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Reversal of Fortunes or Continued Success? Cohort Differences in Education and Earnings of Childhood Immigrants

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.   not available for any reference period
..   not available for a specific reference period
…   not applicable
0   true zero or a value rounded to zero
0^s value rounded to 0 (zero) where there is a meaningful distinction between true zero and the value that was rounded
p   preliminary
r   revised
x   suppressed to meet the confidentiality requirements of the *Statistics Act*
E   use with caution
F   too unreliable to be published

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Abstract

Current knowledge about the favourable socioeconomic attainment (in education and earnings) among children of immigrants is based on the experiences of those individuals whose immigrant parents came to Canada before the 1970s. Since then, successive cohorts of adult immigrants have experienced deteriorating entry earnings. This has raised questions about whether the outcomes of their children have changed over time. This study shows that successive cohorts of childhood immigrants who arrived in Canada at age 12 or younger during the 1960s, 1970s, and 1980s had increasingly higher educational attainment (as measured by the share with university degrees) than their Canadian-born peers by age 25 to 34. Conditional on education and other background characteristics, male childhood immigrants who arrived in the 1960s earned less than the Canadian-born comparison group, but the two subsequent cohorts had similar earnings as the comparison group. Female childhood immigrants earned as much as the Canadian-born comparison group, except for the 1980s cohort, which earned more.

Executive summary

Our current knowledge about the favourable socioeconomic attainment (in education and earnings) among children of immigrants is based on the experiences of those whose immigrant parents came to Canada before the 1970s. As is well documented in the literature, successive cohorts of adult immigrants have experienced declines in entry earnings. This study looks at whether children of recent cohorts of immigrants also have experienced deterioration in educational attainment and earnings, and whether any such deterioration was associated with changes in their parents' labour market outcomes. Understanding these outcomes is important because children of immigrant parents constitute a large and growing part of the Canadian population. How children of immigrants fare in Canada's economy is also one metric of the longer-term impacts of immigration.

The study makes the following contributions to the literature. First, it is the first study to examine cohort differences in education and earnings of the 1.5 generation (childhood immigrants) in North America and to link these to cohort differences in both the education and earnings of adult immigrants (potential parents). Second, this study provides evidence on outcomes of descendants of the 1980s immigrant cohort—the cohort that experienced the largest decline in entry earnings in Canada over the last three decades.

It uses data from six Canadian censuses of population between 1971 and 2006 to examine cohort differences in the educational attainment and earnings of childhood immigrants who arrived in Canada in the 1960s, 1970s, and 1980s. Childhood immigrants are defined as those who were born abroad and immigrated to Canada at the age of 12 or younger. They represented about 26% of immigrants who arrived in Canada in the 1960s, 24% in the 1970s and 21% in the 1980s.Their educational attainment and earnings are examined at age 25 to 34. The comparison group consists of Canadian-born individuals who reported Canadian, British, or French ethnic origin. By defining the comparison group in this way, it is largely comprised of individuals born to Canadian-born parents and is relatively consistent over time. The 20%-sample census files provide substantial sample sizes of the populations of interest.

The outcome measures for childhood immigrants are derived from the 1986 Census of Population for the 1960s entry cohort, from the 1996 Census of Population for the 1970s cohort, and from the 2006 Census of Population for the 1980s cohort. Educational attainment is measured by whether a university degree was obtained. Earnings are measured by weekly earnings for those with positive annual wages and salaries and who worked at least one week in the year prior to the census. Outcomes of childhood immigrants are matched to average outcomes of adult immigrants who arrived in the same decade and from the same source region. Outcomes of these potential parents are measured during their first ten years in Canada.

The probability of obtaining a university degree by age 25 to 34 was higher among childhood immigrants than among their Canadian-born comparison group in all three cohorts. Furthermore, this difference increased across the three cohorts. This study finds that the continued success of more recent cohorts of childhood immigrants is due primarily to a shift in the composition of the immigrant population towards groups in which children of immigrants have traditionally had high educational attainment. Once shifts in composition (including source region, mother tongue, and visible-minority status) are taken into account, the difference no longer increases over time; indeed, if anything, it shrinks for the 1980s cohort. This decline in university completion (relative to the Canadian-born) is associated with the decline in the earnings of immigrant parents relative to the Canadian-born.

In terms of earnings, male childhood immigrants who arrived in the 1960s had weekly wages about 2% lower than the Canadian-born with similar socio-demographic characteristics. This gap disappeared for the 1970s and 1980s cohorts. Female childhood immigrants who arrived in the 1960s and 1970s had similar earnings to the Canadian-born comparison group. However, the 1980s cohort had higher earnings than the Canadian-born comparison group.

1   Introduction

The decision to emigrate is often made at the family level. Young children move passively with their parents, but they may represent an essential element in their parents' immigration decision. Adult immigrants leave their past lives behind not just in order to improve their own standard of living, but often also to ensure a better future for their children.[1] Previous studies have shown that, on average, children of immigrants in North America have more education and higher earnings than the domestic-born population.[2] However, this observation is based mainly on outcomes of children of immigrants who arrived before the 1970s and may not apply to the children of more recent immigrant cohorts. There have been important, and now well-documented, changes in source country composition, increases in education level, and declines in entry earnings of successive cohorts of adult immigrants (the first generation) since the late 1960s.[3] This study asks what impact these compositional changes have had on the outcomes of these immigrants' children. More specifically, it examines how changes in individual and parental characteristics are related to cohort changes in the education and earnings of childhood immigrants, i.e., individuals who were 12 years old or younger at the time of immigration, who arrived in Canada between 1960 and 1989.

The outcomes of children of immigrants are important for at least two reasons. First, children of immigrants constitute a substantial proportion of the Canadian population. According to the 2006 Census of Population, around 16% of the Canadian-born population aged 15 or older had at least one immigrant parent (Statistics Canada 2006a). About one-in-four immigrants arrived in Canada before the age of 15 (Statistics Canada 2006b). Second, outcomes of children of immigrants can be viewed as a measure of the long-term impact of immigration and immigration policy.

The objective of this study is to compare outcomes of childhood immigrants who belong to different arrival cohorts (both across cohorts as well as to a meaningful comparison group within the Canadian-born population for each cohort). An arrival cohort is defined by calendar decade: the 1960s, the 1970s, and the 1980s. The advantage of focusing on childhood immigrants is that their own period of arrival is known and their parents' period of arrival can be inferred by assuming that both parents and children arrived within the same calendar decade. Several cross-sections of the Canadian census are used to identify outcomes of childhood immigrants and to link them to outcomes of potential parents. In the absence of individual-level data on parental education and earnings, average outcomes of immigrants are calculated by source region and arrival cohort and used as proxies for the outcomes of the parents of childhood

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1. Many immigrants cite providing a better future for their families and improving their children's access to education as reasons for deciding to stay permanently in Canada (Schellenberg and Maheux 2007).
2. See Hansen and Kucera (2004), Bonikowska (2008), Finnie and Mueller (2008), Card et al. (2000), Chiswick and DebBurman (2004), Card (2005), and Aydemir and Sweetman (2006). Dustmann and Theodoropoulos (2006) find a similar advantage among children of ethnic minority immigrants in the UK. In contrast, studies on data from continental Europe report that children of immigrants typically have poorer outcomes in terms of education and earnings than comparable native–born. See e.g.: Gang and Zimmermann (2000), Fertig and Schmidt (2002), and Riphahn (2003), for Germany; Van Ours and Veenman (2001), for the Netherlands; Bauer and Riphahn (2007), for Switzerland; Nielse et al. (2003), for Denmark; and Rooth and Ekberg (2003), and Hammarstedt and Palme (2005), for Sweden.
3. See e.g.: for Canada: Baker and Benjamin (1994), Green and Worswick (2004), and Aydemir and Skuterud (2005), Frenette and Morissette (2005); for the US: Borjas (1995a) and Duleep and Regets (2002).

immigrants in the sample.[4] Suitable data are not available to conduct a similar analysis for the second generation (Canadian-born individuals with immigrant parents).[5]

The three decades from the 1960s to the 1980s were characterized by important changes in the composition of the immigrant population and in the outcomes of new immigrants. Immigrants from the 1960s came predominantly from Europe, whereas those from the 1970s and 1980s came predominantly from non-European countries. In existing studies (see section 2 for more details), a wide variation in educational attainment has been documented among the second generation across source regions. Furthermore, immigrants who arrived in the 1980s experienced lower entry earnings than did earlier cohorts, even though the 1980s cohort had higher levels of educational attainment. Changes in the characteristics of the first generation, such as education and earnings, may have a direct impact on the outcomes of their children. Alternatively, or simultaneously, unobservable characteristics may differ across immigrant cohorts, as a result of, for example, changes in immigrant self-selection, and in turn may be correlated with unobservable abilities of the children, specifically those abilities likely to drive educational attainment and earnings. The net impact of the compositional changes among immigrant parents on the education and earnings of successive cohorts of childhood immigrants, therefore, is an empirical question.

The study makes the following contributions to the literature. First, it is the first study to examine cohort differences in education and earnings of the 1.5 generation (childhood immigrants) in North America and to link these to cohort effects in both the education and earnings of adult immigrants (potential parents). Second, it provides evidence on outcomes of descendants of the 1980s immigrant cohort—the cohort that has experienced the largest decline in entry earnings in Canada over the last three decades.

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4. Using group-level, instead of individual-level, data introduces a certain degree of measurement error, which could affect conclusions about the relationship between children's and parents' outcomes but (under some assumptions) should not affect conclusions about cross-cohort changes in outcomes of childhood immigrants. See the Data and Measures section for more details.
5. Surveys that collect information about children and their parents, like the Youth in Transition Survey (YITS) or the National Longitudinal Survey of Children and Youth (NLSCY), ask immigrant parents for the year in which they arrived in Canada; this makes it possible to determine the period of arrival of parents of second-generation immigrants. However, the youth surveyed are currently too young to allow a study of completed educational outcomes and wages.

