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**Education and Ethnicity in Canada: An Intergenerational Perspective**

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# Education and Ethnicity in Canada: An Intergenerational Perspective

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# Education and Ethnicity in Canada: An Intergenerational Perspective


## Abstract

Ethnic and intergenerational aspects of human capital investment are explored. Levels of, and (cross-sectional) returns to, education across ethnic groups in Canada are estimated and large differences observed. For men, a positive correlation between ethnic group average years of education and its return exists. We also find large negative correlations between ethnic group average educational outcomes and the previous generation's fertility, suggesting a role for home-production as a complement to formal education and supporting models of child quantity-quality trade-offs. Substantial intergenerational persistence in ethnic group level labour market outcomes is also observed.

## I. Introduction

It has become increasingly obvious that understanding the economic integration of the many ethnic communities making up society requires an understanding of the human capital investment process. Similarly, understanding human capital investment requires insight into the role of the "communities" in which people live. Previous studies have defined these communities along several, non-mutually exclusive, dimensions, for example: religion (Tomes 1983, 1984, 1985), geography (Borjas 1994a), language (Bloom and Grenier 1992) and ethnicity or race (Borjas 1992; Chiswick 1988; Farley 1990; Gang and Zimmerman 1996).[1] In particular, the communities in which children grow up impact both the nature and quantity of their human capital investments, and intergenerational transfers occur at the level of these communities as well as the nuclear family. Using American data, Borjas (1992, 1994a, 1994b) looks at the intergenerational transmission of human capital and earnings among ethnic groups, and Chiswick (1988), in work closely related to that here, studies the intergenerational effect of ethnic background on educational outcomes.

This study explores both the dispersion in educational outcomes across, and the intergenerational transmission of human capital within, ethnic groups in Canada. Looking across ethnic groups within one generation, our focus is not only on the level of formal education obtained, but also on differences in the rate of return to education, and we find substantial and systematic heterogeneity in both. Five and a half years of schooling separate the averages of the most extreme groups, and three full years of education separate the averages of the second highest and second lowest groups. The differences in the point estimates of the returns to education across ethnic groups

[1] Of course, economic factors other than human capital accumulation have been studied along such community lines. For example, Fairlie and Meyer (1996) look at ethnicity and self-employment.

are similarly large. In earnings regressions, for example, the second highest return is well over twice as large as the second lowest for both men and women. Further, for males the ethnic group specific rates of return and average levels of education are strongly positively correlated for the current generation.

Consistent with intergenerational child investment models, we find that for both males and females the ethnic group specific fertility of one generation is inversely related to the rate of return to education of, and average quantity of education obtained by, the subsequent generation. Other intergenerational correlations indicate that higher levels of education and income for an ethnic group in the parent's generation is correlated with higher levels of, and higher returns to, education for that group in the next, and the magnitude, especially for men, suggests that convergence among ethnic groups is quite slow.

One interpretation of the positive correlation between the returns to, and levels of, education across ethnic groups for men follows from Becker (1967, reprinted 1993). Although primarily postulated as a model to describe educational attainment and the rate of return to education for individuals, Becker points to the importance of an individual's "background" (in our case ethnic background), in influencing the marginal cost and benefit schedules faced by individuals, and hence their equilibrium accumulation and return to human capital. The extension to ethnic groups is made by Chiswick (1988). Although neither of the schedules is empirically identified, the gross positive correlation at the ethnic group level is consistent with the marginal benefit of the education curve being more highly dispersed than the marginal cost one. This suggests that differences in the supply of funds may not, on average, affect male educational differences across ethnic groups as much as group specific educational productivities — what Chiswick calls demand factors. This may also support the idea that Canada's social policy has been successful in alleviating cost issues in the

accumulation of formal human capital, but it also suggests that a substantial gap may exist between equality of opportunity and equality of outcomes.

More strikingly, we observe negative gross intergenerational correlations between fertility and the subsequent generation's outcomes which are consistent with models of child quality-quantity trade-offs and parental investment in their offspring. See, for example, Becker (1981) and a survey by Taubman (1996); Chiswick (1988) looks at the issue in terms of ethnic groups.[2] The current findings are consistent with the hypothesis that differences in the productivity of schooling can arise from differences in family inputs that are complementary to education, and the level of these inputs per child can be expected, on average, to be greater in smaller families. Of the various hypotheses discussed, this may be the most useful in understanding the observed heterogeneity.

