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Why Immigrant Background Matters for University Participation: A Comparison of Switzerland and Canada

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Abstract

This paper extends our understanding of the difference in university participation between students with and without immigrant backgrounds by contrasting outcomes in Switzerland and Canada, and by the use of new longitudinal data that are comparable between the countries. The research includes family socio-demographic characteristics, family aspirations regarding university education, and the student's secondary school performance as explanatory variables of university attendance patterns. In Switzerland, compared to students with Swiss-born parents, those with immigrant backgrounds are disadvantaged regarding university participation, primarily due to poor academic performance in secondary school. In comparison, students with immigrant backgrounds in Canada display a significant advantage regarding university attendance, even among some who performed poorly in secondary school. The included explanatory variables can only partly account for this advantage, but family aspirations regarding university attendance play a significant role, while traditional variables such as parental educational attainment are less important. In both countries source region background is important. Possible reasons for the cross-country differences are discussed.

JEL Code: *J15 and I24*
Keywords: *immigration, second generation, higher education, university participation*

Executive summary

This paper focuses on the participation in university by three groups defined by their immigrant background, (1) young immigrants, (2) the children of immigrants and (3) the children of domestically born parents. These groups represent the 1st generation, 2nd generation and 3rd plus generations respectively. The paper attempts to determine what accounts for the differences in university participation among these groups. There have been a number of papers on this topic, but this paper has a couple of unique features. First, secondary-school performance as well as other well-established variables are used to explain differences in rates of university participation. Only recently have such data become available. Second, using newly developed, and most importantly, comparable longitudinal data, the paper contrasts the findings for Canada and Switzerland, two countries with very different outcomes. In Canada, university participation rates are *higher* among students with immigrant backgrounds than among their counterparts with domestically born parents, but in Switzerland they are *lower*. Possible reasons for the different outcomes are discussed. These two countries in many ways reflect the differences between North America and Europe regarding immigrant educational outcomes.

In Switzerland, the lower levels of university participation among 1st and 2nd generation students can be accounted for almost entirely by poorer secondary-school performance[1] among students with immigrant backgrounds. This poorer secondary-school performance is explained in part by differences in family and socio-economic backgrounds of immigrant students compared with students with Swiss-born parents. In addition, there is significant variation in university participation across immigrant source regions. Students with immigrant backgrounds from European Union countries such as Germany, France, Belgium, and Austria tend to have higher levels of university participation than students with Swiss parents. Little of this positive gap is explained by the variables in the analysis, including secondary-school performance. Students with immigrant backgrounds from countries other than Germany, France, Belgium, and Austria have lower levels of university participation, with poorer secondary-school performance accounting for much of this.

Canadian outcomes are very different. As noted, students with immigrant backgrounds, including both the first and second generations, have a much *higher* rate of university participation than their counterparts with Canadian-born parents. The explanatory variables in the analysis account for about 60% of the difference, with university aspirations among students and their parents accounting for the largest portion. Unlike in Switzerland, however, differences in secondary-school performance in Canada account for little of the difference in university participation rates among students with and without immigrant backgrounds. As in Switzerland, there is significant variation by immigrant source

[1] As measured by the Programme for International Student Assessment (PISA) literacy reading score at age 15.

region. In particular, students with Asian immigrant backgrounds are much more likely to pursue university education than students with other immigrant backgrounds and students with Canadian-born parents. In Canada, this high level of university participation by Asian students is observed even if they perform poorly in secondary school. However, the high university participation rates are not restricted to Asian students. Students with immigrant backgrounds from all source regions have university participation rates equal to or above those of students with Canadian-born parents.

Differences in parents' education play a relatively small direct role in explaining differences in the postsecondary-participation rate between the three generational groups. However, this variable may act indirectly through secondary-school performance or parents' aspirations regarding the educational attainment of their children.

What explains the differences in outcomes between Canada and Switzerland? Differences in the immigration systems likely matter. The Canadian system emphasizes the selection of immigrants with high levels of education. Canadian immigrants have also tended to come from source regions, such as Asia, that place a high value on educational attainment and working in professional occupations. The Swiss immigration system has traditionally brought in lower-skilled immigrants—although this has been changing in recent years. These inter-country differences in immigrant characteristics will affect first- and second-generation educational outcomes in the two countries.

Differences in the education systems also play a role. The more structured Swiss system allows students less flexibility in their academic program as they advance through secondary school. Immigrant students are overrepresented in the lower academic streams, and this affects their likelihood of attending the postsecondary level. The Canadian school system does not have such a streaming process. However, Swiss students have access to strong vocational training at the secondary level; this negates the necessity to continue to the postsecondary level for many.

Speculation regarding other potential explanations of the difference in outcomes between the two countries is presented in the conclusion, focusing on why students with immigrant backgrounds in Switzerland have lower PISA scores and whether differences in meritocratic practices contribute to the differences between countries.

1. Introduction

There is considerable research on the relationship between immigration status and educational attainment. Our interest in this relationship is driven by the observation that, in North America, students with immigrant parents typically achieve higher levels of education than their counterparts with domestic-born parents while the opposite is typically observed in Europe, although the educational attainment gap narrows between the first and second generation in many European countries (See reviews by Algan et al., 2010; Heath et al,, 2008; Picot and Hou 2010).

This paper seeks to extend our understanding of this difference between North America and Europe in two ways. First, the research compares and contrasts differences between one European and one North American country regarding the determinants of the educational attainment gap between students of immigrant parents and those with domestic-born parents. The countries are Switzerland and Canada. They were selected for two reasons. They have very different educational and immigration systems, which may affect the educational outcomes among children of immigrants, and they are among the very few countries that possess the longitudinal data necessary for such research,.

Second, the longitudinal surveys for both countries include the same measure of students' secondary school performance and other unique variables that allow us to extend earlier research regarding the role of immigrant background in educational attainment. The results of the 2000 Programme for International Assessment (PISA), administered to students at age 15, were imbedded by both countries in longitudinal surveys that tracked students to age 23. These data allow us to examine the role of

student secondary school performance in explaining the gap in educational attainment between students with and without an immigrant background, something rarely possible in earlier research. Furthermore, these same data for Canada contain new information on the aspirations of the family and the student regarding university education which may be a critical factor behind the superior performance of students from some immigrant groups.

Researchers have looked to traditional variables such as parental education, family income and other social, economic or cultural background variables to explain the educational attainment gap between student with and without immigrant backgrounds (Boyd, 2002; Card, 2005; Finnie and Mueller, 2010; Heath et al., 2008; Meyer and Bertschy, 2011). But family background variables like parental education may work through other intermediate variables, such as secondary school performance and parents' educational aspirations for the child. In particular, we extend earlier research by assessing the direct effect of differences in secondary school performance by students with and without immigrant backgrounds on educational attainment. Placing this research in a comparative context also allows us to discuss the possible role played by differences in the immigration system in the two countries.