2   Prior research

To date, most research on second-generation immigrants in Canada has focused on outcomes of individuals whose parents arrived before the 1970s. On average, the educational attainment and earnings of this group surpasses those of the domestic population (e.g., Hansen and Kucera 2004; Kucera 2008; Aydemir and Sweetman 2006). Chiswick and DebBurman (2004) and Card (2005) document a similar pattern for the US. As outlined in the introduction, changes in source country composition and in parental post-migration outcomes may lead to cross-cohort differences in the outcomes of childhood immigrants and of the second generation.

Several studies have documented inter-ethnic differences in education and/or earnings, and have analyzed the degree to which these persist across generations. Second-generation youth (age 25 to 34) of Asian origin (other than Filipino) are more likely to hold a university degree than youth of European origin or youth with Canadian-born parents (Abada, Hou, and Ram 2009; Boyd 2008). Furthermore, the gap in university attendance that favours the 1.5 and second generations persists for children of Chinese immigrants even after controlling for a wide range of variables, including high school grades, scores on standardized reading tests, measures of high school engagement, self-perception, and parental education, income, and behaviour (Finnie and Mueller, 2008).[6] Aydemir and Sweetman (2006) conduct a counterfactual exercise in which the returns to various observable characteristics of children of immigrants are kept constant over time but in which the composition in terms of age, visible minority status, and origin reflects that of new adult immigrants. They conclude that the lead in educational attainment among children of immigrants could widen in the future. This assumes, of course, that all other relevant factors remain unchanged.

Inter-ethnic differences in educational attainment among children of immigrants will likely lead to inter-ethnic differences in earnings. Differences exist in an inter-generational context as well. Skuterud (2010) finds that there is little difference in earnings of individuals who do not belong to a visible minority group between the 1.5-generation, second-generation, and third-and-higher-generation in Canada. However, earnings improve between the 1.5 generation and the second generation for members of visible-minority groups. Among Black men, improvement in earnings is also observed between the second generation and the third-and-higher generation. Inter-ethnic differences in education and earnings are also documented for the US (e.g., Chiswick 1988; and Borjas 1994).

The changes in education and earnings of the first generation are important factors to consider in examining outcomes of childhood immigrants (or children of immigrants more broadly) given the positive correlation that exists in these outcomes across generations (e.g., Aydemir, Chen, and Corak 2005 and 2008, for Canada; and Card et al. 2000, for the US). Finnie and Mueller (2008) conclude that lower family income among immigrant parents (compared to Canadian-born parents) is associated with a lower likelihood that their children will be attending university at age 21 among some immigrant groups, but this effect is weaker than the positive effect stemming from the fact that immigrant parents have higher education levels than Canadian-born parents.

While much of the existing literature focuses on outcomes of individuals born in a host country to immigrant parents, this study focuses exclusively on childhood immigrants, defined as foreign-born individuals who immigrated at age 12 or younger. In many ways outcomes of

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6. This study finds an overall higher likelihood of university attendance at age 21 among the 1.5 generation than among the third-and-higher generation after one has controlled for a wide range of individual and parental characteristics. The sample of 1.5-generation immigrants consists of individuals born in 1984, who arrived in Canada by age 15, regardless of year of arrival. In contrast, this study looks at completed university degrees at age 25 to 34 among foreign-born individuals who arrived in Canada at age 12 or younger, by decade of arrival.

childhood immigrants in Canada resemble those of the second generation. Finnie and Mueller (2008) find that both the 1.5 and second generations are more likely to be attending university at age 21 than the third-and-higher generation and Bonikowska (2008) finds that both the 1.5 and second generations have, on average, more years of schooling than the third-and-higher generation (although the lead of the 1.5 generation over the third-and-higher generation falls with age at arrival). However, compositional differences in age, parental education, and ethnic origin can explain much of the gap between the 1.5 generation and the third-and-higher generation, but can explain only a portion of the gap between the second generation and the third-and-higher generations. Using US data, Rumbaut (2004) explores the sensitivity of classifying children of immigrants into different generation groups on the basis of age at arrival and on the basis of whether one or both parents were immigrants. It is not obvious from the available evidence whether differences between the 1.5 and second generations are due to unobservable characteristics that vary across cohorts[7] or to other factors associated with being born abroad versus being born in the host country. Nevertheless, studying outcomes of the 1.5 generation is likely to shed some light on the outcomes of the future second generation.

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7. Since, for example, parents of the 1.5 generation immigrated later than parents of the second generation, on average.

3   Data and measures

The focus of this study is on the cohort differences in educational attainment and earnings of childhood immigrants who arrived in Canada in the 1960s (1960-1969), 1970s (1970-79), and 1980s (1980-1989) *relative to* a cohort-specific comparison group of their Canadian-born peers. Outcomes are derived from the 20%-sample micro data files of the 1986 Census of Population for the entry cohort of the 1960s (and its comparison group), the 1996 Census of Population for the 1970s cohort, and the 2006 Census of Population for the 1980s cohort (see Table 1 for details). The sample consists of individuals between the ages of 25 and 34 in the year their outcomes were measured.[8]

Table 1
Data source

	Outcomes of childhood immigrants aged 25 to 34	Outcomes of potential parents aged 25 to 54
Entry cohort		
1960-1969	1986 Census	1971 Census
1970-1979	1996 Census	1981 Census
1980-1989	2006 Census	1991 Census

Ideally, one would like to compare outcomes of childhood immigrants to those of children of Canadian-born individuals, i.e., the third-and-higher generation. However, information on the immigrant status (or birthplace) of parents was not collected in the 1981 to 1996 censuses. One can identify only individuals who were themselves born in Canada, and this includes the second generation, which in many ways resembles childhood immigrants more than it does the third-and-higher generation. Therefore, the comparison group is defined as Canadian-born

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8. Focusing on the 25-to-34 age group may give an inaccurate picture of the gaps in outcomes between the 1.5 generation and their Canadian-born peers if members of one of the two groups are more likely than members of the other groups to pursue higher education and to be out of the labour force between the ages of 25 and 34. We are unable to observe the 1980s cohort of childhood immigrants, a key group in the present study, at an older age. Instead, this possibility was investigated by forming a synthetic cohort of childhood immigrants who arrived in the 1970s and their comparison group. For the 1970s cohort, the university completion rate increased by only about 2 percentage points between 1996 (among 25-to-34-year-olds) and 2006 (among 34-to-44-year-olds) for both the 1970s cohort 1.5 generation (from 27% to 29%) and the comparison group (from 18% to 20%). Thus, for both groups, only a very small proportion still pursues higher education beyond age 25 to 34. Furthermore, we estimated the earnings gap between the 1970s cohort 1.5 generation and the comparison group for men age 25 to 34 (in 1996) and again at age 35-44 (in 2006). In both years, the estimated earnings gap was not statistically significant after controlling for education, experience, full-time status, and visible minority status. These results suggest that any endogenous selection affects the 1.5 generation and the comparison group similarly, and, if this does not change across cohorts, the results of this study should be robust to the specific age group chosen.

individuals age 25 to 34 who reported their ethnic origin as British, French, or Canadian.[9] By defining the comparison group in this way, it is largely comprised of individuals born to Canadian-born parents and is relatively consistent over time.[10]

Educational attainment is measured by whether or not a person completed a university degree (bachelor's degree or higher) by age 25 to 34.[11] Earnings are measured by weekly wages, defined as annual wages and salaries earned in the year prior to census, divided by the number of weeks worked in the previous year. For the earnings analysis, the sample is restricted to individuals who worked at least one week in the year prior to the census and reported positive (non-zero) wages and salaries.[12] All wage variables have been adjusted to 2005 constant dollars on the basis of the Consumer Price Index.

Several explanatory variables are included in the multivariate models to account for compositional shifts in individual characteristics across cohorts. These variables are age, region of residence, mother tongue, and variables specific to childhood immigrants (age at immigration, visible minority status, and source region). Location of residence is measured by means of a separate indicator for each of the ten Canadian provinces (excluding observations from three Census Metropolitan Areas (CMAs), Montreal, Toronto, and Vancouver, which are assigned separate indicators) and a single indicator for the three territories (for a total of 14 indicators). Mother tongue is coded into three categories: English, French, neither English nor French. Visible-minority status is coded as a dummy variable equal to 1 when the childhood immigrant

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9. Specifically, the comparison group includes those who reported British or French as their only ethnic origin, reported multiple origins involving British and/or French, or reported 'Canadian' as a single origin. The share of the total population reporting 'Canadian' as a single origin increased from about 0.1% in the 1981 Census to 16.6% in the 2001 Census. The majority of people who reported 'Canadian' as a single ethnic origin were of the second or higher generations and would have likely reported English or French as their origin in previous censuses (Thomas 2005). This comparison group accounts for 82%, 76%, and 71% of the total Canadian-born population aged 25 to 34 in the 1986, 1996, and 2006 censuses, respectively. The university completion rate and average earnings of this comparison group were marginally lower than those of all same-aged Canadian-born individuals in all three censuses. If those who reported their ethnic origin as 'Canadian' had not been included, the comparison group's share in the Canadian-born population aged 25 to 34 would have decreased sharply, from 82% in the 1986 Census to 55% in the 1996 Census and to 49% in the 2006 Census. Furthermore, the university completion rate and earnings of the comparison group would have become increasingly higher than those of all same-aged Canadian-born individuals in more recent censuses.

10. In 2006, when the information on parents' birth country was available in the census, only 3% of the Canadian-born comparison group was born to parents who were both immigrants, while 89% was born to parents who were both Canadian-born, and the remaining 8% had one Canadian-born parent. In the 1971 Census, a similarly defined comparison group consisted of 3% of individuals born to two immigrant parents, 87% of individuals born to two Canadian-born parents, and 10% of individuals born to one Canadian-born parent. We could not confirm directly whether the comparison group's share of the third-and-higher generation remained the same from the 1981 to 1996 censuses because the information on parents' country of birth was not collected in those years. However, the high consistency between the 1971 and 2006 censuses suggests that differences, if any, should be very small.

