Gender differences in the transition from secondary to post-secondary education in Switzerland

Report commissioned by the OECD (TOR/PISA-l)

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Basel, November 2012

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This study was financed by the OECD and the Swiss National Science Foundation (project number: 406040_129220 “Gender inequalities in educational and career pathways”). The terms of reference were determined by the OECD.

Introduction

Switzerland is a federal state consisting of 26 cantons with a population of approximately 8 million people. About 20 percent of the population is under 20 years of age. The prospects for young people leaving school in Switzerland are comparatively good. About 90 percent of all school-leavers complete upper secondary education. In 2008, only 8 percent of male and 12 percent of female school-leavers failed to acquire an upper secondary diploma (Federal Department of Economic Affairs, 2011). Switzerland is among the few OECD countries where upper secondary completion rates of females do not exceed those of males (OECD, 2007; 2010). As in most countries, the youth unemployment rate is higher than the overall rate, although it is low in comparison with most OECD countries. In 2011, 7.7 percent of those aged between 15 and 25 were unemployed, according to the ILO definition, compared to an overall unemployment rate of 4.0 percent (BfS, 2012[i]). Three out of four jobless young people have not completed upper secondary education, which highlights the importance of post-compulsory qualifications for subsequent labour market success. With regard to gender issues, we observe, on the one hand, a closure of the gender gap in overall formal education enrolment patterns. On the other hand, gender differences with regard to education persist in the form of horizontal segregation. One of the aims of this report is to illustrate the interplay between the horizontal and vertical dimensions of gender-specific educational pathways.

This report focuses on gender differences in education by level of educational attainment and type of education programme. Chapter 1 outlines the structure of the education system in Switzerland, including an overview of enrolment and gender differences. Chapter 2 provides a description of the data and methods used in this report and which were specified by the OECD. Chapter 3 describes the pathways of men and women through the Swiss education system. Chapter 4 analyses the various factors affecting whether men and women attend post-secondary education relative to the other options, i.e. employment, secondary education or not in education or employment (NEET). Chapter 5 explores gender-specific enrolment patterns according to fields of study (science versus humanities). Chapter 6 analyses the fit between occupational aspirations of men and women at the age of sixteen and their occupation or field of study one decade later.

Data analyses for the latter three chapters are based on the Swiss PISA follow-up study Transition from Education to Employment (TREE) 2008. TREE follows learners who participated in the Programme for International Student Assessment (PISA) cohort of 2000. TREE tracks young people's pathways into and through post-compulsory education and the labour market. The survey is based on a nationally and regionally representative sample of approximately 6,000 youths. The last panel wave included in this report is from 2007.

1. The Swiss education system

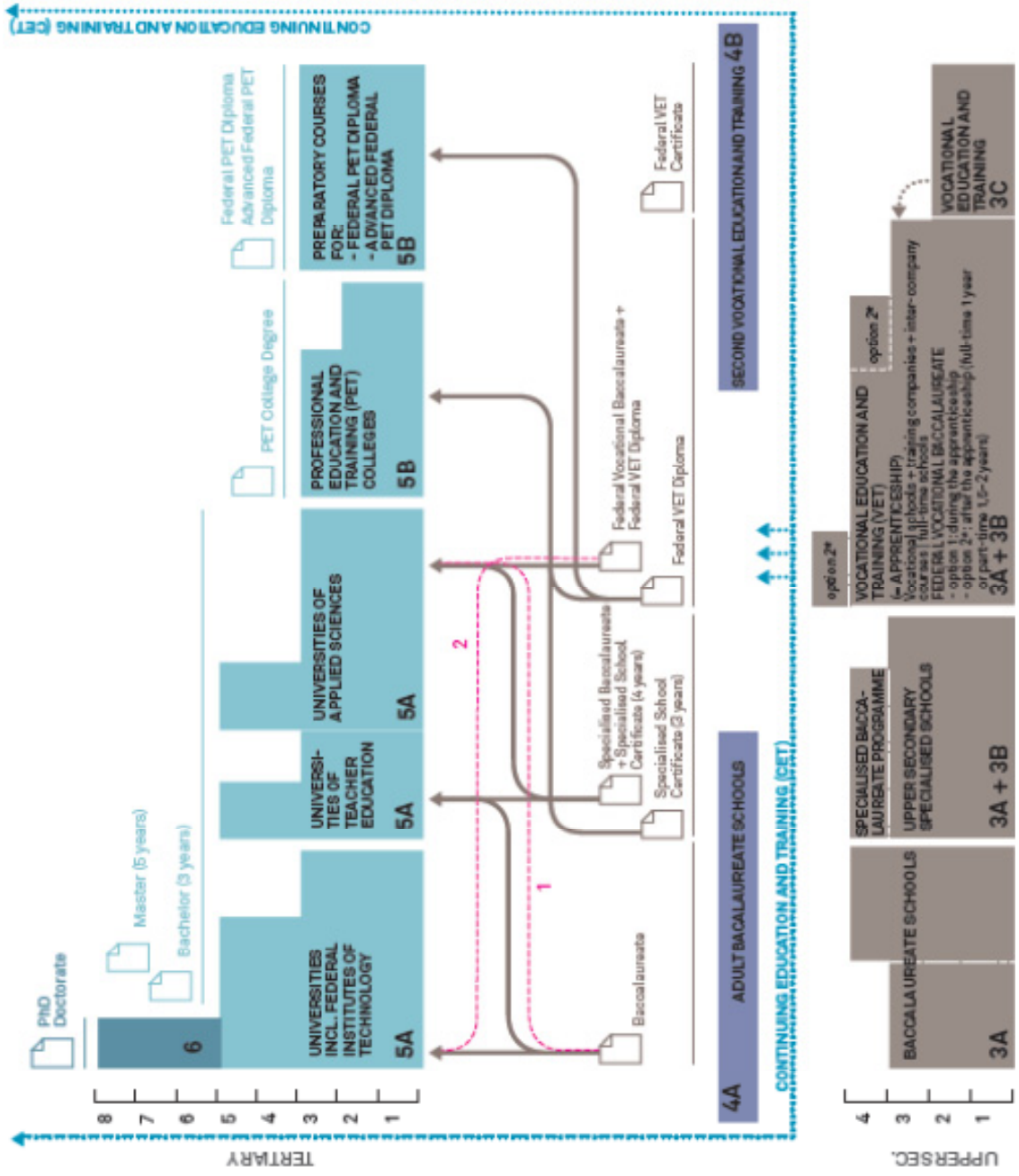
The Swiss cantons autonomously organise compulsory schooling (which lasts for nine years, from about age seven to fifteen), which results in considerable variation of school systems between cantons. There have also been significant changes over time within cantons. Despite this variation, there are still many commonalities. For example, tracking or streaming by ability of learners by academic achievement is a salient selection feature across most cantonal school systems. Tracking starts at the end of primary school, when learners range in age from about ten to twelve years (year four, five or six, ISCED 1). Figure 1 provides a schematic overview of the main features of the Swiss education system[3]. Assessment criteria for tracking vary by canton. Some assess learner performance by written tests, while others rely almost entirely on teacher assessment and, in some cases, on learning, general behaviour and parental assessment. Full details of the selection systems are provided by Neuenschwander (2012). At entry to lower secondary school, learners enter one of two to four different tracks (depending on the canton) with "basic" or "extended" curricula[4]. Selection procedures are meant to be based on achievement but, as Kronig (2007) shows, ascriptive characteristics, such as gender, migration and social background as well as local selection systems, influence educational opportunities.

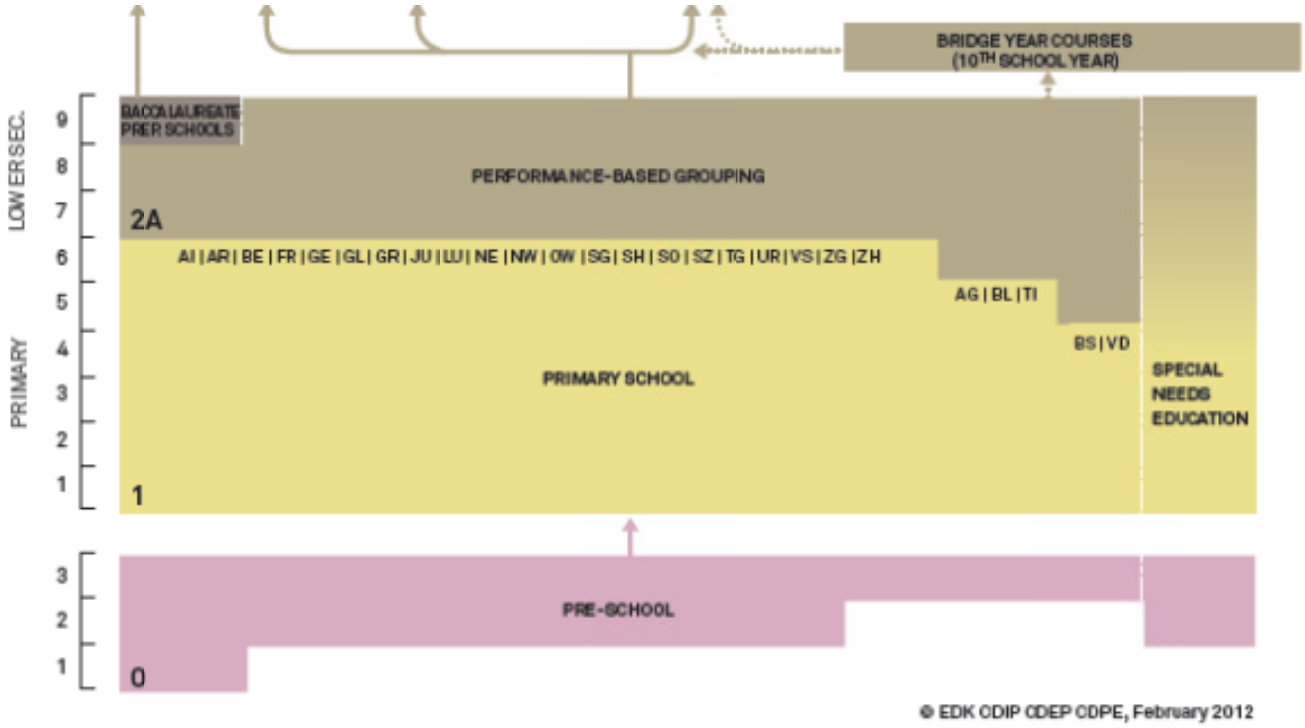
Another salient feature of the Swiss education system is the importance of vocational education and training (VET) (ISCED 3A, B, C). VET programmes are classified at upper secondary level (ISCED 3A, B, C), and most of them are "dual" apprenticeships. The term "dual" refers to the combination of part-time study at a vocational school and part-time practical learning at a company that hires and trains its apprentices. VET prepares for direct entry into the labour market. The variety of programmes offered within VET is considerable, including about 200 occupations which span all occupational sectors. VET programmes are strongly connected to specific occupations. In many cases, a VET diploma of a given occupation is a necessary precondition for working in that occupation.

[3] See also: http://educationscene.educa.ch/en/swiss-education-system-5

[4] As the lower secondary school systems is organised by the cantons, denominations and types of schools differ markedly. PISA 2000 distinguishes between pre-gymnasium tracks, tracks with extended academic requirements, tracks with basic academic requirements and schools without (formal) tracking.

Figure 1: Overview of the Swiss education system





Compulsory education
The diagram shows the present structure of the education system. The cantons aim at harmonising the structure of compulsory education.
www.edk.ch > HarmoS

ISCED
The diagram contains a link to the ISCED (International Standard Classification of Education www.uis.unesco.org).
The ISCED assigns an internationally defined code (ISCED 0 to ISCED 6) to each educational level. This ensures international comparability of educational levels.

- ISCED 6
- ISCED 5A + 5B
- ISCED 4A + 4B
- ISCED 3A–C
- ISCED 2A
- ISCED 1
- ISCED 0

Degree

Transition: 1 Baccalaureate → Universities of applied sciences (practical training)
2 Federal Vocational Baccalaureate → Universities (additional qualifications)

Number of years

The academic requirements and demands of VET programmes vary from modest to the equivalent of gymnasial tracks (Moser, 2004; Stalder, 2005). The degree obtained at the end of a three to four year education programme at upper secondary level is the federal VET diploma. At post-secondary level, the VET system offers professional education and training (PET) at tertiary B level and programmes at universities of applied sciences (UAS) at tertiary A level. The latter can be accessed after obtaining a federal vocational baccalaureate, which is a kind of academic upgrade to the VET Diploma. This federal vocational baccalaureate (also known as the vocational matura) can be undertaken simultaneously with upper secondary education, or after completing upper secondary education while in employment.

The type of upper secondary education which provides the opportunity to access traditional university-level education mainly takes place in matura schools (lycées and gymnasiums). Matura schools have different specialisations[5]. Obtaining a matura[6] requires four years of schooling at a matura school after completing nine years of compulsory school and passing exams in five to seven subjects. The overall grade of the matura comprises the grades obtained in these exams and grades obtained during the last year of schooling. The relative weighting of the two components for the overall matura grade varies between cantons. Learners are also required to write a "baccalaureate essay". The matura certificate entitles the holder to enrol directly at a university (SKBF, 2011). Specialised middle schools are also routes to tertiary education and prepare for higher vocational education (which can also be referred to as professional education and training) or universities of applied sciences. They provide school-based preparation oriented toward a particular occupational field. Courses offered in universities of applied sciences are more vocational than those offered in other universities.

Tertiary education tracks (equivalent to ISCED 5a and 6) consist of a variety of programmes, ranging from higher vocational education (tertiary B, e.g. Höhere Fachschulen, labelled professional education and training colleges (PET) in Figure 1) to universities of applied

[5] Until 1995, schools had different types of profiles (Type A: ancient languages (Greek and Latin); Type B: Latin and English or a third Swiss language; Type C: mathematics and science; Type D: modern languages; Type E: economics; and Type M: music. Matura schools were reformed in 1995. The matura is now under federal jurisdiction but the cantons are still responsible for the concrete implementation and organisation. Accordingly, cantonal differences continue to exist. Since 1995, compulsory subjects are first and second national languages, mathematics, one specialisation (languages, science and engineering, social sciences or arts) and complementary subjects (Ramseier, Allraum and Stalder, 2004).

[6] Matura and baccalaureate are synonyms.

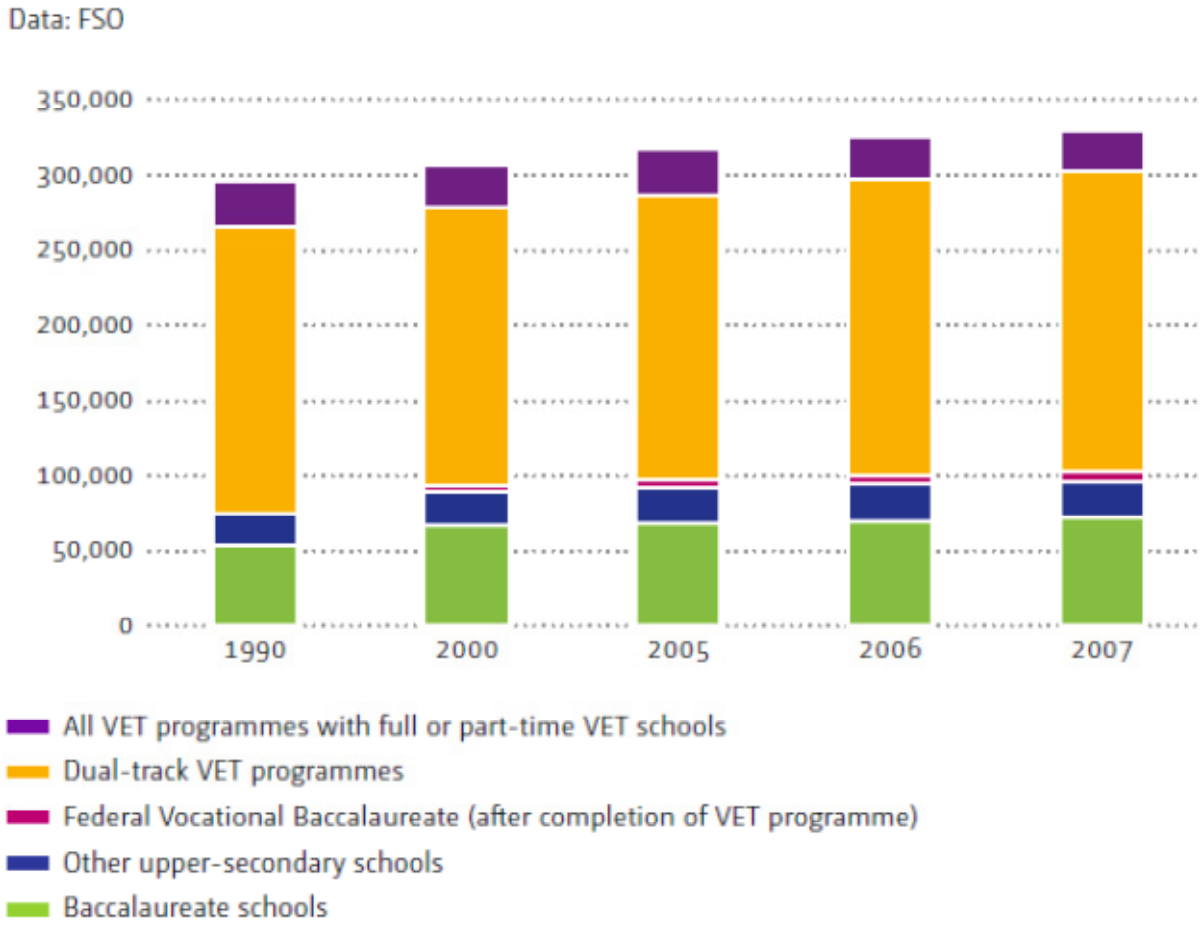
sciences, teacher training universities, and traditional universities (tertiary A). Different entrance regulations exist for universities but they tend to rely on the matura. Universities charge fees between CHF 1,000 to CHF 4,000 per year, and annual living expenses are estimated at between CHF 21,000 and CHF 31,000 (CRUS, 2012).

In recent years, some occupations have upgraded the level of training required for entry to that occupation. For example, the requirement for teacher training used to be an upper secondary education but it now requires a tertiary education level, which is provided by universities of teacher training. A similar upgrading has occurred in several health professions, such as nursing.

1.2. Educational enrolment and gender differences in Switzerland

In Switzerland, approximately 70 percent of upper secondary learners are enrolled in vocational education and training. 25 percent attend gymnasiums, five percent attend other types of general education schools, known as specialised schools (SKBF, 2011). Contrary to most other countries, VET is a highly popular and, in some cases, a prestigious upper secondary programme. The operation of this vocational system, however, relies on the apprenticeship market (which in turn is closely linked to the labour market) being able to offer a sufficient number of places. At times when supply of training places is short, some applicants are obliged to postpone their entry into VET programmes. Depending on the apprenticeship market conditions, 10 to 20 percent of school leavers are in this queue. While waiting, they mostly are in what are termed intermediate solutions (IS). These are a heterogeneous range of, usually, one-year long programmes, which can be either academic, practical, or both, and include options such as a tenth year of schooling, internships or au-pair programmes.

Figure 2: Learners in upper secondary education in Switzerland



Source: SKBF, 2011

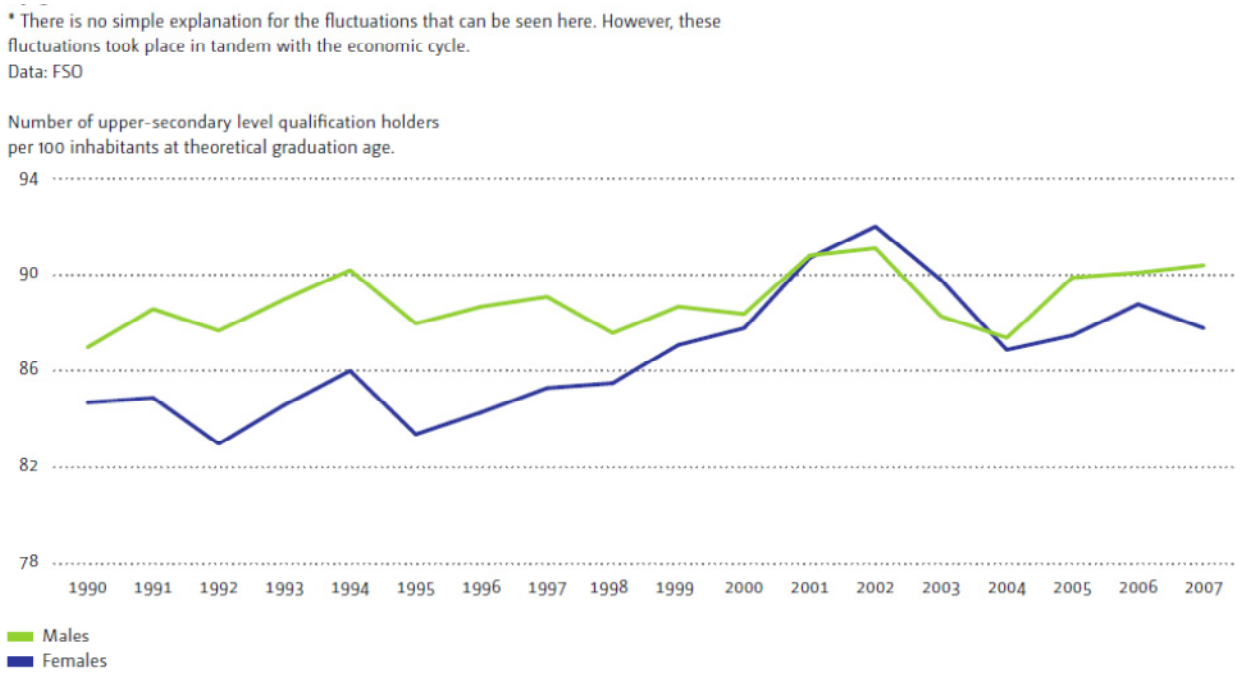
Men are more likely than women to enrol in full-time VET programmes at school, or a combination of school and workplace, while women are more likely to enrol in general, full-time school education (BfS, 2007; Hupka, 2003)[7]. Training programmes in VET are highly gendered (Borkowsky, 2000; Charles and Grusky, 1995). Women tend to pursue VET training that tend toward occupations in health, education and the service sector, whereas men enrol more frequently in VET programmes leading to industrial or technical occupations (Schaffroth, 2004). Because VET qualifications, as mentioned above, are highly occupation-specific, the gendering of VET programmes and the gendering of occupations in the labour market are closely related (Leemann and Keck, 2005). Gendered choices are also observed in most academic tracks

[7] Hirschi (2009) states that the VET system in Switzerland offers less gender-typical VET training places for females than for males, and that, on average, the academic requirements to complete female-typical VET programmes are higher.

(Ramseier, Allraum and Stalder, 2004). Thus, it is not surprising that the gendering of occupational choices has remained stable over the past decades (Leemann and Keck, 2005).

In general, 90 percent of a school-leaver cohort graduates from upper secondary education and training. A much higher proportion of learners go on to complete vocational educational and training than go on to study for the matura. About 20 percent of a cohort obtains university entrance qualifications, which is below average in international comparisons. The matura certificate is not associated with the field of study to which learners gain admission. Approximately four out of five matura graduates plan to enrol in tertiary education, with considerable differences between the various academic profiles within the matura schools (Ramseier, Allraum and Stalder, 2004).