2. Literature review

Students' academic and cognitive performance in secondary school is positively correlated with their ultimate educational attainment. Programme for International Student Assessment (PISA) reading literacy tests, administered at age 15, provide one means of assessing the association between secondary school performance and

educational attainment. A recent Organisation for Economic Co-operation and Development (OECD) study found that, in Canada, students who obtained the highest PISA scores (Level 5) were 20 times[2] more likely to attend university and twice as likely to attend college than those who obtained the lowest PISA scores (Level 1) (OECD, 2010).[3] In Switzerland, researchers found that almost one-half of students aged 15 years who scored at Levels 4 and 5 on the PISA reading literacy test continued on to the tertiary education level (i.e. education beyond the upper secondary level) six years later, compared with only 8% of those scoring at reading literacy Level 2 (Meyer and Bertschy, 2011).

Parental aspirations regarding their children's educational attainment also seems to matter. Using longitudinal data from Statistics Canada's Youth in Transition Survey (YITS), Foley et al. (2010) conclude that parental aspirations are major determinants of the tendency to drop out of high school by age 19, above and beyond any effect of the PISA score at age 15, family background or other variables. This was particularly true for students with low PISA reading scores at age 15. In fact, Foley et al. conclude that, after accounting for PISA reading scores and parental valuation of education, parental educational attainment has no direct effect on the student's probability of dropping out of high school. Falter (2009) obtains similar results for Switzerland, except that the outcome variable is the likelihood of making the transition to a particular upper secondary school stream, typically a vocational or academic stream (see the next section). After controlling

2. This is an adjusted result, after controlling for other variables such as parents' education, secondary school marks and gender.
3. The PISA reading scores were much better at discriminating between those who attend university and those who do not than other variables, such as self-reported secondary school marks and parents' education (OECD, 2010b).

for PISA score, he finds that parental background has little effect on the outcomes of low- and high-ability students.

Canadian research on the educational attainment gap between the children of immigrants and children with Canadian-born parents suggests that the most important determinants are parents' education, age and residential location (Bonikowska, 2008; Boyd, 2002; Hum and Simpson, 2007). However, parents' education may be a proxy for other effects, such as parental aspirations regarding the child's education, the child's performance in high school, educational resources made available to the child and the valuation of education by the parents or the child. But even after accounting for many determinants, this research finds that as much as one-half of the positive gap in educational attainment between the children of immigrant and domestic-born parents persists (Abada et al., 2009).

More recent Canadian research uses YITS data to address issues related to postsecondary participation among students with and without immigrant backgrounds (Childs et al., 2010). They find that parental aspirations regarding university education are higher among children with immigrant backgrounds, particularly among immigrant families from source regions such as China, India, other Asian countries and Africa.

Recent European research also shows significant differences in educational attainment between the children of immigrant and non-immigrant families. Heath et al. (2008) find that second-generation students whose parents came from less economically developed countries tend to have much lower educational attainment (before controlling for social background) than the students from non-immigrant groups. However, just as in Canada and the United States, second-generation immigrants of Indian and Chinese

background often outperform children of non-immigrant families (unconditionally). Heath et al. find that among second-generation groups of European ancestry, lower levels of educational attainment among children with immigrant backgrounds than those without can be accounted for by socio-economic background. They also point out that educational aspirations are often much higher among immigrant than domestic-born families.

In Switzerland, Meyer and Bertschy (2011) conclude that—after controlling for socio-economic background, PISA literacy scores and the student's secondary school stream—immigration background has no effect on the likelihood of pursuing tertiary-level education. However, they point out that this does not mean that immigration background is unimportant. Its effect may work through other variables, notably the type of secondary school stream in which students with immigrant backgrounds find themselves compared with those with Swiss backgrounds.

3. Inter-country differences in the immigration and education systems

To understand the inter-country differences in the role of student immigrant background on university participation, it is necessary to review the basic features of different immigration and education systems.

Canada, like Australia and New Zealand, has an immigration system that focuses on educated and skilled immigrants. Immigrants have, on average, educational attainment levels above those of the Canadian-born population. This has a positive influence on both the social and economic integration of immigrants, as well as the educational outcomes of the children of immigrants (Picot and Hou, 2010). Switzerland, like many European

nations, has experienced the immigration of largely lower-skilled workers. However, because of changes in the Swiss system during the early 1990s, and more recently with the June 2002 Agreement on the free movement of persons in the European Union (EU), migration patterns are shifting. Many highly skilled immigrants are now entering Switzerland from nations such as Germany and France, and a smaller share of lower-skilled immigrants are arriving from regions such as the Balkans, and countries such as Turkey and Portugal. Differences in the immigration systems in Canada and Switzerland are reflected in the socio-economic characteristics of students with immigrant backgrounds in the two countries, with implications for rates of participation in university.

The Canadian and Swiss education systems are also structurally very different. The Swiss system is highly selective. Starting in the sixth or seventh grade, students are streamed into either an upper school track with more intellectually demanding courses, an intermediate track, or a basic track (see Bertschy et al. (2009) and Meyer (2009) for a description of this school system). Only 3% of students from the "basic" track enter tertiary-level (referred to as post-secondary in North America) education by age 23, compared with 30% of those in the upper-level track (Meyer and Bertschy, 2011). Students with an immigrant background are over-represented in the lower-level tracks, thus limiting their tertiary educational opportunities (Meyer, 2009). Following compulsory school, students move into upper-secondary, which is also heavily segmented. Most students (between 40% and 70%, depending upon the region) enter a three- to four-year vocational training (VET) program, usually through a dual apprenticeship, where training is done both in school and with a firm. General education

is provided in the gymnasium stream, which typically leads to university. Meunier (2011) found that 24% of students with Swiss parents were in streams that prepared for university entrance, compared with 19% of second-generation students and 12% of first-generation (immigrant) students.

At the tertiary level, the level beyond upper secondary, there are two major streams, "Tertiary A", and "Tertiary B". The former includes longer university programs leading to a bachelor's, master's or higher degree. Tertiary B includes mostly vocational programs in specialized areas. At age 23, roughly 25% of the 15-year-old cohort are in tertiary A and 5% in Tertiary B (OPET, 2011).[4]

The Canadian educational system has a simpler structure. There is little or no streaming during elementary and secondary schooling in most provinces, although there is significant freedom in course selection. As a result of this course selection by students, some are eligible to apply to more types of post-secondary options, such as university or college, than others. At the post-secondary level, most provinces have both community colleges and universities. Universities are degree granting institutions at the bachelors, master and PhD level.

We use *university* participation as the outcome variable in this paper. It is at this level that the two school systems are the most comparable, since it is only universities that grant degrees in both countries. Other types of education, such as vocational or community college, are structured very differently. In Switzerland, many students do not

4. However, many students enter the Tertiary B level at an older age, so that perhaps half of the students who graduate from Tertiary B have not entered the system by age 23. Thus, by focusing on the educational outcomes of 23-year-olds, we are under-representing the ultimate participation in Tertiary B level in particular.

continue to the college (tertiary) level because upper secondary VET graduation offers valuable labour market opportunities. Such opportunities do not exist in Canada.

4. Data and Methods

4.1 The Data

The analyses for both Canada and Switzerland utilize longitudinal surveys that tracked secondary school students from age 15 in December, 1999 to age 23 in December, 2007. Both surveys start with the national student sample of 15 year olds[5] from the PISA 2000 project. This project assessed reading, mathematical and scientific literacy among 15 year olds, with a primary focus on reading literacy, the measure used in this analysis.