11. The analysis uses university completion rather than on years of schooling for two reasons. First, there is a significant change in the way education information is collected on the 2006 Canadian Census of Population, compared to earlier censuses. There is no direct question on total years of schooling on the 2006 Census, and changes in the highest educational attainment questions are such that not all levels of education below a university degree are comparable across censuses. Second, it is at this level that the biggest differences between children of immigrants and children of non-immigrants have been documented. Abada, Hou, and Ram (2008) find that there are much larger differences between ethnic origin groups among children of immigrants (the second generation) in the probability of completing a university degree than in the probability of completing at least high school. Finnie and Mueller (2008) find no significant differences between the 1.5 generation or the second generation and the third-and-higher generation in the probability of attending a non-university post-secondary education institution, but find significant differences in the probability of attending university.

12. Individuals who reported working in the previous year but also reported wages and salaries of zero are excluded.

belongs to a visible minority group, and coded to 0 otherwise. Immigrant source regions are coded into 43 groups that are consistent across censuses.[13]

Explanatory variables in the wage models include: education; a quadratic in potential years of work experience; and full-time employment status. Education is grouped into five categories: no high school certificate; high school certificate or diploma; non-university certificate or diploma; bachelor's degree; and master's degree or PhD.[14] Potential years of experience are estimated as "age minus years of schooling minus 6." Since years of schooling information was not collected in the 2006 Census, this variable is imputed on the basis of estimated median years of schooling by highest level of education from the 2001 Census.[15] These estimated median years of schooling are assigned to corresponding certificate/degree levels in the 2006 Census.[16] To ensure comparability across time, imputed years of schooling are used to compute potential years of work experience for the 1986 and 1996 data as well.

Of particular interest is the relationship, if any, between the declining entry earnings of adult immigrants and cohort differences in outcomes of the 1.5 generation. While the outcomes of childhood immigrants are measured directly at the individual level, their parents' education and earnings have to be proxied by group-level data. Individual outcomes of childhood immigrants in a given arrival cohort from a specific source region are matched with average outcomes of adult immigrants who arrived in the same time period from the same source region. This approach has been used in other research (e.g., Aydemir, Chen, and Corak 2005 and 2008). Aydemir, Chen, and Corak (2008) show that the group estimator relating outcomes of potential fathers with the child's education yields very similar estimates of the intergenerational transmission of education as those based on individual-level information on paternal education. The approach has also been used in studying the effect of "ethnic capital" (or, essentially, group-level parental human capital) on immigrant children's outcomes (Borjas 1995b). According to Borjas, the

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13. The 43 groups are the following: USA, Haiti, Jamaica, Trinidad, other Caribbean, Central America, Guyana, other South America, UK, Netherlands, France, Germany, Italy, Portugal, other Northern/Western/Southern Europe, Former Yugoslavia, Poland, Former USSR, other Eastern Europe, Israel, Lebanon, Iran, Egypt, other West Asia/Middle East, China, Hong Kong, Taiwan, Korea, other Eastern Asia, Philippines, Vietnam, other Southeast Asia, India, Pakistan/Bangladesh, other South Asia, Northern Africa, Western/Central Africa, Southern Africa, Eastern Africa, Kenya, Australia, New Zealand, and other countries.

14. There has been a change in the way information about educational attainment was collected between the 2001 and 2006 censuses. As a result, detailed educational levels below a bachelor's degree are not entirely comparable with earlier censuses, particularly for older age groups. The breakdown into five education categories used in this study appears reasonable when the education distribution for a synthetic cohort of Canadian-born males aged 30 to 39 in 2001 is compared for both census years (see Bonikowska, Hou, and Picot 2009). We also reran the earnings regressions in this study, controlling only for two education groups—bachelor's degree and graduate degree—with all levels below the bachelor as the base group. This alternative specification did not alter our key findings about cross-cohort patterns in outcomes of childhood immigrants.

15. In the 2001 Census, the estimated wage gap between the 1.5 generation and third-and-higher generation remains the same regardless of whether one uses the imputed years of schooling and the corresponding years-of-experience measure or the self-reported years of schooling and the corresponding years-of-experience measure. For young men aged 25 to 34 and excluding first-generation immigrants, in a model with log weekly wages as the outcome and controlling for generation status, full-time employment status, marital status, visible-minority status, and geographic residence, the coefficient is 0.075 for self-reported years of schooling, 0.057 for the corresponding years of experience, and -0.038 for the 1.5 generation (relative to third-and-higher generation). In comparison, the coefficient is 0.087 for the imputed years of schooling, 0.060 for the corresponding years of experience, and -0.038 for the 1.5 generation.

16. The following values are assigned to the 2006 Census by levels of certificate, diploma, and degree: none—10 years of schooling; high school graduation certificate—12 years; other trades certificate or diploma, registered apprenticeship certificate or diploma, college, CEGEP (community college program specific to the province of Quebec), or other non-university certificate or diploma from a program of 3 months to less than 1 year—13 years; college, CEGEP, or other non-university certificate or diploma from a program of 1 year to 2 years—14 years; college, CEGEP, or other non-university certificate or diploma from a program of more than 2 years—15 years; certificate or diploma below bachelor—16 years; bachelor's degree—17 years; certificate or diploma above bachelor —18 years; degree in medicine, dentistry, veterinary medicine, or optometry—20 years; master's degree—19 years; earned doctorate degree—22 years.

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average human capital of an immigrant group in the father's generation is critical to intergenerational mobility because it acts as an externality in the human capital accumulation process and because differences in the levels of "ethnic capital" slow the convergence of the average skills of ethnic groups across generations (Borjas 1994 and 1992). In this study, the group-level parents' characteristics capture the combined effect of earnings and education of individuals' parents and the "ethnic capital" of one's immigrant group, although these two types of effects cannot be separated. However, their combined effect is more relevant to the central research question.

Optimally, one would measure parental earnings at the time children are finishing high school and deciding whether or not to attend university.[17] Given the timing of the Canadian census and the fact that individual-level information on parental outcomes is not available, outcomes of potential parents are measured 15 years before the outcomes of the children are measured. At that time, the median age of the sample of childhood immigrants was 14. Both parental education (proportion of individuals with a university degree) and earnings (including individuals with zero earnings) among adult immigrants are measured by decade of arrival and source region. The "parental" education and earnings measures are then matched to childhood immigrants by arrival cohort and the aforementioned 43 source regions. More specifically, for the 1960s cohort of childhood immigrants, the group-level education and earnings of their potential parents are calculated using data from the 1971 Census and a sample of immigrants who were over 20 years old at arrival, who had become landed immigrants within the previous 10 years[18], and who were 25-to-54 years old in 1971 and had children in the age range of the childhood immigrants in this study. Outcomes of potential parents of childhood immigrants from the 1970s and 1980s were calculated in a similar fashion. For the Canadian-born comparison group, average outcomes of potential parents were again calculated in a similar fashion, i.e., using a sample of Canadian-born adults with British, French, or Canadian ethnic origin, who were 25-to-54 years old and had children in the appropriate age range in the relevant census year.

Parental earnings were calculated as the sum of father's and mother's earnings, including individuals with zero earnings. This was done to estimate the financial resources available when the child was deciding whether or not to attend university.[19] The analysis controls only for the education of potential fathers. The correlation coefficient between group-level measures of mothers' and fathers' education is 0.93, making it difficult to control for both simultaneously. The key results in the study are robust to the choice of fathers' over mothers' average education as the control variable.

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17. Coelli (2005) shows that persistent negative shocks to parental income lower the probability of university attendance among children of high school leaving age. Finnie and Mueller (2008) control for parental incomes when the children are 15 years old in analyzing differences in post-secondary attendance between children of immigrants and children of non-immigrants.

18. By construction, adult immigrants who arrived in the 1980s, for example, and whose outcomes are calculated from the 1991 Census, 15 years before the outcomes of their potential children are measured (2006), will have lived in Canada for up to a decade.

19. Robustness checks were run in which the earnings of potential fathers were included instead of parental earnings, with similar results achieved. The robustness checks included runs in which fathers with zero earnings were both included and excluded from the calculation.

4 Descriptive statistics

4.1 Composition shifts among childhood immigrants

There were substantial cross-cohort changes in the compositional characteristics of childhood immigrants (and among immigrants in general) arriving between 1960 and 1980, particularly in terms of source region, mother tongue, and visible minority status (Table 2). Europeans accounted for 71.4% of the 1960s cohort of childhood immigrants, 40.8% of the 1970s cohort, and 28.6% of the 1980s cohort. In contrast, the share of childhood immigrants from Asia rose from 9.7% to 42.2%. Accompanying the shifts in source regions were changes in mother tongue and visible minority status. Between the 1960s and the 1970s, the proportion of childhood immigrants whose mother tongue was English or French actually increased slightly even though the share of individuals who belong to a visible minority group rose from 14.7% to 46.0%. This is mostly because the large decline in the share of non-English-speaking/non-French-speaking European source regions (e.g., Italy and Portugal) was replenished by English-speaking/French-speaking immigrants from regions such as the Caribbean, Africa, and the Philippines. However, between the 1970s and 1980s, the proportion of childhood immigrants whose mother tongue was English or French dropped significantly while the shares of individuals belonging to a visible minority group continued to increase.

Table 2
Compositional shifts across cohorts of childhood immigrants

	1960-69 cohort	1970-79 cohort	1980-89 cohort
	percent		
Source regions			
United States	9.3	9.9	4.2
Caribbean	2.9	11.5	6.8
South and Central America	3.5	8.0	12.8
Northern Europe	24.4	19.1	9.4
Western Europe	10.8	5.0	4.3
Southern Europe	32.1	15.0	4.8
Eastern Europe	4.1	1.7	10.1
Africa	2.2	5.6	4.6
South Asia	2.3	6.3	4.8
Southeast Asia	0.7	6.6	19.5
East Asia	3.7	7.0	11.5
Western Asia	3.0	2.4	6.4
Oceania and other	1.0	2.0	0.9
Mother tongue			
English or French	55.4	57.7	35.9
Other	44.6	42.3	64.1
Visible minority			
Yes	14.7	46.0	62.1
No	85.4	54.0	37.9
	number		
Sample size	22,978	30,692	21,201

Sources: 1986, 1996, 2006 Canadian censuses.