The large intergenerational ethnic group level correlations observed in this paper also speak to the issue of economic convergence. In accord with recent work in the United States (e.g. Borjas 1992, 1994a, 1994b), substantial persistence in ethnic group level differences in education and income are observed. Borjas (1994b) estimates that on the order of 100 years were required for ethnic group economic convergence following the Great Migration to the United States in 1880-1910, and the correlations observed here are consistent with that time scale. Canada's attempt at multiculturalism, started in earnest in the late 1960s or early 1970s, does not appear to have appreciably increased the rate at which economic equality amongst ethnic groups is achieved relative to this baseline. It should be noted, however, that the ethnic group differences under study do not accord with simple ideas of discrimination in education. For example Blacks educated in Canada have above average educational attainment and returns. Similarly, each of the South and East Asian, Chinese, and Jewish ethnic groups returns to, and average years of, education are near, or above, the average, while Aboriginals

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[2] A recent and comprehensive survey is Haveman and Wolfe (1995).

are below average in both. This does not, however, suggest that other forms of discrimination do not occur. Discrimination may operate primarily through the intercept term, for example the Black/Caribbean group has a large negative group specific intercept in the wage and earnings equations estimated, but that is not the focus of this study.

Overall, these findings are consistent with growing evidence from the United States that communities need to be considered by policymakers in the design of "equity" or "equal opportunity" programs. Ethnic communities play an empirically important role in the intergenerational transmission of both educational quality and quantity, and in the labor market outcomes that follow.

## II. Theory

In this section we discuss several theories to aid in interpreting the substantial heterogeneity we find across groups before we explore further relationships suggested by the theories. These hypotheses are not always mutually exclusive.

### II.1 Becker's Model of Endogenous Schooling

In his Woytinsky Lecture, Becker (1967, reprinted 1993) develops a model of optimal schooling. Behrman, Pollack and Taubman (1994) extend the model focusing on distributional issues within the family. Card (1995) explores the model's econometric implications more thoroughly and discusses it in light of several recent studies of the returns to education. Chiswick (1988) discusses the interpretation of the model at the level of ethnic groups. In the various versions of this utility maximizing model of investment in human capital, each individual has a demand, or marginal benefit,

schedule which reflects the marginal efficiency of educational attainment, and a supply, or marginal cost, that reflects a discount rate. Following Card, consider the case where the marginal cost and benefit curves are both linear with a common slope and person specific intercepts:

$$\begin{aligned} MB_i &= b_i - k_1 S \quad (k_1 \geq 0) \\ MC_i &= r_i + k_2 S \quad (k_2 \geq 0). \end{aligned} \tag{1}$$

where S is a measure of years of schooling. The intercepts shift the curves up and down and, when the marginal cost equation is integrated, $b_i$ multiplies the linear "years of schooling" variable in an equation including the logarithm of wages for an *individual* (in contrast a regression coefficient multiplying years of schooling measures a population relationship).

The interpretation of the two curves is somewhat open to debate, but $b_i$ is commonly thought to reflect "ability" which can arise from one, or a combination of, such factors as: genetics, parental investment, family or community background, and school quality. Becker suggests that the demand curve reflects the marginal rate of return on further investment in human capital for a given level of endowments, and thus slopes downward to reflect the diminishing returns of the endowment. He interprets the supply curve as reflecting the increasing marginal cost of funds to finance education, but Card emphasizes its role in measuring the marginal rate of substitution between schooling and future earnings. Equilibrium is at the intersection of the two. Chiswick (1988) emphasizes that shifts in the marginal cost and benefit curves can reflected group differences. In this study, as most others, we identify neither curve, rather we are interested in examining the pattern of the observed ethnic group level equilibria in rate of returns—years of schooling space. This pattern may provide information about the relative variation in the two curves across ethnic groups, and the correlation

in $r_i$ and $b_i$ which is what Becker focuses on as the empirical question of interest in his original work.[3]

## II.2 Child Quality-Quantity Models

Another relevant issue involves parental investment in their children — for which ethnic or community background may be viewed as an exogenous explanatory variable — and the trade-off between the number of children and resources per child. Hanushek (1992), using a sample of poor families from the Gary Income Maintenance Experiment, clearly demonstrates the empirical importance of the quantity-quality issue, finding that scholastic achievement, for a given number of years of education, falls systematically as the number of children in the nuclear family increases. He also finds that the presence of a father, and the work behavior of the mother, have negligible effects on achievement.