PISA defines reading literacy quite broadly, as the ability to understand, use and reflect upon written texts (OECD 2001). The OECD claims that PISA literacy scores assess the extent to which 15-year-old students have mastered reading literacy abilities, and have demonstrated the cognitive skills that are required for future academic advancement (OECD, 2001). To do so, it measures ability in three major domains: (1) the ability to read various types of text, including different types of prose, as well as forms, charts and diagrams, (2) the ability to retrieve, understand, interpret and reflect upon text, and (3) to be able to relate the text to its intended use, such as private use, public documents, work-related use or for educational purposes.

PISA 2000 also collected information on social, cultural, economic and educational factors believed to be associated with student performance. Based on this 15-year-old student sample from PISA 2000, both Canada and Switzerland implemented a

[5] The Canadian sample consisted of a representative sample of 15 year olds in the secondary school system. The Swiss sample was representative of students in grade nine as of Dec. 1999, and hence includes some students who were slightly younger or older than age 15.

longitudinal survey designed to examine the major transitions in young peoples lives as they move through the educational system into the labour force. The Swiss TREE (Transition from Education to Employment) survey started with an original sample in the first wave of 5532 at age 15. By the 7th wave, 3979 remained at age 23. Data from both the 1st and 7th wave are used in this paper, and the sample is restricted to those students still in the sample in the 7th wave.

The Canadian YITS (Youth in Transition Survey) started in wave 1 with 29687 respondents, and by wave 5 at age 23, 14751 remained, for an attrition rate of 50%. In the current study, we exclude observations that do not have a valid value for the "generational" variable, reducing the sample size to 13,705 observations. In both surveys, the data were reweighted to reduce the sample bias introduced by non-response, and to compensate as much as possible for sample attrition[6]. We also take into account the stratified and clustered sample design in estimating standard errors.[7]

4.2 The Methods

[6] Both surveys contain a longitudinal weight to account for non-random attrition. Since we focus on students with and without immigrant backgrounds, we are concerned with differential response rates in these two groups and their possible effects. However, the response rates were not that dissimilar. The response rates for students with immigrant backgrounds and those without were, in Switzerland 57% and 66% respectively, and in Canada 49% and 54%.

[7] The TREE provides variables on stratification and primary sampling unit identifier that allow us to estimate the corrected standard errors. YITS provides 1000 bootstrap replicate weights for standard error estimates.

Linear probability models (i.e. ordinary least squares models) are used in the statistical analysis section of the paper[8]. The dependent (outcome) variable is a binary variable of university participation: 1= attended or finished university by age 23, 0 otherwise. The sample for both countries includes all students in the PISA 2000 sample (at age 15) who were still in the sample at age 23. Three models are run. They are:

Model 1: $Y_i = \beta_1 G_i + \beta_2 H_i + \beta_3 I_i + \varepsilon_i$

Model 2: $Y_i = \beta'_1 G_i + \beta'_2 H_i + \beta'_3 I_i + \beta_x X_i + \beta_p P_i + \varepsilon_i$

Model 3: $Y_i = \beta^{\dagger}_1 G_i + \beta^{\dagger}_2 H_i + \beta^{\dagger}_3 I_i + \beta_x X_i + \beta_p P_i + \beta_z Z_i + \varepsilon_i$

Immigrant status is the only independent variable in model 1. It has four levels: (1) G_i =1 for immigrant (foreign born) students who immigrated prior to the age of 15, (referred to as 1st generation students), 0 otherwise. (2) H_i =1 for domestic-born students with two immigrant (foreign born) parents, (referred to as 2nd generation students), 0 otherwise. (3) I_i=1 for domestic-born with one immigrant (foreign born) parent and one domestic-born parent, (referred to as the 2.5 generation), 0 otherwise. (4) Reference group: students with two domestic-born parents, referred to as the 3rd-and-higher generation.

Since the 3rd-and-higher generation is selected as the reference group, the coefficients on the immigrant status variables tell us the difference in the raw data in the probability of attending university between students with a given generation status (say 2nd generation) and those in the 3rd-and-higher generation.

[8] These are preferred to logit or probit models because the coefficients can be interpreted directly. Also, most of the probabilities are not close to either zero or one, and hence all three types of models (logit, probit and linear probability) give approximately the same result.

Model 2 utilizes the independent variables that are common to both data sets. In addition to the immigrant status variable, a vector of Xs is added that includes gender, parents' highest level of education, family type, number of siblings, language spoken at home, and the size of the city of residence. The student's PISA reading literacy score, Pi, is also included in model 2.[9] The coefficient on the immigrant status variable in model 2 tells us the difference in the probability of attending university after having controlled for the PISA reading score and the family socio-demographic variables included in model 2. Hence the difference in the immigrant status coefficients between model 1 (raw data) and model 2 (e.g. $\beta_1 - \beta'_1$) indicates how much of the university participation gap of interest (say between the 1st and 3rd-and-higher generations) is "explained" or accounted for by the independent variables included in model 2.

Furthermore, we go on to run a decomposition which tells us how much each of the independent variables contributed to this "explained" gap (e.g. $\beta_1 - \beta'_1$) This is useful, since we want to know which variables are important in accounting for the gap. Taking $\beta_1 - \beta'_1$ as the example, it can be shown that $\beta_1 - \beta'_1 = \Sigma\, \beta_x * (\overline{X}_{i.G1} - \overline{X}_{i.G0}) + \beta_p * (\overline{P}_{i.G1} - \overline{P}_{i.G0})$, where $\overline{X}_{i.G1} - \overline{X}_{i.G0}$ is the difference between the 1st generation and 3rd-and-higher generation in the means of variables X_is and $\overline{P}_{i.G1} - \overline{P}_{i.G0}$ is the difference between the 1st generation and 3rd-and-higher generation in the means of PISA reading scores (Abada, Hou and Ram 2009).[10] From this equation, the total "explained"

[9] Regarding the PISA variable, five "plausible values" of this variable were used in the analysis, as opposed to a single value. This approach is necessary because not all students receive all PISA questions. See the PISA Data Analysis Manual, OECD (2009), for more detail. The regressions are run 5 times with the 5 values, and the average value of the coefficients used.

[10] This is done following one variation of the Oaxaca decomposition method (Oaxaca and Ransom 1994). In this approach, the 'explained' component is calculated as the sum of the

component, $\beta_1 - \beta'_1$, can be further decomposed into the contribution of each characteristic as $\beta_{xi}*(\overline{X}_{i.G1} - \overline{X}_{i.G0})/(\beta_1 - \beta'_1)$ for group difference in variable X_i, or $\beta_p*(\overline{P}_{i.G1} - \overline{P}_{i.G0})/(\beta_1 - \beta'_1)$ for group difference in PISA reading scores. A similar decomposition of the gap $\beta_2 - \beta'_2$ is carried out. The results from model 2 show to what extent the advantage (in Canada) or disadvantage (in Switzerland) of students with immigrant backgrounds is associated with their family socio-demographic characteristics, some of which are the result of the respective immigration systems. Thus comparisons of the results between Canada and Switzerland are suggestive of the effects of different immigration systems on the educational outcomes of youth with immigrant backgrounds.

