



## 6

# Post-Secondary Attendance of Immigrants in Switzerland and Canada

Is the performance gap between 15-year-old immigrant and non-immigrant students reflected in later outcomes, such as educational attainment? This chapter uses data from Switzerland's and Canada's longitudinal follow-ups to PISA to evaluate the extent to which differences in performance in PISA are associated with enrolment in tertiary education by age 24. These two cases highlight the differences and similarities in educational outcomes between two different educational systems and immigration regimes and the factors associated with these outcomes.

## INTRODUCTION

In most countries, immigrant students face a considerable skills and knowledge disadvantage at age 15. A more disadvantaged socio-economic background is only part of the reason for the performance gap between immigrant students and non-immigrant students. In most cases, immigrant students underperform even when compared to those non-immigrant students who share a similarly disadvantaged socio-economic background.

Beyond skills and knowledge at age 15, how persistent is the disadvantage of immigrant students in their educational pathways? Is the future educational and professional career of the children of immigrant related to their performance in PISA? Does the skill and knowledge disadvantage at age 15 translate into a disadvantage in later educational outcomes? In particular, are immigrant students less likely to access a post-secondary educational institution?

There is considerable research on the relationship between immigration status and educational attainment. In particular, in North America, immigrant students on average achieve higher levels of education than their counterparts with domestic backgrounds (Picot and Hou, 2010), while in Europe the opposite is typically observed (Heath, et al., 2008). Few studies have addressed the role of the student's secondary school performance in explaining the difference in educational attainment between immigrant and non-immigrant students. That dimension is the focus of this chapter.

More specifically, the chapter focuses on the association between a performance in PISA and access to tertiary education for immigrant students. The objective ideally is to identify education or migration policies that contribute to the successful integration of immigrant students in host societies. Can immigration or education policy address skill disadvantage at age 15 among children of immigrants? Are there important differences between educational systems that help immigrant students overcome initial disadvantage to achieve high levels of educational attainment?

The chapter first compares and contrasts the factors associated with students' access to tertiary education in Canada and Switzerland. These two countries have very different immigration and education systems. In addition, these two countries were selected for this study because they are two of the few countries that possess the longitudinal data necessary for such a study. The Canadian Youth in Transition (YITS) was launched in 2000 along with PISA 2000 and has asked a follow-up survey every two years since 2000. This study thus far includes data up to participants' 23rd year, cycle 5 of YITS. The Swiss Transition from Education to Employment (TREE) survey followed up PISA 2000 students every year. This study also contains data until students' 23rd year, the seventh round of TREE. Box 6.1 provides more details on these datasets.

A focus on low secondary school performers is this chapter's second unique feature. In addition to conducting the analysis for all students, the educational attainment of students who do relatively poorly on PISA tests in secondary school is examined closely. Box 6.2 provides details on how lowest performers are defined. Are these students necessarily relegated to poor educational attainment outcomes? Or do significant numbers of these students continue to the post-secondary level, and if so, what distinguishes those who continue from those who do not? Does immigration status play a major role? This chapter addresses these questions.

### Box 6.1 Longitudinal surveys in Canada and Switzerland: The YITS and TREE data

The analyses for both Canada and Switzerland utilise 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<sup>1</sup> from the PISA 2000 round of assessment. PISA 2000 assessed reading, mathematical and scientific literacy among 15-year-olds, with a primary focus on reading literacy, the measure used in this analysis. 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 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 5 532 15-year-olds. By the 7th wave, 3 900 23-year-olds remained in the sample, for a response rate of 62%.<sup>2</sup> Data from both the first-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 29 687 respondents, and by wave 5 at age 23, 14 751 remained, for a response rate of 50%. 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.<sup>3</sup>

More details can be found in the research paper on which this chapter is based (Picot and Hou, 2012).



### Box 6.2 Defining low and high performers in secondary school

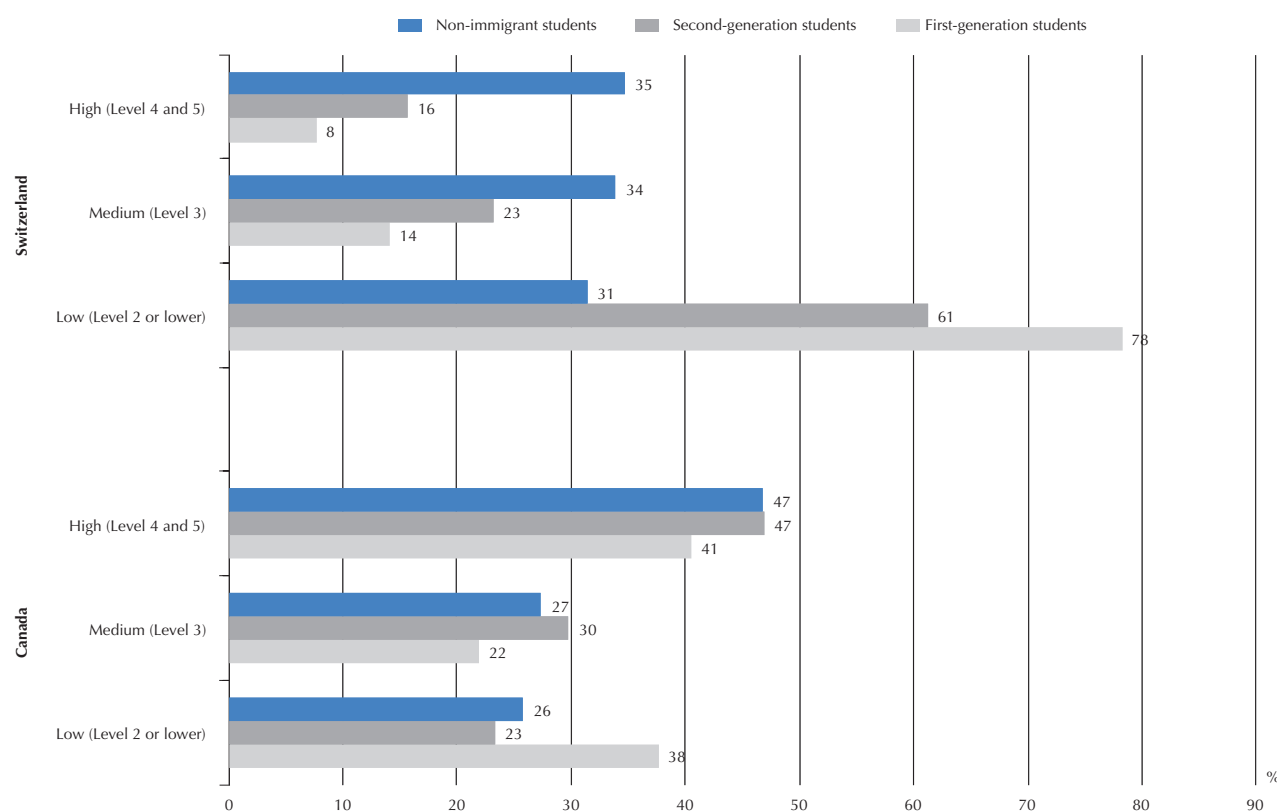
Literacy scores in PISA are used to identify low and high secondary school performers. PISA defines reading literacy quite broadly, as the ability to understand, use and reflect upon written texts (OECD, 2001a). This goes well beyond the ability of individuals to simply read a text. It is a combination of the student's level of reading ability, as well as cognitive skills at age 15.

