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# ABSTRACT

## Intergenerational Education Mobility among the Children of Canadian Immigrants[*]

We analyze the intergenerational education mobility of Canadian men and women born to immigrants. A detailed portrait of Canadians is offered, as are estimates of the degree of generational mobility among the children of immigrants. Persistence in the years of schooling across the generations is rather weak between immigrants and their Canadian born children, and a third as strong as for the general population. Parental earnings is not correlated with years of schooling for second generation children, and if anything negatively correlated. Finally we find that the intergenerational transmission of education has not changed across the birth cohorts of the post-war period.

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# Intergenerational education mobility among the children
# of Canadian immigrants

1. Introduction

Terms such as "inclusion," "exclusion," "assimilation," "integration," and "social

cohesion" have become important touchstones for the discussion of public policy in

Europe, North America and other countries of the OECD. To some important degree this

discussion focuses upon the place of immigrants in the economies and societies of these

mature democracies. But it is also increasingly recognized that an important test of a

society's ability both to adapt and to assimilate concerns the children of immigrants.

In this context the schooling of immigrant children is often cited as an important

outcome related to their capacities to succeed in the labour market and to adapt to the

values of the mainstream. The objective of our research is to inform this discussion by

focusing on the education outcomes of the children of immigrants. The analysis is based

upon the Canadian experience. Our frame of reference is a growing literature on

generational mobility of earnings and education that has come to complement the large

number of studies on the social and economic position of immigrants. This literature

examines the strength of the tie between the situation of immigrants and the adult

outcomes of their children, the so-called "second generation." For example, Borjas (1992,

1993), Card, DiNardo and Estes (2000), and Card (2005) examine both the education and

earnings outcomes of the children of immigrants born in the United States, and in

particular on how well they do relative both to their parents and to children whose parents were also born in the US. Similar issues have also been studied in Europe, including among others: Van Ours and Veenman (2003) for the Netherlands; Hammarstedt and Palme (2005), Osterberg (2000), Rooth and Ekberg (2003), for Sweden; Nielson *et al.* (2003) for Denmark; Bauer and Riphahn (2007) for Switzerland; Dustmann and Theodoropoulos (2005) for Britain; and Gang and Zimmerman (2000), Riphan (2002 2003), and Fertig and Schmidt (2002) for Germany. Canada is often held up as an international success story in terms of the integration of immigrants, yet to the best of our knowledge there are no Canadian based studies of this sort. Soroka, Johnston, and Banting (2007), and Reitz and Banerjee (2007) study aspects of intergenerational dynamics in Canada other than education, but the analysis we pursue using Canadian data is probably closest in spirit to Aydemir, Chen and Corak (2006) who examine the intergenerational earnings mobility of immigrants to Canada.

We ask three questions that are relevant in appreciating both the accomplishments of the past and the challenges of the future. First, what is the degree of generational education mobility, and is it different among immigrants and their children? Second, what factors are most tightly related to the schooling outcomes of second generation Canadians, parental earnings or parental education? And third, has the strength of the tie between the education of immigrant parents and their Canadian born children changed over time?

The answer to the first question highlights whether the education system functions differently for immigrants. If the education outcomes of Canadian born children of immigrants are closely tied to parental circumstances—and indeed more closely tied than

for the children of Canadian born parents—then there is a greater presumption that values and opportunities are based in and transmitted from the home rather than the broader community. In this context reliance upon the education system to promote integrative goals may be an overly optimistic strategy, that to be successful would require institutional reform or behavioural change. The answer to the second question would help to shed light on the concern that the current economic situation of immigrants has strong implications for the next generation. The relative decline in the economic status of immigrants and particularly recent immigrants has been well documented in Canada, as for example in Aydemir and Skuterud (2005), Baker and Benjamin (1994), Bloom, Grenier and Gunderson (1995), Frenette and Morissette (2003), Grant (1999), and Hou and Picot (2003). If money matters a good deal in determining the ultimate educational attainment of their children then there may be long-run challenges to their social and economic integration. Finally, the answer to the third question would help to put current challenges into context. If the patterns in the degree of intergenerational transmission of education are no different now than they were a generation or two ago then the suggestion would be to recognize a continuity in the capacity of Canadian society to deal with the challenges it currently faces, rather than an indication that the current situation is something different and untested.


2. A descriptive overview

Our analysis is based upon the 2001 Canadian Census, and on an associated post-censual survey conducted in 2002, the Ethnic Diversity Survey. The Census analysis relies upon a new question referring to the birthplace of the respondent's parents. The so-called "Long

3

Form" of the Census questionnaire, administered to 20% of the population, asks all persons age 15 and over in which country their father and mother were born.[1] On this basis the 2001 Census allows the precise identification of immigrants, second generation immigrants, and others born in Canada (which we refer to as third generation or higher). The Ethnic Diversity Survey uses the Long-Form respondents as a sampling frame, over-sampling those with an ethnic origin that is non Anglo-Saxon, permitting a more detailed analysis of Canadians by their ethnic and cultural background (Statistics Canada 2003). It also contains the same information on parental place of birth as the Census, permitting an analysis of immigrants and second generation immigrants in addition to the general population.

As the 2001 Census marks the first time since 1971 that information on parental place of birth is available we begin by offering a descriptive overview of the Canadian population that places second generation immigrants and their educational attainment in a broader context. Tables 1 and 2 present information representative of the Canadian

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[1] This is question 32 and the exact wording is as follows.

> **Remember, these questions are only for persons aged 15 and over.**
> PLACE OF BIRTH OF PARENTS.

**32** Where was **each of** this person's parents born?
*Mark " ×" or specify country according to present boundaries.*

   (a)  Father  ☐ Born in Canada
                         Born outside Canada
                         *Specify country*

   (b)  Mother  ☐ Born in Canada
                         Born outside Canada
                         *Specify country*

Information of this kind last appeared in the Canadian Censuses in 1971 when a much more restrictive question was posed, asking only if the respondent's parents were born in Canada without identifying their country of birth.

population using the full 20% file for both men and women categorized by parental origin. The population is classified into three broad groups: (1) Canadian born, by which we mean either those of aboriginal ancestry or those who are third generation or higher Canadians; (2) immigrants, those born in a country other than Canada; and (3) second generation Canadian, those born in Canada whose parents were born elsewhere. Since there is some suggestion in the literature that long-run integration is related to language acquisition and age at migration we divide the immigrant population into two groups, those arriving before the age of 12 and those who were 12 or older when they arrived. The former group is likely to have spent some part of their schooling in the Canadian elementary system and is more likely to have developed better language skills. Research has suggested that these are important considerations in understanding the integration of immigrant children (Worswick 2004). This could also mean they may not differ in their adult outcomes from children who were actually born in Canada to immigrant parents, the second generation group. For the descriptive purposes of these two tables we categorize second generation Canadians into three sub-groupings according to whether only the father is an immigrant, only the mother, or both parents.[2]

The weighted population shares suggest that in 2001 almost 65% of the Canadian population aged 16 to 65 are of aboriginal origin or third generation, and in the neighbourhood of 20% are immigrants. The groups we are focusing on—those with both parents born outside of the country—represent 7¾% of the male population and about 7¼% of the female population. A broader definition of a second generation immigrant

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[2] We restrict the Census data to non-institutional residents aged 16 to 65 years. Individuals who resided outside the ten provinces and non-permanent residents are also excluded. Non-permanent residents refer to persons in Canada on student or employment visas, Minister's permits, or refugee claimants.

based on having only one parent born outside of Canada would encompass just over 15% of the population, and close to 20% if those who immigrated to the country before the age of 12 were included. Immigrants and second generation immigrants form, in other words, a sizable proportion of the Canadian population.

A focus on those with both parents born abroad places the attention upon a sub-category that is likely harder to integrate than those having one Canadian-born parent. Conditional on being between 16 and 65, this group is on average 35 years of age, and tends to be slightly younger than their Canadian born counterparts with both parents born in the country, who are about 39 years of age on average. Just over 50% are less than 35 years of age, compared with fewer than 40% for third generation or higher Canadians.

At the same time these second generation Canadians also tend to have more education: those with both parents born elsewhere having on average about 14 years of schooling, one year more than third generation Canadians. Around a third has at least 16 years of education, with over 20% of men and almost one-quarter of women having at least an undergraduate university degree. About 22% of third generation Canadians have this many years of education, while less than 15% have at least an undergraduate university degree. In fact almost 30% of third generation men and about a quarter of third generation women have less than 12 years of schooling, this proportion being significantly lower at 16% and 14% for second generation Canadian men and women respectively.

These comparisons continue to favour second generation Canadians even when they are done within birth cohorts, as in Tables 3 and 4. Every ten year age cohort of second generation Canadians with both parents born elsewhere has a higher proportion

6

with 16 or more years of education than third or more generation Canadians. This is particularly so for the younger cohorts. Over 44% of 25 to 34 year old men with both parents born abroad have at least 16 years of education, compared to 30% of those with parents born in the country. Slightly over one-half of second generation women in this age group have at least this many years of schooling, versus 35% of their third generation counterparts and higher than any other birth cohort across both genders. While this group of women has considerably more education than their male counterparts of the same age, for older cohorts—particularly the oldest—men tend to be more educated.

Our analysis is based essentially, but not entirely, upon this younger cohort. They are at once an old enough group for which we can reasonably begin to assume that the schooling process has been completed, yet young enough to permit an analysis across generations by using information on their parents in the 1981 Census.