Model 3 includes all the independent variables in model 2, plus a vector Z that includes variables unique to each country. For Switzerland, this includes the student's secondary school stream and language of the canton of residence, variables that can affect the rate of university attendance[11].

For Canada, the additional variables in model 3 include the aspirations of both the parent and the students regarding the student's future education attainment[12], whether the family has made some financial preparation for university education, and whether the

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differences between group means and the means of the reference group, with the differences weighted by the model coefficients of the pooled sample.

[11] Interpreting the effect of the streaming variable on university attendance, and whether immigration works through the streaming variable, has some issues in this model, since PISA scores may cause the different streams, or be a result of them. Hence, part of the effect of streaming may be captured in the PISA variable.

[12] More precisely, the responding parents is asked "What is the highest level of education you hope that your child will get?" with 7 possible responses ranging from "less than high school diploma" to "more than one university degree". The student is asked "What is the highest level of education that you would like to get?", with the same possible response categories. The two dummy variables used in the model are the share of respondents (parents or students) indicating they hope for one or more university degrees.

student expects to have a job that requires a university degree. These variables are not available in the Swiss data[13]. The additional variables in model 3 show how immigrant status works through parents' aspirations for their children and children's aspirations.

The "explained" gap in model 3 indicates that portion of the original gap (in the raw data) that can be accounted for by the extended list of independent variables included in the model. The same decomposition technique used for model 2 is applied to the results from model 3 to determine the contribution of each variable to the "explained" gap.

We also examine some possible interaction effects. Earlier research suggests that the effect of parental education on university attendance may differ between the 2nd and 3rd-and-higher generations. In Canada the correlation between parents' education and the students' educational attainment is observed to be weaker among immigrant families than among domestic-born families (Bonikowska, 2008; Childs, Finnie, Mueller 2010). Similar results are found in Switzerland (Bauer and Riphahn, 2007). This would suggest interacting immigrant (generational) status and parental education in the model. It may also be that PISA scores have a different effect on attendance for students with immigrant or domestic-born parents, also suggesting an interaction term. In a robustness check, including these interaction terms had virtually no effect on differences in university attendance between students with and without immigrant backgrounds. Furthermore, in

[13] It is conceivable that educational aspirations are influenced by the degree of openness of the national post-secondary system. Switzerland, as opposed to Canada, has fairly restricted access to tertiary education. The explanatory power of the aspirations variable in the model may be due to the interaction of aspirations and the opportunity structure of the education system.

many cases the interaction terms themselves were statistically insignificant. Hence, we excluded them from the final models.

Finally, in order to further disentangle the effect of immigrant backgrounds on university participation, we examine the variations in the outcome by source region. Earlier research demonstrated significant variation in educational attainment by ethnic group/source region, even after adjusting for differences in the traditional family and other background variables.

5. Results

5.1 *Descriptive results*

5.1.1 The likelihood of attending university by immigrant background

Participation at the university level by the PISA 2000 cohort in 2007 was higher in Canada than Switzerland (35.7% vs. 22.6%, Table 1). Keller, Hupta-Brunner and Meyer (2010) observe that Switzerland has one of the lowest rates of tertiary education among developed economies. This is in part because of the successful VET (vocational education and training) programs in upper secondary school. Many Swiss students, including some strong academic performers, choose upper secondary VET programs rather than university, and make very successful transitions to the labour market. That option does not exist in Canada. However, the Canadian-Swiss differences are accentuated among students with immigrant backgrounds.

It is among students with immigrant backgrounds that the largest difference is observed. Close to one-half of the 1st and 2nd generation students in Canada attended a university at age 23, compared to only 11% and 20% respectively in Switzerland. Among

students *without* immigrant backgrounds, the inter-country difference was much smaller (31.6% vs. 25.0%). However, our main focus is not on the Swiss-Canadian differences, but rather the participation rate gap between students with and without immigrant backgrounds within each country.

5.1.2 PISA reading literacy by immigrant background

PISA reading literacy scores were higher in Canada than in Switzerland. In PISA 2000, used in this research, the mean literacy performance score in Canada was 534 and 494 in Switzerland. The average for all OECD countries was 500.

The differences between the two countries were concentrated among the 1st and 2nd generation students[14]. In Switzerland, PISA scores were much lower among children with an immigrant background. Students with Swiss-born parents (the 3rd-and-higher generation) registered a score of 517, those born in Switzerland with immigrant parents 452, and immigrant students, 404 (Table 1)[15]. In Canada, 2nd- and 3rd-and-higher generation students had approximately the same average raw PISA score, at around 540. Students who are immigrants themselves had slightly lower scores, at 518. All of these groups, however, had scores above the OECD average score of 500..

Differences by immigrant background are more starkly presented based on distributions of PISA scores. PISA categorized students in five reading levels, and those

[14] The share of 15 year old students in each generation is similar in the two countries. In Canada, the 1st (foreign born students), 2nd (domestic born with two foreign born parents) and 2.5 (domestic born with one foreign born parent) generations constituted 9%, 10% and 8% respectively of the original PISA 2000 student sample; for Switzerland the comparable shares were 12%, 9% and 13%.

[15] For many of these foreign born students the language of assessment would have been a second language, and some may not have had many years experience in the school system of their host country.

in levels 1 and 2 were considered to have poor outcomes (with scores below 480). In Canada, there was relatively little difference in the share of students from the three generations at levels 1 and 2 (37%, 24% and 26% respectively for generations 1, 2 and 3rd and higher). In Switzerland, fully 78% of 1st generation and 61% of 2nd generation students were considered poor secondary school performers by this measure, compared to 31% of the 3rd-and-higher generation.

5.1.3 Differences in other explanatory factors by immigrant background

The differences in other socio-demographic characteristics between students with immigrant backgrounds (1st and 2nd generations) and those without (3rd-and-higher generation) are almost the mirror-image in Canada and Switzerland. In Canada, first and 2nd generation students exhibit socio-demographic characteristics that tend to be correlated with higher levels of university participation. In Switzerland, at least among the immigrant parents of 15 year old students in 2000[16], the opposite is often the case. Following are a few examples of potentially important differences between the countries.

In Canada, the parents of 1st and 2nd generation students are more highly educated than those of the 3rd-and-higher generation: 49% of 1st generation and 38% of 2nd generation students have two parents who are post-secondary graduates (college or university) compared to 33% among the 3rd-and-higher generation (Table 1). A smaller share of 1st and 2nd generation students are in families without two biological parents (e.g. single parent or blended families) than are 3rd-and-higher generation students (21.1% and

[16] As noted elsewhere, the immigration system in Switzerland changed dramatically in the mid 1990s; future cohorts of 15 year olds with immigrant backgrounds may have a "higher" socio-economic status.

24.9% vs. 26.2%). Students from single parent or blended families are less likely to participate in university than those from two-parent families, all else equal. Both 1st and 2nd generation students, and their parents, have greater aspirations/hopes of attaining a university education than their 3rd-and-higher generation counterparts. A larger share of 1st and 2nd generation students live in the three largest metropolitan areas (63% and 55% vs. 21% for the 3rd-and-higher generation), where university attendance is higher.