PISA 2000, used here, assesses the extent to which 15-year-old students have mastered reading skills, and have the cognitive literacy abilities to succeed in the future (OECD, 2001a). To do so, it measures ability in three major domains: *i*) the ability to read various types of text, including different types of prose, as well as forms, charts and diagrams; *ii*) the ability to retrieve, understand, interpret and reflect upon text; and *iii*) 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 literacy scores provide a reasonable basis for the categorisation of 15-years-olds into low and high performers; those students who have mastered and demonstrated the literacy skills, broadly defined, that are required for future academic advancement and for participation in society, and those who have not.

PISA reading scores are grouped by the OECD into five proficiency levels, with Level 5 being the highest. Students with Level 1 or below fail to display the most basic reading skills. In this paper, lowest performers include those in Levels 1 or 2. These are students who received a score of 480 or less on the PISA test. High performers for our purposes are students who attained Levels 4 or 5, that is, a score of 553 or higher, also referred to as top performers.

For Canada, 26% of students are classified as lowest performers, and 47% as high performers. Switzerland has a higher percentage of lowest performers (44%) and a lower percentage of high performers (27%) (Figure 6.1 and Table B6.1).

■ Figure 6.1 ■  
Distribution of students by PISA reading level



Source: Table B6.1; Picot and Hou (2012).

## SKILLS AND KNOWLEDGE AT AGE 15 AND TERTIARY ATTENDANCE

### **Outcomes for the entire student population and for low performers**

Students' academic and cognitive performance at the end of compulsory schooling is positively correlated with access to tertiary. PISA reading literacy tests, administered at age 15, provide one means of assessing the association between secondary school performance and the enrolment in tertiary education.

In Canada, a recent OECD study found that students who obtained the highest PISA scores (Level 5) were 20 times<sup>4</sup> more likely to attend a university degree than those registering Level 1 PISA scores (the lowest), and twice as likely to attend college<sup>5</sup> (*Pathways to Success*, OECD, 2010a). In Switzerland, researchers found that almost one-half of students age 15 who scored the highest (Levels 4 and 5) of the PISA reading literacy test continued to the tertiary level six years later, as compared to only 8% of those scoring at reading Level 2 (Meyer and Bertschy, 2011).

Few studies focus specifically on the tertiary educational outcomes of lowest performers.<sup>6</sup> Recent research on Australian longitudinal data showed that motivation was a key determinant of student's later educational and labour market outcomes among lowest performers at age 15. The socio-economic background of the student was also important, as was having some form of educational goal or plan (Thompson and Hillman, 2010). Similar studies in Switzerland concluded that a surprisingly large number of low secondary school achievers (those with PISA reading literacy Level 2 or below) complete upper secondary with a VET (vocational) diploma. However, they did not examine the tertiary participation of low secondary school achievers (Stalder, et al., 2011).

An analysis of drop-out-rates using the Canadian YITS showed that parental aspirations are major determinants of the tendency to drop out of school after age 15, above and beyond any effect of the PISA score at age 15, family background and other variables (Foley, et al., 2010). This was particularly true for lowest performers at age 15 (i.e. those with low PISA reading scores). In fact, they 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 after age 15. Similar results are evident 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. However, after controlling for PISA score, parental background has been shown to have little effect on the outcomes of low and high ability students (Falter, 2009).

### **Outcomes for immigrant students and for lowest performers**

Regarding the educational attainment gap between immigrant students and those with Canadian-born parents, the early Canadian research suggested that the most important determinant was parents' education, as well as age and residential location (Boyd 2002; Hum and Simpson, 2007; Bonikowska, 2008). However, parental education may be a proxy for other effects, such as the aspirations of the parents regarding the child's educational outcomes, the child's high school performance, educational resources made available to the child, and the valuation of education by the parents or the student. But even after accounting for many determinants, earlier research found that perhaps one half of the positive gap in educational attainment between the children of immigrant and domestically-born parents persisted. Ethnic group differences also matter in the likelihood of attending the tertiary level (Abada, Hou, and Ram, 2009).

More recent Canadian research uses the YITS to address issues related to attendance at the tertiary level among immigrant and non-immigrant students (Childs, et al., 2010). They find that parental aspirations regarding university attendance are higher among immigrant students, and in particular among immigrant families from source regions such as China, India, other Asian countries and Africa. Regarding low-achievers, they observe that students from immigrant families who have low PISA scores are more likely to attend tertiary level than their low-scoring counterparts from domestic families.

Recent European research has also shown that there are significant educational attainment gaps between immigrant students and those from non-immigrant families. Heath, et al. (2008) find that second-generation students whose parents came from less economically developed origins tend to have much lower educational attainment (before controlling for social background) than students from non-immigrant groups. However, just as in Canada and the United States, second-generation minorities of Indian and Chinese background often outperform children of non-immigrant families educationally (unconditionally). They find that among second-generation groups of European ancestry, most of the negative gap in educational attainment between immigrant and non-immigrant students 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, in particular, recent research showed that after controlling for socio-economic background variables, PISA literacy scores at age 15 and the student's secondary school stream, immigration background has no effect on the likelihood of attending tertiary level education (Meyer and Bertschy, 2011). However, as they point out, this does not mean that immigration background is not important. Its effect may work through other variables, notably the type of secondary school stream in which immigrant students find themselves, as compared to those with Swiss backgrounds.



## DIFFERENCES IN IMMIGRATION AND EDUCATIONAL SYSTEMS OF CANADA AND SWITZERLAND

To understand differences across countries in the role of student immigrant background on participation at the tertiary educational level, and the outcomes of low performers, an overview of the basic elements of the educational and immigration systems of the two countries may be helpful.

### **Differences in immigration systems**

In part as a result of differences in the immigration systems, the socio-economic characteristics of immigrant-background students are very different in Canada and Switzerland. This not surprisingly has an impact on differences in tertiary attendance between immigrant and non-immigrant students. These background differences are accounted for in the statistical models, which assess to what extent socio-economic background accounts for the gap in educational attainment between immigrant and non-immigrant students.

Canada, like Australia and New Zealand, has an immigration system that focuses on highly educated/skilled immigrants. Immigrants have, on average, educational attainment levels above that of the Canadian-born. This process has a positive influence on both the social and economic integration of immigrants, as well as the quite successful educational outcomes of the immigrant students (see Picot and Hou, 2010 for a review).

In contrast, Switzerland, like many European nations, has had an immigration system which in the past was more oriented towards the migration of lower-skilled workers.<sup>7</sup> This approach also has implications for the educational outcomes of the immigrants and their children.

### **Differences in education systems**

The Canadian and Swiss education systems are also structurally very different. The most important difference is found on how schooling is organised and in particular in policies that group or select students across differentiated programmes.

The Swiss system is highly selective. Students are streamed at a very early age, starting at the sixth or seventh grade, into roughly three streams: an upper school track with more intellectually demanding courses, an intermediate track, and a basic track.<sup>8</sup> Only 3% of students from the “basic” track ultimately enter tertiary level education by age 23, compared to 30% of those in the upper level track (Meyer and Bertschy, 2011). Following compulsory school, students move into upper-secondary, which is also heavily segmented. General education is provided in the Gymnasium stream, which typically leads to university.