Becker and Lewis (1973), Becker and Tomes (1976, 1979), Becker (1981, especially chapters 5, 6 and 7), Behrman and Taubman (1985), and Behrman, Pollak and Taubman (1989), among others, analyze the child quality-quantity trade-off, and in some cases intergenerational mobility, within the nuclear family.[4] The key insight is that, holding child quality constant, the marginal cost of an additional child rises quickly. Similarly, as family size grows, the marginal cost of increasing quality increases. At issue in the context of the variation between ethnic groups studied here, is that family size (fertility) and parental investment in children may be strongly influenced by the

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[3] The discount rate almost also certainly involves the rate of time preference which may vary systematically across ethnic groups. See Becker and Mulligan (1997) for a discussion of the determination of time preference.

[4] See Becker and Barrow (1988) for a discussion of fertility in an intergenerational, or dynastic, setting.

community(ies) of which they are members. Behrman, Pollak and Taubman (1989), in the context of families, find that genetics and background play a large role in determining educational and labor market outcomes even in the absence of liquidity constraints. Chiswick (1988) discusses the implications of differences in ethnic group average fertility and children's educational investment by parents across successive generations. He concludes that even if all children have equal access to financial resources and similar genetic endowments, that substantial inequalities in lifetime earnings might occur as a result of differences in family environment. If family size serves as a proxy for the time investment a parent makes in a child, and other similar parental investments, then fertility has an important role in determining educational and labour market outcomes. Parental inputs can increase the productivity of schooling (through, for example, home production that is complementary to education) in much the same way that Hanushek (1992) found that teacher quality dramatically affected academic test scores. Parents may similarly vary their consumption to finance their offsprings' education and affect the cost of funds schedule.

### II.3 Ethnic capital as an externality

Borjas (1992) discusses the role of ethnic group norms on intergenerational mobility and the convergence of ethnic group level economic measures over time. He finds that the skills of one generation depend not only on each child's parents' skills, but on the average level of skill in the previous generation of that ethnic group. Further, Borjas (1994a) finds that, controlling for geographic neighborhood characteristics, ethnicity can still have an influence on economic measures.

Borjas posits that ethnicity acts as an externality in the human capital accumulation process.

He argues that this "ethnic capital," together with parental capital, enter the production function determining the level of human capital of the child with the parent making a trade-off between current consumption and investment in her or his progeny. He focuses on convergence over time in ethnic group differences in economic outcomes and argues that differences in the level of ethnic capital retard economic mobility.

### II.4 Other Hypotheses

One hypothesis sometimes forwarded to explain group differences in schooling is that groups with higher levels for education have a "taste for education." This implies that education enters their utility function as a consumption good and that the level attained exceeds that which would be viewed as optimal based on purely monetary measures. In equilibrium, this implies that the observed purely monetary marginal benefit would be less than the measured monetary marginal cost. Discrimination is also commonly put forward as a reason for some groups' poor economic performance. Depending upon the exact model employed, this could imply systematically lower levels of schooling, wages, earnings and/or returns to education for identifiable minorities.

## III. Data

Much of the above mentioned literature involves intergenerational effects at the level of the nuclear family, as well as at that of the ethnic group. Ideally one would like to explore these influences simultaneously. However data containing intergenerational measures on both, and a sufficient sample size to permit reliable inference, do not appear to exist in Canada. Census individual

microdata appears to be the only source that identifies ethnicity and has a sufficiently large sample, but it restricts the study to ethnic group level issues.[5] To obtain sufficient sample sizes, pooled data from the 1991 and 1986 censuses are used for most of the analysis, and census data from 1971 is used to estimate characteristics of the preceding generation. By merging the data from two later censuses we are able to identify 15 ethnic groups with a minimum sample size for wage regressions of 200; 12 of these groups can be identified in the (smaller) 1971 census public use sample.[6] To reduce the computational burden, a random subsample (⅓ from the 1991 3% census sample; ½ from the 1986 2% census sample) is taken of the two largest, British Isles and French, ethnic groups.

Identification of ethnic groups follows the categorization used in the census data files. Individuals reporting single and multiple British origins (English, Scottish, Welsh and Irish) are merged since the censuses do not distinguish between these groups, but other multiple-origin groups are dropped in order to make the distinction between ethnic groups as clear as possible. The British and French are further screened to exclude visible minorities, those reporting "Jewish" as their religion, and those who reported neither English nor French as their "mother tongue," or "home language." In the Atlantic provinces the censuses' ethnic origin measures are less detailed for confidentiality reasons given the small numbers of each resident there. Only British, French, Aboriginal, Black/Caribbean, German, and (in 1986) Dutch, can be identified. Observations on the non-identified groups for that region are thus unavoidably omitted and we are forced to assume that

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[5] Statistics Canada, for confidentiality reasons, does not release the ethnic group affiliation for individuals from groups that form small fractions of the population, or for individuals who live in regions where there are few others of the same group. Thus data on small ethnic groups is not available in any region, and it is not available for some groups in the smaller, Atlantic, provinces.

