they are especially vulnerable to take gender-typical career decisions. Second, on average, university students come from a different, more advantageous social background than VET students, even though social class background of the latter in Switzerland is rather heterogeneous. VET programs may be particularly gender-segregated because students from lower social backgrounds, especially boys, are more vulnerable to take early gender-typed career decisions than students from more advantaged social class backgrounds (who take occupational career decisions later). For boys from lower social strata, heading for male-typed VET facilitates their construction of hegemonic masculinity rather than sticking with a general education program. The fact that, as far as young men are concerned, mixed VET programs are more likely to require higher school certificates compared to male-typed VET programs, may be another hint that social origin matters to understand gender-typed school-to-work transitions. Working class boys are overrepresented in school tracks with low academic requirements, and these school tracks hardly allow accessing gender-mixed apprenticeship programs (Abraham and Arpagaus 2008). Hence, we expect that biographical point of time of career decision and social origin interact when students are institutionally forced to make career choices. However, further research is needed to shed light

on these important but under-investigated issues of intersectionality of gender, age, and class within gender-sensitive research on career decisions.

Subject to the condition that our theoretical assumptions hold true, our findings are important for educational policymakers who work towards more egalitarian gender relations in the education system and at work. Gender segregation in VET, amongst others, has been shown to be a significant factor in explaining the gendered distribution of social class destinations. Due to being channelled into typical “female” training occupations, women in Germany are often placed in comparatively unfavourable class positions (Gundert and Mayer 2012). To avoid these and other long term consequences of early vocational career choices, and in order to prevent individual paths of education and employment from being strongly determined along gender lines in the future, one needs to reflect the current *organisation* of VET. This matters all the more since fighting gender-typical career decisions during adolescence has proved rather ineffective so far. Manifold programs geared at changing gender-typed aspirations of students have not shown the expected results.

That is why our conceptual framework focuses less on the practical implications for youth themselves but rather on the organisation of vocational training at the upper secondary level. Through the adoption of the vocational baccalaureate upward permeability to the tertiary education has been implemented in the Swiss vocational education system (the Federal Vocational Baccalaureate is an entry ticket for universities of applied sciences). However, the Swiss upper secondary level VET system considerably lacks *occupational* permeability, that is opportunities for VET students to revise their initial occupational decision during their vocational training without having to drop out and to start over with an alternative training. To allow for more gender equity in VET, we need to think about how occupational permeability could be improved. International comparative research that looks at how other VET and transition systems achieve such permeability may be a promising start. Finally, our research points out that the public discourse on occupational gender segregation needs to be expanded with gender-sensitive perspectives of educational system related accounts.

8 References

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9 Appendix

Table A1 Multinomial logistic regression model for men (weighted)

Transition type	B	Std. Err.	Wald	p
Male-typed VET-job transition				
			(base outcome)	
Gender-mixed VET-job transition				
Cantonal share of VET	-0.04	0.02	-2.22	0.03
German-speaking region	0.44	0.34	1.31	0.19
Rural area	-0.32	0.20	-1.57	0.12
School with basic requirement	-0.39	0.18	-2.21	0.03
Low achievement in reading	-0.24	0.15	-1.65	0.10
Constant	2.15	0.97	2.21	0.03
Gymnasium-higher education transition				
Cantonal share of VET	-0.05	0.02	-2.90	0.00
German-speaking region	-0.00	0.38	-0.00	0.99
Rural area	-1.02	0.32	-3.18	0.00
School with basic requirement	-2.59	0.29	-9.01	0.00
Low achievement in reading	-1.90	0.20	-9.38	0.00
Constant	4.31	1.07	4.03	0.00
Miscellaneous transition				
Cantonal share of VET	-0.03	0.01	-3.02	0.00
German-speaking region	0.17	0.24	0.72	0.47
Rural area	-0.46	0.16	-2.86	0.01
School with basic requirement	0.07	0.16	0.48	0.63
Low achievement in reading	0.11	0.15	0.76	0.45
Constant	1.71	0.69	2.49	0.01
Complex sample characteristics			Design-Adjusted Overall Wald-Test	
Number of strata = 24			Design df = 429	
Number of Primary Sampling Units = 453			F(15, 431) = 21.84	
Number of observations = 2 486			p < 0.0001	

Source: TREE, Data Release 2011.

Table A2 Multinomial logistic regression model for women (weighted)

Transition type	B	Std. Err.	Wald	p
Female-typed VET-job transition				
			(base outcome)	
Gender-mixed VET-job transition				
Cantonal share of VET	0.02	0.01	1.64	0.10
German-speaking region	-0.28	0.22	-1.26	0.21
Rural area	0.05	0.14	0.38	0.71
School with basic requirement	-0.14	0.17	-0.84	0.40
Low achievement in reading	-0.10	0.17	-0.64	0.52
Constant	-0.45	0.60	-0.75	0.45
Gymnasium-higher education transition				
Cantonal share of VET	-0.03	0.02	-1.67	0.10
German-speaking region	-0.42	0.39	-1.09	0.28
Rural area	-0.61	0.32	-1.89	0.06
School with basic requirement	-1.80	0.24	-7.61	0.00
Low achievement in reading	-2.02	0.21	-9.42	0.00
Constant	3.62	1.04	3.48	0.00
Miscellaneous transition				
Cantonal share of VET	0.01	0.01	1.02	0.31
German-speaking region	-0.04	0.21	-0.19	0.85
Rural area	0.14	0.15	0.93	0.36
School with basic requirement	0.40	0.19	2.09	0.04
Low achievement in reading	0.52	0.16	3.18	0.00
Constant	-0.71	0.55	-1.29	0.20
Complex sample characteristics			Design-Adjusted Overall Wald-Test	
Number of strata = 24			Design df = 445	
Number of Primary Sampling Units = 469			F(15, 431) = 19.34	
Number of observations = 3 122			p < 0.0001	

Source: TREE, Data Release 2011.