In Switzerland students with a migrant background are over-represented in the lower level tracks, which affects their tertiary educational opportunities (Meyer, 2009).<sup>9</sup> Furthermore, 24% of students with Swiss parents were in streams that prepared for university entrance, compared to 19% of second-generation students, and 12% of first-generation (Meunier, 2010).

Vocational programmes play an important role in the Swiss educational system. After completing secondary education most students in Switzerland (between 40% and 70% depending upon the region) enter a three- to four-year vocational training (VET) programme, usually through a dual apprenticeship where training is done both at a school and with a firm. The VET programmes ensure that students have a reasonable chance to obtain a qualified job, which may reduce the tendency to continue to the tertiary level. While typical of many European educational systems, such labour-market-oriented programmes in secondary school are not available in Canada, where labour market-oriented education or training is provided after secondary completion.

At the tertiary level in Switzerland, the level beyond upper secondary, there are two major streams (in the international classification: “Tertiary A”, and “Tertiary B”).<sup>10</sup> The most advanced, Tertiary A, includes longer university programmes leading to a bachelor’s, master’s or higher degree. Tertiary B includes mostly higher level vocational education programmes in specialised areas. At age 23, roughly 25% of the original 15-year-old PISA cohort are in Tertiary A, 5% in Tertiary B (OPET, 2011).<sup>11</sup>

The Canadian educational system has a simpler structure. There is little or no streaming during elementary and secondary schooling in most provinces, and 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. A very small percentage of students enter secondary vocational schools. Most job-oriented vocational education is conducted in the post-secondary college system. In contrast, in Switzerland students need not attend the post-secondary system to obtain such training. This obviously affects the level of tertiary participation in the two countries. In the province of Quebec, upper secondary school consists of three years, following eight years of primary and lower secondary followed by two or three years in colleges (CEGEPS), before entrance into university programmes.

At the post-secondary (tertiary) level, most provinces have both community colleges and universities (Quebec has the CEGEP system plus universities). Universities are degree granting institutions at the bachelors, master and doctoral (PhD level). Community colleges include both advanced vocational programmes designed for labour market entry, as well as, in some provinces, an academic stream that can lead to university attendance at a level above standard entry level.



### Differences in average performance in PISA 2000

PISA literacy scores are, in general, higher in Canada than in Switzerland. This was true in PISA 2000 and PISA 2009, both of which concentrated on reading, rather than math or science (OECD, 2001a; 2010b). In PISA 2000, the beginning of both longitudinal follow-ups analysed in this chapter, the mean literacy performance score in Canada was 534 score points and 494 score points in Switzerland. The average for all OECD countries was 500 score points (the standard deviation across the OECD was set to 100 score points). In PISA 2009, the scores were 524 for Canada and 501 for Switzerland, with an OECD average of 494.

In Switzerland, the reading ability as measured by PISA scores was much lower among immigrant students. Non-immigrant students (the 3<sup>rd</sup>-and-higher generation) registered a score of 514, second-generation students performed at 460 score points, and first-generation students at 412 score points (OECD, 2001a). 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. Even among students born in Switzerland but with immigrant parents (second-generation students), the language spoken at home may be different from the language of assessment.

In Canada, Canadian-born students with Canadian-born parents and those with immigrant parents have approximately the same average PISA score, at 538. Given their higher educational hopes/aspirations and higher parental educational attainment, one might have expected the second generation in Canada to register higher PISA scores than their 3<sup>rd</sup>-and-higher generation counterparts. This was not the case. First-generation students, who are immigrants themselves, have slightly lower scores, at 511 (OECD, 2001a). All of these groups have scores above the OECD average score of 500, however.

## EDUCATIONAL ATTENDANCE BY IMMIGRANT BACKGROUND: THE LIKELIHOOD OF ATTENDING TERTIARY LEVEL

This section presents the results of an analysis of differences across immigrant background in attendance to a post-secondary education. Box 6.3 describes in detail the analysis. The analysis is conducted in three steps: *i*) an initial analysis of simple differences describes observed differences; *ii*) then the analysis compares only those individuals sharing similar performance levels and individual characteristics; *iii*) the last step adds country specific variables measuring the individual and family attitudes towards higher levels of educational attainment.

### Box 6.3 Definitions and statistical methods

Linear probability models (i.e. ordinary least squares models) are used in the statistical analysis section of the paper.<sup>12</sup> The dependent (outcome) variable is the probability of attending a post-secondary (tertiary) institution by age 23. 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 on two populations, students who are low performers in secondary school, and all students. To save space, the regression coefficients are not reported in this chapter, but can be found in Picot and Hou (2012) along with more detail on the methods used.<sup>13</sup>

#### Model 1: Immigrant background model

Immigrant background is the only independent variable in model 1.

Immigrant background has four levels:

- Immigrant (foreign born) students who immigrated prior to the age of 15, referred to as a first-generation students.
- Students born domestically with two immigrant (foreign born) parents, referred to as a second-generation students.
- Students with parents who are domestically born (the third-plus generation), referred to as non-immigrant students.

The category non-immigrant students is selected as the reference group. Hence, the coefficients on the immigrant background variable give the difference in the raw data in the probability of attending a post-secondary institution between students in a given immigrant group (say second-generation) and non-immigrant students.



### Box 6.3 Definitions and statistical methods (continued)

#### Model 2: Student performance, immigrant and socio-economic background

Model 2 utilises the independent variables that are common to both data sets. They include, in addition to the immigrant background variable, gender, parents' highest level of education, family type, number of siblings, language spoken at home, the size of the city of residence, and the PISA reading score.

The coefficient on the immigrant background variable in model 2 reflects the difference in the probability of attending a post-secondary institution after having controlled for the additional independent variable in the model.

Hence the difference in the immigrant background coefficient between model 1 (raw data) and model 2 indicates how much of the post-secondary attendance gap of interest (say between the second and third and higher generations) is "explained" or accounted for by the independent variables included in model 2.

Furthermore, a decomposition is carried out which indicates how much each of the independent variables contributed to this "explained" gap. This is important, since it is of interest to know which variables are important in accounting for the gap.

More detail on the decomposition can be found in Picot and Hou (2012).