3. Data and a framework for the analysis

The empirical approach is motivated by the regression to the mean model used in economic analysis to measure mobility in earnings, income, and other indicators of socio-economic status across the generations as described, for example, in Corak (2004) and Mulligan (1997). This is depicted in equation (1), where $Y$ represents an outcome of interest, in our case years of education attained, and $t$ is an index of generations.

$$Y_{i,t} = \alpha_t + \beta\, Y_{i,t-1} + \varepsilon_{i,t} \qquad (1)$$

To use the example of education, in this equation the educational attainment of family $i$'s child would be $Y_{i,t}$, which is equal to the average years of education of generation $t$ children, as represented by $\alpha_t$, plus two factors determining the deviation from this

average: a fraction of parental education ($\beta\ Y_{i,t-1}$) and other influences not associated with parental education ($\varepsilon_{i,t}$).

Average educational attainment will evolve through time, and it is very likely that many or all members of a generation will have more education than their parents. This is captured in equation (1) by the value of $\alpha$. However, and just as importantly, the equation reflects the idea that an individual's education is nonetheless related to his or her parents' education. This is captured by the value of $\beta$, which represents the fraction of education advantage that is on average transmitted across the generations. In other words, $\beta$ summarizes in a single number the degree of generational education mobility in a society. It could conceivably be any real number. A positive value would indicate generational persistence of education in which higher parental education is associated with higher child education; a negative number would indicate generational reversal in which higher parental education is associated with lower child education. In fact, the published research shows that this coefficient has always been found to be positive, though varying significantly across countries and with the level of development as, for example, in the analysis of over 30 countries by Hertz *et al.* 2007.[3]

We implement this framework in two separate ways: indirectly using a grouped estimator from the Census, and directly using reported individual information on parental education from the Ethnic Diversity Survey. We follow the US analysis of Card, DiNardo

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[3] Intergenerational mobility in education has, of course, been a longstanding concern in both economics and sociology. Some of the most related Canadian work in this area includes de Broucker and Lavallée (1998) using the *International Adult Literacy Survey*, Fournier, Butlin and Giles (1995) using the *Survey of Labour and Income Dynamics*, and Sen and Clemente (2006) using the *General Social Survey*. The latter is closest in spirit to the methodology we employ, but all of these studies find a strong positive association between parent and child education, though none focuses on immigrants. More recently attention has also shifted to the relationship between family background and actual literacy and numeracy outcomes for children, as opposed to formal schooling. See for example OECD and UNESCO (2003) based upon the *Programme for International Student Assessment*.

and Estes (2000) and define second generation immigrants to be those Canadian born individuals whose mother and father were both born outside of Canada. First generation immigrants are defined as those who immigrated to Canada regardless of the age of arrival. In beginning it should be underscored that the 2001 Census does not permit a direct link between the adult outcomes of children and the status of their parents when they were raising their families. But it does permit the construction of a "grouped" estimator relating the average outcomes of second generation adults in 2001 with the average background characteristics of immigrant adults from the 1981 Census who were potentially their parents. An analysis of the generational mobility of immigrants using detailed country of origin along these lines is also offered for the US in Borjas (1993) and Card, DiNardo and Estes (2000), and in the research on the generational earnings mobility of the children of Canadian immigrants in Aydemir, Chen, Corak (2006).

The analytical files from the Census are constructed as follows. Immigrant fathers are drawn from the 1981 Census and restricted to those individuals whose spouse is also an immigrant, and who have Canadian-born children between the ages of 5 and 17 years. Using least squares regression we computed predicted values of $Y_{i,t-1}$ for each country of origin for individuals matching these criteria. Correspondingly, the second generation sample consists of individuals between 25 and 37 years of age in 2001, whose parents are both immigrants. Similarly, predicted values of $Y_{i,t}$ are calculated for each country that respondents report their fathers came from.

Since the variation in the outcome variables may arise from the differences in demographic characteristics between country groups, we construct age- and region-adjusted years of schooling and earnings outcomes for each country of origin. For the

immigrant parents, we regress the variables of interest (years of education and also the logarithm of weekly earnings) on age, age-squared, country of origin dummies, dummies for the Canadian province of residence, and country of origin dummies interacted with age and age-squared. The inclusion of these interaction terms controls for differences in life cycle profiles across countries. We then calculate predicted schooling or earnings for each source country at age 40 for those residing in Ontario, the most populous province.[4] For the second generation sons and daughters we construct age- and region-adjusted outcomes by regressing schooling on age, age-squared, dummies for father's country of origin, and region dummies, and then predict outcomes for each country group for a 31-year-old living in Ontario. These points in the life cycle correspond to that used in Aydemir, Chen, Corak (2006) and in much of the Canadian generational earnings mobility literature, as well as roughly to the suggestion of Haider and Solon (2006) who examine life cycle biases in the derivation of permanent income.

To avoid small sample size problems, we aggregate some countries in which observations are less than 30 into groups and arrive at a total of 70 countries/regions. This is done separately for sons and daughters. These 70 data points are used to estimate equation (1) for sons and daughters using years of education as the outcome, and weighted by population shares. As mentioned, we also calculate parental earnings in the same way, opening up the possibility of relating both parental education and earnings to the educational attainment of the children.

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[4] The exclusion restrictions imposed on the underlying data differ slightly across the two variables of interest. For education we use all available observations; for weekly earnings we use only those observations in which respondents report positive earnings.

This grouped data estimator of equation (1) has both advantages and disadvantages. These are discussed in Card, DiNardo and Estes (2000). The most obvious disadvantage includes the potential slippage between the generations. The "parents" are the potential parents of the children, and there could be a slippage in how representative they are of the actual parents due to death or emigration. At the same time, however, it should be noted that the large sample size available to us through the use of the full 20% Census file reduces this problem to the largest extent possible in the literature with which we are familiar. In particular this is a tighter fit than possible with US data. For example, Card, DiNardo and Estes (2000) are able to develop a similar structure for only 30 source countries, and the data requires them to relate the earnings and education of all immigrants to all second generation individuals aged. Furthermore, as discussed in Aydemir and Borjas (2006), since the within cell means are based upon calculations that are samples their accuracy will vary with the number of observations available. The implication is that the sampling variation associated with the independent variable will cause an attenuation bias. Aydemir and Borjas (2006) examine the nature and extent of this bias, and also show that the use of the 20% Census file, as opposed to smaller sampling rates available in public use versions of the Census, affords a sufficiently large sample size to minimize its impact.

On the other hand, the advantage of this estimator is that it is more robust to measurement error. This is a particularly important concern in the analysis of the intergenerational transmission of earnings inequality as discussed, for example, in Solon (1999, 1992). In this literature researchers are faced with the difficulty of having to infer information on permanent income from annual earnings, and trying to minimize a

11

classical errors-in-variables problem through instrumental variables or through multi-year averages from panel data on individual annual earnings. At first glance it might be reasonable to suppose that the measurement error problems in an outcome like education are not as severe as with earnings. Much of the literature implicitly and even explicitly assumes that in fact it is absent, but Ermisch and Francesconi (2004) using UK data on a commonly employed measure of socio-economic status point out that this need not be the case.

All of this said, we use the Census jointly with and as a complement to the Ethnic Diversity Survey, which has the advantage of offering individual level information on educational attainment across two generations. This is a post-censual survey representative of the entire population, but with the objective of providing information on the ethnic and cultural background of Canadians. A sample of just under 42,500 people 15 years of age and over were interviewed in 2002 using the one-in-five 2001 Census data as the sampling frame, and basing the sample selection on the ethnic origin, place of birth, and parental place of birth. Those who were not Canadian, British, French, American, Australian, or New Zealanders in their response to ethnic origin questions were over-sampled (Statistics Canada 2003). The limitations of the Ethnic Diversity Survey are that there is no information on earnings and income of parents, and the smaller sample size limits somewhat the degree to which specific countries of origin can be examined. It is in these ways that the Census can be a useful complement. The advantages over the Census are the retrospective information on parental education collected from survey respondents, and the capacity to estimate equation (1) for both the

children of immigrants, for the entire population of Canadians, and for different birth cohorts.

The Ethnic Diversity Survey (EDS) contains all the information from the 2001 Census for each survey respondent including, most importantly for our purposes, the years of education attained. The information on parental education attainment, however, is recorded as one of nine categories. In converting this information into years of schooling we rely on the fact that in addition to actual years of education the Census also reports information categorically and actually in more detail with 16 categories being used. We recode both the EDS categories and those in the 1981 Census into seven common categories.[5] We then match years of schooling from the Census to the EDS by cells defined according to: gender, country of origin, education category, and age (25 to 44 years, 45 to 54 years, and 55 and older). Within each of these cells we calculate from the 1981 Census the mode of the years of schooling and match this statistic to the individuals in the EDS in similarly defined cells according to the information they provided on their mothers and fathers.[6]

A summary of this information by broad region of origin is offered in Table 5 along with information from the Census. The average years of education for second generation men and women in panels 3 and 4 of the table are essentially the same across the two data sources, never differing by more than 0.3 to 0.4 of a year. This is not surprising since the EDS information is extracted from the Census, the differences likely

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[5] These are: (1) less than high school, including no schooling; (2) high school diploma; (3) some college without a diploma or certificate; (4) some university without a diploma or certificate; (5) college graduation with a diploma or certificate; (6) undergraduate university degree; and (7) graduate university degree.