In Switzerland, while the educational attainment of the parents of students with immigrant backgrounds is quite polarized, in general it is lower than among the 3rd-and-higher generation parents: 50% of the parents of first-generation students and 52% of the parents of second-generation students have lower secondary school education or less. This is the case for 21% of the parents of students in the 3rd-and-higher generation (Table 1). The educational resources at home are greater among the 3rd-and-higher generation than the 2nd generation, on average. Differences in residential location (city size) tend to favour higher participation by 1st and 2nd generation students, as in Canada. These students are more likely to live in cities where the probability of attending university or the tertiary level is greater, and less likely to live in villages and smaller communities.

By design, in Switzerland students in the pre-gymnasial stream in secondary school are much more likely to attend university or the tertiary level in general than those in the other streams (extended or basic academic requirements). Immigrant (1st generation) students are much less likely to be in the pre-gymnasium stream than the 3rd-and-higher generation students (14% compared with 31%). This may be related to many factors, including academic performance, as well as cultural and social background differences, and their effect on "streaming" decisions. However, 2nd generation students are, if

anything, more likely to be in the pre-gymnasial stream (34%). This tends to increase their likelihood of attending the tertiary level.

5.2 Accounting for the gap in university participation by immigrant background

To account for the gap in university participation by immigrant background, we use the linear probability regression models outlined in the Data and Methods section. The dependent variable is university participation.

For Canada, among both the 1st and 2nd generation students the likelihood of attending university is about 18 percentage points higher than for 3rd-and-higher generation students. Differences in family socio-demographic characteristics and PISA scores (model 2) account for one-third to one-half of this gap (Table 2). The additional variables in model 3 increase the "explained" gap to about 60% of the original unadjusted gap. Around 10 percentage points of the 18 percentage-point gap is accounted for. Even after controlling for all of the explanatory variables, immigrant status remains important.

In model 3, the decomposition indicates that the higher parental and students' own aspirations regarding university education account for almost two-thirds of the explained positive gap for the 1st generation, and about one-half for the 2nd generation (Table 2). In model 2 home language appears to be important for the 1st generation, but in model 3 it is much less so[17]. The higher parental educational attainment among the 1st generation remains significant, but its effect is reduced, accounting for only 15% of the explained gap. Parental educational differences play little role in explaining the gap for the 2nd

[17] This suggests that in model 2 home language was picking up effects associated with immigrant families, such as higher educational aspirations and financial preparedness, rather than the effects of language itself.

generation students. Geographical location and the lower PISA scores registered by 1st generation students (but not 2nd generation) play lesser roles.

These results fit with earlier research by Foley et al (2010) and Childs et al (2010) for Canada. Both papers find that when parental aspirations are included, the effects of parental education and ethnic background on educational outcomes are reduced, and in the case of Foley et al, the effect of parental education is completely eliminated[18].

For Switzerland, the story is very different. The large 14 percentage-point deficit in university participation among *1st generation students* as compared to the 3rd-and-higher generation is entirely accounted for in both models 2 and 3 (Table 2). In model 2, the lower PISA scores among the 1st generation, as compared to the 3rd-and-higher generation, more than account for the entire gap. In model 3, secondary school stream is added, and the effect of the PISA score is reduced, but remains important. Together these two variables account for more than the entire gap. The model 3 results are not surprising. The effect of the PISA scores may act, in part, through the secondary school streaming, since the stream allocation is determined in part by academic performance[19]. In the end, differences in reading literacy appear to be the principle explanation of the difference in university attendance between the 1st and 3rd-and-higher generations. However, the streaming of 1st generation students into the "basic" program is partly related to social and cultural background, including immigration status (see Haeberlinet

[18] In the regressions with the probability of university participation as the outcome variable, some of the effects of parental educational attainment and other background variables on participation are likely working through the PISA variable. We found that when the PISA variable is not included in the regression, the β on parental education increased considerably. One can think about βs on the parental education variable in model 2 or 3 as reflecting the effect that remains after accounting for the effect of parental education on the PISA score.

[19] But the causality may also run the other way, as streaming could affect the PISA score at age 15. Hence, it is difficult to separate the effects of these two variables.

et al, 2004, and Sacchi et al, 2010). Hence, social and cultural background may play a role through the "streaming" variable.

Among the *2nd generation* in Switzerland, the students' lower PISA scores, as compared to the 3rd-and-higher generation, also represent the major explanation of the gap. In model 2, conditional on having similar PISA scores and other background variables, the children of immigrants are about 6 percentage points *more* likely to attend university than their counterparts with Swiss-born parents (table available on request). But PISA scores in particular are not similar, and they more than account for the "explained" gap in university attendance between the 2nd and 3rd-and-higher generations. In model 3, conditional on having the same PISA score, family socio-demographic characteristics and secondary school stream[20], the 2nd and 3rd-and-higher generations are seen to have about the same likelihood of attending university; the original observed gap disappears. Again, the decomposition shows that differences in the PISA scores between generations more than accounted for the original observed gap in university attendance (Table 2).

To summarize, in the raw data, the 1st and 2nd generation students in Canada are much more likely to attend university than their 3rd-and-higher generation counterparts, while in Switzerland the opposite is true. In the Swiss case, the fact that immigrant-background students have, on average, lower reading and comprehension ability in high school accounts for the entire negative gap in university attendance. Once these

[20] Adding the secondary school stream variable in model 3 results in the disappearance of the positive university attendance gap between the 2nd and 3rd-and-higher generations observed in model 2. That is because the 2nd generation is marginally *more* likely to be in the pre-gymnasial stream, which leads to university, than the 3rd-and-higher generation. Hence, after controlling for (adjusting for) these differences in the streams, the university participation rate advantage of the 2nd generation over the 3rd -and-higher generation is seen to disappear.

academic/cognitive differences are accounted for, family socio-demographic characteristics, including parents' education, account for little of the difference between students with and without immigrant backgrounds. Some of the effect of parents' education likely works through the PISA variable.

In the Canadian case, we find that the greater aspirations regarding university education among immigrant families, both 1st and 2nd generations, play the greatest role in accounting for their higher university attendance as compared to the children with Canadian-born parents. Higher parental education played a lesser role after aspirations were included. Differences in academic/cognitive ability as measured by the PISA scores do not contribute to the gap for the 2nd generation, although they do negatively affect university attendance among the 1st generation students.

5.3 Differences in university participation by source country background

Source country, likely serving as a proxy for a host of variables that it may be difficult to disentangle, is one of the important determinants of the educational attainment of the children of immigrants (Picot and Hou, 2010; Heath et al., 2008). The effect associated with the "source country" variable may reflect differences in culture and the value placed on education by the parents, the expectations of the parents regarding educational attainment, community resources and the support available from the ethnic group as a whole ("ethnic capital"), the educational attainment and occupational status of the parents, which varies by ethnic groups, the quality of the school systems to which students are exposed, home language effects, and other cultural differences influencing life-style choices.

With the data at hand, we can account for some of these differences, but not others. Our work differs from the earlier research because we are able to control for secondary school performance and cognitive abilities by using the PISA scores. Most of earlier research did not have access to such data.

In Switzerland, a little over one-quarter of the immigrant-background students were from, or had parents who were from, developed European economies (Table 3). About 40% were born in, or had parents who were born in, the less developed economies of the former Yugoslavia, Albania, Kosovo or Turkey. The remaining roughly one-third had Spanish or Portuguese origins, or were from other countries.