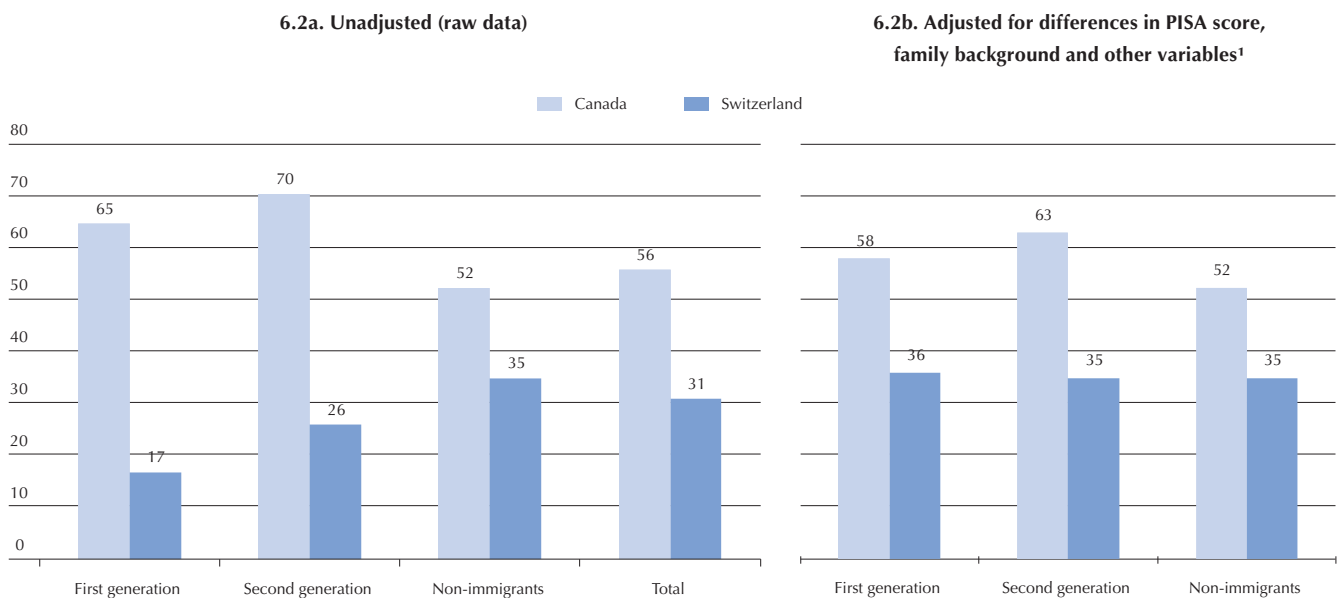
#### Model 3: Attitudes of students and parents towards post-secondary education

Model 3 includes all the independent variables in model 2, plus variables unique to each country. For Switzerland, this means the student's secondary school stream and the language of the canton of residence. For Canada, the additional variables include whether the parent hopes that the child will get at least one university degree, whether the student hopes to get at least one degree, whether the family has made some financial preparation for post-secondary education, and whether the student expects to have a job that requires a university degree.

The "explained" gap in this case 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 is applied to the results from this model to determine the contribution of each variable to the "explained" gap.

Figure 6.2

### Prevalence of university attendance by age 23, by immigrant background



1. The important other variables include, in Canada, students' and parents' aspirations regarding university, and in Switzerland, the student's secondary school stream.  
Source: Picot and Hou (2012).

## Canada

In Canada, first-generation students are 12 percentage points more likely to attend a post-secondary institution than non-immigrant students. For the second-generation, the advantage over non-immigrant students is around 18 percentage points (Figure 6.2). These are small relative differences because in Canada more than 50% of non-immigrant students access a post-secondary education by age 23.

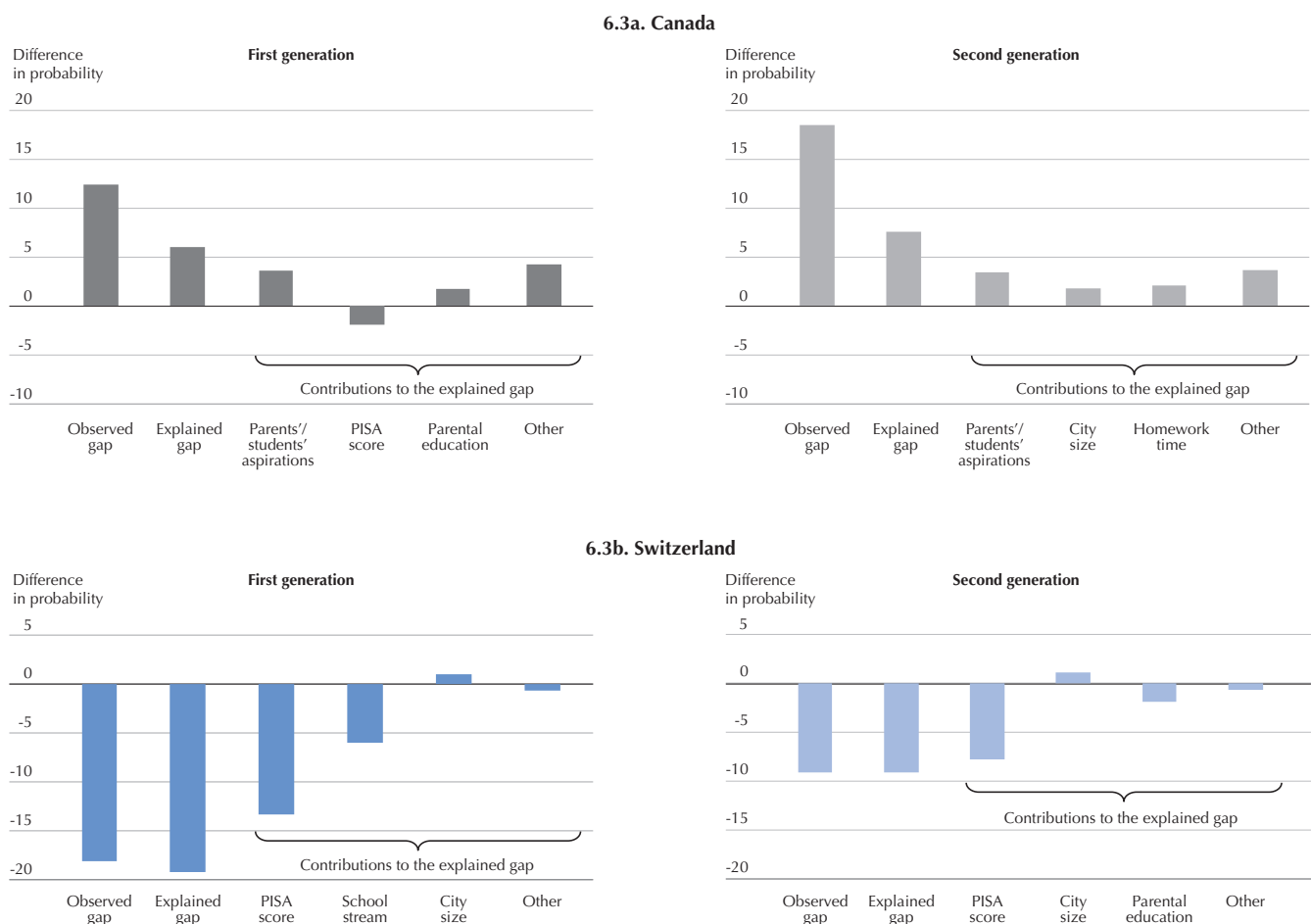
Among first-generation students, adjusting for differences in background variables accounts for about 40% to 50% of this gap (Figure 6.3a). A number of variables account for this “explained” portion of the gap, including differences in the students’ and parents’ aspirations (accounting for almost one-half of the explained gap), as well as differences in parents’ education, geographical location, and homework time, each accounting for about one-fifth of the explained gap (Figure 6.3a). Taking into account the PISA scores tended to reduce the likelihood of the first-generation attending post-secondary, but this effect was more than offset by the other positive effects.

Among the second-generation students, about one-half of the gap can be accounted for by the independent variables related to socio-economic background, performance and attitudes towards tertiary education (Figure 6.3a).

Of this “explained” gap, parents’ and students’ aspirations accounted for about one-third, geographical location and homework time each about 15%. There were no differences in PISA scores between the second-generation and non-immigrant students, so this variable is not important in this case. Differences in parental education also were not seen to be important in the explanation.

■ Figure 6.3 ■

### Factors associated with the gap in university attendance across immigrant backgrounds



Source: Picot and Hou (2012).