Figure 3: Proportions of learners obtaining upper secondary level qualifications



Source: SKBF, 2011

Approximately 60 percent of all graduates of the VET matura make the transition to a university of applied sciences (BfS, 2007). Young people accessing tertiary level education by VET pathways (via vocational baccalaureate; SCED 3A, see Figure 1) often begin their studies later because the transition from the vocational matura to a university of applied science is often made

after a longer gap than the transition from the matura to university and because many learners do not enter VET directly because of structural delays to starting a VET programme.

Despite the variety of educational programmes, the proportion of learners enrolled in tertiary education is fairly low, compared to other countries, i.e. approximately 35 percent (SKBF, 2011; OECD, 2010). This percentage has nevertheless doubled in the past two decades. In the period between PISA 2000 and PISA 2011, female participation as a proportion of total enrolment in universities increased considerably. In 2006, women comprised 40 percent of those obtaining a bachelor's degree at a university in Switzerland. In 2009, the percentage had increased to 52 percent (BFS, 2011). It is hard to know how to interpret this increase, as it could also be due to the reclassification of some programmes from upper secondary to tertiary level (teacher training and nursing). In addition, implementation of the Bologna Process led to a redesign of some programmes during this period. However, it is clear that the completion rate of master's level degrees between men and women is now equivalent. Horizontal differences in fields of study persist (Charles and Bradley, 2009; OECD, 2007). During the past decade, men have been over-represented in technology and engineering, while women have been over-represented in cultural studies, health and education. Engineering and mathematics are more likely to be studied if learners had been previously enrolled in related subjects at upper secondary level (Ramseier, Allraum and Stalder, 2004). Men and women are approximately equally distributed in economics, law and medicine (Leemann and Keck, 2005).

Gendering of the Swiss education system is not always obvious. For example, more females enter academic tracks at upper secondary level (the gymnasium and specialised middle schools), although the proportions of males and females have equalised by the time of entry to tertiary education. Thus, females are less likely to transform their early scholastic success in entering a gymnasium into success in entering university. However, the system is more gendered than it would seem by examining participation alone. Gender gaps across fields of study are particularly pronounced. The differences in fields of study lead to considerable vertical and horizontal occupational gender segregation; the latter is far more evident in Switzerland. Horizontal occupational gender segregation relates to the system of social stratification, which is less determined by access to tertiary education than by access to higher prestige occupations in Switzerland. Prestige occupations are entered either through the vocational or university route.

One reason for strong horizontal segregation is the fairly inflexible structure of the education system in Switzerland. Changing tracks at lower secondary level or changing between VET and an academic track at post-compulsory levels is difficult and costly (Neuenschwander, 2012). Changes from VET to academic tracks are associated with high personal and financial costs. They are therefore rare during upper secondary education[8]. Changes within VET are slightly more common although still rather unusual. Due to the specialised nature of VET, changes between occupational tracks are not easily accomplished, and they often involve having to find a new apprenticeship or training place (Schmid and Stalder, 2008). Vocational choices take place at an early age when learners' gender identity is under formation. Subsequent corrections of choices are yet again difficult and costly. Therefore, early gender differences in vocational choices translate into subsequent labour market segregation. This is considered one of the main factors behind the persistence of the strong horizontal gender gap in Switzerland (Charles and Buchmann, 1995).

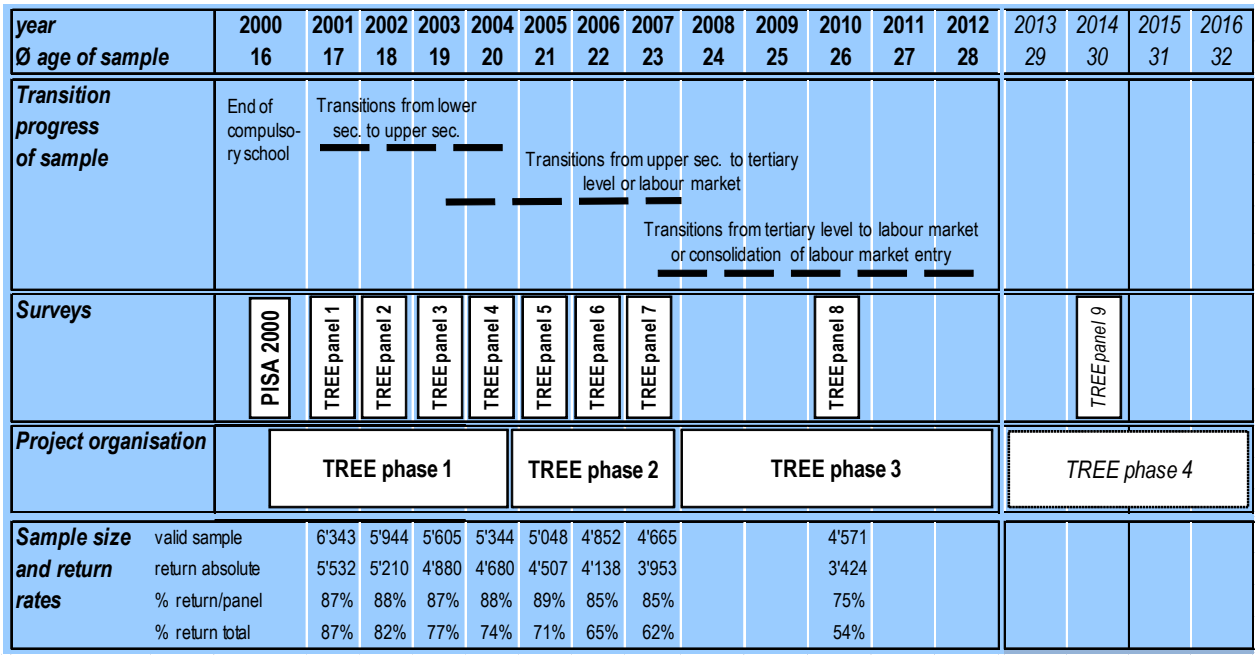
[8] In contrast to Germany, only a minority of graduates from a matura school enrol in VET.

2. Data and methods

For the following analyses, we used data from the Transitions from Education to Employment survey (TREE), which follows learners who participated in the Programme for International Student Assessment (PISA) 2000 cohort. All PISA scales are described in Adams and Wu (2002).

TREE (2011) is a comprehensive survey of young people's pathways in education and the labour market following post-compulsory education. Approximately 6,000 young people participated in this nationally representative panel study from 2001 to 2007, and an eight wave was added in 2010 (see Figure 4). TREE is the only panel survey worldwide, apart from the Canadian *Youth in Transition Survey*, which is based on the PISA 2000 sample. The first phase of the survey, until 2003, focused on education and employment transition patterns at the interface between compulsory schooling and upper secondary education. During that phase, the main focus rested on exploring reasons for, and consequences of, variations in trajectories (such as low performance, dropping out and discontinuous pathways).

Figure 4: PISA 2000 and TREE surveys



Most results in the following sections are based on binary or multinomial logistic regressions. Where necessary, we estimated separate models for males and females to explore in detail differences between men and women.

Sampling weights were used to account for panel attrition and the complex survey design (Sacchi 2011). Table 1 shows return rates for men and women in the TREE survey.

Table 1: Participation rate by gender (not weighted)

	2000	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
Female	3440	3092	2946	2805	2668	2554	2335	2228
Male	2903	2436	2260	2072	2011	1952	1798	1751

The statistical models were run using the Stata command mlogit in Stata 10, using the svy commands to account for the sample design and missing variables. The description of the variables for each model is provided in the relevant chapters.

3. Pathways of women and men of the PISA 2000 cohort through the Swiss education system

Table 2, as well as Figures 5 and 6, provide insights into the gendered pathways of men and women in Switzerland, illustrating some notable differences in the educational and occupational pathways. As stated earlier, the type of school at the lower secondary level plays a crucial role in the educational pathways in Switzerland. Table 2 shows weighted numbers of learners coming from different tracks at lower secondary level and their educational situation in the first year after compulsory schooling.

Table 2: Type of school at lower secondary level and educational status in the first year after compulsory schooling

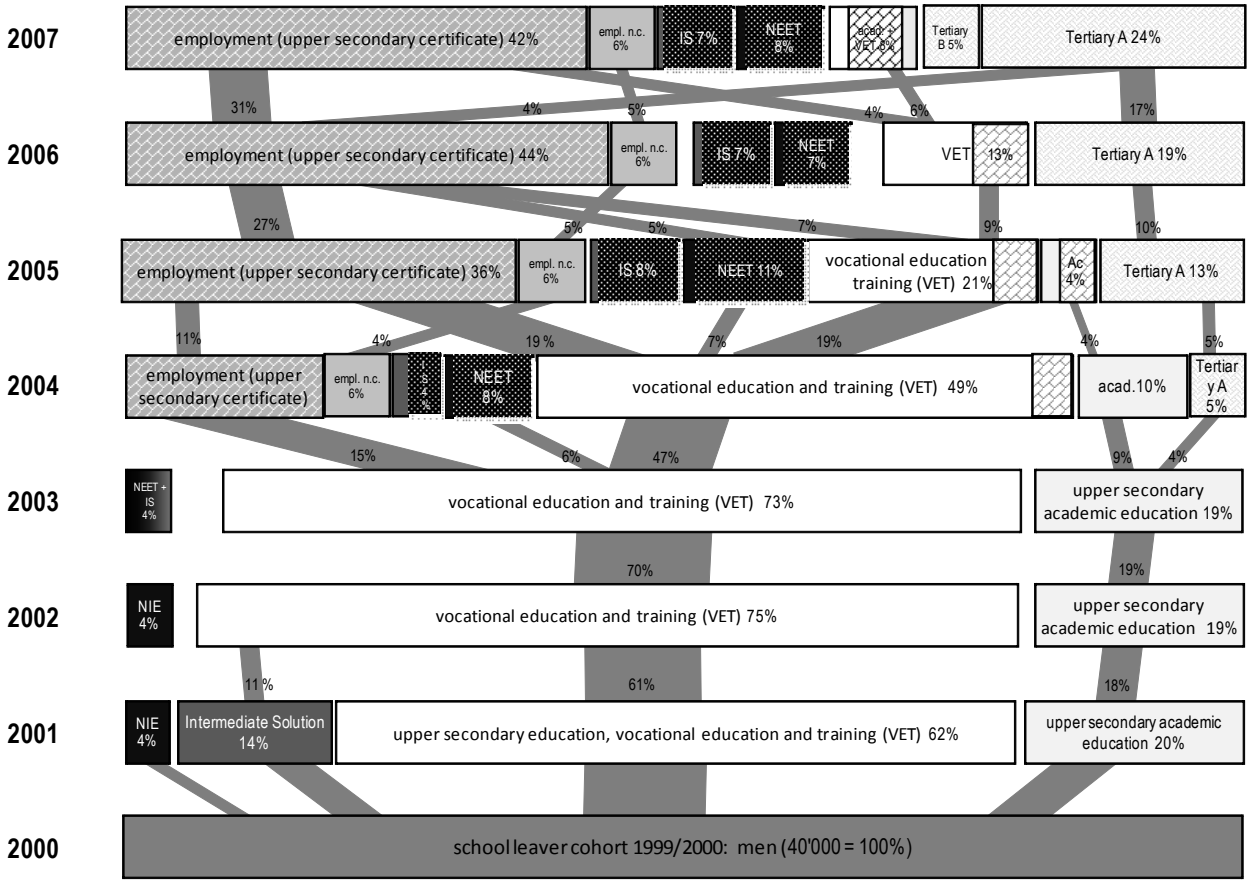
		situation in 2001				
typ of school lower secondary	N weighted	Not in Education	Intermediate Solution	VET	Academic Education	Total
1 pre-gymnasial: females	1000	2%	7%	19%	73%	100%
2 pre-gymnasial: males	900	2%	5%	35%	58%	100%
2 extended academic requirements: femal	1100	4%	31%	47%	19%	100%
3 extended academic requirements: males	1100	4%	15%	73%	7%	100%
3 basic academic requirements: females	800	8%	47%	40%	5%	100%
4 basic academic requirements: males	1200	7%	19%	73%	2%	100%
4 no (formal) tracking: females	100	2%	34%	34%	31%	100%
5 no (formal) tracking: males	100	3%	32%	45%	20%	100%
weighted analyses, rounded to nearest						

73 percent of young women from the pre-gymnasium lower secondary school track enter a gymnasium or its equivalent, compared to only 58 percent of young men. 35 percent of the young men from the pre-gymnasium track enter VET, compared to only 19 percent of the women. This means that high-achieving learners find VET an attractive option, which illustrates the prestige of the VET system in Switzerland. Young learners from the pre-gymnasium track are nearly absent in the categories “not in education” and “intermediate solutions.” Learners from lower secondary tracks with extended curricula often enrol in VET, but gender disparities are substantial: 73 percent of the boys but only 47 percent of the girls enter VET. Twice as many girls (31 percent) from tracks with extended requirements are in intermediate solutions, compared to boys (15 percent). Learners from tracks with basic curricula and requirements rarely end up pursuing an academic education. They are more likely to enrol in VET. Well over twice as many young women from the basic requirements track (47 percent) are in intermediate solutions, compared to

young men in this track (19 percent). Of all the tracks at secondary 1 level, this track has the highest proportion of learners who do not continue their education in the first year after compulsory schooling.

Table 2 shows that the track attended at lower secondary level strongly influences the post-compulsory pathways of young people. Learners from tracks with basic requirements have the lowest chances of directly entering any kind of education, which leads to a formal qualification (certification), while learners from the pre-gymnasium track have the best opportunities.

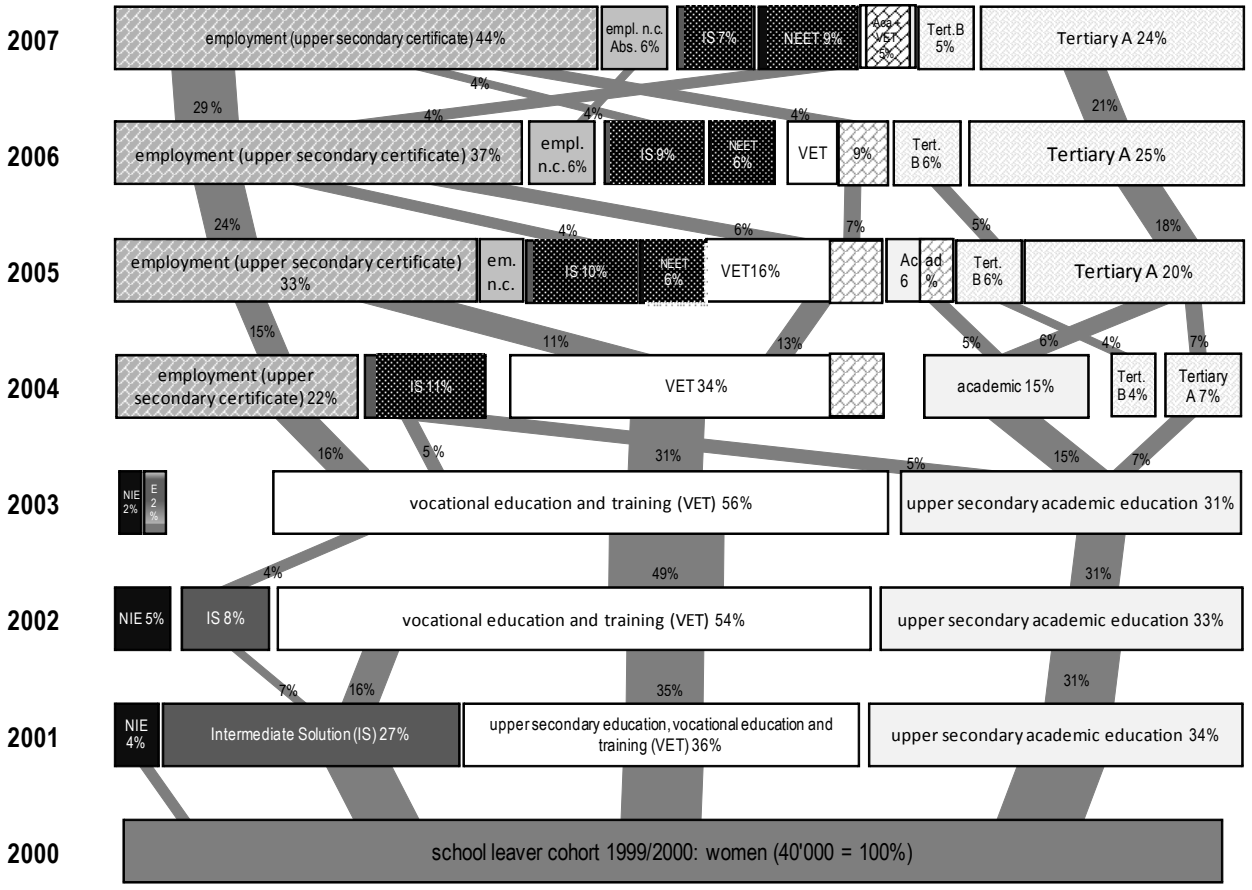
Figure 5: Post-compulsory education and employment pathways of young men in Switzerland



breadth of branches is proportional to percentage of population on the respective path
minimal displayed population size 4% of cohort
patterned areas = upper secondary certificate achieved
Hupka-Brunner et al (2011)

Tertiary A: Universities & Universities of Applied Sciences
Tertiär B: higher vocational schools, federal professional diplomas
NIE = Not in Education
NEET: Not in Education nor Employment

Figure 6: Post-compulsory education and employment pathways of young women in Switzerland



breadth of branches is proportional to percentage of population on the respective path
minimal displayed population size 4% of cohort
patterned areas = upper secondary certificate achieved
Hupka-Brunner et al (2011)

Tertiary A: Universities & Universities of Applied Sciences
Tertiär B: higher vocational schools, federal professional diplomas
NIE = Not in Education
NEET: Not in Education nor Employment

In the first year after compulsory schooling (median age 17), about 20 percent of males and about 34 percent of females are in upper secondary academic education, the main track to university (Figures 5 and 6). This is a striking difference, which seems to suggest that young women are performing much better than young men in the Swiss education system, particularly when considering that most learners who enter these academic tracks stay on this route. However, about 27 percent of young women attend intermediate solutions in the first year after compulsory schooling, which is nearly double the percentage of men in intermediate solutions. This is due in part to the fact that women are over-represented in VET programmes for occupations such as

nursing, which had a minimum entry age for this cohort[9]. Men are more likely to enrol in VET programmes. In 2001, for example, this was 62 percent of men, compared to 36 percent of women.

In 2004, at an average age of about 20 years, some women and men are making the transition from upper secondary education to tertiary education or to employment. However, this transition is not necessarily smooth: 11 percent of women and 12 percent of men of the TREE cohort were neither in education nor in employment, or they found themselves in intermediate solutions. Young women are found more often in intermediate solutions, and men are more often in NEET-situations. The transition from upper secondary education to employment can occur at various points because there is often a delay in entering VET, and upper secondary educational programmes have durations from two to four years. Nevertheless, the transition is concentrated at four to five years after compulsory school, when young people are approximately 21 years of age.

Despite considerable gender differences in the pathways preceding tertiary level education, the proportions of men and women who enrol in tertiary education or who enter the labour market are similar, as shown in Figures 5 and 6. For young women, the academic tracks of upper secondary education (mainly gymnasium) are the main access route to tertiary education. Young men, however, access tertiary education to a greater extent via VET tracks, i.e. via the federal VET diploma and vocational baccalaureate, which entitles to enrolment in universities of applied science. As this latter type of transition concerns only a small percentage of the population (approximately twelve percent) and is spread over several years, it remains largely invisible in Figures 5 and 6, where only cohort percentages of at least four percent are displayed.

These findings should also be interpreted with reference to the work of Widmer and Ritschard (2009), who found that young men and women in Switzerland experience an increase in instability compared to previous cohorts during the transition from education to employment. Young men experience more discontinuities than women until the age of 30, when their

[9] Subsequent cohorts have the opportunity to enrol in a new educational programme („Fachangestellte Gesundheit"), which can be started directly after compulsory school and which can be used as a "bridge" to a nursing programme.

employment trajectories stabilise. Widmer and Ritschard's finding that a higher proportion of young women experiences instability after the age of 30 was found over a longer time period.

4. Factors associated with attending post-secondary education and training

Previous research has established that the main factors associated with enrolment in post-secondary education and training are family background, particularly parental socio-economic status and education, and the family's migration background (Becker, 2010; Bergman and Joye, 2001). The association between occupational position of parents and educational achievement is particularly strong in Switzerland and comparable to the effects seen in Germany (OECD/PISA, 2001). In many countries, young people are more likely to be in higher education, if their father completed higher education. Ireland and Spain provide the most equitable access to higher education, whereas, in Austria, France, Germany and Portugal, young people from a blue-collar background are only about half as likely to be in higher education as those whose parents have a higher occupational background. The influence of mothers' education suggests that the barriers for intergenerational mobility in educational attainment are high. The International Adult Literacy Survey (IALS) results also show that such barriers are highest in Switzerland and Poland compared to the twelve other countries under investigation. The probability of young people whose parents have attained an academic degree to also complete an academic education is four to six times higher than that of children whose parents' highest level of education is compulsory schooling.

Family background is important from an early stage in the educational process, and it heavily influences the track a learner enters in lower secondary level (Kronig, 2007). The track a learner enters is highly predictive of subsequent learning opportunities, pathways and attainment (Kronig, 2007; Coradi Vellacott, 2007; Hupka-Brunner, 2011; Meyer 2009). According to PISA, the influence of family background on competencies up to the end of compulsory school is very strong in Switzerland, compared to other OECD countries. The probability that learners from the lowest quartile of a socio-economic status scale (SES) are also in the lowest PISA literacy score quartile is 2.7 times higher than that of learners from the highest SES quartile. The average ratio across all OECD countries is 2. The impact of PISA literacy skills on educational pathways and labour market entry is well documented for Switzerland (Hupka-Brunner, 2011; Becker, 2011; Bertschy, Cattaneo and Wolter, 2009).

Family background also shapes children's aspirations, which in turn have an impact on educational career decisions, school achievement and pathways through the life course. The

influence of social background is further reflected in the occupational aspirations of young people, which, in Switzerland, have a significant impact on the chances to enter upper secondary education and training (Sacchi, Hupka-Brunner, Stalder, and Gangl, 2011). At the lower secondary level, learners with a migration background, learners from tracks with basic requirements and female learners have lower occupational aspirations. Most young people lower their aspirations during the last year of compulsory schooling (Haeberlin et al., 2004).

Aspirations to attain tertiary level education vary between countries: On average, 57 percent of fifteen-year-olds in OECD countries expect to go to university, but this rate varies from 95 percent in South Korea to 21 percent in Germany (OECD 2007, 2010). Indicators show that expectations vary within countries according to individual performance levels, gender, socio-economic background, and immigrant status. Expectations at age 15 to complete a university-level programme are closely linked to performance in mathematics and reading. Irrespective of PISA measured competencies, 15-year-olds from lower socio-economic backgrounds are less likely to expect that they will pursue a tertiary education (OECD 2007).