[6] The three groups that are missing from the 1971 census are: Greeks, Portugese and East Asians.

the number of such missing observations is sufficiently small that it will not substantially bias the resulting estimates, or that ethnic groups living in that region do not differ systematically from those in our sample. This limitation does not apply to the 1971 data. Additionally, 2.8% of the 1991 census respondents reported their ethnic origin as "Canadian." This group, which we do not include in the analysis, is substantially larger than many of the ethnic groups we identified and may therefore conceal a significant portion of some of these groups.[7]

Individuals who immigrated to Canada at age 15 or older are excluded from the sample. This restriction, while onerous, is necessary since it eliminates two potential criticisms: first, that we are primarily measuring international differences in school systems and related problems in transporting human capital across countries, and secondly that the observed heterogeneity reflects international differences rather than ones across ethnic groups within Canada. This paper is thus concerned with established ethnic groups rather than first-generation immigrants.[8]

We perform the analysis independently for each sex and we select two samples: first, a sample for an hourly wage model for full-time, full-year paid workers; and, second, an annual earnings model which includes both paid and self-employed workers who have any weeks of work in the reporting year. Two versions of the earnings model are presented, one that includes controls for both weeks worked in the year for which earnings data is provided, and hours worked in the survey week, and another which includes neither. The second earnings model is estimated to facilitate comparisons with Chiswick (1988), and Tomes (1983, 1984, 1985). Including controls for weeks worked in the

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[7] See Pryor et al. (1992) for an interesting discussion of whether 'Canadian' is itself evolving into a unique category.

[8] This screening can only be approximated for observations in the Atlantic provinces, for whom the year of immigration is defined coarsely. We excluded observations based on the most recent year of immigration in the specified range.

year, and hours per week, allows the estimates of the return to education in the earnings equation to more closely approximate the change in the value of a unit of time provided in the labour market as the quantity of education changes, which is of theoretical relevance. The hourly wage equation is an attempt to refine this even further. Clearly though, while this latter group is interesting and economically important, its composition is quite different from the larger population which is observed in the earnings model. In thinking about population relationships, we believe the earnings model, with controls for weeks and hours worked, is preferred.

Our analysis is restricted to prime age workers, individuals 25 to 55 years old, who do not live in the Yukon and Northwest Territories, and who (in the 1991 census only) were not full-time students at any time in the preceding nine months. In the sample used to estimate the earnings models, the only restriction is that there must have been a positive number of hours and weeks worked and earnings include the sum of both wage and self-employment earnings. The sample for the wage model is further restricted to include only the employment income of full-time, full-year paid workers — individuals who worked at least 48 "mainly full-time" weeks in the year.

Education is measured in years, using means where census variables span a range of possible values, and the minimum values of unbounded upper ranges. We assign half a year when individuals report a incomplete year of post-secondary education, and years of elementary and high school, university and other post-secondary education are simply added together. While using a linear measure "years of education" is common for data originating in the United States, it is not in Canada primarily because Statistics Canada (particularly in the Labour Force Survey) usually poses its questions, and releases its data, based on the level of schooling attained or completed (e.g. elementary only, incomplete high school etc.). The censuses are one of the few Canadian sources that allow for the possibility of a linear measure and we choose to use it since it makes the correlation in which we

are interested much easier to compute.[9] Further, there is substantial evidence for the United States, see Card (1995) and the references cited therein, that the returns estimated by ordinary least squares are approximately linear.

The data from 1971 are treated similarly to those from 1986 and 1991, except that the upper age limit is raised to 70 for measures of schooling, fertility and the percentage of females never in the labor force, since we are not restricted to the working population and we want to increase the sample size. Further, immigrants are not removed for the purposes of estimating average years of education in each group.[10] We do, however, exclude women who immigrated at age 20 or later from the estimation of ethnic group average fertility. A 50% random sub-sample is taken before identifying British and French. The "Negro" and "West Indian" ethnic groups are merged into one "Black/Caribbean" group to correspond with the single group identified in 1986 and 1991.