## Switzerland

For Switzerland, first-generation students were 18 percentage points less likely to attend the tertiary level by age 23 than their peers without an immigrant background. Second-generation students were 9 percentage points less likely to attend a post-secondary educational institution (Figure 6.2).

In both cases, the entire gap could be accounted for by performance, individual background characteristics and attitudes towards higher education (Figure 6.3b). In fact, the differences in the PISA score between the immigrant and non-immigrant students accounted for the entire observed performance gap (model 2). After considering other variables (model 3), including secondary school stream, the explanatory power of performance in PISA is weakened. However, since a student's secondary school stream is in part a reflection of academic performance, both the PISA and the "stream" variables are reflecting academic performance to some extent. Parents' education and geographical location account for some of the gap, the former in a negative and the latter in a positive sense, but their effects are very small compared to the PISA variable.

## DIFFERENCES IN OUTCOMES BY SOURCE COUNTRY BACKGROUND

Earlier research clearly shows that the educational attainment of first- and second-generation varies by ethnic group/source country of the parents. 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 immigrant students (Picot and Hou, 2010; Heath, 2008).

Source country may reflect differences in the value placed on education by the parents, the expectations of the parents regarding educational attainment, 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.

In both Canada and Switzerland, origin country plays a role but there is evidence of important similarities across very different regions. The results suggest there is an immigrant effect but that this depends on whether the country of origin is similar or not to the host country. For example, Chinese students in Canada are more likely to go to university than non-immigrant students, but so are students from Africa or from eastern Europe. In Switzerland, the results for immigrant students with a German-Austrian-French-Belgium background are more similar to non-immigrant students than students with immigrant backgrounds from other source countries.

### Country of origin profiles in Canada and Switzerland

In Switzerland, a little over one-quarter of the immigrant-background students assessed in PISA 2000 were from, or had parents who were from, developed European economies (Table B6.2). 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 backgrounds, or were from other countries.

The background of immigrant-background students was very different in Canada (Table B6.2). About 44% were of Asian origin, notably China and India. About 18% had backgrounds associated with the generally high attainment economies of the United States, the United Kingdom 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), the same analysis exercise (see Box 6.3) is replicated here by source country.<sup>14</sup> Given the smaller number of individuals in each of the origin country groups, it is necessary to combine the first- and second-generation populations into one category, referred to as immigrant students. The host country (Switzerland or Canada) is always the reference group in the "source region" variable. Hence, the results refer to the differences in the likelihood of attending the higher education between the immigrant-background students whose source region is, say, Turkey, and students whose parents were born in Switzerland (non-immigrant students). The same approach is used with the Canadian sample.

## Canada

In Canada, students with Chinese backgrounds are 28 percentage points more likely to attend the post-secondary level than those with parents born in Canada. That means that 80% of Chinese background students attend some form of post-secondary institution, the vast majority attending a university. Accounting for background characteristics and aspirations regarding attendance, as well as residential location (model 3), accounts for 45% of this positive gap in the Chinese case (Table B6.3). But there remains an unexplained component even with this relatively rich set of control variables.

Students with many other source region backgrounds also display a significant advantage over the Canadian-background students regarding university and post-secondary participation. The advantage is particularly marked for students with backgrounds from all

other Asian regions, Africa, and “other European” nations. Students with backgrounds from other developed economies such as the United States, the United Kingdom, and northern and western Europe do not look much different from Canadian-background students regarding post-secondary participation. However, immigrant students from all source-regions used in this typology have participation rates equal to or higher than students with strictly Canadian backgrounds. No source region group is seen to lag behind (in model 2).

The proportion of the positive gap with Canadian-background students that can be accounted for by differences in family background, PISA scores, aspirations and other variables (model 3) varies tremendously by source region, from one-quarter to over three-quarters (Table B6.3). However, in many cases the post-secondary attendance advantage cannot be entirely explained, even by the rich set of variables available in the most comprehensive analysis (model 3).

### Switzerland

In Switzerland, immigrant-background students with German-Austrian-French-Belgium backgrounds are more likely than non-immigrant students (the 3rd and higher generation) to attend higher education, while those with all other backgrounds are less likely to attend (Table B6.3). The differences are substantial, ranging from 21 percentage points more likely to attend (German etc. backgrounds) to 21 percentage points less likely to attend. Students with families from Yugoslavia-Albania-Kosovo, Spain-Portugal and Turkey are in particular much less likely to attend the tertiary level than their non-immigrant counterparts.

For most regions, the differences in performance, individual characteristics and attitudes, notably PISA score, can account for most of the gap in attendance in higher education between immigrant and non-immigrant students from a particular region (Table B6.3). The German-Austrian-French-Belgium case is an exception. Relatively little of the advantage that students with backgrounds from these countries have relative to non-immigrant students in Switzerland in both attendance to university and other higher education is accounted for either by family background, PISA scores or school stream. Other unmeasured variables are playing a significant role in this case.

## ACCESS TO HIGHER EDUCATION AMONG LOW PERFORMERS

This section focuses on lowest performers, as measured by the PISA reading score.

### **Observed differences: A simple model without adjustments for individual characteristics (model 1)**

More than 33% of low performers participated at the post-secondary level in Canada, compared to 11% in Switzerland (Figure 6.4). However, as noted earlier, participation in higher education in Switzerland is low for a number of structural reasons. Enrolment in Tertiary B, mainly vocational post-secondary schools in Switzerland, often occurs at a later age; perhaps as few as one-half of the students who will ultimately attend Tertiary B schools are enrolled by age 23. Furthermore, the capacity of the Tertiary B system in Switzerland is relatively small compared to the college system in Canada. Finally, many low-performing students may opt for vocational training (VET) in upper secondary, rather than continuing to the tertiary level. This route can result in positive labour market outcomes, and is a choice not readily available in Canada.

Being a low secondary school performer in Switzerland has a very large effect on the likelihood of tertiary attendance, more so than in Canada, particularly among immigrant students. And this is significant, since over three quarters of Swiss immigrant students are in fact low secondary school performers as measured by the PISA test<sup>15</sup> (Table B6.1). As noted, differences in the structure of the school systems likely account for part of this difference.

Overall, high secondary school performers (in PISA reading Level 4 or 5) are twice as likely to attend the post-secondary level as their low-performing counterparts in Canada (this result does not account for other factors), but in Switzerland they are over five times more likely to attend. This difference is exacerbated among the immigrant population. In Canada, among the first- and second-generation, high performers are 1.6 times more likely to attend than among low performers. In Switzerland, high performers are 12 times (among the first-generation) and 6 times (second-generation) more likely to attend.