In most OECD countries, fifteen-year-olds with a migration background are more likely to expect to complete a university-level education than non-migrants. The relative expectations of these learners are higher than those of non-migrant learners of similar aptitudes and socio-economic backgrounds. For Germany, Lörz and Schindler (2011) found that women are less likely to aspire to, and enrol in, tertiary education, and that they are more likely to abandon their academic plans. This gender difference seems to increase as the financial burden of tertiary education becomes more pronounced. We conclude that gender differences in the anticipation of success as well as in cost-benefit calculations modify the gendered probability to enrol in tertiary education.

The analyses in this section of the report build on the findings from the previously cited studies. The TREE data from the PISA 2000 cohort includes a range of measures that are well suited to measuring the effects of socio-economic background variables. The first analysis explores some of the key factors associated with being in tertiary level education five years after leaving compulsory school, which corresponds to an approximate average age of 21.5 years (TREE wave

5[10]). First, we compare the association between being in tertiary education relative to being employed, in upper secondary education or NEET. Appendix 1 includes the details of how the different educational categories in Switzerland correspond to the categories of tertiary education, being employed, in upper secondary education and NEET. At the request of the OECD and for the purpose of facilitating comparisons with the other countries in this study, we ran a second group of models with only three categories, which we constructed by merging tertiary education and upper secondary education. This new category is contrasted with employment and NEET.

[10] By TREE wave 5, the average age of participants is about 20.5 years. Wave 3 would be unsuitable because TREE participants are only about 18.5 years old – too early to capture employment in Switzerland. Wave 4 (average age 19.5) is possible but the proportion in vocational upper secondary education is high (65 percent) and the proportion in tertiary education rather low. Young people who go on to tertiary education usually finish secondary education rather later in Switzerland (see table for a summary of education and work statuses at each wave). Given the slow progress of post-compulsory educational pathways in Switzerland, any moment of observation prior to TREE survey wave 5 would be too early.

Table 3: Educational status five years after compulsory schooling by gender

	Female	Male	Total
Educational status in 2005, four categories			
0 Tertiary education	848	457	1,305
1 Employed	806	609	1,415
2 Upper secondary education	563	541	1,104
3 NEET	336	345	681
Total	2,553	1,952	4,505
Educational status in 2005, three categories			
0 Tertiary and upper secondary	1,411	998	2409
1 Employed	806	609	1415
3 NEET	336	345	681
Total	2,553	1,952	4.505

Model 1: Socio-economic background, region and type of track at lower secondary level:

- Mothers' highest level of qualification: PISA misced recoded: no schooling and primary (ISCED 1 or below); lower secondary (ISCED 2); upper secondary (ISCED 3)[11]; and degree level (ISCED 5 -reference category).
- Father's highest level of qualification: PISA fisced recoded as above.
- ISCO-1-digit of father's and of mother's occupation.
- Books in the household: PISA st37q01: 500+ books (reference category); no books; 1-10 books; 11-50 books; 51-100 books; 101-250 books; and 251-500 books.
- Computers in the household: PISA st22q04 recoded: 2+ computers (reference category); 0 computers; and 1 computer.
- Rural or urban region: PISA Agglo recoded: rural (reference category); urban.
- Language region: PISA recoded: German; French and Italian combined (reference category).
- Migration status: PISA st16q01-03 recoded: first generation migrant; second generation; both parents Swiss (reference category).
- Language spoken at home: PISA st17q01-03 recoded: Local teaching language (reference category) versus other language.
- Type of track attended at lower secondary level: basic (reference category) versus all other types of track.

[11] PISA 2000 did not ask for ISCED level 4 of parents' education.

Model 2: Model 1 + School Level Variables MeanHISEI of the school (MeanHisei)

- Deviation of learners HISEI from meanHisei: The deviation of each learner's ISEI (International Socio-economic Index), taken as the highest ISEI of either parent, from the school mean are included.
- Quality of material resources (scm*a*tbui)
- Quality of educational resources (scmatedu)
- Learner to teacher ratio (stratio)

Model 3: Model 2 + individual learner scores (not all the variables listed are used in the analysis).

- PISA literacy score (wleread)
- Self-concept verbal (scverb)
- General self-efficacy PISA (selfef)
- Self-concept academic (scacad)
- Mathematics self-concept (Matcon)
- Interest in mathematics (intmat)
- Instrumental motivation (insmot)

Results

Socio-economic background, region and type of track at lower secondary level

Mothers' and fathers' education

In Model 1 (Table 4 and 5), mothers' education appears to play little role in predicting whether the individual is in tertiary education relative to being employed, in upper secondary education or NEET. In Model 1, the mother's education is only associated with a males' likelihood of being in tertiary education when the mother is educated to primary level. However, this effect seems to be mediated by school and individual factors, as the coefficient is no longer significant when the variables for school and individual factors are included in Models 2 and 3. It might be surprising that mothers' or fathers' education seems to play such a limited role. However, parents' education is likely to be correlated with some of the large number of explanatory variables in the regression. We therefore perform robustness checks. For example, in a multinomial logistic regression, which includes only the mother's and father's education as explanatory variables, the effects for parents' education are more in line with what might be expected (results not shown in this report but available on request). That is, men's and women's relative risk of being in employment relative to tertiary education is elevated when the father is educated to primary, compulsory or vocational level (though not academic high school) relative to degree level. The

strength of the effect varies slightly in proportion to the level of non-tertiary education, and it is similar for males and females. In relation to the relative risk of being in upper secondary relative to tertiary education, fathers' education is only significant in the case of fathers' education to vocational level. Here, the risk of young men and women still being in secondary education is elevated for those whose fathers were educated to vocational level rather than degree level.

Socio-economic status of parents

The occupational status of the father, using International Standard Classification of Occupations (ISCO), shows significant effects for women: ISCO4 (clerical workers), ISCO5 (service and sales workers), and ISCO7 (crafts and related trades) reduce the odds of being in tertiary education compared with ISCO1 (legislators, senior officials and managers). The same effect is observed for mothers' occupations as far as ISCO4 is concerned. But these effects do not remain statistically significant when adding individual factors to the model. For males, another picture emerges: male learners whose mother is categorised in ISCO3 (technicians and associated professions), ISCO4, ISCO5, ISCO7, or ISCO9 (elementary occupations), rather than ISCO1, run a higher risk of being neither in education nor in employment (NEET), even after controlling for individual factors such as the PISA literacy score[12]. The effect of fathers' status is similar, but weaker and less consistent.

Regional variables

As one would expect for Switzerland, socio-spatial factors play an important role, be it along the urban-rural dimension or with regard to the country's language regions. The odds of being employed rather than enrolled in tertiary level education are higher for men in the German-speaking part of Switzerland. There also seems to be a tendency for this to be the case for women, for whom the odds of being in employment versus tertiary education are elevated in Model 1, but the result does not hold when further variables are added. These phenomena might be explained by better job opportunities in the German-speaking region. Comparing females in the German-speaking part of the country with those in the non-German language region does,

[12] Separate multinomial regressions (not displayed here) show that the coefficients regarding parental ISEI do not change when mothers' and fathers' education are removed from the model. We therefore conclude that ISEI is more influential in relation to educational attainment and training than mothers' or fathers' education per se.

however, show that the odds of their being in tertiary education rather than upper secondary education or NEET are lower for women in the other language regions.

Whether the school location is urban is important for men and remains consistently significant across models in predicting whether they enter employment versus tertiary education. Having attended lower secondary education in an urban area increases the odds for men being in tertiary education rather than in employment or NEET. Women from urban areas seem more likely than those from rural areas to be in upper secondary education than in tertiary education.

Access to books and computers

Access to books appears to be an important explanatory variable, whether it relates to access to cultural resources or as a proxy to the cultural capital of a household. The regression results suggest that the more books present in the household, the more likely it is that learners will be enrolled in tertiary education. Especially for females, living in a household with less than 500 books seems to be a predictor for being employed and not pursuing tertiary education. Access to computers has no effect.

Second generation migrant and language spoken at home

Males who at home speak a language other than the instruction language have a lower risk of being NEET rather than in tertiary education. The variable for main language spoken at home shows no effect for females. Although these results for both men and women might seem counter-intuitive, they should be interpreted in the context of the other variables included in the regression, especially migration status. Similarly, we find that second generation migrant females are less likely to be employed than in tertiary education, whereas there are no significant effects for men, probably because we have also controlled for parents' education and social status. Migrants are a heterogeneous group in Switzerland, with a range of socio-economic levels, including those holding higher-level occupations in the pharmaceutical industry, the financial sector or research.

Type of track at lower secondary education

As outlined in the first chapter, the type of track attended at lower secondary level is important in determining the pathway through upper secondary education. For females and males who attend a type of track beyond "basic requirements", the odds of being enrolled in tertiary education are

increased vis-à-vis all other categories of comparison. When controlling for individual factors, this effect remains significant only when comparing tertiary education to being employed.

School level effects

Mean socio-economic status of learners within school

There is a strong effect of the learners' mean socio-economic status within a given school: the higher this mean status score is, the higher are the odds of being enrolled in tertiary education compared to all other groups of comparison. This provides an important insight into how the processes of stratification take place within schools in Switzerland.

Learner's deviation from the school HISEI

The learners' deviation from their schools' average HISEI shows no effect for females.

Table 4: Explanatory model (tertiary education) five years after compulsory schooling, males

Multinomial logistic regression, relative risk ratios displayed, reference category: Tertiary Education																		
	Model 1						Model 2						Model 3					
Males	**1 Empl.**		**2 Upper Sec. Ed.**		**3 NEET**		**1 Empl.**		**2 Upper Sec. Ed.**		**3 NEET**		**1 Empl.**		**2 Upper Sec. Ed.**		**3 NEET**	
	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|
Mother's education [ISCED 5 tertiary]																		
ISCED 1 (primary or less)	3.35	0.019	1.73	0.354	2.18	0.223	2.44	0.140	1.47	0.562	1.71	0.449	2.34	0.191	1.69	0.460	1.70	0.485
ISCED 2 (lower secondary)	1.12	0.743	1.06	0.869	0.82	0.612	1.12	0.753	1.29	0.508	0.70	0.407	0.95	0.904	1.33	0.505	0.67	0.367
ISCED 3 (upper secondary)	1.12	0.717	0.90	0.753	1.09	0.784	1.19	0.607	1.10	0.778	1.16	0.656	1.10	0.786	1.21	0.613	1.13	0.717
Father's education [ISCED 5 tertiary]																		
ISCED 1 (primary or less)	0.78	0.652	0.68	0.503	0.76	0.657	1.05	0.923	0.73	0.586	0.70	0.581	0.56	0.292	0.37	0.089	0.40	0.186
ISCED 2 (lower secondary)	1.44	0.298	1.11	0.789	0.99	0.980	1.20	0.616	0.83	0.642	0.65	0.309	1.02	0.952	0.75	0.493	0.62	0.272
ISCED 3 (upper secondary)	0.98	0.923	1.15	0.638	0.80	0.445	1.01	0.983	1.10	0.759	0.61	0.126	0.93	0.778	1.09	0.792	0.63	0.164
Father's occupation [ISCO1: Legislators, senior officials and managers]																		
ISCO2: Professionals	0.54	0.053	0.59	0.151	0.50	0.074	0.78	0.529	0.78	0.567	0.54	0.162	0.71	0.419	0.83	0.706	0.53	0.175
ISCO3: Technicians and associate professionals	0.64	0.233	0.46	0.037	0.55	0.186	0.42	0.031	0.43	0.048	0.44	0.098	0.43	0.054	0.50	0.147	0.47	0.134
ISCO4: Clerks	1.09	0.847	0.38	0.042	1.35	0.582	0.88	0.805	0.36	0.075	1.19	0.774	0.87	0.799	0.41	0.143	1.23	0.744
ISCO5: Service workers and shop and market sales v	3.56	0.040	5.38	0.013	3.01	0.120	2.47	0.155	5.15	0.022	2.53	0.195	2.77	0.125	5.19	0.021	2.61	0.176
ISCO6: Skilled agricultural and fishery workers	1.72	0.501	1.18	0.847	2.85	0.224	0.68	0.656	0.78	0.796	1.84	0.508	0.65	0.633	0.90	0.916	1.89	0.501
ISCO7: Craft and related trades workers	1.42	0.377	0.99	0.981	1.31	0.586	0.84	0.708	0.79	0.648	0.94	0.921	0.90	0.826	0.88	0.830	0.97	0.961
ISCO8: Plant and machine operators and assemblers	2.76	0.092	1.41	0.582	2.94	0.135	1.43	0.575	0.92	0.914	1.57	0.597	1.69	0.440	1.08	0.915	1.49	0.650
ISCO9: Elementary occupations	2.81	0.180	2.27	0.275	2.90	0.236	1.71	0.669	2.35	0.495	3.06	0.417	1.25	0.870	1.50	0.769	2.12	0.607
Mother's occupation [ISCO1: Legislators, senior officials and managers]																		
ISCO2: Professionals	0.31	0.105	0.31	0.083	3.40	0.144	0.72	0.663	0.41	0.267	5.69	0.065	0.65	0.572	0.31	0.140	5.52	0.096
ISCO3: Technicians and associate professionals	0.47	0.271	0.42	0.126	4.97	0.047	0.97	0.971	0.64	0.542	7.65	0.030	0.97	0.970	0.51	0.335	7.81	0.043
ISCO4: Clerks	0.55	0.407	0.55	0.357	5.87	0.029	1.22	0.816	0.85	0.852	9.89	0.020	1.14	0.885	0.71	0.689	10.59	0.029
ISCO5: Service workers and shop and market sales v	0.76	0.713	0.77	0.723	7.73	0.015	1.16	0.865	0.77	0.774	9.77	0.022	1.14	0.875	0.67	0.655	10.54	0.028
ISCO6: Skilled agricultural and fishery workers	0.06	0.022	0.08	0.049	0.83	0.893	0.09	0.107	0.08	0.122	0.96	0.981	0.07	0.079	0.05	0.070	0.73	0.864
ISCO7: Craft and related trades workers	0.62	0.617	0.61	0.592	7.29	0.059	0.80	0.842	0.87	0.892	15.11	0.028	0.74	0.800	0.74	0.795	17.88	0.040
ISCO8: Plant and machine operators and assemblers	0.29	0.312	0.88	0.915	2.79	0.448	0.42	0.515	0.74	0.834	1.89	0.700	0.33	0.460	0.46	0.631	1.57	0.805
ISCO9: Elementary occupations	0.40	0.222	0.43	0.229	6.09	0.031	0.64	0.630	0.53	0.475	8.54	0.035	0.71	0.710	0.48	0.419	9.75	0.043
Language region [French & Italian]																		
German	2.13	0.009	0.63	0.100	0.94	0.820	1.85	0.031	0.61	0.066	0.83	0.500	2.98	0.000	0.97	0.917	1.16	0.630
Region [rural]																		
Urban	0.34	0.001	0.72	0.361	0.42	0.011	0.48	0.020	1.03	0.939	0.67	0.243	0.38	0.003	0.86	0.665	0.53	0.074
Books [>500]																		
none	8.38	0.062	0.08	0.061	5.53	0.209	4.97	0.100	0.04	0.032	3.63	0.221	3.50	0.172	0.03	0.021	2.82	0.286
1-10	4.56	0.021	3.79	0.060	4.01	0.049	3.02	0.094	2.19	0.286	2.64	0.166	1.69	0.467	1.23	0.801	1.85	0.426
11-50	2.40	0.023	1.89	0.089	1.64	0.220	1.58	0.264	1.52	0.286	1.21	0.643	1.19	0.683	1.15	0.746	1.28	0.556
51-100	2.67	0.009	1.96	0.088	1.59	0.268	2.17	0.059	1.53	0.271	1.28	0.555	1.34	0.516	1.05	0.910	1.08	0.865
101-250	2.53	0.010	2.02	0.037	1.45	0.317	2.52	0.011	2.15	0.022	1.43	0.342	2.11	0.040	1.92	0.058	1.46	0.312
251-500	1.19	0.583	1.08	0.823	0.80	0.513	1.29	0.420	1.16	0.686	0.63	0.208	1.15	0.666	1.15	0.711	0.69	0.333
Computers [two]																		
No computers	1.89	0.304	2.27	0.185	1.01	0.985	1.83	0.403	2.38	0.219	0.97	0.970	1.73	0.437	1.93	0.364	0.75	0.726
One	0.89	0.615	0.77	0.349	0.84	0.517	0.91	0.703	0.84	0.535	0.87	0.627	0.88	0.641	0.78	0.406	0.77	0.412
Migration background [none]																		
2nd gen.	1.00	0.993	1.29	0.404	0.96	0.907	0.91	0.776	1.54	0.190	0.98	0.944	0.97	0.936	1.32	0.433	1.00	0.992
3rd gen.	1.02	0.973	0.76	0.545	1.95	0.260	1.02	0.971	0.83	0.706	1.07	0.924	0.78	0.637	0.61	0.376	1.01	0.992
Language spoken at home [CH]																		
other	0.60	0.167	0.67	0.321	0.21	0.002	0.54	0.135	0.56	0.181	0.28	0.015	0.62	0.277	0.65	0.345	0.27	0.017
Type of school lower sec [basic]																		
other	0.11	0.000	0.12	0.000	0.23	0.001	0.21	0.000	0.18	0.000	0.41	0.043	0.26	0.005	0.33	0.021	0.57	0.260
MEANHisei							0.87	0.000	0.91	0.001	0.87	0.000	0.88	0.000	0.93	0.018	0.89	0.000
Students deviation from school HISEI							0.98	0.197	0.99	0.444	0.99	0.645	0.98	0.257	0.99	0.564	0.99	0.724
Student/Teacher							1.02	0.763	1.08	0.339	1.07	0.345	1.01	0.913	1.07	0.431	1.06	0.459
Schools' Physical Infrastructure							0.78	0.282	0.86	0.522	0.84	0.449	0.78	0.276	0.81	0.380	0.77	0.238
Schools' Educational Resources							1.18	0.421	0.85	0.487	0.90	0.572	1.25	0.245	0.88	0.585	0.99	0.946
literacy reading													0.99	0.001	0.99	0.000	0.99	0.001
Self-concept verbal													1.22	0.341	1.41	0.093	1.18	0.406
Self efficacy													0.60	0.006	0.91	0.624	0.89	0.555
Self-concept academic													0.82	0.306	0.66	0.033	0.79	0.258
Mathematics self-concept													0.77	0.130	0.73	0.073	0.70	0.048
Instrumental Motivation													1.00	0.990	0.98	0.904	0.84	0.243
Interest in Mathematics													1.01	0.941	1.15	0.343	1.11	0.548
Design	N of strata=24; N of obs = 1643						N of strata=24; N of obs = 1470						N of strata=24; N of obs = 1432					
Model fit	Design df = 456, F(108, 358) = 4.04						Design df = 463, F(123, 341) = 4.68						Design df = 463, F(144, 320) = 7.47					
	Prob > F= 0.0000						Prob > F= 0.0000						Prob > F= 0.0000					

Table 5: Explanatory model (tertiary education) five years after compulsory schooling, females