[6] We also calculated the cell medians and cell means. These all led to similar results, but the mode came closest to the Census results in a comparison across broad regions of origin.

reflecting sampling error. Second generation Canadians regardless of the region of the world in which their parents were born all have more years of education than Canadians with parents also born in Canada. The advantage is greatest for those with African and Asian origins.

The information in panels 1 and 2 compares the direct measures of the years of schooling from the Census to the data calculated from the categories reported in the EDS. The averages across these two sources are similar, with the possible exception of those from Africa, the Census reporting an average of 14.9 years and our derivations from the EDS implying 16.1 years. But the EDS information is based upon a rather small sample of just 68 observations, so it is likely that this difference is due to sampling variation. The next largest difference is 0.7 years for those from Asia.

Further, the information as a whole suggests that all groups made gains over their parents. Canadians 25 to 37 years of age with Canadian born parents have roughly two to three more years of education on average than their parents. Gains are also made by second generation Canadians, though in some cases not as great in absolute levels because of the higher starting point of their parents. However, the gains are particularly high for those whose parents were born in Southern and Eastern Europe. On average fathers had just less than nine years of schooling, but the children obtained 15 years. Those with parents born in Asia also obtained significantly more education than their parents, about two to three years more on average. A more refined examination of this type of mobility, in the context of equation (1), using both grouped data and individual data is discussed in the remainder of the paper.

4. Results

a. The degree and nature of intergenerational education mobility

Tables 6 and 7 offer results from the estimation of equation (1) using both the grouped data estimator from the Census, and individual level information from the EDS for men and women 25 to 37 years of age. This is done using father's years of education as the regressor in the first panel, mother's education in the second, and both at the same time as reported in the third and final panel of each of the tables. For men 25 to 37 years of age every additional year of education their fathers have is associated with 0.13 years of more education. This estimate is virtually the same regardless of whether the Census estimate or the EDS estimate is relied upon. This suggests that the grouping estimator does not suffer from undo problems associated with the use of potential as opposed to actual fathers, and that there is likely little measurement error in this information. However, another interpretation is also possible. The grouped data estimator based on Census data is a sum of the parental influence at the individual level, and the influence of the average level of education in the community. As such the similarity in the results might be interpreted as suggesting that there is no influence of so-called "social capital," in the sense that Borjas (1992) uses that term. For women the point estimates are different at 0.10 and 0.16, but the standard error is 0.03 suggesting that the confidence intervals overlap. Further, all of these estimates appear to be about the same—within one standard error—if mother's education rather than father's is used as the right hand side variable.

The second result from these tables is that at 0.13 and 0.16 the estimates are lower than those for third generation Canadians of the same age cohort. The educational attainment of men and women whose parents were born in Canada is much more strongly

tied to that of their fathers and their mothers than it is for second generation Canadians. For every additional year of parental education the child's education is in the neighbourhood of 0.37 to 0.4 years higher, triple the estimate for Canadian born children whose parents were immigrants. These results are also robust to using mother's education as the regressor. This contrasts with the finding in Aydemir, Chen and Corak (2006) showing that the intergenerational elasticity of annual earnings, estimated to be about 0.2, is the same among second generation Canadians as it is among the population as a whole.

Finally, the last panel of the table, by including both paternal and maternal years of education in the equation, makes explicit—when the focus is on the Ethnic Diversity Survey—that for the second generation sample mother's and father's education have roughly the same association with the son's education. For every additional year of paternal education the education of second generation Canadian men is 0.08 years higher, and for every additional year of maternal education it is 0.1 years higher; the standard error of these estimates being 0.05. Paternal education seems to be more important in the case of women, as there is no statistically significant association with maternal education. The education of third generation men is more tightly associated with paternal years of schooling, but there is no difference between parental effects for women.

However, the findings from the Census are different than anything else observed. The coefficient on paternal education is much higher at 0.74 for sons and 0.58 for daughters, while that for maternal education is equally as great in magnitude but opposite in sign. In fact, there is near collinearity between the variables in these data. Using father's education as the regressand and mother's education as the regressor least squares leads to a coefficient of 1.05, and an R-squared of 0.97. This likely suggests that the large

change in the parameter estimates are a function of the high correlation in father's and mother's education at the community level. Further, the results at the individual level from the Ethnic Diversity Survey do not show these patterns. There is no way in which we can improve on this by, for example, adding more observations. As it is we are using a Census and maximizing the number of groups that can reasonably be observed. Accordingly, we proceed by dropping one of the variables, mother's education, in our analysis since the results based upon the Ethnic Diversity Survey offer the slight suggestion that paternal education is more often statistically significant.

Traditionally in the child development literature maternal education is seen as the prime influence on child attainments, as for example in the discussion by Haveman and Wolfe (1994, pp. 99-101). But recent research has brought this into some question because of the lack of controls for paternal education in many of these studies. If there is assortative mating so that the education levels of parents are similar the use of only maternal education could be misleading (Behrman and Rosenzweig 2002). Indeed, Sen and Clemente (2006) offer an analysis of intergenerational educational attainments using the Canadian General Social Survey and obtain results similar to ours. Their results are for the entire population and are best compared to those reported in Tables 6 and 7 under the heading "entire population." They also find that the probability of post-secondary education is positively related to that of both parents, but somewhat more strongly to fathers.[7] These findings can also be used to motivate the focus in the remainder of our analysis on the relationship between child outcomes and paternal education.[8]

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[7] The results they report in the second columns of their Tables 2 and 3 are not, however, directly comparable in magnitude to our findings because they deal with the probability of any post-secondary education or any university education rather than years of education. They are also not restricted to the age cohort upon which we focus. Their linear probability model of any post-secondary education leads to

b. Parental education and earnings

Table 8 offers Census based least squares results examining the association of both paternal education and income with child education attainment. The results reported in the first column repeat, for the sake of reference, the results from the first columns of Tables 6 and 7, indicating the small positive association between father-child years of schooling. These coefficients are statistically significant at any marginal significance level, being three times as great as the standard error, and explaining about a fifth to a third of the total variance depending upon whether the focus is on men or women. This is in sharp contrast with the findings in column 2, which are based on only the logarithm of paternal weekly earnings as the regressor. The coefficient is not statistically different from zero neither for men nor for women, explaining none of the variation in the data. Finally, and not surprisingly, when both paternal years of education and earnings are used in the model education dominates. It actually turns out that earnings are negatively associated with the child's years of schooling—being on the margin of statistical significance at the 95% level—and the coefficient on education becomes larger in magnitude.

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coefficients of 0.28 and 0.24 for indicators of whether the father attended post-secondary and whether the mother attended post-secondary. They also control for age, gender, marital status, and province. The coefficients are estimated to be 0.27 and 0.18 when the probability of any university education is being examined. de Haan and Plug (2007, Table 2) also report a similar result from the Wisconsin Longitudinal Study.

[8] We also used quantile regressions to amplify slightly the findings from the Ethnic Diversity Survey in order to highlight which part of the distribution contributes to the difference in the intergenerational covariance of years of education. The results were not strong and unambiguous. The least squares estimate of 0.134 for second generation men is driven more by those sons at and below the median than those above, but that the estimate of 0.4 for third generation men is driven by those in the top half of the distribution. That is, the link between parent and child education is stronger for high achieving sons among the native population, but stronger for low achieving sons for the second generation population. But these tendencies were slight, and overall there were no really strong differences. The second generation estimates are always much lower than those for the third generation throughout the entire distribution of child attainments. These general conclusions also held for women.

The suggestion in all of this is that on average paternal earnings on its own has no strong association with the education outcomes of children, sons or daughters. There isn't a straightforward interpretation to give to these results. They are certainly not causal, but at the same time they don't simply reflect a near collinearity in the variables. The correlations between parental education and earnings are 0.6192 for fathers, and 0.3244 for mothers. An unobserved effect may be at play. For example, it is possible that children of low income parents have had more altruistic parents that have invested more heavily in non-monetary aspects of human capital than their higher earning counterparts. In the least, these patterns suggest that the education outcomes of second generation children is much more closely correlated with the education of their parents, and relatedly to the institutional structure of an education system that does not appear to limit access according to income.

c. Changes in the intergenerational association of education

Tables 9 and 10 offer an expanded version of the Ethnic Diversity Survey results presented in Tables 6 and 7 by fully interacting equation (1) with birth cohort effects. The base case is the cohort 25 to 34 years of age, and separate intercepts and slopes are added for those 35 to 44 years, 45 to 64 years, and finally those 65 and older.[9] Three results follow from this exercise for both men and women.

First, for both the second generation and the third generation populations the slope coefficients seem to be the same across all birth cohorts. Rarely are the estimated

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[9] Our original inclination was to use 10 year age cohorts, but the group 55 to 64 represented about 7% of the samples, and we decided to aggregate it with 45 to 54 year olds after preliminary regressions revealed no statistically significant results.

coefficients for the interaction terms with paternal education greater than one standard error, and they are never greater than two standard errors. Individually these coefficients are not statistically significant from zero, and F-tests do not reject the null hypothesis that collectively they equal zero.