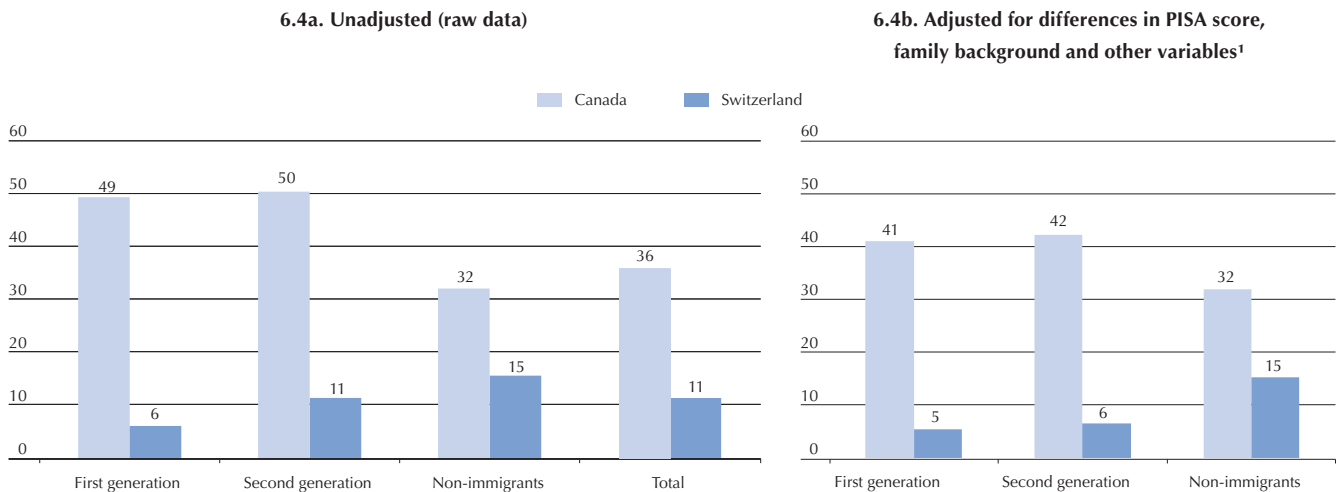
### **Adjusted differences: Taking into account individual characteristics (models 2 and 3)**

#### Canada

In Canada, immigrant students seem to find some way of attending the post-secondary level in spite of their low PISA reading scores. Low secondary school performers with immigrant backgrounds are much more likely to continue to the post-secondary level than non-immigrant students who are also lowest performers (Figure 6.5a). About one-half of low secondary school performers in the first- and second-generation continue to the post-secondary level, compared to only one-third of low-performing non-immigrant students (third plus generation).



Figure 6.4  
**Prevalence of higher education attendance by age 23 among lowest performers at age 15, by immigrant background**



1. The important other variables include, in Canada, students' and parents' aspirations regarding university, and in Switzerland, the student's secondary school stream.  
 Source: Picot and Hou (2012).

Of the 17 or 18 percentage point gap in attendance in higher education across immigrant background, 40% to 50% is accounted for by performance and/or individual characteristics (Figure 6.5a). Hence, even after controlling for numerous variables related to background, PISA reading literacy scores and aspirations, low-performing immigrant students remain 9 to 12 percentage points more likely to continue to the post-secondary level than non-immigrant students.

Once again differences in parents' and students' aspirations regarding post-secondary attendance accounted for the majority, or roughly 40% to 60%, of the explained gap. Other variables of significance included differences in geographical location, accounting for about one-third of the "explained" gap, and differences in homework time (one-fifth). But more than half of the difference in post-secondary attendance between the generations remains unexplained by the variables we have at our disposal. Differences between generations in PISA reading scores and parental education accounted for little of the post-secondary attendance gaps.

### Switzerland

In Switzerland, the tertiary attendance rate of first-generation low-performers is less than one-half that of non-immigrant students, and among the second-generation is it two-thirds of the rate (Figure 6.3). Hence, the very large numbers of immigrant students who find themselves in the low-performing category have relatively low tertiary attendance rates compared to their counterparts with strictly Swiss backgrounds.

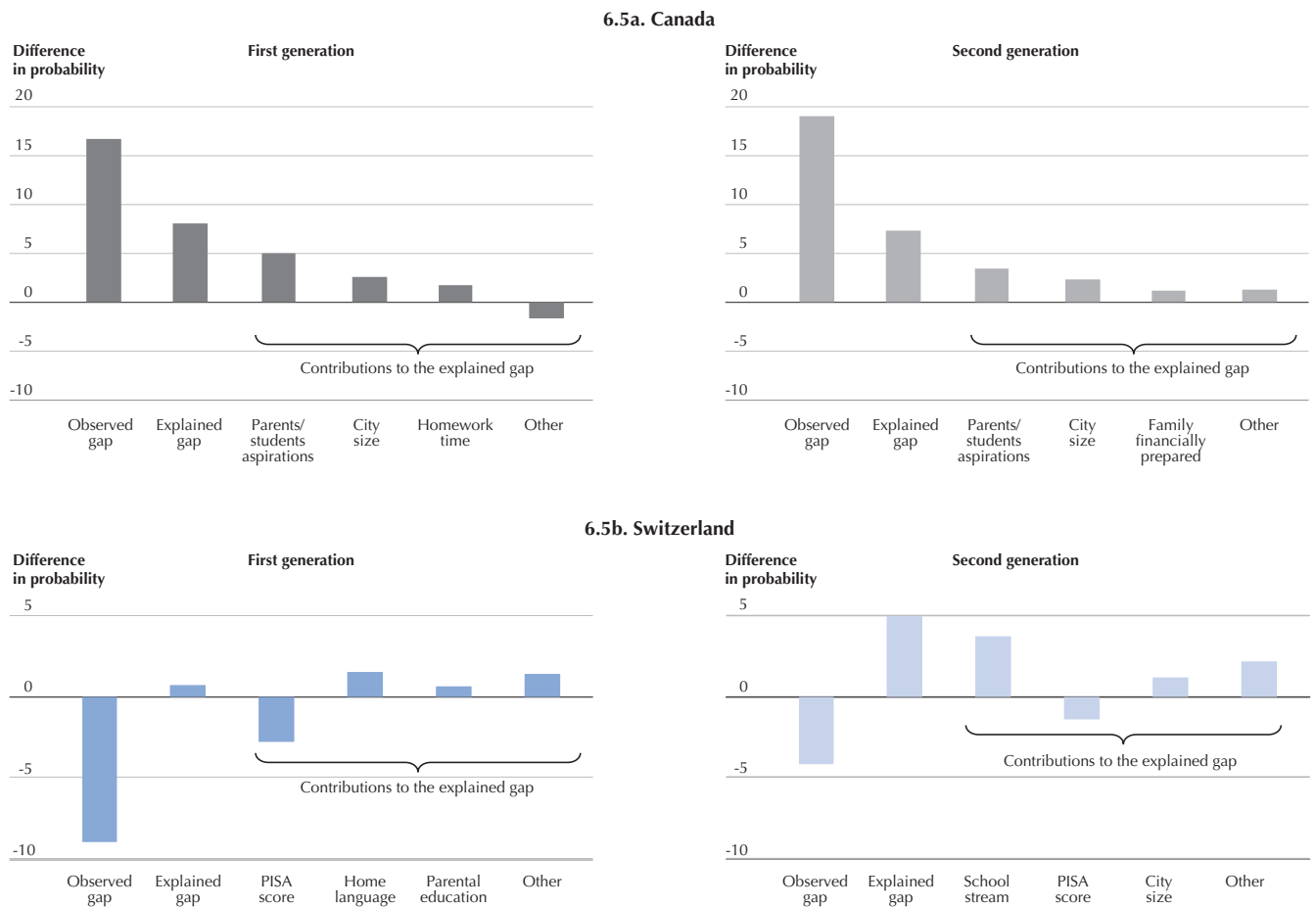
Among lowest performers, the variables included in the more comprehensive analyses do not account for the gap (Figure 6.5b). For the first-generation, both models account for virtually none of the 9 percentage-point gap in tertiary attendance between immigrant and non-immigrant students. Among second-generation students, there is no apparent gap in the likelihood of tertiary attendance with non-immigrant students.<sup>16</sup>