Multinomial logistic regression, relative risk ratios displayed, reference category: Tertiary Education																		
	Model 1						Model 2						Model 3					
Females	**1 Empl.**		**2 Upper Sec. Ed.**		**3 NEET**		**1 Empl.**		**2 Upper Sec. Ed.**		**3 NEET**		**1 Empl.**		**2 Upper Sec. Ed.**		**3 NEET**	
	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|
Mother's education [ISCED 5 tertiary]																		
ISCED 1 (primary or less)	1.65	0.317	2.73	0.111	0.95	0.939	1.75	0.328	3.25	0.094	1.03	0.966	1.78	0.321	3.47	0.059	1.11	0.883
ISCED 2 (lower secondary)	1.08	0.805	1.15	0.677	1.01	0.972	0.91	0.793	1.05	0.896	0.94	0.889	0.99	0.982	1.16	0.720	1.12	0.799
ISCED 3 (upper secondary)	1.15	0.603	1.43	0.246	1.18	0.621	1.25	0.451	1.47	0.267	1.39	0.344	1.35	0.360	1.59	0.200	1.80	0.086
Father's education [ISCED 5 tertiary]																		
ISCED 1 (primary or less)	1.41	0.541	0.89	0.851	1.45	0.541	1.15	0.834	0.88	0.863	1.29	0.716	0.81	0.729	0.58	0.407	0.92	0.900
ISCED 2 (lower secondary)	1.24	0.356	1.24	0.523	1.39	0.340	1.06	0.806	1.08	0.839	0.99	0.977	0.96	0.872	0.90	0.786	0.92	0.839
ISCED 3 (upper secondary)	0.95	0.814	1.06	0.813	0.82	0.453	0.80	0.335	1.16	0.582	0.63	0.102	0.77	0.261	1.05	0.865	0.53	0.027
Father's occupation [ISCO1: Legislators, senior officials and managers]																		
ISCO2: Professionals	0.64	0.147	1.02	0.949	1.40	0.405	0.67	0.260	0.89	0.757	1.08	0.878	0.70	0.332	1.06	0.872	1.21	0.698
ISCO3: Technicians and associate professionals	1.16	0.624	1.46	0.312	1.86	0.219	1.14	0.680	1.45	0.358	1.78	0.261	1.13	0.696	1.46	0.339	1.71	0.291
ISCO4: Clerks	1.31	0.545	1.20	0.685	2.65	0.020	1.05	0.914	1.23	0.678	2.27	0.074	1.01	0.990	1.25	0.647	2.07	0.108
ISCO5: Service workers and shop and market sales workers	1.97	0.072	2.41	0.051	1.58	0.460	2.11	0.081	2.88	0.030	1.47	0.557	1.67	0.243	2.90	0.022	1.24	0.745
ISCO6: Skilled agricultural and fishery workers	0.80	0.643	1.95	0.200	0.92	0.890	0.65	0.520	2.42	0.153	0.71	0.633	0.65	0.514	2.42	0.167	0.60	0.505
ISCO7: Craft and related trades workers	1.18	0.593	2.43	0.010	2.53	0.023	1.01	0.978	2.71	0.009	1.86	0.184	0.94	0.878	2.79	0.008	1.56	0.342
ISCO8: Plant and machine operators and assemblers	1.50	0.439	1.71	0.349	1.05	0.940	1.19	0.767	1.68	0.419	0.61	0.444	0.91	0.873	1.27	0.712	0.41	0.187
ISCO9: Elementary occupations	1.36	0.482	1.22	0.693	1.03	0.959	1.07	0.915	1.17	0.817	0.96	0.955	0.86	0.808	1.01	0.985	0.74	0.676
Mother's occupation [ISCO1: Legislators, senior officials and managers]																		
ISCO2: Professionals	0.85	0.794	0.38	0.221	1.77	0.504	1.09	0.895	0.54	0.414	2.28	0.375	1.16	0.851	0.61	0.513	2.61	0.328
ISCO3: Technicians and associate professionals	0.89	0.850	0.59	0.479	3.51	0.137	1.03	0.964	0.75	0.690	3.28	0.198	0.97	0.970	0.71	0.654	2.91	0.279
ISCO4: Clerks	1.55	0.488	0.91	0.897	5.95	0.033	1.92	0.369	1.22	0.782	6.12	0.048	1.88	0.456	1.12	0.884	5.13	0.098
ISCO5: Service workers and shop and market sales workers	1.64	0.420	0.55	0.472	4.07	0.098	1.87	0.391	0.68	0.641	4.56	0.112	1.72	0.524	0.59	0.542	3.86	0.187
ISCO6: Skilled agricultural and fishery workers	4.07	0.080	0.18	0.118	2.69	0.394	4.50	0.127	0.26	0.221	3.52	0.325	4.55	0.168	0.23	0.219	2.94	0.432
ISCO7: Craft and related trades workers	1.16	0.839	0.65	0.608	1.37	0.736	1.15	0.875	0.77	0.764	1.53	0.684	1.21	0.857	0.93	0.932	1.32	0.807
ISCO8: Plant and machine operators and assemblers	4.34	0.089	0.72	0.743	1.09	0.940	5.91	0.057	0.93	0.952	1.40	0.791	6.94	0.070	1.02	0.985	1.32	0.838
ISCO9: Elementary occupations	2.36	0.193	0.65	0.573	4.52	0.071	3.00	0.180	1.12	0.881	5.58	0.071	3.00	0.246	1.01	0.991	5.01	0.117
Language region [French & Italian]																		
German	1.41	0.081	0.55	0.003	0.53	0.007	1.09	0.662	0.43	0.000	0.52	0.013	1.14	0.510	0.46	0.000	0.60	0.046
Region [rural]																		
Urban	0.68	0.091	1.30	0.273	0.75	0.331	0.88	0.572	1.64	0.035	0.87	0.639	0.87	0.510	1.70	0.024	0.86	0.613
Books [>500]																		
none	0.03	0.006	1.04	0.961	2.42	0.449	0.06	0.022	1.25	0.805	2.87	0.360	0.04	0.013	0.84	0.867	2.12	0.532
1-10	6.49	0.001	1.38	0.623	5.11	0.018	5.25	0.006	0.75	0.683	4.08	0.050	3.06	0.078	0.35	0.151	3.20	0.115
11-50	6.77	0.000	2.60	0.009	4.80	0.000	6.30	0.000	2.14	0.054	4.29	0.001	3.81	0.000	1.41	0.389	3.14	0.010
51-100	2.48	0.006	1.35	0.342	1.81	0.135	2.65	0.003	1.09	0.799	1.73	0.201	2.04	0.048	0.93	0.823	1.40	0.458
101-250	1.78	0.032	0.92	0.736	2.37	0.018	2.37	0.001	1.05	0.836	1.92	0.099	1.88	0.023	0.97	0.906	1.75	0.177
251-500	1.12	0.724	0.73	0.328	1.67	0.169	1.20	0.586	0.68	0.263	1.52	0.283	0.93	0.832	0.55	0.085	1.33	0.470
Computers [two]																		
No computers	1.08	0.803	1.43	0.257	1.76	0.175	1.04	0.905	1.37	0.370	1.20	0.679	1.06	0.864	1.47	0.309	1.32	0.518
One	0.83	0.285	0.84	0.304	0.93	0.787	0.78	0.228	0.80	0.269	0.79	0.398	0.79	0.276	0.80	0.269	0.86	0.569
Migration background [none]																		
2nd gen.	0.68	0.049	0.89	0.568	1.00	0.996	0.60	0.010	0.84	0.435	0.92	0.792	0.57	0.007	0.73	0.161	0.90	0.728
3rd gen.	1.07	0.878	1.54	0.391	1.44	0.525	0.85	0.766	1.48	0.532	1.30	0.686	0.87	0.783	1.68	0.398	1.67	0.422
Language spoken at home [CH]																		
other	0.57	0.090	0.94	0.860	0.76	0.488	0.61	0.159	0.91	0.811	0.73	0.458	0.63	0.212	0.88	0.776	0.74	0.484
Type of school lower sec [basic]																		
other	0.13	0.000	0.09	0.000	0.09	0.000	0.18	0.000	0.10	0.000	0.12	0.000	0.28	0.001	0.15	0.000	0.13	0.000
MEANHisei							0.91	0.000	0.92	0.002	0.93	0.008	0.92	0.000	0.93	0.004	0.94	0.020
Students deviation from school HISEI							1.00	0.756	1.02	0.257	0.99	0.742	0.99	0.430	1.01	0.577	0.99	0.361
Student/Teacher							1.02	0.509	1.02	0.547	1.03	0.211	1.05	0.219	1.04	0.237	1.05	0.040
Schools' Physical Infrastructure							0.92	0.673	0.80	0.234	0.93	0.739	0.97	0.866	0.85	0.389	1.00	0.994
Schools' Educational Resources							1.14	0.449	1.09	0.575	0.82	0.262	1.18	0.307	1.13	0.393	0.83	0.269
literacy reading													0.99	0.000	0.99	0.000	0.99	0.059
Self-concept verbal													1.17	0.236	1.28	0.077	0.98	0.884
Self efficacy													1.15	0.319	1.08	0.636	1.12	0.505
Self-concept academic													0.58	0.001	0.61	0.005	0.64	0.015
Mathematics self-concept													1.18	0.251	0.88	0.442	1.12	0.468
Instrumental Motivation													0.88	0.239	0.85	0.282	1.10	0.469
Interest in Mathematics													0.70	0.006	0.94	0.652	0.77	0.140
Design	N of strata=24; N of obs = 2200						N of strata=24; N of obs = 1956						N of strata=24; N of obs = 1918					
Model fit	df =465, F(108, 358) = 4.72						df =457, F(123, 335) = 5.69						df =456, F(144, 313) = 6.27					
	Prob > F= 0.0000						Prob > F= 0.0000						Prob > F= 0.0000					

Learner teacher ratio

The higher the ratio of learners to teachers in schools, the higher the likelihood that a young female is NEET relative to tertiary education at age twenty.

School's physical infrastructure and educational resources

Both predictors show no effects.

Individual learner level variables

PISA reading literacy score

In Model 3, we have included the PISA reading literacy score.[13] Previous research suggests that this is an appropriate literacy skills measure. Females and males with higher reading literacy scores show reduced odds of being in employment, upper secondary education or NEET. Thus, high PISA reading literacy scores at the end of compulsory school are a strong predictor to enrolling in tertiary education later on.

Verbal self-concept

Females with higher verbal self-concepts are more likely to be in upper secondary (and not in tertiary) education. For males, no effects were detected.

Self-efficacy

For men, higher scores on self-efficacy are related to a higher likelihood of being in tertiary education rather than employment. For women, no significant effect is observed.

Academic self-concept

The academic self-concept seems to work differently for men and women. For women, a higher academic self-concept relates to a higher likelihood of being in tertiary education, while there is no such effect amongst men.

[13] Unfortunately, there are too many missing values for mathematics and science literacy scores, which have also been measured by PISA.

Interestingly, women's academic self-concept seems to influence being in tertiary education, in contrast to men, for whom it is self-efficacy that has an effect.

Mathematical self-concept, instrumental motivation and interest in mathematics

Mathematical self-concept only has an effect on the risk of males being NEET: the higher the mathematical self-concept, the lower the risk of being NEET. Instrumental motivation shows no effects. Interest in mathematics increases the odds of females being enrolled in tertiary education rather than being employed.

The results obtained from running the models with three rather than four categories are presented in Tables 6 and 7. In these models, upper secondary and tertiary education enrolment have been merged into the new reference category; the other categories remain as employment and NEET. The models for males (Tables 4 and 6) are similar, but the influence of parental education and status is less visible, whereas the role of books at home shows stronger influence. Furthermore, the type of lower secondary track, the learners' deviation from the mean learners' SES of a given school and the PISA literacy score are no longer significant. On the other hand, the schools' learner-teacher ratio and educational resources show newly significant effects. The models for females (Table 5 and Table 7) are also similar, but the type of lower secondary track, the mean learners' SES within a school, the learner-teacher ratio and the academic self-concept in part lose their significance. These minor adjustments are not surprising because the reference group in this categorisation of the dependent variable is substantially more heterogeneous.

Table 6: Multinomial logistic regression of young people's situation five years after compulsory schooling, males

Multinomial logistic regression, relative risk ratios displayed, reference category: Tertiary & Upper Sec.Education												
	Model 1				Model 2				Model 3			
Males	**1 Empl.**		**3 NEET**		**1 Empl.**		**3 NEET**		**1 Empl.**		**3 NEET**	
	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|
Mother's education [ISCED 5 tertiary]	2.16	0.133	1.41	0.572	1.79	0.328	1.29	0.692	1.48	0.526	1.10	0.886
ISCED 1 (primary or less)	1.10	0.759	0.80	0.542	0.95	0.863	0.60	0.185	0.81	0.514	0.57	0.122
ISCED 2 (lower secondary)	1.20	0.555	1.16	0.633	1.10	0.766	1.09	0.802	1.00	0.990	1.04	0.906
ISCED 3 (upper secondary)												
Father's education [ISCED 5 tertiary]	1.10	0.849	1.05	0.930	1.46	0.435	0.94	0.923	1.33	0.563	0.92	0.898
ISCED 1 (primary or less)	1.34	0.343	0.92	0.824	1.38	0.313	0.73	0.451	1.27	0.454	0.76	0.484
ISCED 2 (lower secondary)	0.91	0.704	0.74	0.329	0.98	0.936	0.58	0.133	0.88	0.648	0.59	0.143
ISCED 3 (upper secondary)												
Father's occupation [ISCO1: Legislators, senior officials and managers]												
ISCO2: Professionals	0.71	0.287	0.65	0.282	0.88	0.736	0.60	0.262	0.80	0.559	0.58	0.241
ISCO3: Technicians and associate professionals	1.02	0.954	0.85	0.706	0.71	0.308	0.75	0.525	0.68	0.252	0.74	0.492
ISCO4: Clerks	2.02	0.085	2.46	0.092	1.73	0.250	2.30	0.139	1.76	0.223	2.42	0.121
ISCO5: Service workers and shop and market sales worker	0.87	0.734	0.74	0.580	0.61	0.330	0.62	0.436	0.67	0.447	0.65	0.477
ISCO6: Skilled agricultural and fishery workers	1.48	0.436	2.47	0.157	0.79	0.685	2.13	0.280	0.68	0.492	1.96	0.344
ISCO7: Craft and related trades workers	1.38	0.309	1.27	0.588	0.97	0.928	1.07	0.898	0.98	0.959	1.05	0.932
ISCO8: Plant and machine operators and assemblers	2.07	0.097	2.22	0.180	1.45	0.454	1.60	0.500	1.51	0.432	1.34	0.675
ISCO9: Elementary occupations	1.40	0.454	1.46	0.504	0.81	0.728	1.45	0.599	0.85	0.787	1.44	0.613
Mother's occupation [ISCO1: Legislators, senior officials and managers]												
ISCO2: Professionals	0.65	0.492	7.29	0.012	1.21	0.752	9.73	0.006	1.43	0.579	12.30	0.007
ISCO3: Technicians and associate professionals	0.87	0.811	9.27	0.003	1.32	0.659	10.49	0.004	1.66	0.450	13.29	0.005
ISCO4: Clerks	0.86	0.802	9.25	0.004	1.38	0.640	11.21	0.005	1.54	0.538	14.41	0.005
ISCO5: Service workers and shop and market sales worker	0.90	0.864	9.36	0.004	1.35	0.673	11.56	0.006	1.54	0.553	14.44	0.007
ISCO6: Skilled agricultural and fishery workers	0.38	0.232	5.04	0.182	0.51	0.448	5.26	0.238	0.61	0.573	6.40	0.215
ISCO7: Craft and related trades workers	0.91	0.915	10.83	0.018	0.89	0.902	16.68	0.014	0.94	0.955	22.75	0.013
ISCO8: Plant and machine operators and assemblers	0.30	0.172	2.95	0.357	0.41	0.366	1.86	0.649	0.46	0.439	2.15	0.597
ISCO9: Elementary occupations	0.72	0.603	11.32	0.002	0.98	0.975	13.11	0.006	1.22	0.790	16.70	0.008
Language region [French & Italian]												
German	2.88	0.000	1.24	0.396	2.45	0.000	1.08	0.756	2.71	0.000	1.07	0.800
Region [rural]												
Urban	0.43	0.000	0.53	0.008	0.49	0.001	0.68	0.155	0.45	0.000	0.63	0.098
Books [>500]												
none	43.07	0.000	28.15	0.018	28.73	0.001	20.45	0.018	25.60	0.002	20.00	0.014
1-10	1.76	0.249	1.57	0.380	1.76	0.337	1.53	0.476	1.47	0.517	1.60	0.436
11-50	1.69	0.154	1.15	0.707	1.26	0.549	0.95	0.899	1.14	0.745	1.20	0.634
51-100	1.83	0.062	1.10	0.800	1.77	0.096	1.03	0.930	1.42	0.317	1.13	0.750
101-250	1.71	0.117	0.98	0.954	1.61	0.170	0.91	0.770	1.43	0.305	0.99	0.976
251-500	1.16	0.612	0.78	0.406	1.21	0.551	0.58	0.100	1.08	0.807	0.64	0.204
Computers [two]												
No computers	0.93	0.846	0.50	0.200	0.90	0.797	0.49	0.186	1.01	0.988	0.45	0.144
One	1.07	0.766	1.01	0.981	1.04	0.887	0.99	0.964	1.07	0.790	0.93	0.820
Migration background [none]												
2nd gen.	0.81	0.442	0.78	0.375	0.63	0.116	0.69	0.210	0.71	0.270	0.74	0.314
3rd gen.	1.25	0.590	2.34	0.106	1.13	0.789	1.17	0.794	1.08	0.870	1.32	0.648
Language spoken at home [CH]												
other	0.82	0.528	0.29	0.006	0.85	0.651	0.43	0.074	0.85	0.691	0.38	0.052
Type of school lower sec [basic]												
other	0.62	0.038	1.24	0.447	0.86	0.593	1.70	0.104	0.72	0.268	1.57	0.223
MEANHisei					0.92	0.001	0.92	0.001	0.92	0.000	0.93	0.001
Students deviation from school HISEI					0.99	0.430	1.00	0.956	0.99	0.396	1.00	0.993
Student/Teacher					0.96	0.043	1.01	0.651	0.96	0.028	1.00	0.795
Schools' Physical Infrastructure					0.88	0.400	0.94	0.761	0.90	0.513	0.89	0.502
Schools' Educational Resources					1.29	0.078	0.98	0.875	1.32	0.042	1.05	0.738
literacy reading									1.00	0.339	1.00	0.878
Self-concept verbal									0.95	0.650	0.91	0.413
Self efficacy									0.66	0.003	0.97	0.853
Self-concept academic									1.06	0.718	1.01	0.957
Mathematics self-concept									0.96	0.781	0.86	0.373
Instrumental Motivation									1.03	0.817	0.87	0.319
Interest in Mathematics									0.96	0.673	1.04	0.791
Design	N of strata=24; N of obs = 1643				N of strata=24; N of obs = 1470				N of strata=24; N of obs = 1432			
Model fit	df =456, F(72, 394) = 3.08				df =463, F(82, 382) = 3.49				df =463, F(96, 368) = 3.99			
	Prob > F= 0.0000				Prob > F= 0.0000				Prob > F= 0.0000			

Table 7: Multinomial logistic regression of young people's situation five years after compulsory schooling, females

Multinomial logistic regression, relative risk ratios displayed, reference category: Tertiary Education & Upper Secondary												
	Model 1				Model 2				Model 3			
Females	**1 Empl.**		**3 NEET**		**1 Empl.**		**3 NEET**		**1 Empl.**		**3 NEET**	
	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|
Mother's education [ISCED 5 tertiary]												
ISCED 1 (primary or less)	0.77	0.596	0.44	0.175	0.72	0.545	0.42	0.195	0.64	0.426	0.39	0.177
ISCED 2 (lower secondary)	1.00	0.988	0.94	0.874	0.87	0.614	0.89	0.751	0.88	0.682	0.99	0.971
ISCED 3 (upper secondary)	0.93	0.778	0.97	0.918	1.00	0.998	1.12	0.719	1.01	0.964	1.38	0.293
Father's education [ISCED 5 tertiary]												
ISCED 1 (primary or less)	1.63	0.242	1.66	0.283	1.26	0.630	1.42	0.509	1.17	0.736	1.34	0.589
ISCED 2 (lower secondary)	1.11	0.643	1.25	0.497	1.02	0.945	0.96	0.900	0.96	0.873	0.94	0.865
ISCED 3 (upper secondary)	0.94	0.752	0.81	0.431	0.74	0.141	0.58	0.042	0.77	0.200	0.52	0.016
Father's occupation [ISCO1: Legislators, senior officials and managers]												
ISCO2: Professionals	0.61	0.096	1.37	0.443	0.69	0.243	1.12	0.801	0.70	0.267	1.17	0.720
ISCO3: Technicians and associate professionals	0.98	0.944	1.58	0.354	0.97	0.926	1.53	0.397	0.98	0.955	1.48	0.425
ISCO4: Clerks	1.24	0.613	2.54	0.023	0.96	0.921	2.10	0.089	0.96	0.927	2.01	0.111
ISCO5: Service workers and shop and market sales workers	1.35	0.398	1.08	0.898	1.34	0.478	0.94	0.924	1.08	0.852	0.80	0.737
ISCO6: Skilled agricultural and fishery workers	0.61	0.277	0.71	0.570	0.42	0.149	0.48	0.268	0.40	0.147	0.40	0.193
ISCO7: Craft and related trades workers	0.78	0.421	1.66	0.188	0.61	0.210	1.13	0.770	0.56	0.161	0.95	0.906
ISCO8: Plant and machine operators and assemblers	1.21	0.646	0.84	0.756	0.93	0.885	0.48	0.212	0.90	0.826	0.41	0.143
ISCO9: Elementary occupations	1.34	0.443	1.02	0.969	1.03	0.945	0.93	0.906	0.92	0.874	0.80	0.719
Mother's occupation [ISCO1: Legislators, senior officials and managers]												
ISCO2: Professionals	1.21	0.735	2.54	0.237	1.38	0.605	2.91	0.205	1.40	0.654	3.01	0.205
ISCO3: Technicians and associate professionals	1.14	0.809	4.52	0.050	1.15	0.815	3.71	0.106	1.12	0.870	3.33	0.150
ISCO4: Clerks	1.61	0.402	6.20	0.017	1.77	0.364	5.72	0.032	1.78	0.441	4.82	0.061
ISCO5: Service workers and shop and market sales workers	2.22	0.149	5.50	0.022	2.27	0.175	5.58	0.032	2.27	0.252	5.01	0.053
ISCO6: Skilled agricultural and fishery workers	8.84	0.003	6.40	0.082	7.84	0.010	6.54	0.093	8.97	0.013	5.67	0.137
ISCO7: Craft and related trades workers	1.48	0.589	1.72	0.532	1.37	0.690	1.83	0.512	1.34	0.758	1.45	0.707
ISCO8: Plant and machine operators and assemblers	5.17	0.082	1.26	0.834	5.97	0.053	1.39	0.771	6.88	0.054	1.25	0.847
ISCO9: Elementary occupations	2.95	0.072	5.61	0.022	2.90	0.107	5.44	0.037	2.94	0.163	4.85	0.062
Language region [French & Italian]												
German	1.91	0.000	0.72	0.122	1.57	0.013	0.75	0.213	1.57	0.015	0.81	0.368
Region [rural]												
Urban	0.61	0.007	0.68	0.148	0.73	0.082	0.71	0.235	0.70	0.045	0.70	0.202
Books [>500]												
none	0.05	0.008	3.31	0.221	0.09	0.030	3.92	0.151	0.07	0.023	3.72	0.187
1-10	5.43	0.000	4.12	0.017	6.12	0.000	4.56	0.018	5.60	0.001	5.71	0.007
11-50	4.12	0.000	2.86	0.002	4.33	0.000	2.89	0.005	3.31	0.000	2.74	0.013
51-100	2.26	0.008	1.63	0.184	2.73	0.002	1.75	0.171	2.28	0.011	1.56	0.296
101-250	1.94	0.012	2.59	0.008	2.49	0.001	1.98	0.071	2.08	0.008	1.95	0.096
251-500	1.28	0.418	1.89	0.085	1.47	0.204	1.84	0.122	1.30	0.399	1.84	0.134
Computers [two]												
No computers	0.80	0.409	1.33	0.501	0.78	0.412	0.89	0.776	0.75	0.352	0.89	0.779
One	0.89	0.476	1.01	0.975	0.88	0.445	0.88	0.636	0.87	0.428	0.93	0.779
Migration background [none]												
2nd gen.	0.73	0.092	1.10	0.766	0.65	0.027	1.01	0.981	0.66	0.043	1.04	0.889
3rd gen.	0.76	0.402	1.05	0.913	0.61	0.196	0.97	0.950	0.53	0.115	1.07	0.890
Language spoken at home [CH]												
other	0.56	0.031	0.74	0.400	0.63	0.107	0.73	0.395	0.67	0.161	0.76	0.449
Type of school lower sec [basic]												
other	0.69	0.063	0.51	0.020	0.94	0.773	0.63	0.140	1.37	0.200	0.62	0.168
MEANHisei					0.94	0.000	0.96	0.093	0.95	0.004	0.96	0.123
Students deviation from school HISEI					0.99	0.214	0.99	0.322	0.98	0.171	0.98	0.212
Student/Teacher					1.02	0.371	1.03	0.223	1.03	0.168	1.03	0.164
Schools' Physical Infrastructure					1.03	0.838	1.04	0.837	1.03	0.839	1.06	0.738
Schools' Educational Resources					1.07	0.591	0.77	0.091	1.08	0.545	0.77	0.067
literacy reading									0.99	0.002	1.00	0.825
Self-concept verbal									1.02	0.888	0.85	0.297
Self efficacy									1.07	0.647	1.04	0.791
Self-concept academic									0.77	0.029	0.83	0.292
Mathematics self-concept									1.23	0.106	1.16	0.337
Instrumental Motivation									0.97	0.747	1.20	0.162
Interest in Mathematics									0.76	0.011	0.82	0.256
Design	N of strata=24; N of obs = 2200				N of strata=24; N of obs = 1956				N of strata=24; N of obs = 1918			
Model fit	df =465, F(72, 394) = 3.41				df =457, F(82, 376) = 3.45				df =456, F(96, 361) = 3.75			
	Prob > F= 0.0000				Prob > F= 0.0000				Prob > F= 0.0000			

Summary: probability of being in tertiary education

- Family background shows some effects, especially mothers' occupational status (ISCO) for males and cultural capital (number of books). Availability of books seems to be an important factor for both men and women, but keeps its significance across models relating to women only. Perhaps we have some tentative evidence that this kind of cultural resource is somewhat more important for women.

- Coming from urban areas enhances men's odds of men of being in tertiary education rather than in employment or NEET. Men from German-speaking parts of Switzerland have a higher likelihood of being in employment. Compared to their French and Italian-speaking counterparts, females from the country's German-speaking part have higher odds of being in tertiary education rather than in upper secondary or NEET, but there is some weak evidence that they have a higher likelihood of being in employment relative to tertiary education, compared to women in the other language group.

- School-related variables show little effects: only the mean of school HISEI seems to influence the chance of being in tertiary education.