Second, the estimates of the constant term make clear that second generation Canadians obtain more years of schooling than those born in the country with Canadian born parents. To be precise, for those 25 to 34 years of age the difference in years of schooling for men is four years in favour of second generation Canadians; for women it is almost 2 ½ years.[10]

Third, the separate intercepts for each birth cohort suggest that only in the case of the very oldest cohort, those older than 65 years in 2001, are the years of schooling different. This cohort obtained from 2 ¾ to 4 ²/₃ years fewer schooling than all younger cohorts. This could reasonably be attributed to changes in school leaving legislation as these individuals would have been 15 years of age at some point before 1950 (Oreopoulos 2006). It is the statistically significant result for this single cohort drives the results of F-tests to a point that we cannot reasonably reject the null that all intercepts are collectively equal to zero.

With the possibility of this last exception, the results from this model show that for both men and women the intergenerational association in educational attainment, including overall average attainment, has been stable across all birth cohorts. None of the findings associated with Tables 6 and 7 need be modified: the Canadian born sons of immigrants obtain about 0.13 years more schooling for every additional year their fathers

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[10] It should again be noted that these results pertain to the reference case of those living in Ontario.

have, and daughters about the same at 0.16; this is significantly lower than the tie

between the Canadian born children of Canadian born parents who obtain an additional

0.3 to 0.4 years of schooling for each additional year. In particular, the degree of

intergenerational mobility among most recent second generation Canadians is no stronger

or no weaker than it has always been, and has not changed relative to third generation

Canadians.

It should be noted that the youngest second generation cohort in our analysis,

those 25 to 34 years of age in 2000, were born on average in 1970 and no earlier than

1966. In other words this cohort was born just after the implementation of important

policy changes that led to the removal of the national origin quota system as a means of

selecting immigrants. Therefore, their parents likely entered the country before this

system was replaced by a points based policy geared to labour market integration. As

such the extent to which these findings can be extrapolated into the future is an open

question. The results may differ if the analysis were to be replicated in the future with

more recent cohorts of immigrants and their children, those who were selected under the

new policy regime, and who accordingly were much more diverse in their national

origins.


5. Some refinements

These findings all pertain to averages, speaking to the overall patterns in the country.

However, the large sample size of the Census allows us to explore the variation in the

data in more detail than possible with any other data source. Figures 1 and 2, for

example, offer scatter plots of parent and child years of schooling used in the regression

analysis presented in the first column of Tables 6 and 7. This illustrates the grouped information from each of the 70 countries making up our analytical file. A picture of this sort would be available from the EDS but, because of the smaller sample size, for only about 30 countries. The weighted least squares regression line with slopes of 0.136 for father-son years of schooling, and 0.102 for father-daughter years of schooling are included in the figures, as are the average years of schooling for Canadian born fathers and their Canadian born children. These latter points are for illustrative purposes and are not used in the regression.[11]

The figures make clear that the children of immigrants are more educated than their counterparts with Canadian born parents: the educational attainment of the latter lies below the level predicted by the regression line for the number of years of schooling their fathers on average had. While there is rapid regression to the mean among immigrant children—much more rapid than for the native Canadian population—it should be clear that this mean is an immigrant based mean: the children of immigrants are regressing to a different, higher, average than the children of Canadian born parents.

The figures also make clear that in spite of the general tendencies there is a good deal of variation about the estimated regression lines. For the strong majority of countries immigrant fathers have more than the average education of Canadian born fathers, and this advantage is passed on to the next generation, both sons and daughters having more

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[11] We examined the robustness of the regression estimates by successively dropping a single observation from the estimation and recalculating the slope before then re-including it in the estimation and dropping the next observation. There are no particularly influential observations in the data, the estimated slope not changing at all. The only exceptions to this—for both sons and daughters—were the estimates excluding the UK, Italy, and Portugal. Without the UK the slope for fathers-sons is just over 0.16, and similarly without Italy; without Portugal it is 0.11. These are all within one standard error (0.038) of the original estimate of 0.136. The general patterns and conclusion also hold for the father-daughter analysis. Also to be strictly correct the averages depicted in the figures are for the reference case of someone living in Ontario.

years of schooling then their Canadian born cohort with Canadian born parents. In only four countries do immigrants have an education disadvantage that continues to be reflected in the next generation of sons and daughters. For all the other countries in which father's education is less than the average, the children make relative gains and exceed the Canadian average.

We use the information in these figures combined with similar information on weekly earnings in Aydemir, Chen, and Corak (2006) to highlight particular communities of concern. One could imagine that matters of integration into the broader community would be particularly salient under at least the following two circumstances. First, consider a situation in which fathers come to the country with greater than average schooling, yet earn less than the average. This might in part be the situation currently playing itself out because of the reported difficulties in having foreign education credentials recognized in the Canadian labour market. If these fathers then witness a similar scenario occurring for their children, it can reasonably be imagined that a sense of frustration or lack of belonging to the host country could develop both among them and among their adult sons and daughters. They may be willing to shoulder the costs of below average earnings in spite of having above average education, but to see that these costs do not lead to an improved situation for their children may change their perspective and that of their children. The second particularly pertinent scenario might be one of intergenerational transmission of low income and education: fathers who come to the country with below average education and below average earnings see their children to grow up to also have lower education and earnings than the mainstream. This is a scenario in which there is a higher likelihood that disadvantage and poverty will have

23

intergenerational consequences, and might also be a case in which the chances of social exclusion are greater.

In order to illustrate the relevance of these two possibilities we cross-classify the information in Figures 1 and 2 with similar information on parent-child weekly earnings. The results are offered in Tables 11 and 12, panels 1 looking at countries of origin in which fathers have on average more years of schooling than their Canadian counterparts; panels 2 in which they have less. Focusing for the moment on Table 11, dealing with the father-son relationship, it is notable, firstly, that there are no cases of downward education mobility: if fathers have above average education, so do the sons. Second, in 57 of 70 countries the fathers have above average education, and in two-thirds of these they also have below average earnings. But in 11 of these 38 cases the sons go on to earn less than the Canadian average in spite of having above average education. So only a very small number of countries representing a small total population occupy this potentially challenging position. That said these are dominated by the Caribbean countries, and with the addition of West Africa likely represent a visible minority group highlighted by Reitz and Bannerjee (2007), and the basis for their rather pessimistic perspective on the integration of second generation immigrants.[12]

To address our second potential hotspot, there are only 12 countries in which fathers have less than average years of schooling and less than average earnings, and in all but two of these cases the sons go on to have above average earnings, breaking out of this potentially challenging starting point. Some of these sons do this by having above

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[12] The fact that Japan is also included in this group might be an anomaly. A closer look at the data shows that with respect to weekly earnings the data for both fathers and sons are essentially the same as the Canadian average, differing by less than 0.01 log points. Japan could just as easily be included as above the average, as below.

average education (six of ten), while others continue to have below average education in spite of having higher earnings. There are only two cases of an intergenerational transmission of disadvantage in earnings, though not of education: Cyprus and Greece, and neither of these countries have been highlighted by the existing literature as being particular flashpoints for discontent.

The situation for daughters, presented in Table 12, is in fact even better than for sons. There is only one case of downward education mobility, Norway, and only one case in which fathers with above average education and below average earnings have daughters who grow up to also have above average education and below average earnings. For 37 of the 38 countries of origin with fathers in this situation the daughters go on to have both higher education and higher earnings than their Canadian counterparts. Furthermore, there are no examples of the intergenerational transmission of relative disadvantage in education and earnings. There are 13 countries of origins in which fathers on average have less education than the Canadian average, and in 12 of these they have below average earnings. But there is only one case in which the daughters find themselves with below average education and earnings.

6. Conclusion

Our analysis of the degree and nature of intergenerational education mobility among the Canadian born children of immigrants suggests, along three related issues, a rather positive view of socio-economic integration. First, we find that the elasticity between parent and child years of schooling is rather loose among immigrants and their children, and indeed much looser than it is for the Canadian born children of Canadian born

parents; second, that money has little to do with this intergenerational tie, indeed if anything lower earning immigrant parents have more educated children; and finally, that the strength of the tie between parent and child years of schooling has not changed across the birth cohorts of the post-war era. All of this also plays out in a context in which immigrants and their children have on average more years of schooling than Canadians who have been in the country for more than two generations. At the same time it should be stressed that our analysis cannot and is not intended to uncover or outline the reasons for these patterns, which likely reflect both the operation of Canadian institutions and the selection process determining the characteristics of the immigrant population. Berman and Rzakhanov (2000) and Zhou and Kim (2006), to cite two very contrasting examples, point out that immigrants can indeed be self-selected on inter-generational altruism, an aspect that would be particularly important in the context of human capital investment.

We also underscore the fact that our descriptive results are global, referring to societal averages, and offer an overall view of how Canadian society functions with respect to the schooling of children and children of immigrants. This is not to say that there are not particular challenges that have to be faced, and our use of detailed Census data permits us to highlight their nature. We highlight the fact that some children from some communities have higher than average education but lower than average earnings as adults, a pattern that echoes the situation faced by their parents. This applies to the sons of immigrants from a small number of countries, particularly the Caribbean and West Africa. This is similar to the major messages in Reitz and Banerjee (2007). Though these groups represent a small fraction of the total population it is important to also

understand the nature of the intergenerational process underlying their outcomes, and this can likely be more fruitfully studied by detailed analyses specific to these communities.

Finally, it should be noted that by its very nature our analysis is backward looking referring to cohorts of immigrants who arrived in the country some decades in the past, and whose children attended the education system of the past. In spite of our examination of past cohorts of immigrants and their children and the suggestion that there is some continuity in the intergenerational process between the most recent and most distant cohorts of the post-war period, it is not clear the extent to which the patterns we uncover, and the particular groups we highlight, can be extrapolated into the future.