The origin of immigrant-background students was very different in Canada (Table 3). About 44% were of Asian origin, notably China and India. About 18% had backgrounds associated with the developed economies of the U.S., the U.K or Northern and Western Europe. The remaining one-third were born in, or had parents who were born in, Central or South America, elsewhere in Europe, or Africa.

To assess differences in outcomes by source region of the parents (or students if they are immigrants), we use the three regression models outlined in the methods section. With the exception of the "immigrant status" variables, the independent variables are the same as those used in the earlier described regression models 1, 2 and 3. Given the small sample sizes, it is necessary to combine the 1st and 2nd generation populations into one category, referred to as students with immigrant backgrounds. Rather than employing binary variables that denotes generational status (1st, 2nd , 2.5 or 3rd-and-higher) as in the earlier regressions, we use a "source region" variable that denotes the country of birth for 1st generation students, and of the parents for 2nd generation students. The source country

variable has seven levels for Switzerland, and eleven for Canada.[21] The 3rd-and-higher generation is always the reference group. Hence, the coefficients in the regression model estimate the differences in university participation between the immigrant-background students whose source region is, say, Turkey, and 3rd-and-higher generation students. The same approach is used with the Canadian sample.

In *Switzerland*, unconditionally (in the raw data, model 1), immigrant-background students with German/Austrian/French/Belgium origins are more likely than 3rd-and-higher generation students to attend university, while those with all other origins are less likely to attend (Table 4). The differences are substantial, ranging from 16 percentage points more likely to attend (German/Austrian/French/Belgium) to 19 percentage points less likely to attend (Yugoslavia/Albania/Kosovo).

For most regions, the differences in the explanatory variables included in models 3 can account for most of this gap in university participation between immigrant-background students from a particular region, and students with Swiss-born parents. After controlling for family socio-demographic characteristics, and in particular PISA scores, as well as secondary school stream in model 3, most or all the gap is accounted for in most cases (Table 4). The German/Austrian/France/Belgium case is an exception. Relatively little of the advantage of these students relative to students with Swiss-born parents in university attendance is accounted for either by family socio-demographic

[21] The country of birth variable is coded differently in the YITS (Canada) and the TREE (Switzerland) data, reflecting their large differences in the source country composition. For Switzerland, the categories for this variable include Switzerland (i.e. 3rd-and-higher generation), Germany/France/Austria/Belgium, Italy, Spain/Portugal, Yugoslavia/Albania/Kosovo, Turkey, and Other. For Canada, the categories are Canada (i.e., the 3rd-and-higher generation), China, India, Other East or South East Asia, Other Asia, U.S., Central/South America, U.K., Northern/Western Europe, Other Europe, Africa and others. Some aggregation of categories was necessary due to sample size issues.

characteristics, PISA scores or school stream. Other unmeasured variables are playing a significant role.

For *Canada,* the now familiar pattern is observed (Table 4). Unconditionally, students with Chinese origins are 40 percentage points more likely to attend university than those with Canadian-born parents. That means that almost three quarters of students with the Chinese origin attend university, more than twice the rate among students with Canadian-born parents. Socio-demographic characteristics, aspirations regarding attendance, as well as residential location (model 3), account for 40% of this positive gap in the Chinese case. There remains an unexplained component even with this relatively rich set of explanatory variables.

Students with many other source region origins also display a significant advantage over students with Canadian-born parents in university participation. This is particularly true for students with all other Asian origins, Africa, and "other European" origins. Students from other developed economies such as the U.S, U.K., and Northern and Western Europe do not differ much from students with Canadian-born parents in university participation. However, students with immigrant backgrounds from all source-regions used in this typology have participation rates equal to or higher than students with Canadian-born parents. No source region group is seen to lag behind in the raw data.

Among the source regions with large positive advantages in university participation, the proportion of the gap with 3rd-and-higher generation students that can be accounted for by differences in family socio-demographic characteristics, PISA scores, aspirations and other variables in model 3 varies tremendously, from one-quarter

to two-thirds (Table 4). In many cases the university attendance advantage cannot be entirely explained, even by the rich set of variables available in model 3.

The very high incidence of university participation among Asian origin students in particular is even observed among students who were performing poorly in secondary school at age 15. The authors ran the same three regression models outlined above on the population of students at levels 1 and 2 of the five level PISA standings, those considered to be poor performers (results available on request). These students scored below 480 on the PISA reading test[22]. Poor performing secondary students with a Chinese background were seven times more likely to attend university than their counterparts with Canadian-born parents, and similar students with other Asian backgrounds were four times more likely to attend. Specifically, 8% of the poor performing students with Canadian born parents attended university by age 23, compared to over one-half of students with a Chinese background, and one-third of those with other Asian backgrounds. And differences in the explanatory variables in model 3 could account for only one-quarter to one-half of this gap between students with and without an (Asian) immigrant background.

A very high share of students with Asian backgrounds found ways to attend university, even if they performed poorly on the PISA tests. These tests were designed to determine if students had mastered the academic skills, broadly defined, required for future academic advancement, and are usually highly correlated with educational attainment. And the rich set of independent variables available, including parental and

[22] These poorer performers constituted 38% of 1st generation, 23% of 2nd generation and 26% of 3rd-and-higher generation students.

student aspirations, could account for only a minority of the gap. Other unmeasured factors are at play.

6. Summary of Findings

Consistent with earlier research, first- and second-generation students in Canada are more likely to continue to the university level than their counterparts with Canadian-born parents. In Switzerland, they are less likely to continue.

In Switzerland, this negative university participation gap is due almost entirely to lower secondary-school performance among immigrant-background students, as measured by PISA reading literacy scores. After controlling for PISA scores, differences in family background and other variables become less important. When secondary-school stream is included, it also explains a significant portion of the gap. However, academic performance in secondary school may work in part through this variable, since school stream is determined by academic performance as well as other variables such as social background.

Canada's story is very different. Differences in PISA scores play little role in the positive university participation gap between students with and without immigrant backgrounds. Our analysis can account for about one-half of the gap, and parents' and students' aspirations regarding the student's postsecondary education account for much of this.

In both countries, there is significant variation (unconditionally) by source region in university attendance. In the Swiss data, differences in the socio-economic and academic background (mainly academic) of immigrants and native-born students accounts for most

of the negative gap for most regions, but in the Canadian data only about one-quarter to two-thirds of the positive gap can be accounted for. Among source regions with very high university participation, mainly Asian, less than one-half of the positive gap can be accounted for. Other unmeasured factors are at play. Furthermore, in Canada Asian students participate at high levels in the university system even if they perform poorly in secondary school.

7. Discussion and Conclusion

The results point to a number of potential explanations of the differences between the two countries in the native-immigrant university participation gap, and to a number of puzzles that are beyond the scope and limits of this research. We will address four of these topics.

a) For Switzerland, why do students with immigrant backgrounds have lower PISA scores than students with Swiss backgrounds, a difference which accounts for most of the native-immigrant university participation gap in that country.