- Adding individual levels of academic achievement and concepts to the model generates interesting effects: Academic self-concept influences women's likelihood of being in tertiary education, but not for men, for whom self-efficacy is a better predictor with regard to enrolment in tertiary education. For women, and with a stronger effect size but lower significance level, a higher verbal self-concept is related to a higher likelihood of being in upper secondary education rather than in tertiary education.

5. Factors influencing the proportions of women and men opting for science versus humanities subjects in post-secondary education

5.1 Previous research

The unequal proportions of women and men opting for different fields of studies or occupational careers within a similar social stratum are often referred to as horizontal gender segregation. Gender segregation is explained by a range of factors including the structure of the education system and the labour market; gender-typed beliefs and societal norms as well as individual self-concepts, aspirations and competencies; or anticipation of cost-benefit-relations (Eccles, 2005; Lörz and Schindler, 2011). Charles and Bradley (2009) propose that these factors are influential in shaping gendered life experiences, expectations and aspirations, even in the most liberal and egalitarian societies (see also Charles and Grusky, 2004; Correll, 2004). Due to the central importance of gender as a component of human identity, value systems based on self-expression encourage development and enactment of culturally masculine or feminine affinities. Thus, for instance, girls are more likely to express aversion to science or mathematics, and they are consequentially more likely to avoid such programmes because this is a socially legitimate, even normative, criterion for educational career decisions. These beliefs are founded on individual ideas but are also linked to societal norms. Gender norms are often reinforced by those responsible for implementing VET programmes, particularly the personnel responsible for VET within the training firms (Imdorf, 2006). Modern education systems and labour markets seem to have institutionalised gender-differentiated aspirations and their realization. In Switzerland, a strong gender segregation of occupations persists (Charles and Grusky, 2004).

At an individual level, interest and self-concept are seen to be most important factors influencing gender orientation, and they differ significantly betweens boys and girls (PISA and EDK, 2002; Eccles, 2004). Interest in mathematics is associated with parental and teacher support and evidence suggests that these factors have different effects in the case of boys and girls differently (Lazarides and Ittel, 2011). Some countries have seen a reversal in gender differences in mathematical attainment in recent years. In cases where girls attain less in mathematics, it is often explained by differences in the academic self-concept and self-confidence. Buchmann and Kriesi (2009) conclude that the belief in one's own skills counts more than the skills themselves with regard to educational pathways. Notwithstanding the high overall performance of Switzerland in mathematics, a traditional divide between girls and boys in mathematics performance persists (OECD/PISA, 2001; OECD, 2006). Thus the segregation by field of study

at the tertiary level is all the more striking. At tertiary level, university courses are diversified with regard to fields of study. Gaining admission to university allows learners to choose almost any of the options on offer. The range of courses on offer is perceived to meet the presumed interests, especially of those newly incorporated female learners (Bradley and Charles, 2004; Frank and Meyer, 2007). Charles and Bradley (2009) point out that post-industrial economies produce segregating forces because of their abundance of female-labelled service jobs. They argue that the increase of gendered educational and occupational pathways encourages sex typing of career expectations and dispositions, and that the sex labelling of occupations, educational fields, and persons is self-fulfilling in perpetuating women's disadvantage. Charles and Bradley (2009) find a general tendency for greater segregation of academic fields in more economically developed contexts. Gender segregation is particularly pronounced in Finland, followed by Hong Kong, South Africa, and Switzerland. Despite the general pattern of gender segregation, international variability is also striking, even in relation to engineering, the most segregated field (Charles and Bradley, 2009). Furthermore, work-life balance and family planning affect young girls more than young boys (Leemann and Keck, 2004). Leemann and Keck (2005) state that forced educational career decisions at an early age foster gender differences because teenagers are in a sensitive phase of emerging (gender) identity and are therefore less able to distance themselves from peer pressure and social norms. Accordingly, occupational decisions at upper secondary level are expected to have a stronger gendering effect than those made at tertiary level. Furthermore, educational programmes at tertiary level seem to be less specific than at upper secondary level and, therefore, later changes between subjects are more feasible. Buchmann and Kriesi (2009) confirm this by showing that girls from matura schools are more likely to make non-traditional career choices. In contrast, young women with lower educational achievement end up in female-dominated jobs and gendered career choices. Also, high parental expectations regarding performance in mathematics are important in early stages of the educational pathways, leading young women away from traditional occupations. In addition, higher education levels of parents are associated with stronger support for non-traditional occupational choices (Buchmann and Kriesi, 2009).

5.2 Analysis of field of study using TREE data

In the second set of analyses of the TREE data, we examined the ISCED field of study at tertiary level. As vocational upper secondary education is an important path taken by a large number of Swiss school leavers, we have also examined the field of study of those in vocational upper

secondary education.[14] We ran pooled models with the set of variables used in the previous chapter (M1), and then added sex (M2)[15]. We ran the analyses for T5 and T7 because we risk biased results about those who go through tertiary education in Switzerland, if we consider only learners enrolled in tertiary education at T5. Additionally, as the VET system is so important in Switzerland, we also constructed a comparable variable for those still in a VET programme, using the classifications of occupation from the Swiss Federal Office of Statistics. The data from T5 (average age 20.5) provide a clearer picture for those in vocational education than would data from T7. 18 percent are enrolled in this form of education at T5 and only 5 percent at T7. In contrast, at T7 a higher proportion is enrolled in tertiary education (24 percent) than at T5 (16 percent).

Definitions of variables used in the analyses

For the dependent variable in the regression, we use the ISCED field of study at the 1-digit aggregation level (provided by the Swiss Federal Statistics Office):

ISCED fields of study
0 General programmes
1 Education
2 Humanities and arts
3 Social sciences, business, and law
4 Science, mathematics, and computing
5 Engineering, manufacturing, and construction
6 Agriculture and veterinary
7 Health and welfare
8 Services

Results

Table 8 shows differences in the fields of study that men and women enter. Perhaps most striking is that seven years after compulsory schooling (T7), about 22 percent of men in tertiary education are studying engineering, manufacturing, and construction, while only 4 percent of women are in these fields. The highest proportion of women is in health and welfare. Similar proportions of

[14] Using the classification of occupations from the Swiss Federal Office of Statistics

[15] Separated models would have been interesting but there is already a high degree of gender segregation by field of study. Moreover, the sample size of women in science and engineering subjects are too small to analyse women separately, particularly on the full set of variables (given item non-response). For reasons of international comparison, we added the separated models, even if these models have to be interpreted with caution (see appendix Table A4 and A5).

men and women are found in the social sciences, business and law. A much higher percentage of men (19 percent) are in the sciences, compared to women (7 percent). However, it should be noted that women make up about 30 percent of those studying sciences at degree level. The proportion at T5 is comparable, apart from a higher proportion of females in the social sciences (65 percent five years after compulsory schooling).

Table 8: Gender division of upper secondary and tertiary education by field of study

	Female		Male		Total
T7 ISCED field of study, tertiary, 1 digit	N	Row / Column%	n	Row / Column %	n
Education	139	75 / 17	46	25 / 7	185
Humanities and arts	121	63 / 14	71	37 / 11	192
Social sciences, business and law	285	57 / 34	212	43 / 33	497
Science, mathematics and computing	61	33 / 7	122	67 / 19	183
Engineering, manufacturing, construction	31	18 / 4	137	82 / 22	168
Agriculture and veterinary	6	75 / 1	2	25 / 0	8
Health and welfare	181	82 / 22	41	18 / 6	222
Services	13	68 / 2	6	32 / 1	19
Total	837		637		1474
T5 ISCED field of study, tertiary 1, digit					
Education	138	83 / 20	29	17 / 7	167
Humanities and arts	97	64 / 14	54	36 / 13	151
Social sciences, business and law	229	65 / 33	126	35 / 31	355
Science, mathematics and computing	54	38 / 8	87	62 / 21	141
Engineering, manufacturing, construction	25	22 / 4	90	78 / 22	115
Agriculture and veterinary	7	100 / 1	0	0 / 0	7
Health and welfare	138	85 / 20	25	15 / 6	163
Services	9	100 / 1	0	0 / 0	9
Total	697	55/100	411	45/100	1108
T5 ISCED field study, (upper secondary) VET, 1 digit	1256		793		
Education	1	100 / 0	0	0 / 0	1
Humanities and arts	40	71 / 9	16	29 / 4	56
Social sciences, business and law	172	64 / 39	96	36 / 27	268
Science, mathematics and computing	6	16 / 1	31	84 / 9	37
Engineering, manufacturing, construction	38	17 / 9	182	83 / 51	220
Agriculture and veterinary	9	38 / 2	15	63 / 4	24
Health and welfare	147	95 / 33	8	5 / 2	155
Services	28	70 / 6	12	30 / 3	40
Total	441	55/100	360	45/100	801

Similar unequal proportions of men and women by field of study are observed in upper secondary level VET programmes. In the field of engineering, 83 percent of all learners are male, whereas in the field of health, females are even more over-represented (95 percent versus 5 percent).

There are important differences between the universities and the universities of applied sciences (Table 9). Sciences are mostly studied at university, while engineering and industry are mostly studied at universities of applied sciences. In addition, much of the study associated with engineering and industry takes place in ISCED level 4 post-secondary VET programmes. Accordingly, there is considerable heterogeneity within science, engineering and industry-based subjects. The heterogeneity manifests itself in the type and degree of academic requirements, prestige, and job opportunities.

Table 9: ISCED fields of study in tertiary education by type of tertiary institution (Universities of Applied Sciences and Universities)

	University of applied sciences		**University**		**Total**
Field of Study	N	Row %	n	Row %	n
Education	123	66	62	34	185
Humanities and arts	44	23	145	77	189
Social sciences, business and law	110	22	387	78	497
Science, mathematics, computing	45	25	136	75	181
Engineering, manufacturing and construction	94	57	70	43	164
Agriculture and veterinary	1	13	7	88	8
Health and welfare	123	57	92	43	215
Services	11	61	7	39	18
Total	551		906		1457

Regression results

Family socio-economic and cultural background and regional variables

Mother's education and father's education and ISCO

We find only minor effects for maternal and paternal level of education with regard to field of study. Learners whose parents' have attained lower secondary or primary education show reduced odds of studying science, mathematics, and computing. Socio-economic background also matters, but shows only weak effects. Fathers in occupations classified as ISCO5 (sales and service workers), ISCO7 (craft and related trades) and ISCO8 (plant and machine operators) enhance the odds of studying science (compared to ISCO1: managers). These relatively weak effect might be explained by the fact that sciences are mostly studied at university, while

engineering and industry are mostly studied at the universities of applied sciences, and that learners at universities tend to have a higher socio-economic background.

Access to books

As in previous analyses, access to books appears to be an important explanatory variable, whether it relates to access to cultural resources or as a proxy for cultural capital in the household. The regression results suggest that the more books are present in a household, the less likely young people will pursue science subjects, rather than non-science subjects (this tendency is observed at T5 and especially in T7).

Access to computer

Having no computers in the home (rather than having two or more) computers at T5 and T7 significantly lowers the odds of pursuing a science-based education, relative to non-science based subjects.

Regional variables and migration background

Regional effects do not seem to play a systematic role (Model 1 T5: learners from the German-speaking part in Switzerland have lower odds of studying science; Models1+2 T7 learners in urban regions are less likely to study sciences). Migration background has no effects.

School level effects

School-level factors hardly play a role in determining whether learners enrol in science-based subjects. For T5, the learner-teacher ratio shows a significant effect: the higher this ratio, the less likely learners enrol in science-based degrees. Surprisingly, the higher the school's educational resources are, the less likely it is for learners to study sciences, mathematics or engineering.

Table 10: Probability of studying science, seven and five years after compulsory schooling

Multinomial logistic regression, relative risk ratios displayed, reference category: Science								
	t7science M1		t5 science M1		t7science M2		t5science M2	
	females & males		females & males		females & males		females & males	
Mother's education [ISCED 5 tertiary]	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|
ISCED 1 (primary or less)	0.10	0.007	0.16	0.050	0.14	0.044	0.19	0.058
ISCED 2 (lower secondary)	0.44	0.090	1.31	0.622	0.47	0.125	1.39	0.541
ISCED 3 (upper secondary)	0.65	0.192	1.15	0.726	0.60	0.138	1.22	0.615
Father's education [ISCED 5 tertiary]								
ISCED 1 (primary or less)	4.57	0.171	5.32	0.048	3.92	0.212	4.60	0.055
ISCED 2 (lower secondary)	1.11	0.794	1.46	0.408	1.25	0.621	1.78	0.212
ISCED 3 (upper secondary)	0.96	0.895	1.37	0.397	1.10	0.783	1.41	0.421
Father's occupation [ISCO1: Legislators, senior officials and managers]								
ISCO2: Professionals	1.71	0.156	1.28	0.608	2.14	0.071	1.19	0.731
ISCO3: Technicians and associate professionals	2.20	0.123	0.88	0.814	2.39	0.094	0.68	0.477
ISCO4: Clerks	0.82	0.743	0.87	0.838	0.99	0.986	0.79	0.693
ISCO5: Service workers and shop and market sales workers	6.41	0.017	1.12	0.907	12.76	0.002	1.24	0.828
ISCO6: Skilled agricultural and fishery workers	1.89	0.489	0.97	0.978	1.95	0.465	0.86	0.881
ISCO7: Craft and related trades workers	2.32	0.135	0.72	0.535	3.18	0.044	0.66	0.421
ISCO8: Plant and machine operators and assemblers	5.22	0.033	0.52	0.407	9.67	0.002	0.74	0.680
ISCO9: Elementary occupations	2.50	0.240	0.16	0.094	3.01	0.244	0.23	0.150
Mother's occupation [ISCO1: Legislators, senior officials and managers]								
ISCO2: Professionals	0.50	0.415	0.35	0.105	0.33	0.176	0.50	0.502
ISCO3: Technicians and associate professionals	1.06	0.947	0.49	0.320	0.79	0.789	0.75	0.795
ISCO4: Clerks	0.89	0.896	0.50	0.337	0.64	0.604	0.82	0.856
ISCO5: Service workers and shop and market sales workers	1.47	0.678	0.63	0.541	0.93	0.935	0.99	0.991
ISCO6: Skilled agricultural and fishery workers	0.24	0.321	0.00	0.000	0.14	0.156	0.00	0.000
ISCO7: Craft and related trades workers	0.26	0.251	0.28	0.300	0.12	0.059	0.49	0.641
ISCO8: Plant and machine operators and assemblers	0.62	0.767	0.14	0.219	0.31	0.611	0.49	0.665
ISCO9: Elementary occupations	2.18	0.421	0.85	0.846	1.17	0.869	0.88	0.919
Language region [French & Italien]								
German	0.88	0.620	0.54	0.019	0.80	0.423	0.59	0.057
Region [rural]								
Urban	0.58	0.034	0.83	0.577	0.51	0.013	0.64	0.227
Books [>500]								
none	21.15	0.028	25.23	0.089	26.09	0.009	22.81	0.043
1-10	3.69	0.052	1.87	0.430	2.11	0.277	1.26	0.774
11-50	2.66	0.046	1.85	0.171	1.85	0.218	1.78	0.248
51-100	2.58	0.013	1.93	0.158	2.95	0.008	2.37	0.095
101-250	2.80	0.000	1.31	0.433	3.11	0.000	1.60	0.206
251-500	2.31	0.015	1.00	0.993	2.53	0.010	1.18	0.705
Computers [two]								
No computers	0.23	0.057	0.10	0.003	0.33	0.203	0.15	0.016
One	0.66	0.101	0.69	0.148	0.72	0.196	0.73	0.193
Migration background [none]								
2nd gen.	0.67	0.204	0.90	0.711	0.68	0.259	1.29	0.423
3rd gen.	1.18	0.803	0.43	0.140	1.47	0.585	0.52	0.274
Language spoken at home [CH]								
other	1.07	0.894	1.87	0.207	1.30	0.636	1.50	0.487
Type of school loewer sec [basic]								
other	1.50	0.488	2.08	0.264	1.86	0.355	2.04	0.283
MEANHisei	1.03	0.231	1.04	0.123	1.04	0.141	1.04	0.091
Students deviation from school HISEI	1.02	0.213	1.01	0.700	1.02	0.143	1.01	0.714
Student/Teacher	0.99	0.797	0.87	0.005	1.00	0.954	0.91	0.070
Schools' Physical Infrastructure	0.76	0.113	0.99	0.979	0.85	0.368	0.99	0.970
Schools' Educational Resources	0.89	0.367	0.76	0.042	0.83	0.169	0.77	0.083
literacy reading	1.00	0.174	1.00	0.340	1.00	0.372	1.00	0.736
Self-concept verbal	1.02	0.917	0.81	0.248	1.16	0.380	0.92	0.652
Self efficacy	1.35	0.086	1.66	0.005	1.15	0.445	1.33	0.123
Self-concept academic	0.71	0.027	0.67	0.007	0.82	0.221	0.77	0.113
Mathematics self-concept	1.71	0.000	1.64	0.015	1.56	0.007	1.40	0.093
Instrumental Motivation	0.69	0.001	0.72	0.001	0.62	0.000	0.68	0.000
Interest in Mathematics	1.67	0.001	1.67	0.008	1.55	0.012	1.73	0.006
Gender [male]								
female					0.16	0.000	0.18	0.000
Design	N of strata=21; N of obs = 1149		N of strata=19; N of obs = 849		N of strata=21; N of obs = 1149		N of strata=19; N of obs = 849	
Model fit	df =423, F(48, 376) = 4.02		df =411, F(48, 364) = 416		df =423, F(49, 375) = 3.70		df =411, F(48, 363) = 290.68	
	Prob > F= 0.0000		Prob > F= 0.0000		Prob > F= 0.0000		Prob > F= 0.0000	

Individual learner level variables

In our previous analyses, we found that the parents' socio-economic background and the mean socio-economic background of the school attended at the end of compulsory schooling had important effects on whether learners entered tertiary education. Thus, there is significant socio-economic selection into tertiary education. It is therefore not surprising that individual attributes seem to be more important than social factors (which are mostly not significant in our models) in explaining choice of subjects. The regression results show that individual attributes have significant effects on whether those in degree level education are in science or arts subjects. In particular, higher scores in self-efficacy as well as higher mathematical self-concept and interest in mathematics enhance the odds of enrolling in sciences studies. Reading literacy does not show significant effects. Learners with a higher academic self-concept and higher instrumental motivation are less likely to study science subjects.

When adding gender to our model (M2), the level of significance changes for some variables relating to family background as well as for the school level. Interestingly, the effects of self-efficacy and academic self-concept are no longer significant, whereas gender itself remains highly significant, showing that females have a lower likelihood of enrolling in science subjects.

A look at the VET system (Table 11) shows similar patterns except for socio-economic background, which seems to hardly play a role, although it has undoubtedly played a role in learners following the VET rather than tertiary education path. Migration background is important. First and second generation migrant learners have a higher probability of enrolling in science-orientated occupations. Furthermore, the type of track seems to be important. Learners from schools with extended requirements are less likely to enrol in science-orientated VET occupations. In addition, a high mean HISEI of the school enhances the odds of enrolling in VET programmes involving science, mathematics or engineering. This also holds for individual variables such as the mathematical self-concept and interest in mathematics. A high self-efficacy lowers the odds of enrolling in science-orientated VET programmes. Adding gender as a variable changes little in the model, confirming that women have lower odds of enter science-oriented occupations.

Table 11: Upper secondary VET enrolment by field of study, T5

Multinomial logistic regression, relative risk ratios displayed, reference category: Science				
t5 VET	**females & males (M1)**		**females & males (M2)**	
Mother's education [ISCED 5 tertiary]	RRR	P>|t|	RRR	P>|t|
ISCED 1 (primary or less)	2.77	0.086	2.58	0.231
ISCED 2 (lower secondary)	1.29	0.619	1.21	0.724
ISCED 3 (upper secondary)	2.16	0.102	2.69	0.054
Father's education [ISCED 5 tertiary]				
ISCED 1 (primary or less)	0.64	0.528	0.85	0.849
ISCED 2 (lower secondary)	1.11	0.823	1.94	0.231
ISCED 3 (upper secondary)	1.03	0.951	2.03	0.133
Father's occupation [ISCO1: Legislators, senior officials and managers]				
ISCO2: Professionals	0.68	0.665	0.57	0.545
ISCO3: Technicians and associate professionals	0.96	0.955	1.21	0.835
ISCO4: Clerks	1.27	0.779	1.56	0.651
ISCO5: Service workers and shop and market sales workers	0.95	0.952	0.82	0.867
ISCO6: Skilled agricultural and fishery workers	0.56	0.513	0.62	0.702
ISCO7: Craft and related trades workers	0.88	0.860	0.71	0.744
ISCO8: Plant and machine operators and assemblers	0.40	0.341	0.14	0.073
ISCO9: Elementary occupations	1.01	0.990	0.47	0.561
Mother's occupation [ISCO1: Legislators, senior officials and managers]				
ISCO2: Professionals	1.86	0.520	2.31	0.525
ISCO3: Technicians and associate professionals	1.31	0.766	2.48	0.418
ISCO4: Clerks	0.45	0.403	0.94	0.964
ISCO5: Service workers and shop and market sales workers	0.65	0.631	1.13	0.911
ISCO6: Skilled agricultural and fishery workers	0.95	0.970	0.56	0.696
ISCO7: Craft and related trades workers	1.15	0.908	6.74	0.132
ISCO8: Plant and machine operators and assemblers	6.36	0.239	6.65	0.347
ISCO9: Elementary occupations	1.87	0.543	3.17	0.341
Language region [French & Italien]				
German	1.31	0.426	1.71	0.163
Region [rural]				
Urban	0.71	0.343	0.72	0.407
Books [>500]				
none	0.31	0.591	2.18	0.714
1-10	3.13	0.166	1.65	0.548
11-50	0.68	0.539	0.43	0.224
51-100	0.84	0.780	0.56	0.448
101-250	0.37	0.078	0.16	0.009
251-500	1.24	0.716	0.90	0.875
Computers [two]				
No computers	0.23	0.010	0.25	0.008
One	0.98	0.943	1.20	0.667
Migration background [none]				
2nd gen.	3.27	0.008	2.60	0.045
3rd gen.	3.94	0.039	6.51	0.010
Language spoken at home [CH]				
other	0.64	0.404	0.68	0.465
Type of school loewer sec [basic]				
other	0.53	0.062	0.49	0.066
MEANHisei	1.08	0.027	1.05	0.184
Students deviation from school HISEI	1.03	0.214	1.03	0.280
Student/Teacher	1.01	0.663	1.04	0.288
Schools' Physical Infrastructure	0.67	0.116	0.53	0.038
Schools' Educational Resources	0.97	0.879	1.34	0.192
literacy reading	1.00	0.115	1.00	0.543
Self-concept verbal	1.30	0.227	1.21	0.360
Self efficacy	0.68	0.078	0.47	0.001
Self-concept academic	0.81	0.397	0.74	0.259
Mathematics self-concept	1.92	0.003	1.62	0.091
Instrumental Motivation	1.09	0.664	1.16	0.490
Interest in Mathematics	2.27	0.001	2.34	0.001
gender [male]				
female			0.02	0.000
Design	N of strata=24; N of obs = 541		N of strata=24; N of obs = 541	
Model fit	df 257, F(48, 210) = 2.86		df 257, F(49, 209) = 3.78	
	Prob > F= 0.0000		Prob > F= 0.0000	

Summary: field of study

Social background plays a minor role within tertiary level education, which can be explained by the fact that this group of learners has gone previously through a social selection process mainly mediated by type of lower secondary track, which is strongly related to socio-economic background. Individual factors like interest in mathematics or mathematical self-concept as well as instrumental motivation seem to be the key factors to explain learners' career decisions with regard to the field of study. Higher self-efficacy and academic self-concept are only significant factors in the model as long as gender is not controlled. The finding that a higher academic self-concept lowers the odds of science studies might be explained by institutional aspects. Some science-orientated fields of study are mainly offered by universities of applied sciences, which have a more practical approach and are generally considered to be less prestigious than the traditional academic universities.