Childhood immigrants who arrived in Canada in the 1960s through the 1980s achieved higher rates of university completion than Canadian-born children (Charts 1 and 2). At age 25 to 34, 19.6% of the 1960s cohort male childhood immigrants held a university degree (5.6 percentage points, or 40%, more than the Canadian-born comparison group) while 31.6% of the 1980s cohort of male childhood immigrants did so (11.2 percentage points, or 55%, more than the Canadian-born comparison group). Among women, 17.7% of childhood immigrants in the 1960s cohort held a university degree (5.2 percentage points, or 41%, more than the Canadian-born

comparison group) while 39.8% of the 1980s cohort did so (10.1 percentage points, or 34%, more than the Canadian-born comparison group). The gender-specific trends appear to be similar for both childhood immigrants and their Canadian-born comparison group: the share of women who had completed a university degree by age 25 to 34 rose faster than the share of university-educated men across the three cohorts considered.

Chart 1
Cohort differences in university completion rates among childhood immigrants and the Canadian-born comparison group at age 25 to 34 − Men

percentage with university degrees
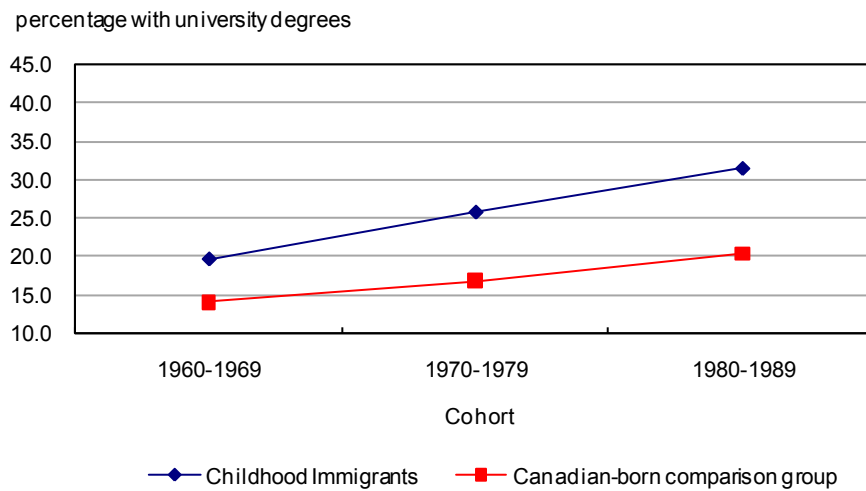
Sources: 1986, 1996, and 2006 Canadian censuses.

Chart 2
Cohort differences in university completion rates among childhood immigrants and the Canadian-born comparison group at age 25 to 34 − Women

percentage with university degrees
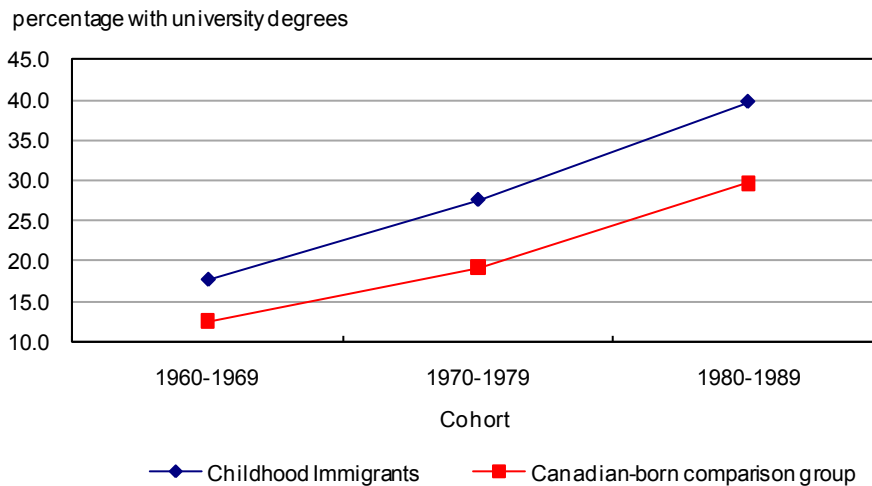
Sources: 1986, 1996, and 2006 Canadian censuses.

The cohort differences in childhood immigrants' weekly earnings relative to the Canadian-born comparison group vary by gender (Charts 3 and 4). Among men, the log weekly earnings of the comparison group decreased between 1985 and 1995 and then recovered somewhat by 2005, although they remained below the 1985 level.[20] These trends are consistent with the observation of previous studies that successive cohorts of new labour market entrants experienced declines in earnings (Green and Worswick 2004; Aydemir and Skuterud 2005). Childhood immigrants experienced similar fluctuations but in different magnitudes: the decrease between 1985 and 1995 was more pronounced while the recovery between 1995 and 2005 still left them lagging behind their Canadian-born comparison group. As a result, the gap between the earnings of male childhood immigrants and the comparison group widened across cohorts. At age 25 to 34, the 1960s cohort of childhood immigrants had average earnings 3.0% below those of the comparison group. The gap was 4.4% for the 1970s cohort and 4.8% for the 1980s cohort. In comparison, female childhood immigrants tended to earn higher weekly earnings than the comparison group, and the lead expanded across successive cohorts as earnings growth between 1985 and 2005 was faster among childhood immigrants than among the comparison group.

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20. The difference in log weekly wages between two groups (e.g., childhood immigrants vs. Canadian-born comparison group, or 1960s cohort vs. 1970s cohort) can be interpreted as an approximate percentage difference (when multiplied by 100) in weekly wages.

Chart 3
Cohort differences in mean log weekly earnings (in 2005 dollars) among childhood immigrants and the Canadian-born comparison group at age 25 to 34 − Men

log weekly earnings

Cohort

◆ Childhood Immigrants ■ Canadian-born comparison group
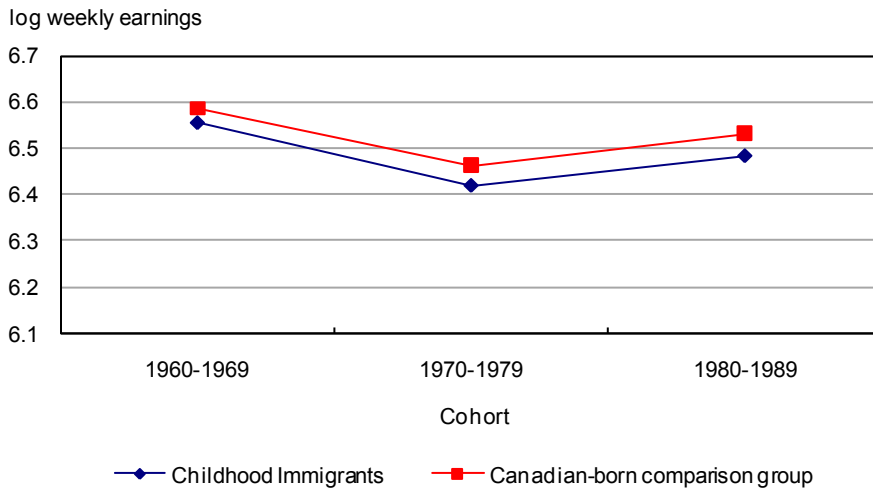
Sources: 1986, 1996, and 2006 Canadian censuses.

Chart 4
Cohort differences in mean log weekly earnings (in 2005 dollars) among childhood immigrants and the Canadian-born comparison group at age 25 to 34 − Women

log weekly earnings

Cohort

◆ Childhood Immigrants ■ Canadian-born comparison group
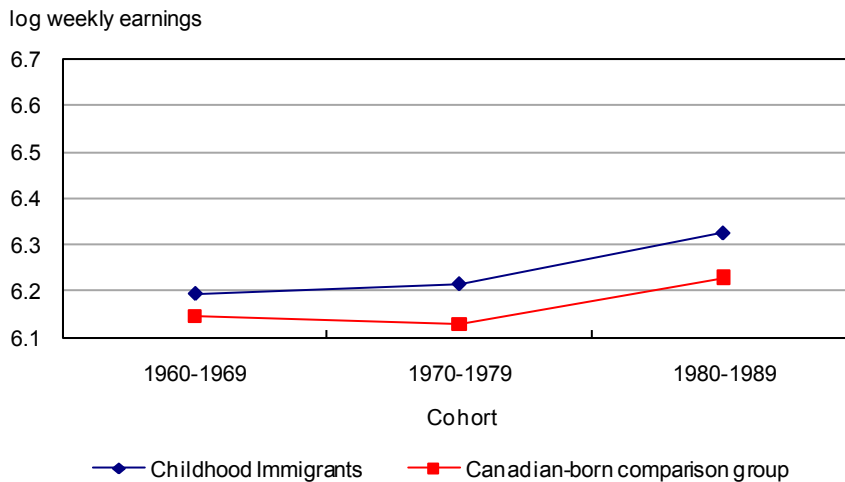
Sources: 1986, 1996, and 2006 Canadian censuses.

4.2 Cohort differences in education and earnings among childhood immigrants' parents' generation

Turning to the characteristics of adult immigrant parents, university completion rates were higher among immigrants in all three cohorts than among the Canadian-born comparison groups. However, the magnitude of the difference declined (Charts 5 and 6). While the 1960s cohort of potential immigrant fathers aged 25 to 54 had a university completion rate more than twice that of the comparison group (14.2% vs. 6.3%), the 1980s cohort led the comparison group by 75% (24.9% vs. 14.2%). A similar pattern is observed among women.

It is important to note that the narrowing gap in educational attainment between recent immigrants and the Canadian-born did not continue beyond the 1980s.[21] Placing priority on the 'human capital model' of immigrant selection, the Canadian government increased the proportion of individuals granted landed immigrant status (permanent residence) in Canada who held a university degree. As a result, the education levels of immigrants to Canada in the 1990s and early 2000s surpassed those of the Canadian-born (Picot and Hou 2009). These new changes are not covered in this study, since most children who immigrated in the 1990s have not yet reached age 25. Because the study is limited to childhood immigrants who arrived in the 1960s to 1980s, any extrapolation to more recent or future cohorts of childhood immigrants must be made with caution.