Meunier (2011) found that, for Switzerland, about 80% of the differences in the 2000 PISA reading scores between the 1st and 3rd plus generation students was explained by differences in endowments such as language, parental education, family income, etc. The authors of this paper, using the PISA reading score as the dependent variable, accounted for about half of the PISA gap between generations using family socio-demographic available in the TREE (Swiss) data set. Such results suggest that immigrant's observable characteristics play a major role in any story regarding both academic achievement and university participation. That places the focus on immigration policies and practices.

b) Do differences in immigration policy and practice as reflected in the types of immigrants entering the country explain the differences between Canada and Switzerland?

We cannot test this hypothesis directly using a regression decomposition technique, the approach normally used, because the two data sets are not comparable regarding three key variables, source country, educational aspirations and language. But studies have shown that when the Swiss immigrants have higher socio-economic backgrounds, their children's academic achievement increases and participation at university would likely increase. In the mid 1990s Swiss immigration policy changed so as to focus more on highly educated immigrants from the European Economic Area[23]. Cattaneo and Wolter (2012) show that the PISA score of 15 year old 1st generation students rose 43 points between 2000 and 2009, and about half of this increase can be accounted for by changes in immigrant observable characteristics related to the changes in immigration policy (parents education, socio-economic index, language, source region, etc.). If one also accounts for the fact that these "new" immigrant students were less likely to attend schools with a high concentration of "foreign" languages, then over two thirds of the increase in the PISA scores is accounted for.

Immigration policy obviously affects immigrant educational outcomes, and Canadian – Swiss differences in immigration policy are important. Having said that, there are other factors at work. In this work for Canada, variables influenced by the immigrant selection system accounted for only roughly one-half of the post-secondary attendance advantage of immigrant-background students over others.

[23] Before the change the majority of immigrants had no tertiary education and did not speak an official language. After the change, one-half had degrees and one-third spoke a national language.

c) Does the presence of a large Asian immigrant community in Canada account for part of the inter-country difference in the immigrant-native university attendance gap?

Looking to the future is an important motive for most immigrants, but ensuring a bright educational future for the children appears to be particularly strong among Asian immigrants. Whether that is the motive for immigration or not, higher university attendance among their children is one of the outcomes, even conditional on observable characteristics (table 4, Abada et al. 2009). And this observation is not restricted to Canada. Heath (2010) also found that educational outcomes of children with Asian backgrounds tended to be superior to those with native backgrounds in European nations as well. And Canada has a greater share of such immigrants[24]. The relatively large Asian community in Canada contributes to the differences between the two countries. However, this observation is only a part of the answer, since immigrant students from all other source regions also display a positive immigrant-native university participation gap in Canada, although not as large as that observed among the Asians (Abada et al. 2009).

d) Do differences in meritocratic practices contribute to the differences in the immigrant-native university participation gap?

In Switzerland, the over-representation of students with immigrant backgrounds in the lower academic streams significantly reduced their likelihood of attending university. This over-representation appears to be related to more than school performance. Sacchi et al. (2011) found that in Switzerland the transition from compulsory to upper secondary school is strongly shaped by the students' social origins and cultural backgrounds,

[24] Among the 15 year old immigrant students in the 2000 PISA, 44% had Asian backgrounds in Canada, notably Chinese and Indian, compared to a negligible number in Switzerland.

irrespective of their school achievements as measured by PISA reading scores and academic record. Haeberlin et al. (2004) found similar results. Students with immigrant backgrounds, but with equal school performance, were much less likely to be recommended for "higher level" school streams than were students with Swiss-born parents[25].

Our results suggest that if anything, in Canada the opposite holds. Poor performing secondary school students, as measured by PISA scores at age 15, with Chinese backgrounds[26] were seven times more likely to attend university than their poor-performing counterparts with a Canadian background. Low-performing students with other Asian backgrounds were four times more likely. What might explain this large difference in Canada? Differences in aspirations regarding university attendance likely play a strong role. But that does not explain how the immigrant low PISA performers manage to enter university. There are a number of potential explanations, but they cannot be tested with the data at hand. First, it may simply be that low-performing immigrant background students attend universities and programs with lower academic entrance requirements. But if this were the case, presumably low-performing students with Canadian backgrounds could as well[27].

Second, it may also be that there are avenues for lower performing students to attend university, but those with Canadian backgrounds make other choices, such as

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[25] For example, a Swiss girl with average school achievement had an 83% chance of being recommended for a school with extended requirements (beyond basic). A boy with an immigrant background and the same average achievement had a 37% chance. Coradi Vellacott and Wolter (2004) discuss other aspects of the degree of equity in the Swiss school system across immigrant and other groups.

[26] 1st and 2nd generations combined

[27] Furthermore, this explanation does not fit with a number of observations: Canada has a quite homogeneous university system, a disproportionately high number of Asian students are concentrated in academically demanding fields such as engineering, math and business; and Asian students are concentrated in major metropolitan areas, where university admission standards tend to be higher.

college or the work force. This would fit with the evidence regarding the stronger preference for a university education among families with Asian (and other immigrant groups) as compared to Canadian parents[28].

Third, the immigrant student may not have been comfortable in the language of the test, resulting in an underestimate of the student's real academic ability. However, the population studied here included both 1st and 2nd generation students. All the 2nd generation students and many of the 1st would have had all or most of their education in Canadian schools, so language would not be an issue for most. Finally, it may also be that given the strong preference for university attendance in Asian families, Asian students improve their academic performance considerably between age 15 and high school graduation, allowing university admission.

We do not know which of these hypotheses, or possibly others, explain the outcomes reported. Just as Swiss research has focused on why immigrant students do relatively poorly academically, Canadian research is needed to determine exactly how it is that the immigrant community is placed at an advantage regarding educational outcomes.

Beyond research puzzles, the results also hold policy implications. As earlier research suggested, parents' education may act indirectly through intermediate mechanisms such as secondary school performance and parental aspirations. This distinction is important. It is virtually impossible to change the parental background of current students in immigrant families, but there may be ways of improving their

[28] It is also conceivable that, just as in Switzerland, the recommendations from guidance counsellors regarding tertiary educational streams are different for Asian and "Canadian" students, except that in Canada a recommendation re university is more likely for Asian students. However, the influence of counsellors recommendations is much less in Canada than Switzerland.

secondary school performance, or the educational aspirations of the family. This may apply to all students from families with lower socio-economic backgrounds, not just immigrants. Improving the secondary school performance of students from lower socio-economic groups in general would, as a by product, help close the PISA score gap and hence the university attendance gap between students with immigrant and native backgrounds.