Interestingly, the odds of enrolling in science-based VET programmes show some similarities, especially in relation to interest and self-concept in mathematics. But there are important differences. Socio-economic background has no significant effect but migration background does. Learners who attended a type of track with extended requirements at lower secondary level have reduced odds of enrolling in VET training in science-oriented occupations. Furthermore, and contrary to the findings in tertiary education, higher self-efficacy lowers the odds of enrolling in science-oriented VET programmes. This might be explained by the highly differentiated structure of upper secondary VET programmes and the great heterogeneity of its academic requirements, prestige and job opportunities.

6. Factors influencing the match between occupations envisaged at age sixteen and the occupation or field of study engaged in

Aspirations have been shown to play a major role in shaping vertical and horizontal educational pathways. However, little is known about the match between aspirations at the end of compulsory school (age sixteen) and subsequent educational and occupational outcomes of young people in Switzerland. PISA 2000 did not include educational or occupational aspiration items, but it included an item asking what job respondents thought they would hold at the age of 30. Imdorf (2005) shows that job aspirations for women, migrants and learners having attended lower secondary tracks satisfying only "basic requirements" exhibit marked cooling effects towards the end compulsory school. Learners tend to aspire to more prestigious jobs in the eighth grade than in the ninth grade.

Table 12 shows that male learners see themselves as physical, mathematical and engineering science professionals (17.3 percent) or as metal, machinery and related trade workers (10.2 percent), whereas female learners see themselves in the ISCO category "other professionals" (such as lawyers, accountants or translators), in the life sciences and health (7.9 percent, 11.4 percent) or in the teaching professions (7.8 percent). At age sixteen, 96 respondents of the PISA/TREE sample saw themselves as housekeepers at the age of 30, 93 of them being female. A fairly high proportion of the respondents, 407 females and 274 males, stated they had no notion of their occupation at age 30.

Definitions of variables used in the analyses

In this report, we explore the match between a person's occupational perspective at age sixteen and his or her actual occupation or education at the time of TREE survey waves 5 and 7 (i.e. at average age of 20.5 (T5) or 22.5 (T7) years. We examine whether a match is indicative of labour market success or disadvantage, and whether it implies meeting high or low aspirations. Specifically, a match is operationally defined as the match between the two-digit ISCO code for the occupation envisaged at age sixteen and the ISCO code for the actual occupation at T7. For respondents enrolled in tertiary education, we assigned an ISCO code equivalent to the

occupation mainly associated with the studies undertaken at T7.[16] We exclude young people still in upper secondary education and NEET. We thus examine three categories of men and women:

- In tertiary education only;
- In employment only;
- Both in tertiary education and employment.

[16] The Swiss Federal Statistical Office codes all occupations at a fine level of detail and assigns an ISCO code to each of them. Hupka-Brunner and Imdorf have constructed an approximate SFO occupation code for all the degree and vocational education programmes listed in TREE, based on the occupation that a particular course gives access to. They have subsequently matched these occupations to ISCO codes. Degree courses that do not lead to a specific occupation are not coded. Accordingly, there is some risk of bias due to missing observations, although these amount to only 200 of 1775 cases.

Table 12: Anticipated job at age 30*

anticipated job age 30,ISCO88, 2digit	male	female	Total
10 Legislators, senior officials and managers, nos	28	11	39
row / col %	71.8 / 1.0	28.2 / 0.3	100 / 0.6
11 Legislators and senior officials	12	15	27
row / col %	44.4 / 0.4	55.6 / 0.4	100 / 0.4
12 Corporate managers	25	14	39
row %	64.1 / 0.9	35.9 / 0.4	100 / 0.6
13 Managers of small enterprises	49	20	69
row %	71.0 / 1.7	29.0 / 0.6	100 / 1.1
20 Professionals, nos	0	2	2
row %	0 / 0	100 / 0.1	100 / 0
21 Physical, mathematical and engineering science professionals	502	77	579
row %	86.7 / 17.3	13.3 / 2.2	100 / 9.1
22 Life science and health professionals	87	270	357
row %	24.4 / 3.0	75.6 / 7.9	100 / 5.6
23 Teaching professionals	75	268	343
row %	21.87 / 2.6	78.13 / 7.8	100 / 5.4
24 Other professionals	192	402	594
row %	32.3 / 6.6	67.68 / 11.7	100 / 9.4
30 Technicians and associate professionals, nos	0	1	1
row %	0 / 0	100 / 0	100 / 0
31 Physical and engineering science associate professionals	157	82	239
row %	65.7 /5.4	34.3 / 2.4	100 / 3.8
32 Life science and health associate professionals	40	393	433
row %	9.2 / 1.4	90.8 / 11.4	100 / 6.8
33 Teaching associate professionals	11	85	96
row %	11.5 / 0.4	88.5 / 2.5	100 / 1.5
34 Other associate professionals	154	212	366
row %	42.1 / 5.3	57.9 / 6.2	100 / 5.8
40 Clerks, nos	30	73	103
row %	29.1 / 1.0	70.9 / 2.1	100 / 1.6
41 Office clerks	62	139	201
row %	30.9 / 2.1	69.2 / 4.0	100 / 3.2
42 Customer services clerks	32	86	118
row %	27.1 / 1.1	72.9 / 2.5	100 / 1.9
50 Service workers and shop and market sales workers, nos	1	0	1
row %	100 / 0	0 / 0	100/0
51 Personal and protective services workers	73	222	295
row %	24.8 / 2.5	75.3 / 6.5	100 / 4.7
52 Models, salespersons and demonstrators	90	104	194
row %	46.4 / 3.1	53.6 / 3.0	100 / 3.1
60 Skilled agricultural and fishery workers, nos	20	3	23
row %	87.0 / 0.7	13.0 / 0.1	100 / 0.4
61 Skilled agricultural and fishery workers	40	50	90
row %	44.4 / 1.4	55.6 / 1.5	100 / 1.4
70 Craft and related trades workers, nos	0	1	1
row %	0 / 0	100 / 0	100 / 0
71 Extraction and building trades workers	101	5	106
row %	95.3 / 3.5	4.7 / 0.2	100 / 1.7
72 Metal, machinery and related trades workers	295	4	299
row %	99.1 / 10.2	1.3 / 0.1	100 / 4.7
73 Precision, handicraft, craft printing and related trades workers	27	19	46
row %	58.7 / 0.9	41.3 / 0.6	100 / 0.7
74 Other craft and related trades workers	80	23	103
row %	77.7 / 2.8	22.3 / 0.7	100 / 1.6
81 Stationary plant and related operators	1	0	1
row %	100 /	0 / 0	100 / 0
82 Machine operators and assemblers	2	0	2
row %	100 / 0.1	0 / 0	100 / 0
83 Drivers and mobile plant operators	22	3	25
row %	88.0 / 0.8	12.0 / 0.1	100 / 0.4
91 Sales and services elementary occupations	1	5	6
row %	16.7 / 0	83.3 / 0.2	100 / 0
92 Agricultural, fishery and related labourers	3	1	4
row %	75 / 0.1	25 / 0	100 / 0.1
93 Labourers in mining, construction, manufacturing and transp	2	1	3
row %	66.7 / 0.1	33.3 / 0	100 / 0.1
95 house keeping, retired or vage answer	339	641	980
row %	34.6 / 11.7	65.4 / 18.6	100 / 15.5
col %	11.7	18.6	15.5
missings	350	208	558
row %	62.7 / 12.1	37.3 / 6.1	100 / 8.8
Total	2,903	3,440	6,343
	45.8 / 100	54.2 / 100	100 / 100

*unweighted results

Generally, the match rate is very low. At age 23, anticipated and actual job match for only 20 to 23 percent of the respondents, as displayed in Table 13. Men have a higher match rate than women in both tertiary education and employment.

Table 13: Match between anticipated job at age 30 and actual occupation at age 23 T7

Field	gender	No Match		Match		Total	
Employment and education	Female	1543	*80.62*	371	*19.38*	1914	*100*
	Male	1095	*75.41*	357	*24.59*	1452	*100*
	Total	2638	*78.37*	728	*21.63*	3366	*100*
Tertiary education	Female	792	*78.65*	215	*21.35*	1007	*100*
	Male	571	*74.35*	197	*25.65*	768	*100*
	Total	1363	*76.79*	412	*23.21*	1775	*100*
Employment	Female	751	*82.8*	156	*17.2*	907	*100*
	Male	524	*76.61*	160	*23.39*	684	*100*
	Total	1275	*80.14*	316	*19.86*	1591	*100*

*weighted results

Explanatory variables

We use the set of explanatory variables that were included in previous specifications. The results of the analysis of the combined group of those in education and employment are not particularly informative. This leads us to suspect that the meaning of getting a match is ambiguous. It may be that some people who start with low aspirations have a fairly high chance of achieving their low aspirations. Another group of those attaining a match may have envisaged and achieved a high occupational status or its educational equivalent. Table 13 shows the results for males and females combined and for males and females separately.

Whether a match is achieved or not is linked to family background, although a higher educational or socio-economic status does not necessarily lead to a match. In contrast, a father's lower educational status increases the odds of a match for women, as do most ISCO categories relative to ISCO1 (managers). Among females, living in the German-speaking part of Switzerland enhances the odds of a match. Both males and females with no computers in their home are much more likely to get a match than those with two or more computers. This is consistent with the idea that obtaining a match may be an indicator for low expectations. On the other hand, the results regarding the number of books at home suggest that the effect is one of meeting high aspirations. For males, the coefficients associated with the variable "books" suggest that fewer

cultural resources lower the likelihood of having a match relative to having a high level of cultural resources. Furthermore, second generation male migrants have lower odds of a match. In Switzerland, second generation migrants are a heterogeneous population, known to have high aspirations, but also to attain a lower education level than the national average (Swiss Federal Statistical Office, 2005). Male learners in particular, who have attended a lower secondary track with extended requirements also have lower odds of a match, possibly due to higher aspirations that are not (yet) met.

High literacy scores predict a higher match for males, while a high verbal self-concept and a high self-efficacy score predict a better match for females. Finally, instrumental motivation seems to go along with a match, especially for women. At the school level, only the deviation from the average school SES enhances the odds of females for achieving a match.

Table 14: Match between anticipation and realization (logistic regression)

logistic regression, odds ratios displayed, reference category: match						
	females & males		females		males	
	Odds Ratio	P>|t|	Odds Ratio	P>|t|	Odds Ratio	P>|t|
Mother's education [ISCED 5 tertiary]						
ISCED 1 (primary or less)	1.06	0.903	1.31	0.602	0.80	0.726
ISCED 2 (lower secondary)	0.89	0.655	1.23	0.581	0.73	0.417
ISCED 3 (upper secondary)	0.87	0.550	1.17	0.610	0.75	0.417
Father's education [ISCED 5 tertiary]						
ISCED 1 (primary or less)	1.37	0.379	2.68	0.074	1.30	0.629
ISCED 2 (lower secondary)	1.07	0.796	2.07	0.022	0.56	0.102
ISCED 3 (upper secondary)	1.01	0.969	1.52	0.124	0.84	0.526
Father's occupation [ISCO1: Legislators, senior officials and managers]						
ISCO2: Professionals	0.98	0.958	1.14	0.790	0.99	0.983
ISCO3: Technicians and associate professionals	1.46	0.169	1.73	0.161	1.41	0.347
ISCO4: Clerks	1.03	0.942	1.32	0.604	0.85	0.756
ISCO5: Service workers and shop and market sales workers	1.56	0.339	3.22	0.060	0.67	0.478
ISCO6: Skilled agricultural and fishery workers	2.31	0.021	5.86	0.003	1.47	0.512
ISCO7: Craft and related trades workers	1.72	0.107	2.22	0.036	1.71	0.286
ISCO8: Plant and machine operators and assemblers	1.13	0.768	1.38	0.573	1.09	0.889
ISCO9: Elementary occupations	2.56	0.028	1.62	0.418	3.56	0.030
Mother's occupation [ISCO1: Legislators, senior officials and managers]						
ISCO2: Professionals	2.05	0.274	5.81	0.042	1.33	0.654
ISCO3: Technicians and associate professionals	1.63	0.457	5.49	0.043	0.64	0.479
ISCO4: Clerks	1.96	0.324	5.60	0.034	0.95	0.938
ISCO5: Service workers and shop and market sales workers	2.33	0.239	5.54	0.044	1.59	0.495
ISCO6: Skilled agricultural and fishery workers	3.98	0.079	3.19	0.303	2.25	0.310
ISCO7: Craft and related trades workers	4.42	0.040	6.44	0.037	3.95	0.092
ISCO8: Plant and machine operators and assemblers	0.59	0.562	8.00	0.022	0.06	0.029
ISCO9: Elementary occupations	2.41	0.192	6.12	0.037	1.05	0.940
Language region [French & Italien]						
German	1.44	0.035	1.58	0.044	1.28	0.400
Region [rural]						
Urban	0.78	0.188	0.93	0.748	0.69	0.216
Books [>500]						
none	0.34	0.227	5.86	0.136	0.09	0.073
1-10	0.68	0.324	1.46	0.452	0.35	0.048
11-50	0.62	0.117	0.54	0.143	0.53	0.117
51-100	0.80	0.497	0.86	0.691	0.61	0.296
101-250	0.91	0.749	0.95	0.888	0.71	0.415
251-500	0.94	0.821	0.80	0.575	1.07	0.848
Computers [two]						
No computers	2.55	0.002	3.54	0.001	2.29	0.088
One	1.13	0.503	1.41	0.137	1.06	0.841
Migration background [none]						
2nd gen.	0.76	0.203	1.23	0.394	0.45	0.018
3rd gen.	1.12	0.759	1.75	0.175	0.43	0.217
Language spoken at home [CH]						
other	0.96	0.899	0.96	0.915	1.31	0.598
Type of school loewer sec [basic]						
other	0.56	0.009	1.05	0.869	0.33	0.002
MEANHisei	1.02	0.359	1.02	0.233	1.00	0.917
Students deviation from school HISEI	1.02	0.067	1.04	0.012	1.00	0.772
Student/Teacher	1.00	0.882	0.99	0.611	1.02	0.494
Schools' Physical Infrastructure	0.85	0.148	0.90	0.451	0.88	0.442
Schools' Educational Resources	1.05	0.659	1.10	0.411	1.01	0.952
literacy reading	1.002	0.081	1.001	0.345	1.003	0.081
Self-concept verbal	1.15	0.260	1.42	0.021	1.07	0.657
Self efficacy	0.80	0.057	0.72	0.039	0.86	0.431
Self-concept academic	1.08	0.579	1.06	0.708	1.08	0.676
Mathematics self-concept	0.99	0.936	1.01	0.947	0.98	0.917
Instrumental Motivation	1.23	0.016	1.26	0.017	1.25	0.109
Interest in Mathematics	1.18	0.156	1.24	0.175	1.16	0.427
Design	N of strata=24; N of obs = 2550		N of strata=24; N of obs = 1458		N of strata=24; N of obs = 1313	
Model fit	df =470, F(48, 399) = 1.89		df =400, F(48, 353) = 1.61		df =384, F(48, 337) = 1.85	
	Prob > F= 0.0006		Prob > F= 0.0089		Prob > F= 0.0010	

What is the significance of obtaining a match?

A match in the equivalent occupational ISEI for tertiary education may have a different meaning from that of a match for those who are in employment. The comparison group in employment, those without a match, might have lower aspirations.

The kernel density graphs below provide a view of the distribution of statuses, as indicated by the job ISEI or equivalent ISEI for the educational programme studied, for all men and women who are in a job, and for those who obtain a match. Similarly, figures 9 and 10 provide the distribution of the equivalent ISEI for all men and women who are in an educational programme (Figure 9) and for those who obtain a match (Figure 10). Comparison of figures 7 and 8 shows that, for those entering a job, men who obtained a match aspired to jobs with a status broadly similar to that of all young and women who subsequently were in a job. Women who obtained a match were aspiring to higher prestige jobs than all women who were in a job at T7. In contrast to all of those who were in an educational programme at T7, "male" matches were in much higher status programmes. Thus the graphs show that the meaning of obtaining a match differs considerably in terms of the status attainment it implies.