Compared to cohort differences in educational attainment, cohort differences in earnings among adult immigrants are more striking (Charts 7 and 8). Among men, the average earnings increased between the 1960s and 1970s cohorts, and decreased between the 1970s and 1980s cohorts. Over the entire period, increases were smaller and decreases larger among immigrants than among the Canadian-born, and the earnings gap widened between the two. Consequently, while the 1960s cohort of adult male immigrants had earnings on par with those of their Canadian-born counterparts, the 1980s cohort earned 24% less. Among women, average earnings rose among both immigrants and the Canadian-born, but gains were more modest among immigrants, and by the 1980s their earnings were 14% below those of the Canadian-born comparison group.

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21. A few previous studies also found that education levels rose faster among the Canadian-born than among recent immigrants through the 1970s and 1980s, and the weakening advantage of recent immigrants in educational levels partially accounted for their decline in earnings relative to the Canadian-born (Hou and Picot 2008; Reitz 2001).

Chart 5
Cohort differences in educational attainment of adult immigrants − Fathers aged 25 to 54

percentage with university degrees
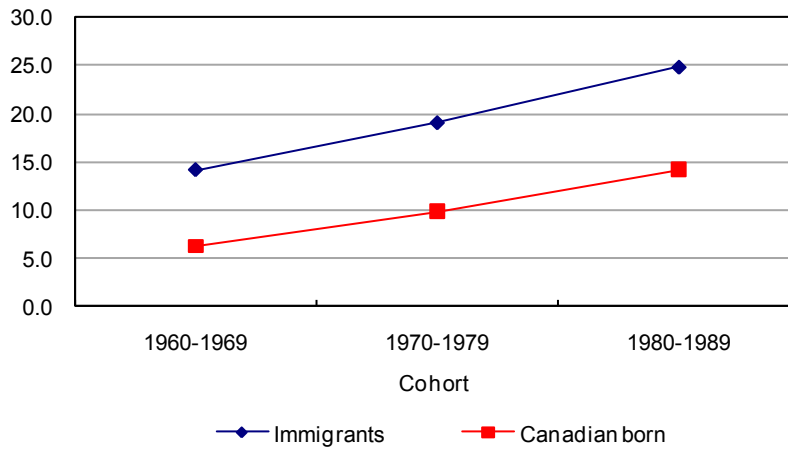
Chart 6
Cohort differences in educational attainment of adult immigrants − Mothers aged 25 to 54

percentage with university degrees
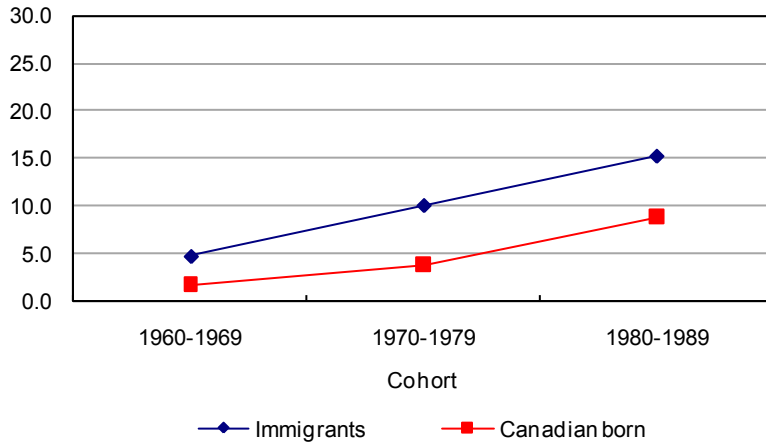
Chart 7
Cohort differences in earnings of adult immigrants −
Fathers aged 25 to 54

annual earnings (in 2005 dollars)

Cohort

◆ Immigrants ■ Canadian born
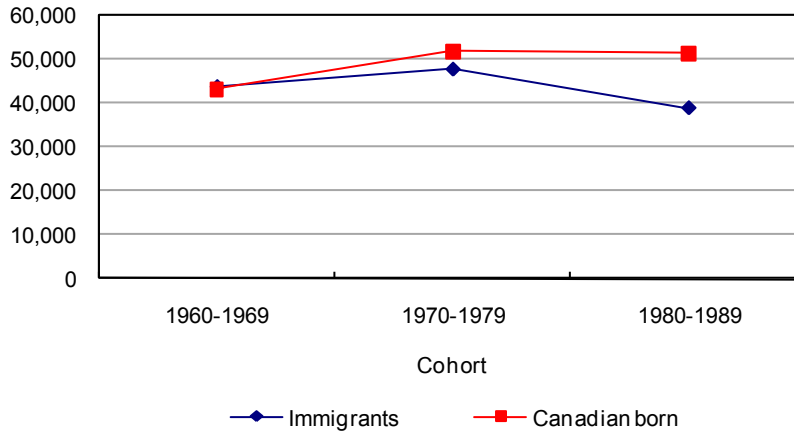
Chart 8
Cohort differences in earnings of adult immigrants −
Mothers aged 25 to 54

annual earnings (in 2005 dollars)

Cohort

◆ Immigrants ■ Canadian born
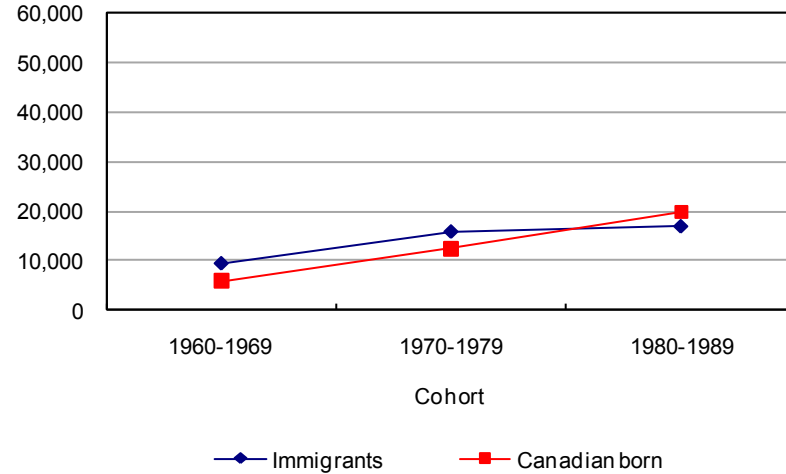
5 Estimation results

5.1 Methods

Multivariate models are estimated to examine how compositional shifts among childhood immigrants and changes in education and earnings of their parents affect the observed cross-cohort differences in relative outcomes—education and earnings—of childhood immigrants.

Specifically, the following three sequential models are run for each outcome. Model 1 simply replicates the observed differences in the outcome across cohorts of childhood immigrants and the Canadian-born comparison group:

$$Y = a + \beta_1 * Y96 + \beta_2 * Y06 + \beta_3 * IM + \beta_4 * IM * C70s + \beta_5 * IM * C80s \qquad (1)$$

where **Y96** and **Y06** represent year effects for 1996 and 2006, respectively, with 1986 as the base year. Accordingly, β_1 represents the difference in outcome **Y** of the Canadian-born comparison group (aged 25 to 34) between 1986 and 1996, and β_2 represents the difference between 1986 and 2006.[22] IM represents immigrant status (i.e., **IM** = 1 for childhood immigrants and **IM** = 0 for the Canadian-born comparison group). **C70s** and **C80s** are dummy variables representing the 1970s and 1980s cohorts of childhood immigrants, respectively (so that the variable **IM** in fact represents the 1960s cohort as the reference group). Accordingly, β_3 represents the gap in the outcome between the 1960s cohort of childhood immigrants and their Canadian-born peers in 1986 (a positive gap indicates that childhood immigrants outperform the Canadian-born comparison group in outcome **Y**). β_4 represents the extent to which the gap in the outcome between the 1970s cohort of childhood immigrants and the Canadian-born comparison group in 1996 is larger or smaller than it was for the 1960s cohort (β_3); thus $\beta_3 + \beta_4$ is the gap between the 1970s cohort of childhood immigrants and the comparison group in 1996. β_5 can be interpreted similarly for the 1980s cohort.

Next, a standard set of control variables is added in Model 2:

$$Y = a^\dagger + \beta_1^\dagger * Y96 + \beta_2^\dagger * Y06 + \beta_3^\dagger * IM + \beta_4^\dagger * IM * C70s + \beta_5^\dagger * IM * C80s + \gamma X + \kappa Z \qquad (2)$$

where **X** is a vector of control variables that are common to both childhood immigrants and the Canadian-born comparison group and **Z** is a vector of control variables specific to childhood immigrants. In the model for university completion, **X** includes age, area of residence, and mother tongue. In the model for weekly earnings, **X** also includes a quadratic in potential years of work experience, educational attainment, geographic location, mother tongue, and full-time status.[23] For both outcomes, **Z** includes age at immigration, an indicator for individuals who belong to a visible minority group, and indicators for source region (43 countries or groups of countries). All immigrant-specific variables are transformed as deviations from the mean of the

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22. Since the census asks respondents to report their wages and salaries and weeks worked in the calendar year prior to the census, for the weekly wage outcome, the corresponding year effects are 1995 and 2005 versus 1985.

23. Many of the included variables, such as geographic location, and (in wage regressions) education and full-time status, are likely endogenous. The goal of this study is to conduct an accounting exercise rather than to identify causal relations.

1960s cohort in order to simplify the interpretation of $\beta_3^\dagger, \beta_4^\dagger$, and $\beta_5^\dagger$.[24] $\beta_3^\dagger$ indicates the gap in outcome Y between the 1960s cohort of childhood immigrants and the Canadian-born comparison group in 1985 after adjustment has been made for differences in X. $\beta_4^\dagger$ and $\beta_5^\dagger$ have a similar interpretation.