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Table 1. Variable means by generational status, Canada and Switzerland

	Canada				Switzerland			
	First generation	Second generation	2.5 generation	Third-and-higher generation	First generation	Second generation	2.5 generation	Third-and-higher generation
Attending university (%)	49.3	48.9	45.4	31.6	11.1	19.9	30.4	25.0
Plausible PISA reading (mean)	518	540	557	537	404	452	498	517
Girl (%)	51.9	53.8	48.5	48.3	46.2	44.2	51.6	50.5
Both parents with tertiary education	49.1	37.5	45.9	33.1	16.5	4.7	17.0	8.2
One parent with tertiary education	23.0	27.7	32.0	31.6	16.5	19.1	32.0	30.5
Both parents upper secondary	10.7	15.2	13.2	16.7	4.9	8.6	15.7	26.0
One parent upper secondary	7.4	7.0	6.6	10.6	11.8	15.7	14.4	10.6
One or both parents with lower secondary	4.3	7.0	1.6	6.3	29.0	36.7	15.5	20.4
Both parents lower than lower secondary	5.4	5.6	0.8	1.7	21.3	15.1	5.4	4.3
Nuclear families	76.5	73.8	85.7	71.1	68.1	66.1	81.5	76.5
Single parents	15.7	22.5	1.2	15.7	20.5	25.0	0.0	12.5
Blended families	5.4	2.4	10.3	10.5	9.7	5.8	11.2	6.7
Other families	2.3	1.3	2.8	2.7	1.8	3.1	7.3	4.4
Number of siblings (mean)	1.8	1.8	1.8	1.8	2.8	2.3	2.6	1.8
Home language is official	39.2	74.0	95.4	98.0	23.6	60.2	91.0	97.2
Educational resources at home (mean)	0.2	0.0	0.0	-0.2	-0.1	0.2	0.2	0.4
Time spent on homework (mean)	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03	-0.03
Three largest metropolitan areas	63.2	55.1	37.1	20.5				
The five next largest metropolitan areas	14.0	16.7	19.7	14.8				
Other metropolitan areas	13.2	16.4	16.8	17.6				
Small urban areas	4.5	7.2	11.0	18.4				
Town	4.3	3.8	11.1	18.3				
Village or rural area	0.9	0.8	4.3	10.3				
Parents hope child finish university	81.6	75.3	72.9	59.2				
Parents made financial preparation	63.3	75.4	75.4	65.4				
student hopes finishing university	79.1	72.0	74.6	56.3				
Expect a job requiring university	54.1	47.5	49.3	40.8				
Village					7.0	6.3	6.6	15.2
Town					73.2	66.5	75.8	74.8
City					16.8	26.3	13.8	7.8
Location missing					3.0	0.9	3.8	2.1
pre-gymnasial					14.2	33.7	29.3	30.9
Extended academic requirements					26.1	25.4	46.9	44.0
Basic academic requirements					55.7	36.3	20.6	23.7
No formal tracking					4.0	4.6	3.3	1.4
German language region					57.9	61.1	53.1	81.3
French language region					34.3	32.9	40.2	16.7
Sample size	569	841	871	11424	463	472	485	2559

Source: Canadian Youth in Transition Survey and Swiss Transition from Education to Employment Survey

Note: First generation refers to foreign born students; second generation refers to domestic-born students with two foreign born parents; 2.5 generation refers to domestic-born students with one foreign born parent; and third-and-higher generation refers to students with two domestic-born parents

Table 2. Decomposition of the gap in attending university between students with immigrant backgrounds and 3rd-and-higher generations, Canada and Switzerland

	Canada		Switzerland	
	Model 2	Model 3	Model 2	Model 3
First generation	Percentage points			
Observed gap	17.7	17.7	-14.0	-14.0
"Explained" Gap	6.0	10.5	-16.2	-15.1
Gap "explained" by differences in:				
Gender	0.2	0.1	0.1	0.1
Parents' education	2.0	1.5	-0.5	0.0
Family structure	0.6	0.5	-0.5	-0.3
Number of siblings	0.0	0.0	0.1	-0.3
Home language	2.2	0.7	4.3	2.2
Home education resources	0.3	0.1	0.4	-0.1
Homework time	1.8	1.0	0.0	0.0
PISA reading score	-3.3	-2.3	-21.3	-11.8
Geographic location	2.2	1.6	1.2	0.9
Parental expectation		2.7		
Parents made financial preparation		-0.1		
student hopes finishing university		3.9		
Expect a job requiring university degree		0.8		
School streaming				-6.3
Language regions				0.3
Second generation				
Observed gap	17.3	17.3	-5.1	-5.1
"Explained" Gap	7.3	10.1	-10.9	-5.6
Gap "explained" by differences in:				
Gender	0.3	0.2	0.1	0.1
Parents' education	0.4	0.4	-2.8	-1.9
Family structure	0.5	0.5	0.0	0.1
Number of siblings	0.0	0.0	0.1	-0.1
Home language	0.9	0.3	2.1	1.1
Home education resources	0.2	0.0	0.2	0.0
Homework time	1.6	0.9	0.1	0.1
PISA reading score	1.3	0.9	-12.3	-6.8
Geographic location	2.0	1.4	1.6	1.1
Parental expectation		2.0		
Parents made financial preparation		0.4		
student hopes finishing university		2.7		
Expect a job requiring university degree		0.4		
School streaming				0.5
Language regions				0.1

Source: Youth in Transition Survey, Canada

Note: First generation refers to foreign born students; second generation refers to domestic-born students with two foreign born parents; 2.5 generation refers to domestic-born students with one foreign born parent; and third-and-higher generation refers to students with two domestic-born parents

Table 3. Source countries among the first and second generation

In Canada			In Switzerland		
	Weighted percent distribution	Sample size		Weighted percent distribution	Sample size
China	14.3	224	Germany, Austria	3.1	51
India	9.8	119	France, Belgium	5.1	86
Other East, South East Asian	19.7	293	Italy	17.5	193
U.S.	4.4	77	Spain	3.8	62
Central/South America	13.0	154	Portugal	9.0	102
U.K.	8.9	125	Former Yugoslavia	15.6	120
Northern/Western Europe	3.9	87	Albania or Kosovo	13.5	56
Other Europe	18.4	219	Turkey	9.8	61
Africa and others	7.6	112	Others	22.6	204

Source: Swiss Transition from Education to Employment Survey and Canadian Youth in Transition Survey

Table 4. Differences in the likelihood of attending university between students with immigrant backgrounds and 3rd-and-higher generation students, by source region

Coefficients from regression models showing difference in the proportion of attending university

		Attending university as the outcome						
		Model 1		Model 2		Model 3		% of gap accounted for
Canada								
	China	0.40	*	0.29	*	0.24	*	40%
	India	0.28	*	0.16	*	0.09		66%
	Other East, Southeast Asia	0.14	*	0.12	*	0.06		56%
	Other Asia	0.28	*	0.27	*	0.21	*	26%
	U.K.	0.04		-0.01		-0.01		129%
	U.S.	0.01		-0.02		-0.02		
	Caribbean, Central and South America	-0.03		0.01		-0.03		
	Northern, Western Europe	0.11		0.04		0.06		51%
	Other Europe	0.16	*	0.12	*	0.10	*	39%
	Africa and others	0.23	*	0.17	*	0.12	*	49%
Switzerland								
	Germany, Austria, France, Belgium	0.16	*	0.12	*	0.10	*	36%
	Italy	-0.12	*	0.03		-0.02		80%
	Spain and Portugal	-0.12	*	0.01		-0.06		52%
	Former Yugoslavia, Kosovo, Albania	-0.19	*	0.05		0.02		109%
	Turkey	-0.13	*	0.09	*	0.04		132%
	Other countries	-0.05		0.03		0.02		136%

Source: Swiss Transition from Education to Employment Survey and Canadian Youth in Transition Survey

Note: * significant at p<=0.05.