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Table 1
Characteristics of Canadian men by birthplace and parental birthplace, 2001

| | Canadian Born | | Immigrants | | Second Generation Canadian Born | | |
|---|---|---|---|---|---|---|---|
| | Aboriginals | Third generation or more | Age of migration 11 or younger | Age of migration 12 or older | Only Father is immigrant | Only Mother is immigrant | Both parents immigrants |
| Number (unweighted) | 128,918 | 1,159,886 | 72,544 | 304,794 | 84,983 | 61,683 | 143,115 |
| Population share (%) | 2.65 | 61.5 | 3.90 | 16.5 | 4.48 | 3.27 | 7.74 |
| Average age (years) | 35.2 | 38.8 | 35.7 | 44.1 | 39.7 | 39.3 | 34.9 |
| Age (% distribution) | | | | | | | |
| 16 to 24 | 26.0 | 18.9 | 25.8 | 7.27 | 21.5 | 20.7 | 26.1 |
| 25 to 34 | 24.8 | 19.1 | 22.8 | 16.2 | 18.3 | 18.7 | 26.8 |
| 35 to 44 | 24.1 | 25.7 | 21.5 | 26.3 | 19.3 | 20.0 | 25.8 |
| 45 to 54 | 15.8 | 22.3 | 22.1 | 26.2 | 19.8 | 25.1 | 11.0 |
| 55 to 65 | 9.27 | 14.0 | 7.81 | 24.0 | 21.1 | 15.7 | 10.3 |
| Average years of Schooling | 11.2 | 13.0 | 14.0 | 13.9 | 13.6 | 13.7 | 14.1 |
| Years Schooling (%) | | | | | | | |
| Less than 12 years | 52.7 | 28.4 | 19.0 | 21.5 | 22.4 | 21.0 | 16.5 |
| 12 years | 22.4 | 22.3 | 19.6 | 14.5 | 22.9 | 23.0 | 20.2 |
| 13 to 15 years | 17.4 | 27.3 | 29.8 | 25.3 | 27.3 | 28.1 | 30.8 |
| 16 or more years | 7.50 | 22.0 | 31.6 | 38.6 | 27.4 | 27.9 | 32.6 |
| Highest Degree (%) | | | | | | | |
| Less than High School | 48.2 | 28.3 | 22.2 | 22.7 | 24.1 | 23.2 | 19.7 |
| High School | 27.5 | 31.2 | 31.3 | 24.3 | 30.9 | 30.8 | 31.8 |
| Certificate | 20.9 | 26.5 | 25.9 | 25.5 | 26.7 | 26.7 | 27.7 |
| Undergraduate degree | 2.87 | 11.1 | 16.3 | 18.4 | 14.2 | 15.1 | 17.2 |
| Graduate degree | 0.53 | 2.87 | 4.31 | 9.13 | 4.14 | 4.17 | 3.68 |

Source: Tabulations by the authors using micro-files from the 2001 Statistics Canada Canadian Census respondents to the Long-Form, a 20% sample of the Canadian population. All calculations and proportions are based upon weighted data.

Table 2
Characteristics of Canadian women by birthplace and parental birthplace, 2001

| | Canadian Born | | Immigrants | | Second Generation Canadian Born | | |
|---|---|---|---|---|---|---|---|
| | Aboriginals | Third generation or more | Age of migration 11 or younger | Age of migration 12 or older | Only Father is immigrant | Only Mother is immigrant | Both parents immigrants |
| Number (unweighted) | 132,076 | 1,187,527 | 70,789 | 331,788 | 89,656 | 62,344 | 140,682 |
| Population share (%) | 2.81 | 61.0 | 3.69 | 17.4 | 4.56 | 3.2 | 7.3 |
| Average age (years) | 35.4 | 39.2 | 36.0 | 43.7 | 40.2 | 39.6 | 35.1 |
| Age (% distribution) | | | | | | | |
| 16 to 24 | 24.9 | 17.9 | 24.4 | 6.84 | 19.9 | 19.9 | 25.4 |
| 25 to 34 | 25.3 | 19.3 | 22.7 | 18.2 | 18.4 | 18.9 | 26.9 |
| 35 to 44 | 24.7 | 26.1 | 22.5 | 26.5 | 19.5 | 20.0 | 25.9 |
| 45 to 54 | 15.9 | 22.5 | 22.6 | 25.8 | 20.4 | 25.1 | 11.1 |
| 55 to 65 | 9.18 | 14.3 | 7.75 | 22.6 | 21.9 | 16.2 | 10.8 |
| Average years of Schooling | 11.6 | 13.2 | 13.8 | 13.2 | 13.6 | 13.7 | 14.3 |
| Years Schooling (%) | | | | | | | |
| Less than 12 years | 46.3 | 24.3 | 18.1 | 24.4 | 19.9 | 18.7 | 13.4 |
| 12 years | 22.3 | 23.1 | 21.4 | 16.3 | 24.4 | 24.7 | 20.5 |
| 13 to 15 years | 22.0 | 30.7 | 31.1 | 28.7 | 30.2 | 30.4 | 32.7 |
| 16 or more years | 9.36 | 22.0 | 29.0 | 30.6 | 25.7 | 26.2 | 33.3 |
| Highest Degree (%) | | | | | | | |
| Less than High School | 42.8 | 24.5 | 20.5 | 26.1 | 21.7 | 20.8 | 16.1 |
| High School | 28.0 | 31.4 | 32.5 | 26.5 | 30.8 | 30.8 | 31.2 |
| Certificate | 23.9 | 29.2 | 26.7 | 25.4 | 29.0 | 29.2 | 29.1 |
| Undergraduate degree | 4.75 | 12.6 | 17.0 | 16.8 | 15.4 | 15.9 | 20.4 |
| Graduate degree | 0.58 | 2.26 | 3.37 | 5.19 | 3.10 | 3.26 | 3.19 |

Source: Tabulations by the authors using micro-files from the 2001 Statistics Canada Canadian Census respondents to the Long-Form, a 20% sample of the Canadian population. All calculations and proportions are based upon weighted data.

Table 3

Percentage distribution of educational attainment by age cohort, men 16 to 65 in 2001

| | Canadian Born | | Immigrants | | Second Generation Canadian Born | | |
|---|---|---|---|---|---|---|---|
| | Aboriginals | Third generation or more | 11 years or younger upon arrival | 12 years or older upon arrival | Only Father is immigrant | Only Mother is immigrant | Both parents immigrants |
| | (column percent distribution within each cohort) | | | | | | |
| **Age 16 to 24** | | | | | | | |
| Less than 12 yrs | 59.1 | 31.9 | 29.0 | 24.2 | 27.0 | 28.0 | 22.4 |
| 12 yrs | 26.6 | 28.2 | 23.4 | 23.0 | 28.5 | 29.0 | 23.3 |
| 13 to 15 yrs | 12.0 | 30.0 | 34.0 | 36.4 | 32.5 | 31.3 | 36.5 |
| 16 or more years | 2.21 | 9.85 | 13.7 | 16.5 | 12.0 | 11.7 | 17.9 |
| | | | | | | | |
| **Age 25 to 34** | | | | | | | |
| Less than 12 yrs | 43.2 | 16.6 | 9.31 | 13.9 | 10.6 | 8.78 | 7.85 |
| 12 yrs | 25.7 | 21.9 | 16.9 | 14.3 | 20.2 | 21.7 | 17.1 |
| 13 to 15 yrs | 21.5 | 31.3 | 29.3 | 26.7 | 30.7 | 31.1 | 30.8 |
| 16 or more years | 9.60 | 30.1 | 44.6 | 45.2 | 38.5 | 38.4 | 44.2 |
| | | | | | | | |
| **Age 35 to 44** | | | | | | | |
| Less than 12 yrs | 48.5 | 23.1 | 14.7 | 17.2 | 15.8 | 15.7 | 11.9 |
| 12 yrs | 21.7 | 23.2 | 20.0 | 14.2 | 22.8 | 22.8 | 20.5 |
| 13 to 15 yrs | 20.1 | 29.1 | 29.6 | 25.7 | 28.5 | 29.8 | 30.7 |
| 16 or more years | 9.78 | 24.6 | 35.8 | 43.0 | 32.9 | 31.7 | 36.8 |
| | | | | | | | |
| **Age 45 to 54** | | | | | | | |
| Less than 12 yrs | 53.1 | 28.7 | 18.4 | 20.3 | 19.5 | 19.8 | 15.3 |
| 12 yrs | 18.1 | 21.1 | 18.4 | 13.7 | 22.8 | 22.1 | 20.2 |
| 13 to 15 yrs | 19.1 | 25.8 | 28.4 | 24.9 | 25.8 | 26.7 | 28.1 |
| 16 or more years | 9.76 | 24.3 | 34.9 | 41.1 | 31.9 | 31.4 | 36.5 |
| | | | | | | | |
| **Age 55 to 65** | | | | | | | |
| Less than 12 yrs | 70.7 | 49.2 | 28.4 | 32.0 | 36.5 | 34.9 | 36.9 |
| 12 yrs | 11.1 | 15.1 | 17.2 | 13.4 | 19.8 | 18.6 | 19.4 |
| 13 to 15 yrs | 11.2 | 17.1 | 22.2 | 21.2 | 19.5 | 20.5 | 19.1 |
| 16 or more years | 6.90 | 18.7 | 32.2 | 33.5 | 24.2 | 26.1 | 24.6 |
| | | | | | | | |
| **Age 25 to 65** | | | | | | | |
| Average years of schooling | 11.2 | 13.1 | 14.4 | 14.0 | 13.8 | 14.0 | 14.4 |
| Less than 12 years | 50.5 | 27.6 | 15.6 | 21.3 | 21.1 | 19.1 | 14.4 |
| 12 years | 20.9 | 20.9 | 18.3 | 13.9 | 21.4 | 21.5 | 19.1 |
| 13 to 15 years | 19.2 | 26.7 | 28.3 | 24.5 | 25.9 | 27.3 | 28.8 |
| 16 or more years | 9.35 | 24.8 | 37.8 | 40.4 | 31.6 | 32.1 | 37.8 |
| Highest Degree | | | | | | | |
| Less than High School | 42.3 | 25.4 | 15.9 | 21.9 | 20.5 | 18.9 | 15.5 |
| High School | 27.6 | 29.2 | 26.8 | 22.5 | 27.2 | 27.5 | 26.3 |
| Certificate | 25.8 | 29.0 | 31.3 | 26.6 | 30.5 | 30.7 | 32.6 |
| Undergraduate degree | 3.63 | 12.9 | 20.2 | 19.3 | 16.7 | 17.7 | 20.6 |
| Graduate degree | 0.71 | 3.51 | 5.72 | 9.80 | 5.22 | 5.22 | 4.87 |