Figure 7: Distribution of job ISEI by gender

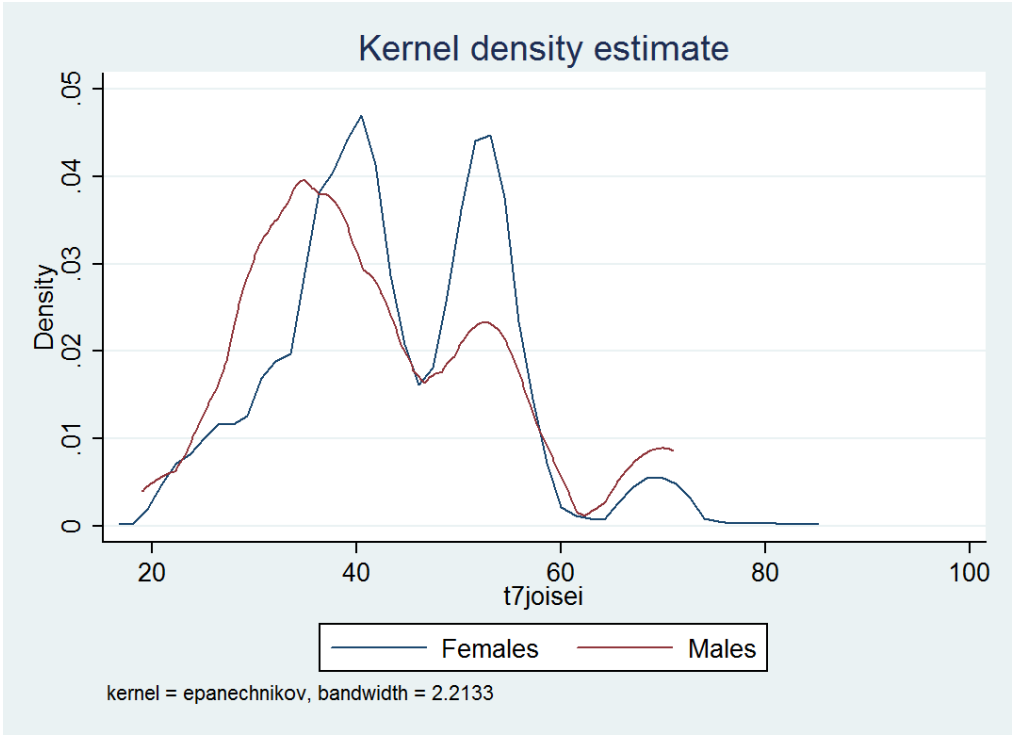


Figure 8: Distribution of Job ISEI by gender for those with a match

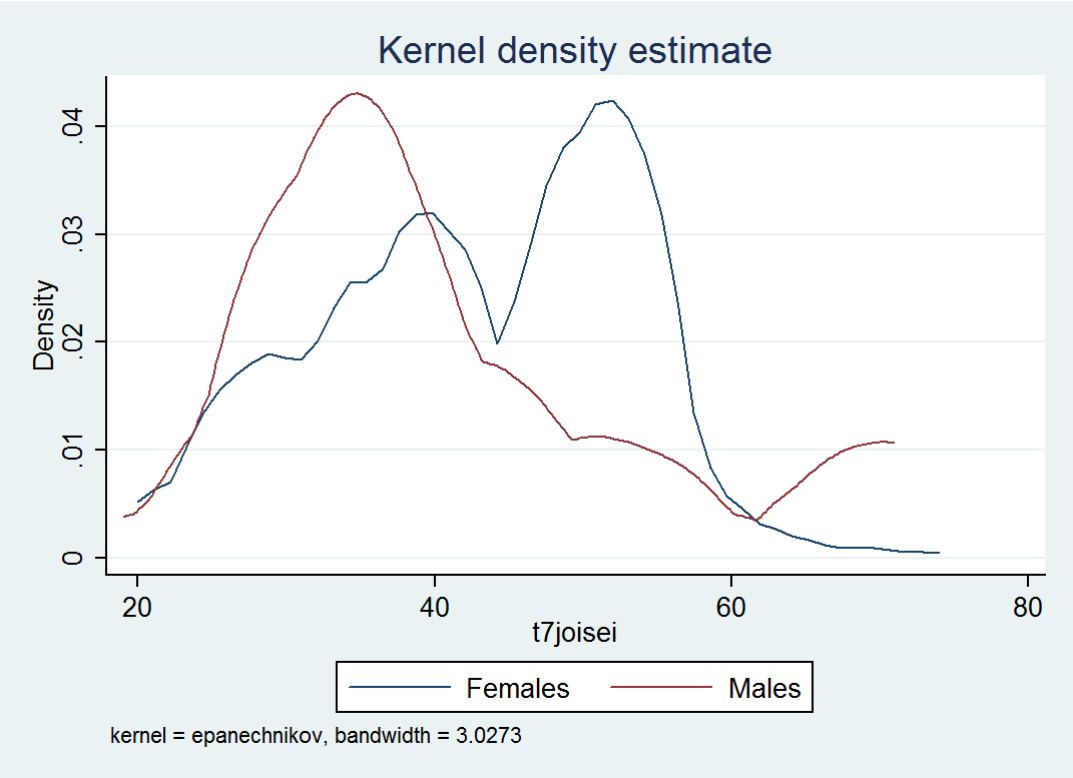


Figure 9: Education equivalent ISEI

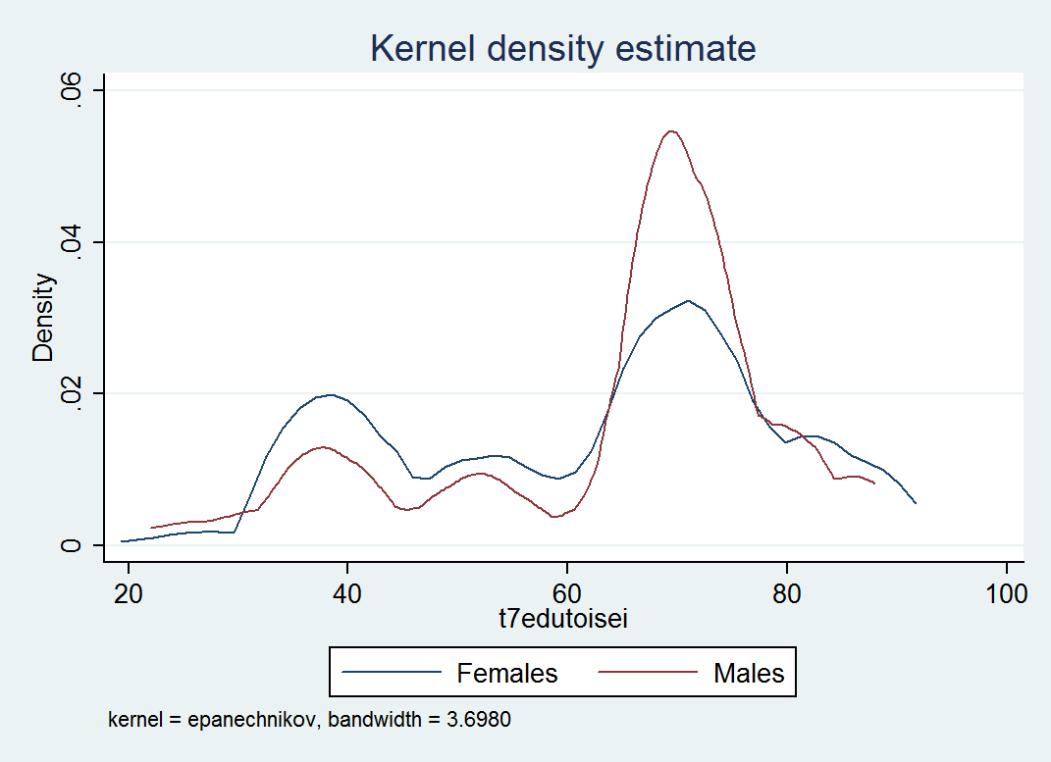
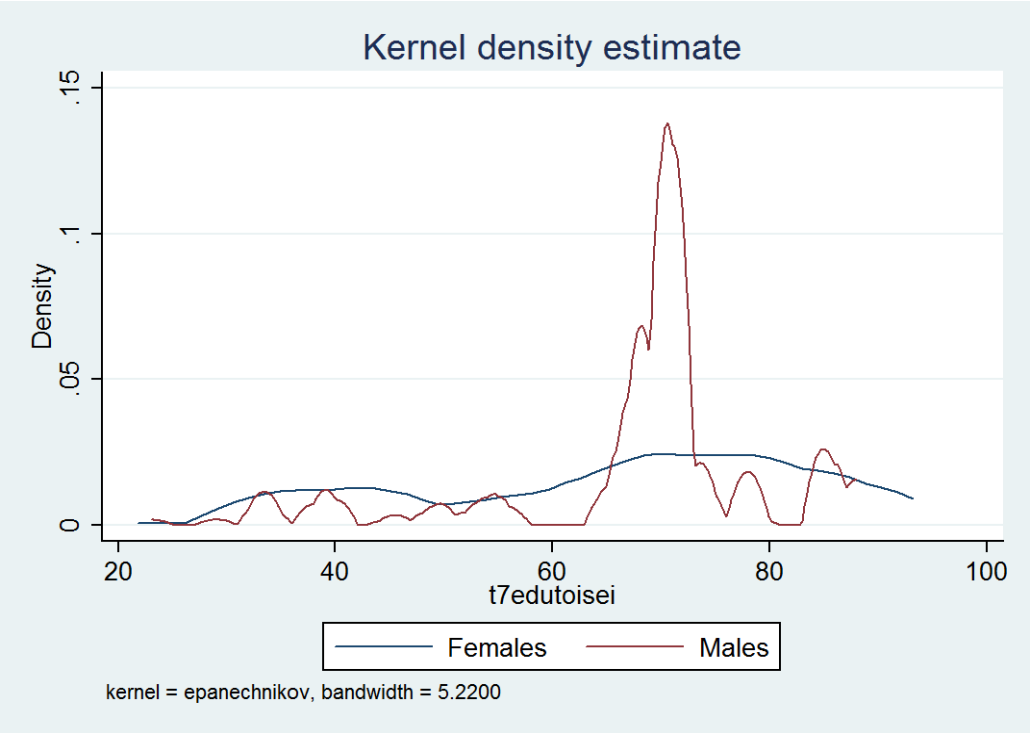


Figure 10: Educational equivalent for those with a match



7. Conclusions and policy implications

7.1 Summary of results

The results in these analyses are in line with previous research that highlights the importance of family background for determining educational outcomes. In previous research, these effects have been found to be particularly strong in Switzerland. The analyses in this report also show that the likelihood of enrolling in tertiary education depends on family background. For example, cultural capital (measured by the number of books at home) plays a major role, particularly for women.

The full force of family background and social selectivity of the Swiss education system can only be appreciated by taking into account early selection into different school tracks or streams, which is strongly determined by family background. Unlike other countries, heavy tracking at lower secondary level strongly predetermines upper secondary educational pathways and substantially mediates the influence of social background on educational success. Learners who attend lower secondary tracks with so-called basic requirements have markedly reduced chances of finding a direct route to upper secondary education or being able to proceed to tertiary level education.

In contrast to most other OECD countries, vocational education and training (VET) is the main educational programme at upper secondary level. Approximately two thirds of those completing lower secondary school enrol in VET programmes, the majority of them in company-based, dual apprenticeships which are a combination of part-time studies at a vocational school and part-time practical learning at a host company that hires and trains its apprentices. There is a strong link between the occupational orientation of a given apprenticeship and the subsequent occupation of a VET graduate. Despite relatively low tertiary enrolment rates by international standards, status disparities (i.e. prestige or career opportunities) between upper secondary and tertiary level degrees are not as pronounced in Switzerland as in other countries. This is partly due to stratification within the VET system, where status disparities between VET programmes by qualification level and career opportunities are enormous. Some VET programmes, for example those geared to occupations in the technical, industrial, computer or business and commercial sectors, equal those of the academic tracks in terms of skills and access to tertiary education.

Others have low entry requirements and provide training to a rather modest level of qualifications.

Pronounced system differences between the German, French and Italian-speaking regions of the country are also related to the importance of VET. The German-speaking regions have the strongest tradition of dual VET and the most favourable labour market situation for VET graduates. Differences between urban and rural areas also manifest themselves inasmuch as learners from rural areas are less likely to access tertiary education.

In terms of other influences on entry to tertiary education, school-related factors show little effect, but individual factors are important. While academic self-concept is a predictor for women's odds of attending tertiary education, it is self-efficacy that predicts men's propensity to enrol in tertiary education.

Regarding the field of study at tertiary level, we see that social background plays a minor role at this stage. This can be explained by the generally high social selectivity of access to tertiary education, where socio-economic background is mediated by the type of educational pathway or track from lower secondary level onward. At this stage, gender norms and identity seem to play a more critical role than family background in determining field of study. The key influences on the field of study seem to be interest in mathematics or mathematical self-concept as well as the level of self-efficacy. We also conducted analyses of the VET field of study. The results for the VET sector are similar to those we obtained for tertiary education.

When examining the match between anticipated and attained occupation or field of study, we found that the match rate is generally rather low (below 25 percent). There is a higher likelihood of obtaining a match among men than among women, but achieving a match is not necessarily indicative of attaining a good outcome in the labour market.

7.2 Policy implications

Understanding how education is socially stratified is essential to interpreting gender differences in educational participation and attainment. As in most other countries, educational expansion in Switzerland has led to higher enrolment rates of young women at upper secondary and tertiary

levels. However, this considerable increase in participation is of a particular type and does not translate into subsequent occupational status or economic parity between the genders. In addition to vertical stratification based on socio-economic status, horizontal gender segregation is striking and seems to be stronger in upper secondary VET than in tertiary education (Estévez-Abe, 2005). In addition, this horizontal segregation in occupations often translates into vertical segregation on the labour market which is difficult to overcome. The findings in this report highlight the importance of institutional arrangements with regard to educational transitions, which shape later educational opportunities. Overall, horizontal gender segregation in education is more obvious than vertical gender segregation.

It is important to note that access to tertiary education is not the only or even the main issue regarding gender equality in educational outcomes. The system of social stratification in Switzerland is less determined by access to tertiary education than by access to VET in high prestige occupations that can be accessed either through the vocational or the academic track. In terms of gender equality, tackling women's unequal access to higher status VET options is of critical importance. Factors which impede women's progress into these VET options include the early streaming by perceived ability and gendered career guidance. An increase in permeability between educational programmes would certainly be fairer for both male and female learners.

Our results also point to the role of the tracking system with regard to intergenerational social mobility. While some efforts have been made to enhance permeability within and between educational tracks, further efforts are needed to provide children and young adults with real opportunities to develop their potential, irrespective of their parents' resources and initial choices. This should be a matter of considerable concern for Swiss policy makers. Furthermore, the magnitude of the importance of individual factors (mathematical concept and interest) underlines that parents, schools and career advisors need to motivate young people to overcome gender stereotypes, e.g. by encouraging to or at least not detracting girls from engaging in mathematical subjects or boys in social sciences and health subjects. Finally, the high importance of the VET system needs to be taken into account. The high gender segregation at the age of sixteen highlights the need for gender-sensitive career counselling at a very early phase of career development. In addition, training firms as gate-keepers in the apprenticeship selection process need to be integrated in the process to change gendered education, work policy and outcomes.

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Appendix 1

Table A1

T5educ4	t5educ22 situation in 2005	t5job (employed) no	t5job (employed) yes	t5job (employed) Total	t5job (employed) no	t5job (employed) yes	t5job (employed) Total	t5job (employed) no	t5job (employed) yes	t5job (employed) Total
Upper sec.	3 apprenticeship with basic federal certificate of vocational education and training (2 years)(Berufsattest)	3	0	3	1	0	1	2	0	2
Upper sec.	4 apprenticeship with federal diploma of vocational education and training (Eidgenössisches Fähigkeitszeugnis) or equivalent (3 or 4 years)	565	27	592	285	16	301	280	11	291
Upper sec.	5 commercial college (WMS)	55	10	65	28	4	32	27	6	33
Upper sec.	6 specialised middle schools (FMS/DMS)	35	8	43	11	4	15	24	4	28
Post-sec./ tertiary	7 teachers college (for kindergarten/primary school)	13	1	14	1	0	1	12	1	13
Upper sec.	8 academic matura school	215	23	238	101	11	112	114	12	126
Upper sec.	9 professional baccalaureate/vocational matura (full time after education)	71	9	80	45	4	49	26	5	31
Upper sec.	10 professional baccalaureate/vocational matura (after commercial college as an internship)	38	3	41	17	1	18	21	2	23
Upper sec.	11 professional baccalaureate/vocational matura (after education besides employment)	4	20	24	2	8	10	2	12	14
Upper sec.	12 specialised matura (FMS/DMS)	16	2	18	3	0	3	13	2	15
Post-sec./ tertiary	13 Colleges of professional education and training	122	13	135	20	7	27	102	6	108
Post-sec./ tertiary	14 Federal and advanced PET Diploma Examinations	17	23	40	7	8	15	10	15	25
Post-sec./ tertiary	15 university of applied sciences/universities of teacher education (Bachelor)	279	52	331	90	12	102	189	40	229
Post-sec./ tertiary	16 universities and federal institutes of technology (ETH) (Bachelor/Master/Diploma)	711	74	785	285	27	312	426	47	473
Interm. solutions	19 Internship (not integrated in any educational programme)	119	17	136	29	6	35	90	11	101
Interm. solutions	20 language stay, Au-Pair	35	5	40	12	1	13	23	4	27
Interm. solutions	21 pre-course (in order to enter upper secondary or higher education)	26	15	41	9	3	12	17	12	29
Interm. solutions	22 other education	47	130	177	14	46	60	33	84	117
No Education	90 not in education	454	1248	1702	281	553	834	173	695	868
Total		**2825**	**1680**	**4505**	**1241**	**711**	**1952**	**1584**	**969**	**2553**

NEET=not in education or employment
Upper sec. = upper secondary education
Post-sec./tertiary= Post secondary or Tertiary Education
Employed but not in Education

We have constructed one group which includes: those in intermediate solutions who are not in employment AND those not in education or employment (the colour coding above shows which types of education and employment status correspond to the constructed groups).

The scales used in our analyses are constructed and documented by PISA 2000 (Adams and Wu 2002). For a better understanding, the questions on which the scales are based on are listed below:

SCMATBUI: In your school, how much is the learning of <15-year-old learners> hindered by:
SC11Q01 poor condition of buildings?
SC11Q02 poor heating, cooling and/or lighting systems?
SC11Q03 lack of instructional space (e.g., classrooms)?
Note: All items were reversed for scaling.

SCMATEDU: In your school, how much is the learning of <15-year-old learners> hindered by:
SC11Q04 lack of instructional material (e.g., textbooks)?
SC11Q05 not enough computers for instruction?
SC11Q06 lack of instructional materials in the library?
SC11Q07 lack of multi-media resources for instruction?
SC11Q08 inadequate science laboratory equipment?
SC11Q09 inadequate facilities for the fine arts?
Note: All items were reversed for scaling.

SELFEF: How often do these things apply to you?
CC01Q02 I'm certain I can understand the most difficult material presented in texts.
CC01Q18 I'm confident I can do an excellent job on assignments and tests.
CC01Q26 I'm certain I can master the skills being taught.

SCACAD: How much do you disagree or agree with each of the following?
CC02Q03 I learn things quickly in most school subjects.
CC02Q07 I'm good at most school subjects.
CC02Q20 I do well in tests in most school subjects.

SCVERB: How much do you disagree or agree with each of the following?
CC02Q05 I'm hopeless in <test language> classes. (rev.)
CC02Q09 I learn things quickly in <test language>
CC02Q23 I get good marks in <test language>
Note: Items marked 'rev.' had their response categories reversed before scaling.

MATCON: How much do you disagree or agree with each of the following?
CC02Q12 I get good marks in mathematics.
CC02Q15 Mathematics is one of my best subjects.
CC02Q18 I have always done well in mathematics.

INTMAT: How much do you disagree or agree with each of the following?
CC02Q01 When I do mathematics, I sometimes get totally absorbed.
CC02Q10 Because doing mathematics is fun, I wouldn't want to give it up.
CC02Q21 Mathematics is important to me personally.

INSMOT: How often do these things apply to you?
CC01Q06 I study to increase my job opportunities.
CC01Q14 I study to ensure that my future will be financially secure.
CC01Q22 I study to get a good job.

Table A2: Explanatory model (Tertiary Education) five years after compulsory schooling, females and males

Multinomial logistic regression, relative risk ratios displayed, reference category: Tertiary Education																								
	Model 1						Model 2						Model 3						Model 4					
Males & Female	**1 Empl.**		**2 Uper Sec. Ed.**		**3 NEET**		**1 Empl.**		**2 Uper Sec. Ed.**		**3 NEET**		**1 Empl.**		**2 Uper Sec. Ed.**		**3 NEET**		**1 Empl.**		**2 Uper Sec. Ed.**		**3 NEET**	
	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|
Mother's education [ISCED 5 tertiary]																								
ISCED 1 (primary) or less	2.47	0.033	2.54	0.077	1.53	0.352	2.04	0.117	2.59	0.092	1.38	0.537	2.06	0.113	2.69	0.072	1.31	0.620	1.97	0.121	2.5621	0.088	1.2544	0.675
ISCED 2 (lower secondary)	1.14	0.596	1.19	0.516	0.86	0.620	1.00	0.988	1.29	0.384	0.70	0.271	1.00	0.998	1.36	0.315	0.72	0.318	1.01	0.968	1.36	0.32	0.73	0.36
ISCED 3 (upper secondary)	1.19	0.391	1.20	0.389	1.16	0.543	1.20	0.437	1.35	0.212	1.21	0.432	1.28	0.315	1.51	0.119	1.33	0.257	1.29	0.315	1.52	0.12	1.34	0.25
Father's education [ISCED 5 tertiary]																								
ISCED 1 (primary or less)	0.93	0.853	0.63	0.260	0.89	0.799	0.99	0.979	0.62	0.305	0.80	0.651	0.67	0.336	0.41	0.045	0.56	0.244	0.69	0.392	0.43	0.07	0.59	0.29
ISCED 2 (lower secondary)	1.17	0.503	1.08	0.788	1.04	0.896	0.98	0.926	0.90	0.715	0.74	0.291	0.90	0.649	0.82	0.508	0.72	0.244	0.98	0.932	0.92	0.78	0.82	0.49
ISCED 3 (upper secondary)	0.85	0.379	1.00	0.988	0.68	0.060	0.81	0.267	1.04	0.873	0.53	0.004	0.74	0.121	0.98	0.945	0.49	0.001	0.81	0.269	1.09	0.71	0.55	0.01
Father's occupation [ISCO1: Legislators, senior officials and managers]																								
ISCO2: Professionals	0.61	0.020	0.84	0.483	0.82	0.509	0.76	0.249	0.88	0.613	0.76	0.379	0.70	0.142	0.94	0.838	0.77	0.443	0.70	0.130	0.92	0.78	0.76	0.42
ISCO3: Technicians and associate professionals	1.01	0.968	0.92	0.763	1.10	0.780	0.87	0.613	0.88	0.657	1.03	0.941	0.88	0.635	0.95	0.868	1.03	0.937	0.85	0.549	0.92	0.80	1.00	1.00
ISCO4: Clerks	1.32	0.405	0.80	0.479	2.01	0.049	1.10	0.811	0.77	0.507	1.74	0.169	1.09	0.816	0.82	0.616	1.65	0.219	1.09	0.817	0.83	0.63	1.68	0.22
ISCO5: Service workers and shop and market sales workers	2.34	0.012	3.08	0.005	1.79	0.217	1.94	0.076	2.77	0.022	1.56	0.371	1.85	0.098	2.74	0.016	1.43	0.464	2.02	0.062	3.05	0.01	1.63	0.31
ISCO6: Skilled agricultural and fishery workers	1.14	0.726	1.54	0.322	1.76	0.262	0.77	0.588	1.47	0.468	1.38	0.579	0.80	0.667	1.53	0.424	1.27	0.689	0.77	0.615	1.48	0.47	1.22	0.74
ISCO7: Craft and related trades workers	1.32	0.281	1.62	0.084	1.73	0.077	1.03	0.925	1.55	0.205	1.33	0.461	1.03	0.940	1.63	0.167	1.18	0.674	1.02	0.951	1.64	0.16	1.18	0.68
ISCO8: Plant and machine operators and assemblers	2.00	0.076	1.56	0.281	1.97	0.152	1.37	0.484	1.28	0.621	1.18	0.776	1.28	0.597	1.17	0.752	0.91	0.864	1.22	0.671	1.11	0.83	0.86	0.80
ISCO9: Elementary occupations	1.76	0.135	1.56	0.243	1.57	0.390	1.28	0.649	1.59	0.401	1.45	0.588	0.96	0.941	1.16	0.786	1.00	0.995	0.99	0.986	1.20	0.75	1.04	0.95
Mother's occupation [ISCO1: Legislators, senior officials and managers]																								
ISCO2: Professionals	0.54	0.241	0.40	0.111	3.28	0.065	0.92	0.883	0.53	0.311	5.09	0.025	0.88	0.847	0.53	0.323	5.31	0.036	0.85	0.800	0.51	0.29	4.83	0.05
ISCO3: Technicians and associate professionals	0.68	0.450	0.53	0.239	5.12	0.009	1.04	0.952	0.74	0.631	5.89	0.013	1.05	0.942	0.71	0.598	6.04	0.023	1.03	0.964	0.70	0.58	5.78	0.03
ISCO4: Clerks	0.97	0.953	0.76	0.635	7.32	0.001	1.58	0.472	1.04	0.956	9.63	0.002	1.49	0.571	0.92	0.906	9.54	0.004	1.55	0.521	0.98	0.97	9.87	0.00
ISCO5: Service workers and shop and market sales workers	1.19	0.740	0.66	0.505	6.85	0.002	1.63	0.453	0.76	0.698	8.55	0.003	1.55	0.537	0.67	0.592	8.02	0.009	1.56	0.527	0.68	0.60	7.96	0.01
ISCO6: Skilled agricultural and fishery workers	0.54	0.362	0.27	0.128	3.41	0.166	0.66	0.635	0.34	0.287	3.51	0.226	0.60	0.574	0.28	0.220	2.82	0.352	0.60	0.571	0.28	0.22	2.90	0.35
ISCO7: Craft and related trades workers	0.83	0.768	0.62	0.471	4.04	0.030	0.92	0.917	0.77	0.737	5.77	0.020	0.85	0.844	0.78	0.759	5.64	0.037	0.95	0.946	0.89	0.88	6.34	0.03
ISCO8: Plant and machine operators and assemblers	1.67	0.520	1.25	0.805	4.04	0.166	2.57	0.296	1.48	0.696	3.98	0.242	2.12	0.434	1.20	0.854	3.25	0.346	2.35	0.386	1.33	0.78	3.41	0.35
ISCO9: Elementary occupations	1.15	0.799	0.61	0.412	7.88	0.001	1.68	0.453	0.88	0.851	10.21	0.001	1.79	0.441	0.82	0.797	10.30	0.004	1.64	0.506	0.76	0.71	8.97	0.01
Language region [French & Italien]																								
German	1.63	0.008	0.56	0.002	0.72	0.095	1.32	0.124	0.50	0.000	0.65	0.032	1.58	0.010	0.63	0.011	0.77	0.172	1.53	0.020	0.61	0.01	0.73	0.12
Region [rural]																								
Urban	0.53	0.006	1.07	0.789	0.64	0.063	0.71	0.088	1.41	0.105	0.84	0.432	0.66	0.042	1.36	0.140	0.76	0.219	0.66	0.043	1.38	0.12	0.77	0.26
Books [>500]																								
none	1.82	0.432	0.40	0.333	1.76	0.562	1.55	0.544	0.33	0.227	1.68	0.563	0.99	0.994	0.20	0.101	1.25	0.807	1.07	0.923	0.21	0.13	1.29	0.79
1-10	5.63	0.000	2.91	0.032	4.47	0.005	4.30	0.001	1.85	0.230	3.35	0.021	2.63	0.038	1.00	0.997	2.50	0.087	2.33	0.070	0.87	0.80	2.10	0.16
11-50	4.10	0.000	2.19	0.003	2.44	0.005	3.18	0.000	1.80	0.042	2.06	0.027	2.22	0.003	1.20	0.552	1.79	0.072	2.36	0.002	1.30	0.39	1.98	0.03
51-100	2.44	0.000	1.57	0.062	1.48	0.205	2.25	0.001	1.25	0.371	1.28	0.453	1.73	0.034	0.98	0.948	1.17	0.641	1.82	0.024	1.04	0.87	1.24	0.51
101-250	2.01	0.001	1.30	0.235	1.51	0.079	2.23	0.000	1.42	0.125	1.34	0.228	1.89	0.003	1.24	0.358	1.36	0.219	2.02	0.001	1.33	0.21	1.48	0.12
251-500	1.13	0.574	0.82	0.415	0.92	0.740	1.10	0.692	0.78	0.358	0.74	0.286	0.97	0.896	0.71	0.222	0.77	0.349	1.04	0.867	0.77	0.36	0.85	0.56
Computers [two]																								
No computers	1.19	0.519	1.41	0.208	1.11	0.784	1.10	0.758	1.37	0.274	0.84	0.632	1.16	0.622	1.41	0.274	0.87	0.717	1.28	0.408	1.59	0.14	1.03	0.93
One	0.81	0.152	0.72	0.052	0.82	0.297	0.79	0.145	0.73	0.084	0.74	0.151	0.78	0.142	0.72	0.079	0.74	0.146	0.82	0.229	0.76	0.14	0.78	0.26
Migration background [none]																								
2nd gen.	0.84	0.360	1.07	0.694	0.95	0.802	0.76	0.145	1.13	0.515	0.90	0.628	0.70	0.080	0.95	0.792	0.86	0.509	0.72	0.104	0.98	0.90	0.89	0.62
3rd gen.	1.10	0.766	1.08	0.828	1.71	0.215	1.00	0.991	1.15	0.736	1.19	0.727	0.90	0.759	1.05	0.909	1.27	0.622	0.94	0.859	1.11	0.81	1.33	0.57
Language spoken at home [CH]																								
other	0.66	0.123	0.86	0.589	0.44	0.021	0.62	0.073	0.73	0.290	0.46	0.029	0.64	0.111	0.72	0.298	0.41	0.017	0.66	0.149	0.74	0.35	0.43	0.03
Type of school loewer sec [basic]																								
other	0.12	0.000	0.10	0.000	0.15	0.000	0.17	0.000	0.13	0.000	0.21	0.000	0.26	0.000	0.23	0.000	0.29	0.000	0.26	0.000	0.23	0.00	0.29	0.00
MEANHisei							0.89	0.000	0.92	0.000	0.90	0.000	0.91	0.000	0.94	0.006	0.92	0.000	0.91	0.000	0.94	0.00	0.91	0.00
Students deviation from school HISEI							0.99	0.369	1.00	0.679	0.99	0.655	0.99	0.382	1.00	0.908	0.99	0.393	0.99	0.416	1.00	0.84	0.99	0.45
Student/Teacher							1.02	0.716	1.05	0.313	1.04	0.200	1.02	0.618	1.06	0.267	1.05	0.177	1.03	0.522	1.07	0.23	1.06	0.13
Schools' Physical Infrastructure							0.86	0.384	0.84	0.323	0.90	0.549	0.90	0.550	0.85	0.358	0.90	0.562	0.91	0.585	0.86	0.38	0.92	0.63
Schools' Educational Resources							1.15	0.317	0.94	0.709	0.84	0.226	1.18	0.234	0.97	0.850	0.88	0.366	1.20	0.186	0.99	0.96	0.90	0.48
literacy reading													0.99	0.000	0.99	0.000	0.99	0.000	0.99	0.000	0.99	0.00	0.99	0.00
Self-concept verbal													1.18	0.086	1.30	0.008	1.06	0.608	1.23	0.045	1.36	0.00	1.12	0.33
Self efficacy													0.94	0.513	1.13	0.327	1.14	0.326	0.86	0.128	1.03	0.83	1.02	0.89
Self-concept academic													0.67	0.000	0.60	0.000	0.65	0.003	0.70	0.002	0.63	0.00	0.68	0.01
Mathematics self-concept													1.06	0.601	0.91	0.407	1.04	0.771	0.98	0.847	0.8251	0.118	0.9196	0.51
Instrumental Motivation													0.92	0.371	0.93	0.488	0.94	0.586	0.91	0.297	0.9178	0.442	0.9359	0.558
Interest in Mathematics													0.89	0.228	1.08	0.438	0.95	0.686	0.86	0.102	1.0225	0.818	0.8898	0.383
gender [male]																								
female																			2.35	0.000	2.7644	0.000	3.5239	0.000
Design	N of strata=24; N of obs = 3843						N of strata = 24, N of obs = 3426						N of strata = 24, N of obs = 3350						N of strata = 24, N of obs = 3350					
Model fit	Design df = 456, F(108, 349) = 7.83						Design df = 408, F(123, 286) = 8.14						Design df = 407, F(144, 264) = 9.45						Design df = 407, F(147, 261) = 8.66					
	Prob > F = 0.0000						Prob > F = 0.0000						Prob > F = 0.0000						Prob > F = 0.0000					