## IV. Methodology

We employ standard log-wage and log-earnings regressions of the form:

$$\ln(y) = X\beta + \sum_{i=1}^{N-1} E_i \gamma_i + \sum_{i=1}^{N} (S \cdot E_i)\delta_i + \varepsilon \qquad \textbf{(2)}$$

where y is either wages or earnings (converted into 1991 dollars using the consumer price index) to obtain the estimate of the ethnic group specific returns to education. $E_i$ is a dummy variable

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[9] Baker and Benjamin (1994) is an example of work using Canadian census data that employs a linear "years of education" measure.

[10] The problem of non-equivalent education systems is likely less severe in this situation since we are not measuring the impact on labour markets. Removing this restriction is essential to ensure reasonable sample sizes for several of the groups given the smaller census sample in 1971.

indicating the ethnic group to which an individual belongs (i = 1,..,15), with British Isles being the omitted group. S is the years of schooling measure. The coefficients on the conditioning variables are assumed to be the same for all ethnic groups and the matrix of control variables (X; variables as indicated in the relevant Tables) contains a constant. We also perform a version of the model where the $\beta$'s are not constrained to be the same across ethnic groups; the results do not differ substantively but the returns to education are measured less precisely; hence we prefer the model in equation (2). We test the null hypotheses that the $\delta$'s are all equal to each other.

Regressors in the wage and earnings models include language ability, marital status, immigrant status (immigrated before age 15) and a dummy variable indicating urban residence. An additional dummy variable is included to distinguish observations from the 1986 census. We also estimate, but do not present, versions of the models which include dummy variables for either industry or occupation.[11] They increase the standard errors of the coefficients of interest for the smaller ethnic groups, and alter some of the results slightly, but they do not change the overall picture. Like previous researchers (e.g. Baker and Benjamin 1995), we, however, are not convinced that industry and occupation should be present in these regressions. If workers in some ethnic groups receive a lower wage because they are, for example, discriminated against and thus disproportionately work in low wage industries or occupations, it is not clear that we want that to be absorbed by those indicator variables.

It is important to note that we make no effort to estimate the "true," or unbiased, return to education; for the purposes of this paper the cross-sectional relationship between wages (earnings) and schooling will be called the return to education. Card (1995) surveys several papers using

[11] We use the census definitions which identify 16 categories for each using the 1980 standard industry and occupation codes.

instrumental variables, or fixed effects, estimators in an attempt to estimate the "causal" effect of education. Rather, we focus on differences in the OLS return to education across ethnic groups taking as given whatever biases, or differences in biases, may exist. Further, we do not attempt to control for whatever selection there may be into each regression subsample. Baker and Benjamin (1995) attempt standard Heckman type selection correction using data from the 1991 census and do not find it useful. There are no obvious instrumental variables, or exclusion restrictions, in the census data, and identification of the selection model therefore relies on functional form assumptions exclusively. Also, inasmuch as we are interested in differences in the outcomes of whatever processes may cause sample selection, it is not clear that results that do not control for it are any less interesting.

If the number of ethnic groups that could be identified with sufficient sample sizes were larger, then we would look at conditional correlations (i.e. regression coefficients) among the variables in question as do Fairlie and Meyer (1996). However, with only 15 (or 12) observations this is not possible and we restrict our attention to gross correlations between the variables of interest.

## V. Results

### V.1 Educational and Labour Market Outcomes

Tables 1 and 2 present mean education levels, wages, earnings and returns to education by ethnic group for men and women respectively. In each Table, column 1 lists the average years of education for each ethnic group. Columns 2, 3 and 4 contain, respectively, the sample size, average wage, and coefficient on the years of education variable in the log-wage equation ($\delta_i$ in equation 2),

for the sample of full-time full-year workers. Estimates similar to those in columns 2 and 3, but for the earnings samples, can be found in columns 5 and 6; columns 7 and 8 contain the coefficient estimates from the earnings regressions with (column 7), and without (column 8), controls for hours and weeks of work. At the bottom of each relevant column are probability values (p-values) of F-tests of the null hypothesis that the estimates in the column above are equal to each other. Each such test strongly rejects homogeneity across the groups. The remainder of the coefficients for the equations from which the returns to education are extracted for Tables 1 and 2 are presented in Appendix Table 1.