Source: Tabulations by authors from Statistics Canada, 2001 Census.

Table 4
Percentage distribution of educational attainment by age cohort, women 16 to 65 in 2001

| | Canadian Born | | Immigrants | | Second Generation Canadian Born | | |
|---|---|---|---|---|---|---|---|
| | Aboriginals | Third generation or more | 11 years or younger upon arrival | 12 years or older upon arrival | Only Father is immigrant | Only Mother is immigrant | Both parents immigrants |
| | (column percent distribution within each cohort) | | | | | | |
| **Age 16 to 24** | | | | | | | |
| Less than 12 yrs | 53.4 | 25.8 | 25.8 | 20.9 | 23.3 | 23.78 | 18.2 |
| 12 yrs | 26.6 | 24.7 | 21.1 | 22.1 | 24.3 | 25.6 | 19.2 |
| 13 to 15 yrs | 16.6 | 35.1 | 37.0 | 37.5 | 35.8 | 35.4 | 39.1 |
| 16 or more years | 3.34 | 14.5 | 16.2 | 19.6 | 16.6 | 15.35 | 23.5 |
| | | | | | | | |
| **Age 25 to 34** | | | | | | | |
| Less than 12 yrs | 36.6 | 11.8 | 7.14 | 14.4 | 7.31 | 7.34 | 4.77 |
| 12 yrs | 23.4 | 19.3 | 14.9 | 14.8 | 18.0 | 17.7 | 14.0 |
| 13 to 15 yrs | 27.3 | 33.7 | 30.5 | 29.7 | 31.7 | 31.4 | 31.1 |
| 16 or more years | 12.7 | 35.2 | 47.5 | 41.1 | 43.0 | 43.6 | 50.1 |
| | | | | | | | |
| **Age 35 to 44** | | | | | | | |
| Less than 12 yrs | 40.2 | 17.6 | 12.7 | 18.2 | 11.6 | 11.6 | 8.27 |
| 12 yrs | 22.5 | 26.1 | 24.1 | 15.9 | 25.7 | 26.1 | 24.1 |
| 13 to 15 yrs | 25.6 | 32.7 | 32.0 | 30.0 | 32.6 | 32.8 | 33.5 |
| 16 or more years | 11.8 | 23.6 | 31.2 | 35.8 | 30.1 | 29.5 | 34.2 |
| | | | | | | | |
| **Age 45 to 54** | | | | | | | |
| Less than 12 yrs | 47.0 | 26.2 | 20.2 | 25.2 | 17.4 | 17.9 | 13.0 |
| 12 yrs | 19.3 | 24.9 | 26.8 | 16.5 | 27.8 | 28.3 | 25.8 |
| 13 to 15 yrs | 21.8 | 28.5 | 27.6 | 28.7 | 28.8 | 28.7 | 30.1 |
| 16 or more years | 11.8 | 20.5 | 25.4 | 29.7 | 25.9 | 25.1 | 31.2 |
| | | | | | | | |
| **Age 55 to 65** | | | | | | | |
| Less than 12 yrs | 69.6 | 48.4 | 35.2 | 39.8 | 36.9 | 35.6 | 36.8 |
| 12 yrs | 12.1 | 18.0 | 23.8 | 15.8 | 24.4 | 24.6 | 26.1 |
| 13 to 15 yrs | 12.6 | 20.7 | 22.4 | 23.9 | 23.5 | 23.0 | 22.3 |
| 16 or more years | 5.66 | 12.8 | 18.6 | 20.5 | 15.3 | 16.8 | 14.7 |
| | | | | | | | |
| **Age 25 to 65** | | | | | | | |
| Average years of schooling | 11.7 | 13.2 | 14.1 | 13.2 | 13.8 | 13.9 | 14.5 |
| Less than 12 years | 44.0 | 24.0 | 15.6 | 24.6 | 19.0 | 17.4 | 11.8 |
| 12 years | 20.9 | 22.8 | 22.1 | 15.8 | 24.1 | 24.5 | 21.0 |
| 13 to 15 years | 23.8 | 29.7 | 29.2 | 28.1 | 29.0 | 29.2 | 30.5 |
| 16 or more years | 11.4 | 23.6 | 33.1 | 31.5 | 28.0 | 28.9 | 36.7 |
| Highest Degree | | | | | | | |
| Less than High School | 37.6 | 22.5 | 15.5 | 26.0 | 19.1 | 17.7 | 12.7 |
| High School | 27.1 | 29.6 | 28.9 | 25.0 | 27.7 | 27.8 | 26.6 |
| Certificate | 28.8 | 31.3 | 31.2 | 26.2 | 32.3 | 32.7 | 33.2 |
| Undergraduate degree | 5.81 | 14.0 | 20.1 | 17.3 | 17.1 | 17.9 | 23.4 |
| Graduate degree | 0.77 | 2.71 | 4.39 | 5.52 | 3.81 | 4.03 | 4.12 |

Source: Tabulations by authors from Statistics Canada, 2001 Census.

Table 5

Years of schooling by parent's region of origin for second generation men and women 25
to 37 years of age: Census and Ethnic Diversity Survey

|  | Census | Ethnic Diversity Survey |
|---|---|---|
| **1. Fathers** | | |
| North America, Northern and Western Europe | 13.9 | 13.8 |
| Caribbean, Central and South America and Oceania | 13.0 | 13.4 |
| Southern and Eastern Europe | 8.8 | 8.7 |
| Africa | 14.9 | 16.1 |
| Asia | 13.6 | 14.3 |
| Canadian born | 11.3 | 11.9 |
| **2. Mothers** | | |
| North America, Northern and Western Europe | 12.9 | 12.8 |
| Caribbean, Central and South America and Oceania | 12.0 | 13.0 |
| Southern and Eastern Europe | 8.1 | 8.2 |
| Africa | 12.9 | 13.6 |
| Asia | 12.1 | 13.5 |
| Canadian born | 11.6 | 11.4 |
| **3. Second generation men** | | |
| North America, Northern and Western Europe | 14.8 | 14.5 |
| Caribbean, Central and South America and Oceania | 14.8 | 14.8 |
| Southern and Eastern Europe | 14.8 | 15.1 |
| Africa | 16.3 | 16.4 |
| Asia | 16.3 | 16.1 |
| Canadian born, third generation or more | 14.0 | 14.2 |
| **4. Second generation women** | | |
| North America, Northern and Western Europe | 15.2 | 15.1 |
| Caribbean, Central and South America and Oceania | 15.6 | 15.8 |
| Southern and Eastern Europe | 15.4 | 15.0 |
| Africa | 16.8 | 16.9 |
| Asia | 16.6 | 16.4 |
| Canadian born, third generation or more | 14.6 | 14.5 |

For information from the Census "Fathers" and "Mothers" in panels 1 and 2 refers to "potential" fathers and mothers from the 1981 Census as described in the text, while from the Ethnic Diversity Survey the labels refers to retrospective information reported by the survey respondents with categorical information on parental education converted to years as described in the text.

Second generation men and women refer to those 25 to 37 years of age in 2001 with both parents born outside of Canada. The sample size from the 1981 Census for panels 1 and 2 is 80,651. For panels 3 and 4 they are 45,415 and 41,927 for the second generation. The sample size from the Ethnic Diversity Survey used is 1,673 (789 men and 884 women).