Tabel A3: Explanatory model (tertiary/upper secondary education) five years after compulsory schooling, females and males

Multinomial logistic regression, relative risk ratios displayed, reference category: Tertiary & Upper Sec.Education																
	Model 1				Model 2				Model 3				Model 4			
Males & Female	**1 Empl.**		**3 NEET**		**1 Empl.**		**3 NEET**		**1 Empl.**		**3 NEET**		**1 Empl.**		**3 NEET**	
	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|
Mother's education [ISCED 5 tertiary]																
ISCED 1 (primary) or less	1.26	0.606	0.78	0.608	1.02	0.975	0.70	0.515	0.95	0.917	0.63	0.403	0.94	0.893	0.61	0.374
ISCED 2 (lower secondary)	1.04	0.834	0.79	0.379	0.86	0.509	0.61	0.077	0.83	0.44	0.61	0.072	0.83	0.441	0.61	0.076
ISCED 3 (upper secondary)	1.07	0.735	1.04	0.862	1.01	0.961	1.03	0.885	1.02	0.91	1.08	0.717	1.03	0.909	1.09	0.718
Father's education [ISCED 5 tertiary]																
ISCED 1 (primary or less)	1.29	0.445	1.23	0.629	1.41	0.330	1.12	0.804	1.26	0.52	1.04	0.942	1.27	0.507	1.06	0.905
ISCED 2 (lower secondary)	1.11	0.598	0.99	0.963	1.06	0.786	0.80	0.434	1.01	0.96	0.81	0.430	1.04	0.852	0.87	0.612
ISCED 3 (upper secondary)	0.86	0.365	0.68	0.096	0.79	0.211	0.51	0.008	0.76	0.13	0.49	0.005	0.77	0.155	0.53	0.010
Father's occupation [ISCO1: Legislators, senior officials and managers]																
ISCO2: Professionals	0.64	0.035	0.86	0.629	0.79	0.307	0.79	0.455	0.73	0.18	0.80	0.507	0.73	0.166	0.80	0.496
ISCO3: Technicians and associate professionals	1.04	0.860	1.13	0.705	0.95	0.827	1.12	0.748	0.93	0.77	1.11	0.767	0.92	0.749	1.11	0.765
ISCO4: Clerks	1.48	0.211	2.24	0.019	1.26	0.507	2.01	0.065	1.30	0.44	1.98	0.069	1.30	0.444	2.02	0.063
ISCO5: Service workers and shop and market sal	1.15	0.617	0.88	0.758	1.05	0.876	0.85	0.719	1.00	1.00	0.78	0.591	1.01	0.972	0.82	0.678
ISCO6: Skilled agricultural and fishery workers	0.90	0.791	1.41	0.491	0.62	0.289	1.12	0.841	0.60	0.27	0.98	0.971	0.60	0.261	0.98	0.965
ISCO7: Craft and related trades workers	1.01	0.980	1.32	0.344	0.81	0.487	1.04	0.913	0.80	0.47	0.93	0.827	0.80	0.463	0.93	0.834
ISCO8: Plant and machine operators and assemb	1.56	0.175	1.54	0.327	1.19	0.641	1.03	0.952	1.17	0.69	0.84	0.733	1.16	0.698	0.84	0.724
ISCO9: Elementary occupations	1.37	0.279	1.23	0.630	1.00	0.992	1.14	0.796	0.94	0.87	1.00	0.995	0.93	0.858	1.00	0.999
Mother's occupation [ISCO1: Legislators, senior officials and managers]																
ISCO2: Professionals	0.83	0.683	5.06	0.007	1.17	0.747	6.61	0.005	1.16	0.77	7.14	0.006	1.14	0.801	6.58	0.007
ISCO3: Technicians and associate professionals	0.95	0.903	7.12	0.001	1.15	0.757	6.64	0.003	1.21	0.70	7.04	0.004	1.20	0.708	6.72	0.004
ISCO4: Clerks	1.12	0.797	8.52	0.000	1.49	0.420	9.22	0.000	1.49	0.44	9.68	0.001	1.50	0.429	9.51	0.001
ISCO5: Service workers and shop and market sal	1.49	0.379	8.57	0.000	1.82	0.228	9.69	0.001	1.87	0.23	9.84	0.001	1.87	0.230	9.58	0.001
ISCO6: Skilled agricultural and fishery workers	1.25	0.728	7.78	0.024	1.32	0.687	6.99	0.051	1.36	0.67	6.39	0.076	1.35	0.673	6.32	0.076
ISCO7: Craft and related trades workers	1.11	0.851	5.39	0.006	1.06	0.925	6.67	0.005	0.99	0.99	6.66	0.010	1.01	0.993	6.74	0.009
ISCO8: Plant and machine operators and assemb	1.31	0.722	3.16	0.218	1.60	0.548	2.51	0.380	1.47	0.65	2.25	0.468	1.43	0.675	2.00	0.545
ISCO9: Elementary occupations	1.52	0.357	10.40	0.000	1.75	0.282	10.69	0.000	1.90	0.24	11.02	0.001	1.86	0.256	10.10	0.001
Language region [French & Italien]																
German	2.29	0.000	0.99	0.965	1.90	0.000	0.93	0.684	1.95	0.00	0.95	0.753	1.95	0.000	0.93	0.704
Region [rural]																
Urban	0.51	0.000	0.62	0.009	0.60	0.001	0.71	0.073	0.57	0.00	0.65	0.030	0.57	0.000	0.66	0.041
Books [>500]																
none	3.80	0.053	3.66	0.142	3.52	0.049	3.73	0.093	3.01	0.10	3.65	0.088	3.02	0.085	3.51	0.096
1-10	2.74	0.005	2.18	0.066	2.78	0.013	2.15	0.101	2.46	0.04	2.30	0.077	2.41	0.042	2.15	0.102
11-50	2.69	0.000	1.60	0.100	2.30	0.001	1.48	0.183	2.05	0.00	1.63	0.083	2.09	0.003	1.73	0.049
51-100	1.99	0.003	1.20	0.506	2.08	0.002	1.17	0.592	1.83	0.01	1.22	0.506	1.84	0.010	1.24	0.458
101-250	1.83	0.005	1.37	0.165	1.92	0.004	1.15	0.558	1.74	0.01	1.25	0.348	1.75	0.013	1.28	0.310
251-500	1.24	0.302	1.00	0.994	1.25	0.323	0.83	0.491	1.17	0.49	0.92	0.758	1.19	0.440	0.97	0.906
Computers [two]																
No computers	0.86	0.474	0.80	0.546	0.81	0.371	0.63	0.173	0.83	0.43	0.63	0.173	0.86	0.509	0.70	0.296
One	0.98	0.868	0.98	0.938	0.96	0.774	0.90	0.624	0.96	0.79	0.90	0.631	0.97	0.852	0.93	0.748
Migration background [none]																
2nd gen.	0.80	0.193	0.90	0.633	0.68	0.033	0.82	0.353	0.71	0.06	0.87	0.501	0.71	0.069	0.88	0.543
3rd gen.	1.02	0.952	1.59	0.228	0.88	0.653	1.06	0.888	0.84	0.55	1.17	0.707	0.85	0.584	1.19	0.676
Language spoken at home [CH]																
other	0.73	0.130	0.48	0.026	0.77	0.225	0.57	0.071	0.77	0.28	0.51	0.041	0.19	0.485	0.52	0.050
Type of school loewer sec [basic]																
other	0.64	0.003	0.81	0.318	0.83	0.288	1.03	0.914	0.90	0.56	1.03	0.908	0.90	0.553	1.02	0.941
MEANHisei					0.93	0.000	0.94	0.000	0.94	0.00	0.94	0.001	0.94	0.000	0.94	0.001
Students deviation from school HISEI					0.99	0.210	0.99	0.500	0.99	0.27	0.99	0.331	0.99	0.274	0.99	0.364
Student/Teacher					0.99	0.352	1.02	0.267	0.99	0.38	1.01	0.303	0.99	0.461	1.02	0.191
Schools' Physical Infrastructure					0.95	0.665	0.99	0.930	0.97	0.78	0.97	0.786	0.97	0.798	0.98	0.848
Schools' Educational Resources					1.18	0.090	0.85	0.127	1.18	0.09	0.88	0.230	1.18	0.081	0.89	0.285
literacy reading									1.00	0.19	1.00	0.334	1.00	0.285	1.00	0.646
Self-concept verbal									1.00	1.00	0.89	0.277	1.01	0.932	0.91	0.376
Self efficacy									0.88	0.11	1.06	0.650	0.86	0.073	1.02	0.891
Self-concept academic									0.90	0.30	0.87	0.300	0.91	0.330	0.89	0.386
Mathematics self-concept									1.11	0.32	1.08	0.506	1.09	0.411	1.02	0.871
Instrumental Motivation									0.98	0.84	1.00	0.998	0.99	0.856	1.01	0.926
Interest in Mathematics									0.88	0.11	0.94	0.606	0.87	0.073	0.90	0.416
gender [male]																
female													1.24	0.111	1.89	0.001
Design	N of strata =24, Nof obs = 3843				N of strata =24, Nof obs = 3426				N of strata =24, Nof obs = 3350				N of strata =24, Nof obs = 3350			
Model fit	Design df =456, F(72, 385) = 4.57				Design df =408, F(82, 327) = 5.38				Design df =407, F(96, 312) = 5.37				Design df =407, F(98, 310) = 5.25			
	Prob > F = 0.0000				Prob > F = 0.0000				Prob > F = 0.0000				Prob > F = 0.0000			

Table A4: Probability of studying science, seven years after compulsory schooling, by gender

Multinomial logistic regression, relative risk ratios displayed, reference category: Science						
	t7science M1					
	females & males		females		males	
Mother's education [ISCED 5 tertiary]	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|
ISCED 1 (primary or less)	0.10	0.007	0.00	0.000	0.20	0.239
ISCED 2 (lower secondary)	0.44	0.090	1.39	0.613	0.44	0.191
ISCED 3 (upper secondary)	0.65	0.192	0.97	0.960	0.68	0.385
Father's education [ISCED 5 tertiary]						
ISCED 1 (primary or less)	4.57	0.171	0.12	0.303	9.80	0.153
ISCED 2 (lower secondary)	1.11	0.794	1.49	0.458	1.42	0.602
ISCED 3 (upper secondary)	0.96	0.895	1.29	0.610	1.12	0.800
Father's occupation [ISCO1: Legislators, senior officials and managers]						
ISCO2: Professionals	1.71	0.156	2.42	0.273	2.97	0.081
ISCO3: Technicians and associate professionals	2.20	0.123	2.64	0.252	2.27	0.203
ISCO4: Clerks	0.82	0.743	2.56	0.330	0.50	0.471
ISCO5: Service workers and shop and market sales workers	6.41	0.017	8.00	0.051	3.75	0.245
ISCO6: Skilled agricultural and fishery workers	1.89	0.489	0.88	0.933	1.45	0.756
ISCO7: Craft and related trades workers	2.32	0.135	0.49	0.513	5.10	0.028
ISCO8: Plant and machine operators and assemblers	5.22	0.033	4.94	0.149	35.68	0.000
ISCO9: Elementary occupations	2.50	0.240	0.00	0.000	5.89	0.105
Mother's occupation [ISCO1: Legislators, senior officials and managers]						
ISCO2: Professionals	0.50	0.415	0.23	0.230	0.33	0.247
ISCO3: Technicians and associate professionals	1.06	0.947	0.23	0.232	0.78	0.789
ISCO4: Clerks	0.89	0.896	0.23	0.225	0.88	0.893
ISCO5: Service workers and shop and market sales workers	1.47	0.678	0.41	0.491	1.33	0.769
ISCO6: Skilled agricultural and fishery workers	0.24	0.321	0.00	0.000	0.10	0.128
ISCO7: Craft and related trades workers	0.26	0.251	0.11	0.195	0.09	0.078
ISCO8: Plant and machine operators and assemblers	0.62	0.767	0.72	0.843	0.05	0.265
ISCO9: Elementary occupations	2.18	0.421	0.16	0.228	1.26	0.829
Language region [French & Italien]						
German	0.88	0.620	0.57	0.135	0.69	0.373
Region [rural]						
Urban	0.58	0.034	1.69	0.170	0.35	0.002
Books [>500]						
none	21.15	0.028	0.00	0.000	58700000000000000.00	.
1-10	3.69	0.052	0.00	0.000	1.71	0.517
11-50	2.66	0.046	1.09	0.935	2.45	0.152
51-100	2.58	0.013	1.84	0.334	3.19	0.050
101-250	2.80	0.000	1.30	0.592	4.84	0.000
251-500	2.31	0.015	1.69	0.230	2.58	0.048
Computers [two]						
No computers	0.23	0.057	0.23	0.124	0.78	0.829
One	0.66	0.101	1.56	0.294	0.51	0.035
Migration background [none]						
2nd gen.	0.67	0.204	0.72	0.514	0.69	0.441
3rd gen.	1.18	0.803	1.65	0.438	0.72	0.725
Language spoken at home [CH]						
other	1.07	0.894	2.11	0.247	0.54	0.426
Type of school loewer sec [basic]						
other	1.50	0.488	2.65	0.296	2.39	0.308
MEANHisei	1.03	0.231	1.01	0.870	1.03	0.279
Students deviation from school HISEI	1.02	0.213	1.02	0.385	1.01	0.577
Student/Teacher	0.99	0.797	1.06	0.079	0.99	0.699
Schools' Physical Infrastructure	0.76	0.113	1.57	0.157	0.65	0.107
Schools' Educational Resources	0.89	0.367	0.75	0.351	0.86	0.513
literacy reading	1.00	0.174	1.00	0.816	1.00	0.827
Self-concept verbal	1.02	0.917	1.40	0.233	1.15	0.512
Self efficacy	1.35	0.086	0.88	0.597	1.65	0.048
Self-concept academic	0.71	0.027	1.35	0.213	0.53	0.006
Mathematics self-concept	1.71	0.000	1.03	0.903	2.10	0.001
Instrumental Motivation	0.69	0.001	0.52	0.000	0.78	0.147
Interest in Mathematics	1.67	0.001	1.73	0.016	1.52	0.050
Design	N of strata=21; N of obs = 1149		N of strata=19; N of obs = 662		N of strata=20; N of obs = 487	
Model fit	df =423, F(48, 376) = 4.02		df =418, F(48, 371) = 433.07		df =422, F(47, 376) =	
	Prob > F= 0.0000		Prob > F= 0.0000		Prob > F=	

Table A5: Probability of studying science, five years after compulsory schooling, by gender

Multinomial logistic regression, relative risk ratios displayed, reference category: Science						
	t5 science M1					
	females & males		females		males	
Mother's education [ISCED 5 tertiary]	RRR	P>|t|	RRR	P>|t|	RRR	P>|t|
ISCED 1 (primary or less)	0.16	0.050	0.00	0.000	0.19	0.214
ISCED 2 (lower secondary)	1.31	0.622	2.60	0.302	1.30	0.642
ISCED 3 (upper secondary)	1.15	0.726	1.80	0.485	1.33	0.512
Father's education [ISCED 5 tertiary]						
ISCED 1 (primary or less)	5.32	0.048	0.52	0.691	4.89	0.237
ISCED 2 (lower secondary)	1.46	0.408	0.72	0.573	3.54	0.076
ISCED 3 (upper secondary)	1.37	0.397	1.26	0.689	1.71	0.283
Father's occupation [ISCO1: Legislators, senior officials and managers]						
ISCO2: Professionals	1.28	0.608	1.74	0.485	0.64	0.553
ISCO3: Technicians and associate professionals	0.88	0.814	0.87	0.868	0.33	0.146
ISCO4: Clerks	0.87	0.838	1.33	0.687	0.25	0.176
ISCO5: Service workers and shop and market sales workers	1.12	0.907	2.62	0.358	0.08	0.047
ISCO6: Skilled agricultural and fishery workers	0.97	0.978	0.24	0.372	0.56	0.690
ISCO7: Craft and related trades workers	0.72	0.535	0.43	0.236	0.32	0.219
ISCO8: Plant and machine operators and assemblers	0.52	0.407	0.80	0.845	3.98	0.273
ISCO9: Elementary occupations	0.16	0.094	0.35	0.421	0.38	0.571
Mother's occupation [ISCO1: Legislators, senior officials and managers]						
ISCO2: Professionals	0.35	0.105	0.13	0.040	1.14	0.915
ISCO3: Technicians and associate professionals	0.49	0.320	0.25	0.161	1.62	0.699
ISCO4: Clerks	0.50	0.337	0.18	0.049	2.09	0.548
ISCO5: Service workers and shop and market sales workers	0.63	0.541	0.30	0.223	2.37	0.507
ISCO6: Skilled agricultural and fishery workers	0.00	0.000	0.00	0.000	0.00	0.000
ISCO7: Craft and related trades workers	0.28	0.300	0.45	0.540	0.30	0.532
ISCO8: Plant and machine operators and assemblers	0.14	0.219	0.27	0.450	0.00	0.000
ISCO9: Elementary occupations	0.85	0.846	0.36	0.280	1.73	0.705
Language region [French & Italien]						
German	0.54	0.019	0.44	0.034	0.67	0.320
Region [rural]						
Urban	0.83	0.577	0.87	0.772	0.34	0.025
Books [>500]						
none	25.23	0.089	13.80	0.515	1010000000000000.00	0.000
1-10	1.87	0.430	0.00	0.000	1.67	0.685
11-50	1.85	0.171	2.41	0.339	1.61	0.556
51-100	1.93	0.158	3.43	0.064	1.26	0.757
101-250	1.31	0.433	1.63	0.242	1.56	0.403
251-500	1.00	0.993	0.79	0.610	1.39	0.565
Computers [two]						
No computers	0.10	0.003	0.30	0.256	0.02	0.016
One	0.69	0.148	1.27	0.612	0.49	0.100
Migration background [none]						
2nd gen.	0.90	0.711	0.84	0.731	2.26	0.082
3rd gen.	0.43	0.140	0.40	0.359	0.66	0.616
Language spoken at home [CH]						
other	1.87	0.207	1.80	0.547	1.14	0.827
Type of school loewer sec [basic]						
other	2.08	0.264	3.06	0.508	2.16	0.387
MEANHisei	1.04	0.123	1.02	0.612	1.06	0.106
Students deviation from school HISEI	1.01	0.700	1.02	0.589	0.99	0.678
Student/Teacher	0.87	0.005	0.85	0.017	0.89	0.197
Schools' Physical Infrastructure	0.99	0.979	2.77	0.003	0.47	0.036
Schools' Educational Resources	0.76	0.042	0.41	0.004	1.16	0.538
literacy reading	1.00	0.340	1.00	0.315	0.99	0.142
Self-concept verbal	0.81	0.248	1.10	0.716	0.81	0.304
Self efficacy	1.66	0.005	1.18	0.479	1.53	0.177
Self-concept academic	0.67	0.007	0.80	0.411	0.62	0.097
Mathematics self-concept	1.64	0.015	0.83	0.600	2.56	0.001
Instrumental Motivation	0.72	0.001	0.68	0.005	0.60	0.019
Interest in Mathematics	1.67	0.008	3.07	0.002	1.32	0.134
Design	N of strata=19; N of obs = 849		N of strata=18; N of obs = 534		N of strata=17; N of obs = 315	
Model fit	df =411, F(48, 364) = 416		df =411, F(48, 364) = 118		df =383, F(48, 336) = 190	
	Prob > F= 0.0000		Prob > F= 0.0000		Prob > F= 0.0000	

[i] http://www.bfs.admin.ch/bfs/portal/de/index/themen/03/03/blank/data/02.html