Finally, parental outcome measures—proportion of potential fathers with a university degree and average earnings of potential parents—are added in Model 3.

$$Y = a' + \beta_1'*Y96 + \beta_2'*Y06 + \beta_3'*IM + \beta_4'*IM*C70s + \beta_5'*IM*C80s + \gamma'X + \kappa'Z$$

$$+ \Pi_1*Fu + \Pi_2*Pe \qquad\qquad (3)$$

where Fu is the proportion of potential fathers with a university degree and Pe is the log of average annual earnings of potential parents. Since both variables are measured at the group level, within-group dependence is allowed for in estimating standard errors in the regression model. Parental outcome measures were added in a separate model so as to analyze the following three changes: $\beta_3^\dagger - \beta_3', \beta_4^\dagger - \beta_4'$, and $\beta_5^\dagger - \beta_5'$. These changes result from controlling for cohort differences in education and earnings in the parents' generation, while holding other observable characteristics constant.

The educational outcome is estimated using both linear probability (LPM) and probit models. Marginal effects from the probit models are reported in Appendix II. The method does not alter conclusions about the trend in the university completion gap between childhood immigrants and the third-and-higher generation. Results from the linear probability models and decompositions are presented below.

5.2 Cohort differences in educational attainment among childhood immigrants

In this section, regression estimates are presented to answer the question: to what extent is the 'gap' in university completion between childhood immigrants and the Canadian-born attributable to changes in the characteristics of these groups, including relative changes in the outcomes of their parents? In all three models (as described above), the coefficient labelled "childhood immigrant" is the percentage point difference in university completion rates between the 1960s cohort of childhood immigrants and their Canadian-born counterparts as measured in 1986. The coefficient labelled "1970s cohort" is the *difference* in relative (to the Canadian-born comparison group) university completion rates between the 1960s and 1970s cohorts, measured in 1996. Similarly, the coefficient labelled "1980s cohort" is the *difference* in relative (to the Canadian-born comparison group) university completion rates between the 1960s and 1980s cohorts, measured in 2006.

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24. Rather than referring to a specific age at immigration, visible minority status and source region base group, the coefficients on the childhood immigrant indicators, conditional on age at immigration, visible minority status and source region still represent the difference in outcomes between an "average" childhood immigrant and the Canadian-born comparison group.

Table 3
Linear probability models of university completion rates at age 25 to 34

	Model 1		Model 2		Model 3	
	coefficient	standard error	coefficient	standard error	coefficient	standard error
Men						
Childhood immigrant	0.056 ***	0.004	0.026 ***	0.004	-0.013 *	0.007
1970s cohort	0.034 ***	0.005	0.002	0.006	0.016 **	0.006
1980s cohort	0.056 ***	0.006	-0.011	0.007	0.026 **	0.010
Intercept	0.140 ***	0.001	0.193 ***	0.005	-1.561 ***	0.396
Year 1996	0.028 ***	0.001	0.028 ***	0.001	-0.029 ***	0.009
Year 2006	0.064 ***	0.001	0.065 ***	0.001	-0.025 **	0.011
Age			0.002 ***	0.000	0.002	0.002
Non English/French mother tongue			-0.013 **	0.005	-0.010	0.008
French mother tongue			-0.015 ***	0.002	-0.015 ***	0.003
Age at immigration			-0.004 ***	0.001	-0.005 ***	0.002
Member of visible minority group			0.024 **	0.010	0.031 *	0.018
Father's education					0.378 ***	0.067
Parental earnings					0.160 ***	0.037
Women						
Childhood immigrant	0.052 ***	0.004	0.020 ***	0.005	-0.025 ***	0.009
1970s cohort	0.032 ***	0.006	0.008	0.006	0.024 ***	0.008
1980s cohort	0.049 ***	0.007	-0.010	0.008	0.030 **	0.015
Intercept	0.125 ***	0.001	0.317 ***	0.005	-1.491 ***	0.482
Year 1996	0.067 ***	0.001	0.069 ***	0.001	0.010	0.011
Year 2006	0.171 ***	0.001	0.173 ***	0.001	0.081 ***	0.014
Age			-0.003 ***	0.000	-0.003	0.003
Non English/French mother tongue			-0.016 ***	0.006	-0.013	0.012
French mother tongue			0.005 ***	0.002	0.005	0.011
Age at immigration			-0.007 ***	0.001	-0.007 ***	0.002
Member of visible minority group			0.031 ***	0.010	0.037 *	0.022
Father's education					0.392 ***	0.076
Parental earnings					0.165 ***	0.045

	Model 1	Model 2	Model 3
Control variables included			
Geographic location	no	yes	yes
Immigrant source region	no	yes	yes

Notes: * significant at p<.1, ** p<.05, *** p<.01. In the pooled men's sample, there are 38,662 childhood immigrants and 818,094 Canadian-born individuals. In the pooled women's sample, there are 37,209 childhood immigrants and 835,271 Canadian-born individuals. The 1970s and 1980s cohort intercepts are defined relative to the 1960s cohort represented by the childhood immigrant variable. Parental outcomes refer to outcomes of potential parents and are group-level measures. Data cells are left blank when variables are not included in the model.

Sources: 1971, 1981, 1986, 1991, 1996, and 2006 Canadian censuses.

The unadjusted percentage point gap in university completion widened across the three cohorts to the advantage of childhood immigrants, from about 5 percentage points for the 1960s cohort to about 10 percentage points for the 1980s cohort, for both men and women aged 25 to 34 (Model 1, Table 3). Once differences in compositional characteristics of childhood immigrants—age, age at immigration, mother tongue, visible minority status, place of residence, and place of birth—were accounted for in Model 2, the positive gap between the 1960s cohort of childhood immigrants and their Canadian-born peers decreased by more than half, for both men and women. Furthermore, the gap does not change between the 1960s and 1970s cohorts. The gap in university completion between the 1980s cohort and their comparison group, however, diminishes compared to the 1960s cohort. This decline is statistically significant when estimated with a probit model, but not when estimated with a linear probability model. It is also larger in magnitude in the probit than the linear probability model estimation, to the point where childhood

immigrants from the 1980s cohort no longer have university completion rates higher than those of their comparison group.

In Model 3, controls for parental characteristics are added, specifically the share of potential fathers with a university education and the average earnings of potential parents. Since the proportion of potential fathers with a university degree is higher among immigrants than among the native-born comparison group in all three cohorts, one would expect that controlling for education of potential fathers would lower the gap in education between childhood immigrants and the comparison group in any given cohort. On the one hand, the share of potential immigrant fathers relative to potential Canadian-born fathers with a university degree, however, has fallen across the three cohorts. Therefore, controlling for potential fathers' education should also lower the gap in university completion across cohorts, assuming that the relationship between fathers' and children' education has not changed over this period. On the other hand, earnings of potential parents of childhood immigrants have fallen relative to earnings of potential Canadian-born parents. To the extent that parental earnings are positively correlated with children's education outcomes, one might expect that controlling for earnings of potential parents will decrease the gap in university completion to the advantage of childhood immigrants, holding everything else constant.

Adding controls for outcomes of potential parents in Model 3 leads to the following observations. First, consistent with *a priori* expectations, the lead of the 1960s cohort of childhood immigrants over the Canadian-born comparison group in university completion disappears—in fact, childhood immigrants (particularly women) are now less likely to complete university than their Canadian-born counterparts. This is expected given the much higher university completion rates among the potential parents of childhood immigrants than among the parents of the comparison group, but on average similar earnings. Second, one no longer sees deterioration in the relative (to the Canadian-born comparison group) university completion rates between the 1960s and 1980s cohorts. Instead, there is a small improvement. Consequently, there is no difference in the probability of university completion between childhood immigrants and their Canadian-born counterparts.

The gap in university completion between childhood immigrants and their Canadian-born peers across the three cohorts changes with the introduction of control variables in Models 2 and 3. To investigate which of the factors account for what share of the unadjusted gaps in university completion, a decomposition exercise is conducted based on coefficients from Models 2 and 3, respectively. Details of the decomposition are outlined in Appendix I.

In Model 2, the roughly 5-percentage-point-higher likelihood of completing university among childhood immigrants in the 1960s cohort drops by roughly half once standard controls are included. This decline is due entirely to the fact that childhood immigrants were much more highly concentrated in Canada's three largest metropolitan areas, particularly Toronto, where university completion rates were higher than in the rest of the country.[25] Also, the gap in university completion rates between childhood immigrants and their Canadian-born peers is no longer growing across cohorts in Model 2. For men, about 57% of the change in the 1970s cohort coefficient between Model 1 and Model 2 (or, put differently, 57% of the increase in relative university completion between the 1960s and 1970s cohorts observed in raw data) is the result of a shift in source region composition. Another 25% is due to the increase in the share of members of visible minority groups. The remaining difference is due to changes in characteristics common to childhood immigrants and the Canadian-born comparison group, i.e., age, mother tongue, and geographic location. Similarly, 76% of the change in the 1980s cohort

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25. In 1986, 34.2% of the 1960s cohort of childhood immigrants lived in Toronto, 12.7% lived in Montreal, and 8.9% lived in Vancouver. The corresponding distributions were 9.7%, 9.2%, and 8.3% for the Canadian-born comparison group.

coefficient is due to a shift in source region composition, and 17% is due to the rise in the share of members of visible minority groups. These compositional changes exerted upward pressure on the likelihood of university completion among successive cohorts of childhood immigrants. Between the 1960s and the 1980s, the share of childhood immigrants from Asia and the share of childhood immigrants who belong to a visible minority group increased considerably, and these immigrants traditionally have high university completion rates.

Controlling for outcomes of potential parents in Model 3 turns the cross-cohort decline in university completion of childhood immigrants relative to the comparison group into an increase. This decline observed in Model 2 can be accounted for by the decline in earnings of potential immigrant parents relative to their Canadian-born counterparts. The expanding earnings gap between immigrant and Canadian-born parents throughout the 1960s to 1980s was, therefore, negatively associated with the university completion rates among successive cohorts of childhood immigrants. With parental education and other individual characteristics being held constant, the likelihood of completing university may have been higher for childhood immigrants had the earnings of their parents not declined as they did between the 1960s and the 1980s.