### Differences by source region among low performers

#### Canada

Among low-performing students, educational outcomes vary tremendously by source region in Canada, less so in Switzerland. In Canada, low-performing students with Chinese background are 34 points more likely to attend the post-secondary level than their counterparts with Canadian-born parents (Table B6.3). Fully two-thirds (66%) of these students attended a college or university (about one-half attend a university). Registering a low-performance in secondary school appears to do little to discourage students with such a background from continuing. Only about one-quarter of this large advantage in post-secondary attendance by students with Chinese backgrounds can be accounted for by differences with the Canadian-background students in family background, PISA score, aspirations and the other variables included in model 3. Conditional on having similar backgrounds, having a Chinese background continues to result in a 24 percentage point advantage in post-secondary attendance compared to lowest performers among non-immigrant students (the 3rd-and-higher generation) (Table B6.3).

Figure 6.5  
**Prevalence of university attendance by age 23 among lowest performers at age 15, by immigrant background**



Source: Picot and Hou (2012).

Virtually identical results are evident for students with other Asian backgrounds (other than Indian), and like the Chinese background students, these significant advantages are not explained by the background variables included in the models. Other unmeasured factors are at play. Low-performing students with European backgrounds also display a substantial advantage over their counterparts with strictly Canadian backgrounds regarding post-secondary attendance. Little of this advantage can be explained by these models as well.

### Switzerland

In Switzerland, there is, in most cases, little difference to explain. Among secondary school low-performers, the unconditional differences (in the raw data) between immigrant-background students and Swiss-background students are much smaller and typically not statistically significant. Only among students with an Italian background is there a statistically significant difference in the likelihood of attending the tertiary level (Table B6.3) In this case, virtually none of this 12 percentage point gap is accounted for by the explanatory variables analysed here (model 3). Overall, there is less to explain in the case of secondary school low-performers in Switzerland.

## WHAT DIFFERENTIATES LOW-PERFORMERS WHO ATTEND POST-SECONDARY EDUCATION FROM THOSE WHO DO NOT?

Many other variables besides immigrant background differentiates low-performers who attend the post-secondary level from those who do not. To address this issue, the analysis compares the magnitude of the effect of various explanatory variables on the likelihood of attending a post-secondary institution (regression results reported in Picot and Hou, 2012).

For Canada, among the low-performing secondary school students, in addition to immigrant status, parents' and students' aspirations regarding post-secondary attendance, whether the family made financial preparations for post-secondary attendance



(likely a motivational effect), family status, PISA reading literacy level, and parental educational attainment differentiate low-performing students who attend the post-secondary level from those who do not.<sup>17</sup>

In Switzerland, the results are similar (particularly in model 2). There is no variable related to the aspirations of parents or students, but parental education, family status, and PISA score are all seen to play a role in differentiating those low-performers who continue from those who do not. When secondary school stream and language canton variable are added (in model 3), not surprisingly secondary school stream in particular is seen to play a significant role. Low-performing students living in the Italian language cantons are also more likely to continue to the tertiary level than their counterparts in other cantons, all else being equal.

The results from the two countries suggest that the traditional variables such as parental education and family type play a role in the likelihood of low performers continuing, even after controls for PISA reading scores and other background variables. But the Canadian results also suggest that variables related to motivation, such as parental and student aspirations, and the degree of financial preparedness, play even a greater role in distinguishing those who continue from those who do not.

## SUMMARY AND CONCLUSIONS

Consistent with earlier research, this chapter presents evidence that first- and second-generation immigrant students in Canada are more likely to continue to the post-secondary level than their non-immigrant counterparts. Immigrant students in Switzerland are less likely to do so.

In Switzerland, the post-secondary attendance gap in favour of non-immigrant students is due almost entirely to poorer secondary school performance among immigrant students, as measured by the PISA reading scores. After controlling for PISA scores, differences in family background and other variables become less important. When secondary school stream is included, it is strongly associated with a significant part of the gap as well. However, academic performance works in part through this variable, since school stream is determined by academic performance, as well as other variables such as social background.

The story is very different in Canada. Differences in PISA scores account for only a small part of the gap in favour of immigrants in post-secondary education. Parents' and students' aspirations regarding the student's post-secondary school career play a major role in the "explained" gap.

In both countries, there is significant variation in these results by source region. In Canada, Asian students, even if they perform poorly in secondary school, participate at high levels in the post-secondary system, particularly university. Even when parents' and students' aspirations are included, the models explain little of this advantage.

Being a low-performing secondary school student, that is, having a PISA reading score at Level 1 or 2 at age 15, results in a greater reduction in the likelihood of post-secondary participation in Switzerland than Canada, particularly among immigrant-background students. There are a number of reasons for this, many related to the differences in the structure of the educational systems between the two countries. In Canada, a surprisingly high share of low-performers with immigrant backgrounds continue to the post-secondary level, around 50%, compared to one-third of those with strictly Canadian backgrounds. This figure reaches 66% among students with Asian backgrounds. Again there is significant variation by source region background. Even with a rich set of PISA, family background and aspirational variables, the analysis can account for only about one-third to one-half of the post-secondary participation gap between low-performing immigrant and non-immigrant students with and without immigrant backgrounds. Differences in the student's and parent's aspirations regarding post-secondary attendance again play an important role. But other unmeasured factors are also at play. In Switzerland, first-generation low-performing students are less likely to continue than their non-immigrant counterparts without an immigrant background. Little of this gap can be accounted for by family background, the PISA score and other available variables.

But many other variables besides immigrant background influence the decision of poor-performing students to continue to the post-secondary level. The Canadian data suggest that these are related to motivation, such as parents' and student's aspirations, financial capacity, family type, PISA reading score, and parents' educational attainment. In Switzerland, parents' education, family type, PISA score, and the student's secondary school track influence the decision.

Why do immigrant students have better relative educational attainment outcomes in Canada than in Switzerland? Differences in the immigration systems play a significant role. The educational attainment of immigrants exceeds that of the domestically born population by quite a wide margin. Furthermore, much of Canada's immigration over the past thirty years has been from Asian countries, whose cultures place a high value on educational attainment and labour-market success. By including variables influenced by the immigrant selection system, including parental education, source region and home language, only about one-half of the post-secondary attendance advantage of immigrant-background students over others can be accounted for. So there are clearly many other factors at work.



Meanwhile, until recently, Switzerland has not had an immigration system oriented towards highly skilled candidates and has generally received lower skilled immigrants from less developed nations. Other research has shown that differences in individual and family background between students with immigrant backgrounds and others could account for between one-half to all of the differences in PISA reading scores between these groups. And this difference in PISA scores accounts for virtually all of the difference in tertiary participation rates between these two groups.

The inter-country difference in immigration systems, resulting in immigrants with very different backgrounds, plays a role in explaining the differences between countries. However, because of changes in the Swiss system during the early 1990s, and more recently with the 2002/03 treaty on the free movement of labour in the European Union, migration patterns are shifting. Many more highly skilled immigrants are entering Switzerland from nations such as Germany and France, and a smaller share of immigrants are lower-skilled from the Balkans, Turkey or Portugal. This shift could significantly influence the educational attainment of immigrant-background students in the future.