Table 6

Least squares estimates of regression to the mean models of education mobility across the generations: Men 25 to 37 years of age

| | | Census | Ethnic Diversity Survey | | |
|---|---|---|---|---|---|
| | | Second Generation | Second Generation | Entire Population of 25 to 37 year olds | 3rd Generation and higher |
| 1. | Father's Education | 0.136 | 0.134 | 0.329 | 0.400 |
| | | 0.038 | 0.031 | 0.023 | 0.031 |
| | Constant | 13.6 | 16.3 | 6.40 | 3.13 |
| | | 0.433 | 9.38 | 5.74 | 7.10 |
| | Sample Size | 70 | 739 | 2965 | 1455 |
| | R-squared | 0.30 | 0.111 | 0.145 | 0.170 |
| 2. | Mother's Education | 0.122 | 0.162 | 0.309 | 0.381 |
| | | 0.030 | 0.036 | 0.028 | 0.038 |
| | Constant | 14.0 | 21.6 | 9.31 | 6.33 |
| | | 0.376 | 9.39 | 5.94 | 7.34 |
| | Sample Size | 70 | 729 | 2946 | 1443 |
| | R-squared | 0.22 | 0.106 | 0.095 | 0.115 |
| 3. | Father's Education | 0.743 | 0.080 | 0.267 | 0.320 |
| | | 0.134 | 0.046 | 0.028 | 0.036 |
| | Mother's Education | -0.657 | 0.104 | 0.144 | 0.213 |
| | | 0.138 | 0.053 | 0.034 | 0.043 |
| | Constant | 13.3 | 20.0 | 3.13 | -2.37 |
| | | 0.337 | 9.47 | 5.82 | 7.16 |
| | Sample Size | 70 | 697 | 2840 | 1392 |
| | R-squared | 0.49 | 0.121 | 0.160 | 0.196 |

Least squares coefficient estimates are offered as the top entry in each panel, and standard errors in the bottom. Census results are based on weighted least squares.

Table 7

Least squares estimates of regression to the mean models of education mobility across the generations: Women 25 to 37 years of age

| | Census | Ethnic Diversity Survey | | |
|---|---|---|---|---|
| | Second Generation | Second Generation | Entire Population of 25 to 37 year olds | 3rd Generation and higher |
| 1. Father's Education | 0.102 | 0.163 | 0.292 | 0.370 |
| | 0.031 | 0.033 | 0.021 | 0.029 |
| Constant | 14.4 | 10.0 | 3.76 | 1.04 |
| | 0.365 | 12.2 | 5.78 | 6.96 |
| Sample Size | 70 | 815 | 3481 | 1734 |
| R-squared | 0.22 | 0.078 | 0.128 | 0.162 |
| 2. Mother's Education | 0.092 | 0.128 | 0.298 | 0.403 |
| | 0.030 | 0.036 | 0.026 | 0.034 |
| Constant | 14.7 | 6.21 | 3.46 | 2.71 |
| | 0.316 | 12.3 | 5.83 | 7.02 |
| Sample Size | 70 | 824 | 3553 | 1768 |
| R-squared | 0.16 | 0.043 | 0.109 | 0.154 |
| 3. Father's Education | 0.580 | 0.160 | 0.206 | 0.249 |
| | .0121 | 0.045 | 0.024 | 0.032 |
| Mother's Education | -0.516 | 0.0098 | 0.167 | 0.252 |
| | 0.127 | 0.048 | 0.029 | 0.036 |
| Constant | 14.1 | 9.27 | 2.46 | -0.116 |
| | 0.287 | 12.7 | 5.66 | 6.81 |
| Sample Size | 70 | 786 | 3372 | 1683 |
| R-squared | 0.38 | 0.079 | 0.150 | 0.206 |

Least squares coefficient estimates are offered as the top entry in each panel, and standard errors in the bottom. Census results are based on weighted least squares.

Table 8

Least squares estimates of regression to the mean models of education mobility across the generations: Parental education and income, for men and women 25 to 37 years of ages

|  | (1) | (2) | (3) |
| --- | --- | --- | --- |
| **1. Men 25 to 37 years of age** | | | |
| Father's Education | 0.136 | | 0.198 |
|  | 0.038 | | 0.054 |
| Father's *ln* Earnings | | 0.465 | -2.09 |
|  | | 0.980 | 1.06 |
| Constant | 13.6 | 12.1 | 27.1 |
|  | 0.433 | 6.70 | 6.72 |
| Sample Size | 70 | 70 | 70 |
| R-squared | 0.30 | 0.01 | 0.40 |
| **2. Women 25 to 37 years of age** | | | |
| Father's Education | 0.102 | | 0.153 |
|  | 0.031 | | 0.047 |
| Father's *ln* Earnings | | 0.284 | -1.69 |
|  | | 0.815 | 0.935 |
| Constant | 14.4 | 13.7 | 25.2 |
|  | 0.365 | 5.57 | 5.94 |
| Sample Size | 70 | 70 | 70 |
| R-squared | 0.22 | 0.00 | 0.31 |

Least squares coefficient estimates are offered as the top entry in each panel, and standard errors in the bottom.
Estimates are based upon weighted least squares using Statistics Canada, Census of the Population as organized by the authors.

Table 9

Least squares estimates of regression to the mean models of education mobility across the generations: Fully interacted model with birth cohorts, men 25 to 37 years of ages

| | Second generation | Entire Population | Third generation and higher |
|---|---|---|---|
| Father's Education | 0.104 | 0.307 | 0.371 |
| | 0.034 | 0.0255 | 0.0349 |
| Father's Education × 35 to 44 years of age | 0.077 | -0.0198 | -0.0286 |
| | 0.053 | 0.0362 | 0.0489 |
| Father's Education × 45 to 64 years of age | 0.052 | 0.0556 | 0.0253 |
| | 0.082 | 0.0419 | 0.0531 |
| Father's Education × 65 years of age | 0.106 | 0.0699 | 0.0609 |
| | 0.099 | 0.0642 | 0.0914 |
| Constant | 14.2 | 11.2 | 10.2 |
| | 0.45 | 0.339 | 0.454 |
| 35 to 44 years of age | -0.944 | 0.081 | 0.231 |
| | 0.637 | 0.441 | 0.584 |
| 45 to 64 years of age | -1.06 | -1.05 | -0.653 |
| | 0.875 | 0.469 | 0.594 |
| 65 or more years of age | -3.73 | -2.95 | -2.76 |
| | 0.964 | 0.656 | 0.908 |
| Sample Size | 1 770 | 9 180 | 4 755 |
| R-squared | 0.197 | 0.187 | 0.198 |
| | | | |
| F-test for slope interactions = 0 | 0.92 (0.430) | 1.48 (0.218) | 0.54 (0.653) |
| F-test for intercept interactions = 0 | 5.03 (0.0018) | 9.30 (0.00) | 4.30 (0.0049) |
| F-test for all interactions = 0 | 14.7 (0.00) | 24.37 (0.00) | 12.1 (0.00) |

Least squares coefficient estimates are offered as the top entry in each panel, and standard errors in the bottom. The marginal significance levels of the F-tests are reported in parentheses.
Estimates are based upon Statistics Canada, Ethnic Diversity Survey.

Table 10

Least squares estimates of regression to the mean models of education mobility across the generations: Fully interacted model with birth cohorts, women 25 to 37 years of ages

|  | Second generation | Entire Population | Third generation and higher |
|---|---|---|---|
| Father's Education | 0.157 | 0.246 | 0.311 |
|  | 0.036 | 0.024 | 0.032 |
| Father's Education × 35 to 44 years of age | 0.0067 | 0.060 | 0.0250 |
|  | 0.055 | 0.037 | 0.049 |
| Father's Education × 45 to 64 years of age | -0.0067 | 0.0509 | 0.0173 |
|  | 0.076 | 0.035 | 0.044 |
| Father's Education × 65 years of age | 0.130 | 0.106 | 0.0847 |
|  | 0.072 | 0.055 | 0.085 |
| Constant | 13.8 | 12.3 | 11.4 |
|  | 0.46 | 0.32 | 0.43 |
| 35 to 44 years of age | -0.626 | -1.34 | -0.909 |
|  | 0.62 | 0.43 | 0.57 |
| 45 to 64 years of age | -0.727 | -1.82 | 1.35 |
|  | 0.81 | 0.41 | 0.52 |
| 65 or more years of age | -4.67 | -4.12 | -3.92 |
|  | 0.76 | 0.54 | 0.79 |
| Sample Size | 1 952 | 10 892 | 5 703 |
| R-squared | 0.258 | 0.231 | 0.238 |
| F-test for slope interactions = 0 | 1.74 (0.156) | 1.76 (0.153) | 0.36 (0.784) |
| F-test for intercept interactions = 0 | 13.9 (0.00) | 20.0 (0.00) | 8.50 (0.00) |
| F-test for all interactions = 0 | 32.1 (0.00) | 65.0 (0.00) | 36.8 (0.00) |

Least squares coefficient estimates are offered as the top entry in each panel, and standard errors in the bottom. The marginal significance levels of the F-tests are reported in parentheses.
Estimates are based upon Statistics Canada, Ethnic Diversity Survey.