5.3 Cohort differences in weekly earnings among childhood immigrants

The cross-cohort patterns in earnings of childhood immigrants relative to their Canadian-born counterparts look very different for men and women in the raw data. Model 1 in Table 4 replicates the overall cohort differences observed in Charts 3 and 4. Among men, childhood immigrants who arrived in the 1960s earned 3% less than their Canadian-born counterparts by age 25 to 34. This gap appears to widen across cohorts to 5% for the 1980s cohort, although the decline is not statistically significant. Female childhood immigrants, in contrast, experienced a statistically significant improvement in weekly earnings relative to their comparison group across the three cohorts, from a nearly 5% lead for the 1960s cohort to a nearly 10% lead for the 1980s cohort.

Controlling for education, potential years of experience, full-time status, and other compositional characteristics removes the gender difference in relative earnings and results in a similar cross-cohort trend for both men and women. The lag in earnings of the 1960s cohort of childhood immigrants compared to their Canadian-born peers is eliminated in subsequent cohorts. The 1980s cohort of childhood immigrants even earns higher earnings than their Canadian-born peers; this gap is larger among women than men and statistically significant only for the former.

The cross-cohort pattern of rising relative earnings of childhood immigrants observed in Model 2 remains unchanged when controls for parental outcomes are included in Model 3 (although the increase becomes more pronounced among women). Furthermore, the study finds no significant effect of potential fathers' education on earnings of their (potential) children. Earnings of potential parents are not significantly correlated with earnings of sons, but are positively and significantly associated with daughters' earnings. Given that group-level measures of potential parental outcomes in individual level regressions are used, it is possible that the general lack of a significant association between parental outcomes and children's earnings is a result of attenuation bias.[26]

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26. On the other hand, it is possible that any association between parental and children's outcomes is channelled entirely through the child's educational attainment. Card et al. (2000) reach a similar conclusion about the correlation between potential fathers' education and earnings and children's (second generation) earnings in the US for outcomes of second-generation individuals observed in the 1990s, but not for the second-generation men observed in the 1970s.

Table 4
Regression models of log weekly wages at age 25 to 34

	Model 1		Model 2		Model 3	
	coefficient	standard error	coefficient	standard error	coefficient	standard error
Men						
Childhood immigrant	-0.030 ***	0.008	-0.024 **	0.009	-0.008	0.017
1970s cohort	-0.014	0.012	0.028 **	0.012	0.028 **	0.014
1980s cohort	-0.018	0.013	0.040 ***	0.015	0.047 **	0.021
Intercept	6.587 ***	0.001	5.351 ***	0.008	4.941 ***	0.725
Year 1996	-0.125 ***	0.002	-0.153 ***	0.002	-0.156 ***	0.016
Year 2006	-0.055 ***	0.002	-0.114 ***	0.002	-0.110 ***	0.020
No diploma/certificate			-0.200 ***	0.003	-0.200 ***	0.007
Non-university diploma/certificate			0.183 ***	0.003	0.183 ***	0.012
University degree			0.378 ***	0.003	0.378 ***	0.023
Graduate degree			0.498 ***	0.005	0.498 ***	0.023
Years of experience			0.088 ***	0.001	0.088 ***	0.003
Years of experience squared/100			-0.250 ***	0.006	-0.250 ***	0.018
Full time			0.708 ***	0.005	0.708 ***	0.072
Non English/French mother tongue			-0.045 ***	0.013	-0.046 **	0.019
French mother tongue			0.058 ***	0.004	0.058 ***	0.004
Age at immigration			0.000	0.001	0.000	0.002
Member of visible minority group			-0.081 ***	0.019	-0.083 ***	0.021
Father's education					-0.229	0.149
Parental earnings					0.039	0.068
Women						
Childhood immigrant	0.048 ***	0.009	-0.013	0.011	-0.013	0.013
1970s cohort	0.038 ***	0.013	0.026 **	0.013	0.032 ***	0.010
1980s cohort	0.047 ***	0.014	0.045 ***	0.015	0.068 ***	0.016
Intercept	6.145 ***	0.002	5.248 ***	0.008	4.018 ***	0.546
Year 1996	-0.017 ***	0.003	-0.087 ***	0.003	-0.115 ***	0.012
Year 2006	0.084 ***	0.003	-0.084 ***	0.003	-0.120 ***	0.017
No diploma/certificate			-0.203 ***	0.004	-0.203 ***	0.003
Non-university diploma/certificate			0.274 ***	0.003	0.274 ***	0.010
University degree			0.555 ***	0.004	0.555 ***	0.032
Graduate degree			0.679 ***	0.005	0.679 ***	0.023
Years of experience			0.070 ***	0.001	0.070 ***	0.003
Years of experience squared/100			-0.228 ***	0.006	-0.228 ***	0.009
Full time			0.660 ***	0.003	0.660 ***	0.018
Non English/French mother tongue			-0.031 **	0.014	-0.030	0.021
French mother tongue			0.058 ***	0.004	0.058 ***	0.008
Age at immigration			0.000	0.002	0.000	0.002
Member of visible minority group			-0.045 **	0.020	-0.044 **	0.021
Father's education					-0.091	0.088
Parental earnings					0.114 **	0.051

	Model 1	Model 2	Model 3
Control variables included			
Geographic location	no	yes	yes
Immigrant source region	no	yes	yes

Notes: * significant at p<.1, ** p<.05, *** p<.01. In the pooled men's sample, there are 32,508 childhood immigrants and 704,278 Canadian-born individuals. In the pooled women's sample, there are 28,817 childhood immigrants and 623,079 Canadian-born individuals. The 1970s and 1980s cohort intercepts are defined relative to the 1960s cohort represented by the childhood immigrant variable. Parental outcomes refer to outcomes of potential parents and are group-level measures. Data cells are left blank when variables are not included in the model.
Sources: 1971, 1981, 1986, 1991, 1996, and 2006 Canadian censuses.

It is interesting to note that age at immigration is not significantly associated with weekly earnings of childhood immigrants (conditional on education) even though it is negatively associated with the likelihood of holding a university degree at age 24-34. Previous studies

show that age at immigration has been negatively associated with earnings among adult immigrants since the 1980s (Schaafsma and Sweetman 2001), but this is not true for childhood immigrants. On the one hand, this negative association among adult immigrants has been interpreted as foreign working experience not being rewarded in the Canadian labour market (e.g., Green and Worswick 2004; Aydemir and Skuterud 2005). However, this does not apply to childhood immigrants who gain all their work experience in Canada. On the other hand, the negative association between age at immigration and university completion among childhood immigrants is consistent with the finding of previous studies that age at immigration still matters even for those who arrived at very young age in terms of host-country language proficiency and educational attainment (Rumbaut 2004).

The negative impact of visible minority status on earnings—about 8% for men and 4.5% for women—is similar in magnitude to that documented for adult immigrants and Canadian-born members of visible minority groups in earlier studies (Pendakur and Pendakur 2002; Hou and Picot 2008; Hou and Coulombe 2010). Note also that no cross-cohort changes in the returns to being a member of a visible minority group were found. Interactions between the visible minority status indicator and arrival cohorts were included in Model 2, but were not statistically significant for either men or women (results not reported). A word of caution is necessary. Members of visible minority groups, as a whole, are more likely to obtain a university education; they also earn lower earnings than the Canadian-born comparison group. This does not necessarily imply lower returns to education for members of visible minority groups along the entire education spectrum. In the models, returns to different levels of education are constrained to be the same for both childhood immigrants (whether members of a visible minority group or not) and the comparison group. This also does not imply that, to the extent that such an effect exists, it holds true for members of all visible minority groups (e.g., Boyd (2008) documents a large variation in educational attainment, earnings, and other indicators among second-generation youth across different visible minority groups in Canada). This issue warrants further investigation but is beyond the scope of the current study.

Again considering the relative importance of control variables in accounting for the differences in earnings between childhood immigrants and their Canadian-born peers, the most interesting observation is perhaps the persistently lower earnings of male childhood immigrants in spite of an increase in educational attainment relative to the Canadian-born over the period. This cross-cohort pattern in the unadjusted earnings data can be accounted for primarily by two factors: the rising share of childhood immigrants who are members of a visible minority group and the disappearing advantage in full-time employment rates of childhood immigrants over the comparison group. For both the 1970s and the 1980s cohorts, the increasing advantage in educational attainment of childhood immigrants tended to increase their earnings relative to the comparison group. This positive relationship was not strong enough, however, to offset the impact of the rising share of individuals who are members of a visible minority group and lower full-time employment rates of childhood immigrants.[27] Both factors were equally strongly associated with the earnings gap of the 1970s cohort, although full-time employment differences were less important for the 1980s cohort.

The higher earnings of the 1960s cohort of female childhood immigrants, compared to their Canadian-born peers, is attributable to their higher educational attainment, higher rate of full-time employment, and higher concentration in Toronto and Vancouver (where earnings are on average higher than in smaller urban or rural areas) than those for the comparison group. The controls in Model 2 reduced the coefficient on the 1970s cohort indicator by roughly 1 percentage point, but had little impact on the coefficient of the 1980s cohort between Models 1

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27. In 1985, male childhood immigrants and the comparison group were equally likely to work full-time, at about 93%. In comparison, in 1995 and 2005, the full-time rate was about 3 percentage points lower among childhood immigrants than among the comparison group.

and 2. The change in the coefficient of the 1970s cohort is due primarily to an increasing advantage in education and concentration in Toronto and Vancouver among childhood immigrants. For both the 1970s and 1980s cohorts, the rising share of members of a visible minority group among childhood immigrants tended to reduce the overall earnings of female childhood immigrants. This negative effect was smaller than the positive effect of their advantage in education and geographic distribution in the 1970s. In the 1980s, however, the effect of the rising share of members of visible minority groups offset the effect of higher education and geographic concentration in high-wage areas. Put differently, this means that, had the composition of immigrants in terms of visible minority status not changed since the 1960s, one would have observed childhood immigrants from the 1970s and 1980s earning even more than their Canadian-born counterparts.