Differences in the educational systems, and their effect on immigrant students of immigrant background may also play a role. The more structured Swiss system allows for less adjustment on the students' part, and research has shown that social background is a factor in the streaming that takes place in secondary school, above and beyond academic performance. This could negatively affect the tertiary educational attendance of immigrant students of immigrant background. And the structure of the Canadian labour market is such that continuation to the post-secondary level is necessary to acquire skills of value in the job market, including vocational skills. This is not the case in Switzerland, with vocational (VET) programmes in upper secondary school.

The results also point to possible policy implications. In Switzerland, after controlling for secondary school performance, parental background variables play little direct role in explaining the negative attendance gap between immigrant and non-immigrant students. Given the earlier research referred to, it seems likely that parental education, for example, acts indirectly through variables such as high school performance and parental aspirations. This distinction is important. It is difficult at best to address the disadvantaged parental backgrounds of current students in immigrant families, but there may be ways of improving their high school performance. And immigration patterns have recently shown an increase in the educational attainment of entering immigrants, and could increasingly do so in the future. Without adequate data, it is difficult to know what role family hopes/aspirations play in the Swiss case. However, assuming that the Canadian results may apply to Switzerland, policies designed to influence the value that immigrant families place on higher education, and hence their aspirations regarding tertiary level attendance for their children, could also positively influence the currently negative post-secondary attendance gap.

In the Canadian case, parental background is also not directly a major explanation of the positive post-secondary attendance advantage immigrant-background students hold over low-performers (and in general) among non-immigrant students. Higher parental education among immigrant families may act indirectly through the hopes and aspirations of parents and students. But since this latter variable appears to have a more direct effect on educational attainment, focusing on the value placed on higher education, and hopefully thereby influencing aspirations, may be helpful. More research on this particular question would assist policy development.

### Notes

1. 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 December 1999, and hence includes some students who were slightly younger or older than age 15.
2. Students are « lost » because they refuse to continue participating, because they have left the country, because they can no longer be found or because they were not available to be interviewed.
3. Since the focus is on students with and without immigrant backgrounds, differential response rates in these two groups and their possible effects are a matter of concern. However, the response rates were not that dissimilar.
4. This is an adjusted result, after controlling for other variables such as parent's education, high school marks, gender, etc.
5. 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, or parents' education (OECD, 2010a).
6. The PISA reading, math and science scores themselves have been used as an outcome measure of educational achievement. In Switzerland, both first and second-generation students had significantly lower PISA scores, on average, than their counterparts with Swiss born parents (OECD, 2001a). A Swiss study found that social origin was one of the most important factors accounting for the difference in PISA score outcomes between children with and without immigrant backgrounds (Coradi Vellacott and Wolter, 2002). Meunier (2010) found that for Switzerland, differences in individual characteristics, family background and school characteristics could account for the majority of the PISA reading literacy gap between both first and second-generation students on one hand, and students with Swiss born parents on the other. A





study based on the 2003 PISA reading test scores concluded that controlling only for differences in parental educational and occupational background reduced the PISA performance gap but did not by eliminate it (OECD, 2006). The association between PISA reading scores and family background is important in the discussion section.

7. Because of changes in the Swiss system during the early 1990s, and more recently with a 2002/03 treaty on the free movement of labour in the European Union, the composition of migration to Switzerland is shifting. Many more highly skilled immigrants are entering Switzerland from nations such as Germany and France, and a smaller share of immigrants are lower-skilled from the Balkan countries, Turkey or Portugal. See Cattaneo and Wolter (2012) for an analysis of how these changes have affected student performance in PISA 2009.
8. See Bertschy, et al. (2009) and Meyer (2009) for a description of the school system.
9. The over-representation of students with immigrant backgrounds in the lower academic streams appears to be related to more than marks and school performance. Sacchi, et al. (2011) found that the transition from compulsory to upper secondary school in Switzerland is strongly shaped by the students' social origins and cultural backgrounds, irrespective of their school achievements as measured by PISA reading scores and academic record. Haeblerlin, 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 strictly Swiss backgrounds. Coradi, Vellacott and Wolter (2004) discuss the degree of equity in the Swiss school system across immigrant and other groups.
10. These designations are those of the International Standard Classification of Education (ISCED).
11. 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.
12. 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.
13. Five "plausible values" of the PISA reading score were used in the analysis, as opposed to a single value. This approach is necessary because not all students were administered all PISA questions; responses to those not asked are probabilistically imputed five times. See the *PISA Data Analysis Manual*, OECD (2009) for more details. The regressions are run 5 times with the 5 values, and the average value of the coefficients used. Also, bootstrap re-sampling methods are used to estimate standard errors incorporating complex survey design effects.
14. The same population of students with PISA scores at age 15, and who remain in the sample in 2007 at age 23, is employed. The dependent variable is the probability of attending a tertiary level institution by age 23. With the exception of the "generational" variables, the independent variables are the same as those used in the earlier described regression models. Rather than employing a binary variable that denotes generational status (1st, 2nd, 2.5 or 3rd-and-higher) as in the earlier regressions, a "source region" variable is used that denotes the country of birth of the student if a 1st or 3rd-plus generation student, and of the parent if a second-generation student. The source country variable has seven levels for Switzerland, and eleven for Canada. For Switzerland, the categories for this variable include Switzerland (i.e. students without an immigrant background or 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. students without an immigrant background or the 3rd-and-higher generation), China, India, Other East or South East Asia, Other Asia, United States, Central/South America, United Kingdom, northern/western Europe, other Europe, Africa and others. Some aggregation of categories was necessary in cases where sample sizes were too small.
15. As noted earlier, the language of the test is often not the immigrant student's home language, and this may affect the test score. This may be true among some second-generation students as well, where the share who are low-performers is also high (61%). However, the PISA reading literacy scores are strongly correlated with post-secondary attendance, and no doubt play a significant role in tertiary attendance patterns.
16. The estimate is smaller, at minus 4.1 percentage points, and not statistically significant. In model 3 (Figure 6.5a), when the secondary school streaming variable is added, the gap becomes marginally significant at – 8.8 percentage points. The gap increases in this model because second-generation students were more likely to be in the pre-gymnasial stream that leads to tertiary schooling than 3rd-plus generation students. (This was observed primarily in the French-speaking Cantons, not the German-speaking ones). The result is that, after one accounts for this difference through the control variable, the likelihood gap increases.
17. If both the parents and student held aspirations to attend the post-secondary level, they were about 20 percentage points more likely to attend than those who did not, after controlling for parental education and PISA score (Table 6.3). This is an important difference. Students in single parent or blended families were about 10 percentage points less likely to attend than their counterparts in two parent families. A 10-percentage-point difference in PISA reading scores resulted in about a 0.8-percentage-point difference in the likelihood of attending. Students whose parents had high school or less education were from 10 to 15 percentage points less likely to continue as compared to families where both parents had a post-secondary education.

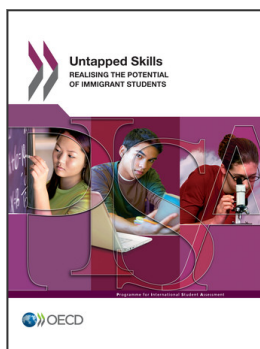
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