Table 11
Countries and regions of father's birthplace categorized by father's status and son's outcomes for 2nd generation Canadians relative to the average outcome of Canadians and third generation Canadians: 70 countries from the Census

| | Son's education greater than Canadian average | | | | Son's education less than Canadian average | |
|---|---|---|---|---|---|---|
| | Earnings less than average | Earnings greater than average | | | Earnings less than average | Earnings greater than average |
| 1. Father's education greater than Canadian average | | | | | | |
| a. Earnings less than Canadian average | BARBADOS COLOMBIA OCEANIA GRENADA GUYANA HAITI JAMAICA JAPAN ST LUCIA TRINIDAD WEST AFRICA | ARGENTINA BRAZIL/CHILE HONG KONG INDIA IRAN/IRAQ ISRAEL KENYA KOREA MOROCCO NETHERLANDS | OTHER N AFRICA OTHER S AMERICA OTHER WEST ASIA OTHER W EUROPE PAKISTAN/NEPAL PHILLIPINES POLAND ROMANIA RUSSIA | SPAIN/OTHER SOUTH EUROPE SRI LANKA SWITZERLAND SYRIA TAIWAN TANZANIA TURKEY UGANDA | | |
| b. Earnings greater than Canadian average | OTHER CARIBBEAN OTHER E/C AFRICA UNITED STATES | AUSTRALIA AUSTRIA CZECH/BULGARIA DENMARK EGYPT FRANCE | GERMANY HUNGARY INDONESIA IRELAND MALAYSIA AND SINGAPORE | NEW ZEALAND NORWAY SOUTH AFRICA SWEDEN UNITED KINGDOM | | |
| 2. Father's education less than Canadian average | | | | | | ECUADOR OTHER C AMERICA |
| a. Earnings less than Canadian average | CYPRUS GREECE | CHINA ITALY | LEBANON MALTA | OTHER E ASIA YUGOSLAVIA | | PARAGUAY PORTUGAL |
| b. Earnings greater than Canadian average | FINLAND | | | | | |

Table 12
Countries and regions of father's birthplace categorized by father's status and daughter's outcomes for 2nd generation Canadians relative to the average outcome of Canadians and third generation Canadians: 70 countries from the Census

| | Daughter's education greater than Canadian average | | Daughter's education less than Canadian average | |
|---|---|---|---|---|
| | Earnings less than average | Earnings greater than average | Earnings less than average | Earnings greater than average |
| **1. Father's education greater than Canadian average** | | | | |
| | OTHER SOUTH AMERICA | ARGENTINA  KENYA  ST LUCIA | | |
| **a. Earnings less than Canadian average** | | BARBADOS  KOREA  SPAIN/OTHER S EUROPE  BRAZIL/CHILE  MOROCCO  COLOMBIA  NETHERLANDS  SRI LANKA  GRENADA  OCEANIA  SWITZERLAND  GUYANA  OTHER N AFRICA  SYRIA  HAITI  OTHER WEST ASIA  TAIWAN  HONG KONG  OTHER W EUROPE  TANZANIA  INDIA  PAKISTAN/NEPAL  TRINIDAD  IRAN/IRAQ  PHILLIPINES  TURKEY  ISRAEL  POLAND  UGANDA  JAMAICA  ROMANIA  WEST AFRICA  JAPAN  RUSSIA | | |
| **b. Earnings greater than Canadian average** | | AUSTRALIA  HUNGARY  OTHER E/C AFRICA  AUSTRIA  INDONESIA  CZECH/BULGARIA  IRELAND  SOUTH AFRICA  DENMARK  MALAYSIA AND  SWEDEN  EGYPT  SINGAPORE  UNITED  FRANCE  NEW ZEALAND  KINGDOM  GERMANY  OTHER CARIBBEAN  UNITED STATES | NORWAY | |
| **2. Father's education less than Canadian average**  **a. Earnings less than Canadian average** | | CHINA  ECUADOR  LEBANON  CYPRUS  GREECE  MALTA  ITALY  YUGOSLAVIA | OTHER CENTRAL AMERICA | OTHER EAST ASIA  PARAGUAY  PORTUGAL |
| **b. Earnings greater than Canadian average** | | FINLAND | | |

1

Figure 1
Scatter plot of grouped data of years of schooling for immigrant fathers and second generation sons:
Census data, for 25 to 37 year old Canadian born children of immigrants
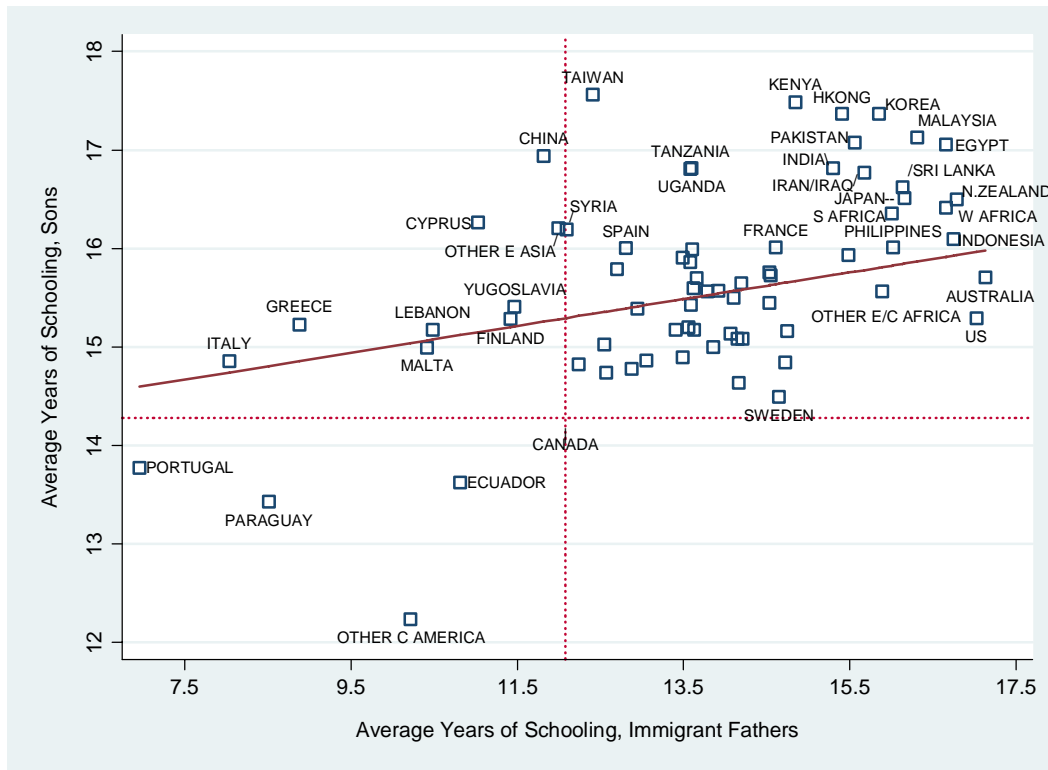


Note: The dashed vertical and horizontal lines are the average years of schooling for Canadian born fathers and their Canadian born sons, 12.1 and 14.3 years respectively. These data are not used in the regression analysis between father and son years of education, the results of this weighted least squares regression being represented by the solid line with slope of 0.136.

Figure 2
Scatter plot of grouped data of years of schooling for immigrant fathers and second generation daughters:
Census data, for 25 to 37 year old Canadian born children of immigrants
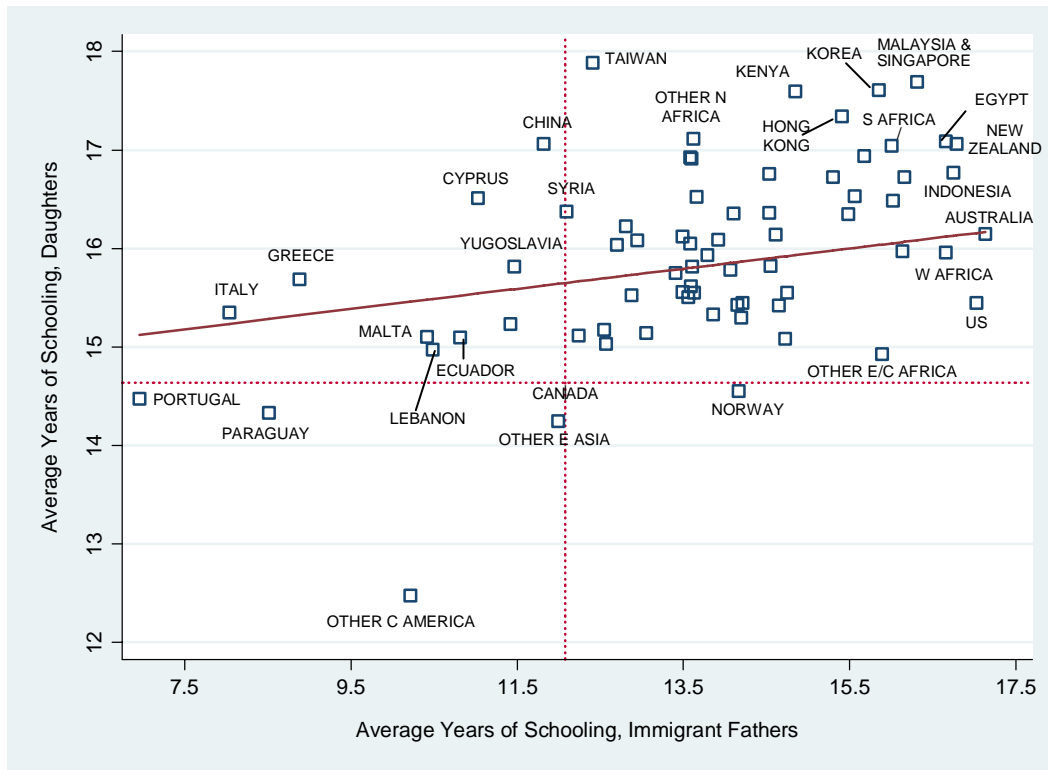


Note: The dashed vertical and horizontal lines are the average years of schooling for Canadian born fathers and their Canadian born daughters, 12.1 and 14.6 years respectively. These data are not used in the regression analysis between father and daughter years of education, the results of this weighted least squares regression being represented by the solid line with slope of 0.102.