6 Conclusion and discussion

The impact of immigrants on a host society and economy extends beyond the impact of the continuous inflow of working age individuals. Outcomes of children of immigrants are an important part of the picture. The education and earnings outcomes of the Canadian-born children of immigrant parents documented to date offer a positive immigration outcome amidst the phenomenon that has drawn much research interest over the last few years—the decline in entry earnings across successive cohorts of immigrants. However, much of what is known about children of immigrants and how they are doing in Canada is based on descendants of mainly European immigrants who arrived in Canada over the first half of the 20th century, not on the more recent cohorts.

This study investigates how changes in characteristics and outcomes of more recent cohorts are related to the outcomes of the children who immigrated with them. Focusing on childhood immigrants, rather than on Canadian-born children of immigrants, allows one to study this relationship for immigrants who arrived as recently as the 1980s, and to compare this relationship to that for earlier cohorts—those of the 1970s and 1960s.

Declining parental earnings (relative to Canadian-born parents) across the three cohorts tempered the likelihood of childhood immigrants completing a university education. However, in spite of this, childhood immigrants across the three cohorts were still more likely than their Canadian-born peers (roughly the third-and-higher generations) to have obtained a university education by age 25 to 34. The overall (unadjusted) rise in the university completion rate among female childhood immigrants was also accompanied by rising earnings, relative to the Canadian-born comparison group. However, this was not true for men, who on average earned less than the comparison group across all three cohorts. Falling relative full-time employment rates and an increase in the share of members of visible minority groups across successive cohorts are the main factors associated with this wage gap.

In summary, have childhood immigrants experienced a reversal of fortunes or continued success? As recently as the 1980s, they have achieved a high rate of university completion relative to the third-and-higher generation. This trend is likely to continue among more recent cohorts for several reasons. First, the source region composition of newer immigrant cohorts is moving towards regions from which children of immigrants have traditionally had high educational attainment. Second, the education levels of adult immigrants from the 1990s onwards have been higher than ever before. Third, children of poorly educated immigrant parents have higher education levels than children of poorly educated Canadian-born parents (Aydemir, Chen and Corak, 2008; Bonikowska, 2008)**.** Declining parental earnings are one source of offsetting pressures to the childhood immigrants' lead in educational attainment. The deterioration in earnings of adult immigrants continued through the 1990s and early 2000s, albeit on a smaller scale than in the 1980s. The evidence to date, however, suggests that this phenomenon, while associated with lower rates of university attendance and lower rates of university completion across cohorts of childhood immigrants, is not as strongly associated with education outcomes as is parental education. It remains to be seen how the outcomes of childhood immigrants who arrived in the 1990s and early 2000s are related to the trends in labour market outcomes among adult immigrants who arrived in the same period. In the meantime, results in this study point to intergenerational consequences of economic outcomes among adult immigrants, whether causal or driven by cross-cohort changes in unobserved characteristics. These findings inspire caution in generalizing the evidence based on the outcomes of the current stock of second-generation immigrants to future cohorts of children of immigrants.

Appendix I

In model 2, $\beta_3^\dagger$ measures the gap in outcome Y between the 1960s cohort of childhood immigrants and the Canadian-born comparison group in 1985 after adjusting for differences in X_i. In other words, the difference between β_3 (coefficient on the childhood immigrant indicator in Model 1) and $\beta_3^\dagger$ (coefficient on the childhood immigrant indicator in Model 2), $\beta_3 - \beta_3^\dagger$, represents the portion of the observed gap in outcome Y between the 1960s cohort of childhood immigrants and their Canadian-born counterparts in 1985 that can be accounted for by differences in the observed individual characteristics.

It can be demonstrated that $\beta_3 - \beta_3^\dagger = \Sigma\gamma*(\overline{X}_{Y86.IM} - \overline{X}_{Y86.CB})$ when immigrant-specific characteristics are transformed as the deviation from the means of the 1960s cohort, where $\overline{X}_{Y86.IM}$ are means of X_i among the 1960s cohort of childhood immigrants in 1986 and $\overline{X}_{Y86.CB}$ are means of Xi among the Canadian-born comparison group in 1986. From equation 1, one can state that $\overline{Y}_{Y86.IM} - \overline{Y}_{Y86.CB} = \beta_3$, where $\overline{Y}_{Y86.IM}$ is the mean outcome of the 1960s cohort of childhood immigrants in 1986 and $\overline{Y}_{Y86.CB}$ is the mean outcome of the Canadian-born comparison group in 1986. From equation 2, one can state that $\overline{Y}_{Y86.IM} - \overline{Y}_{Y86.CB} = \beta_3^\dagger + \Sigma\gamma*\overline{X}_{Y86.IM} + \Sigma k*\overline{Z}_{Y86.IM} - \Sigma\gamma*\overline{X}_{Y86.CB}$, where $\overline{Z}_{Y86.IM}$ are means of immigrant-specific variables. Since all immigrant-specific variables are transformed as the deviation from their respective means (in 1986), the means of these transformed variables equal 0. Accordingly, $\overline{Z}_{Y86.IM} = 0$ and $\Sigma k*\overline{Z}_{Y86.IM} = 0$. Therefore $\beta_3 = \beta_3^\dagger + \Sigma\gamma*\overline{X}_{Y86.IM} - \Sigma\gamma*\overline{X}_{Y86.CB}$ or $\beta_3 - \beta_3^\dagger = \Sigma\gamma*(\overline{X}_{Y86.IM} - \overline{X}_{Y86.CB})$.

Similarly, $\beta_4^\dagger$ reflects changes in the relative (to the comparison group) outcomes between the 1960s and 1970s cohorts after adjusting for compositional changes. The difference $\beta_4 - \beta_4^\dagger$ captures the portion of the change in the relative outcome between the 1960s and 1970s cohorts that can be accounted for by compositional changes. More specifically, it can be shown that $\beta_4 - \beta_4^\dagger = \Sigma\gamma*(\overline{X}_{Y96.IM} - \overline{X}_{Y96.CB}) - \Sigma\gamma*(\overline{X}_{Y86.IM} - \overline{X}_{Y86.CB}) + \Sigma K\Delta\overline{Z}$ where $\overline{X}_{Y86.IM}$ is a vector of means of X_i among the 1960s cohort of childhood immigrants in 1986 and $\overline{X}_{Y86.CB}$ is a vector of means of Xi among the Canadian-born comparison group in 1986; $\overline{X}_{Y96.IM}$ is a vector of means of X_i among the 1970s cohort of childhood immigrants in 1996 and $\overline{X}_{Y96.CB}$ is a vector of means of Xi among the Canadian-born comparison group in 1996; $\Delta\overline{Z}$ are differences in means of immigrant-specific variables between the 1960s and 1970s cohorts. On the basis of this equation, one can decompose $\beta_4 - \beta_4^\dagger$ into contributions due to factors common to immigrants and the Canadian-born comparison group (the sum of the first two terms) and due to immigrant-specific factors (the third term). Further, one can evaluate the relative contribution of each explanatory variable to $\beta_4 - \beta_4^\dagger$. The interpretation of $\beta_4^\dagger$ and $\beta_4 - \beta_4^\dagger$ also applies to $\beta_5^\dagger$ and $\beta_5 - \beta_5^\dagger$.

Appendix II

Text Table 1
Marginal effects from a probit model of university completion

	Model 1		Model 2		Model 3	
	marginal effect	standard error	marginal effect	standard error	marginal effect	standard error
Men						
Childhood immigrant	0.056 ***	0.004	0.016 ***	0.004	-0.013 **	0.005
1970s cohort	0.034 ***	0.005	-0.002	0.005	0.009 *	0.005
1980s cohort	0.056 ***	0.006	-0.019 ***	0.007	0.010	0.007
Year 1996	0.028 ***	0.001	0.028 ***	0.001	-0.017 ***	0.006
Year 2006	0.064 ***	0.001	0.065 ***	0.001	-0.008	0.008
Age			0.003 ***	0.000	0.001	0.002
Non English/French mother tongue			-0.011 **	0.004	-0.009	0.007
French mother tongue			-0.015 ***	0.002	-0.015 ***	0.004
Age at immigration			-0.002 ***	0.000	-0.003 **	0.001
Member of visible minority group			0.013 **	0.005	0.016 *	0.009
Father's education					0.185 ***	0.032
Parental earnings					0.089 ***	0.017
Women						
Childhood immigrant	0.052 ***	0.004	0.013 ***	0.004	-0.017 **	0.007
1970s cohort	0.032 ***	0.006	-0.001	0.005	0.008	0.006
1980s cohort	0.049 ***	0.007	-0.029 ***	0.007	0.003	0.012
Year 1996	0.067 ***	0.001	0.069 ***	0.001	0.024 ***	0.008
Year 2006	0.171 ***	0.001	0.175 ***	0.001	0.092 ***	0.011
Age			-0.004 ***	0.000	-0.002	0.002
Non English/French mother tongue			-0.015 ***	0.005	-0.011	0.010
French mother tongue			0.004 **	0.002	0.004	0.011
Age at immigration			-0.004 ***	0.000	-0.004 ***	0.001
Member of visible minority group			0.019 ***	0.006	0.021 *	0.012
Father's education					0.196 ***	0.039
Parental earnings					0.108 ***	0.023

	Model 1	Model 2	Model 3
Control variables included			
Geographic location	no	yes	yes
Immigrant source region	no	yes	yes

Notes: * significant at p<.1, ** p<.05, *** p<.01. In the pooled men's sample, there are 38,662 childhood immigrants and 818,094 Canadian-born individuals. In the pooled women's sample, there are 37,209 childhood immigrants and 835,271 Canadian-born individuals. The 1970s and 1980s cohort intercepts are defined relative to the 1960s cohort defined by the childhood immigrant variable. The 1970s and 1980s cohort (interaction terms between childhood immigrant indicator and year indicators) marginal effects were calculated according to Ai and Norton (2003) and Norton, Wang and Ai (2004). Parental outcomes refer to outcomes of potential parents and are group-level measures. Parental outcomes refer to outcomes of 'potential parents.' Data cells are left blank when variables are not included in the model.

Sources: 1971, 1981, 1986, 1991, 1996, and 2006 Canadian censuses.

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