Looking at the mean years of education across ethnic groups (column 1) substantial differences are obvious. For men (Table 1) education can be seen to range from a low of 9.5 for Aboriginals, to a high of 15.0 for the Jewish group. An extremely wide range remains if one looks at the second highest and lowest; three full academic years separate the means of those with French or Portugese backgrounds (at 11.7 years each) from those of Chinese ethnic origin (14.7 years). This massive difference is especially remarkable since the vast majority of Canadians attend public secondary schools, as opposed to private ones which may be thought to generate differences based on parental income. Further, both University and College tuition is quite low and a substantial loans and grants program existed in much of the relevant period. For women the pattern across ethnic groups is very similar to that for men, as seen in column 1 of Table 2, and the variation is almost as dramatic with the difference between the highest and lowest, and second highest and second lowest, being 4.2 and 1.6 year respectively. These massive differences in human capital accumulation across ethnic groups for individuals *who are all educated in Canada* has not, to the best of our knowledge, been acknowledged previously.

Differences in average hourly wages across groups (column 3) are also very large, ranging

for men from a high of $24.62 per hour to a low of $14.74, and for women from $17.38 to $11.94. Relative to the lowest group, this implies that the highest group obtains about 67 and 45 percent more per hour, on average, for men and women respectively. However, the differences in average annual earnings (column 6) are even more substantial, with the highest earning male group obtaining over twice that of the lowest two groups. For women the earnings gaps, similar to those for wages, is not as large as the men's ones, but relative to the lowest group, the highest earning one obtains about 35 percent more per year. As expected, given the large amount of research that has been conducted on the male-female wage and earnings gap, the wages and earnings of women are less than those for men in every group.

Point estimates of the return to education presented in Tables 1 and 2, and the F-test results below, clearly indicate that the cross sectional relationship between earnings and education differs significantly and systematically across ethnic groups with many of the differences being extremely large. For men, the point estimates from the wage equations imply that, relative to the group with the lowest return, the highest coefficient, is 285% larger; the same ratio for women is 222%. If we look at the second most extreme estimates, the same ratios are still remarkably high at 176% for men, and 155% for women. Overall the coefficients from the earnings equations have a similar pattern to those for the wage equations, but the extremes, remarkably, are slightly larger; the second most extreme coefficient estimates have ratios of 217% and 239% for men and women respectively. The finding of substantial heterogeneity in the cross-sectional returns to education across ethnic groups is consistent with the discussion in Card (1995) which suggests that parameter heterogeneity, along these and other dimensions, may be crucial to interpreting the differences between OLS and IV estimates of the return to education. The instrument may only "sweep out" the returns to a particular sub-group of the population.

Of particular interest in Tables 1 and 2 is that, for every group except the Chinese, the return in the wage equation is higher for women than men, and it is higher for most female groups in the earnings equations. For the largest and most precisely estimated group (British) the difference is quite substantial in the wage equation: 0.050 compared to 0.080 or a 60% difference in the point estimates.

Some results for individual groups are noteworthy. The male Black/Carribean group has above average years of education and among the highest returns to education of any group. Despite this, their wages and earnings are extremely low (Appendix Table 1 shows that they have a large negative intercept term). Women from the same group also have high years of education, but their return is closer to the average (although, unlike the men, they have positive and statistically insignificant intercept terms). This contrasts with the findings of several previous studies in the United States (e.g. Smith and Welch, 1986) where blacks are observed to have low returns to education. Chiswick (1988) estimates the attainment, and return to, education with annual earnings as the dependent variable using the 1970 U.S. census and finds that while Blacks with foreign born parents are indistinguishable from All Whites, those with U.S. born parents have both low returns to, and low levels of, education. However, Ashraf (1994), using the PSID finds that Blacks who work *full year* have higher returns to education than Whites every year from 1967 to 1986. Blacks educated in Canada appear to have, on average, poor labor market outcomes not because they are less educated, or have low returns to that education, but because of the intercept term in their earnings equation.

Another possible surprise is that the returns to education for the male Jewish group is about average for the wage equation, but quite high in both the earnings ones. Chiswick (1983) finds their returns to be above average using United States' data on earnings, and Tomes (1983, 1985) obtains

mixed results using Canadian data: high, using the 1970 census; and close to the average, using the 1980 census.[12] Still, the Jewish group has extremely high wages and earnings in our sample, in accord with earlier studies, even if their returns are close to the median. Our results for the Aboriginal group are consistent with those of Kuhn and Sweetman (1997) who compare them to a single "non-aboriginal, non-visible minority" group. They find that Aboriginals have low average levels of education, and returns to education that are lower than the comparison group.

The importance of controlling for hours of work per week and weeks employed per year in the earnings equations is underscored by looking at the distribution of the averages across ethnic groups in Table 3. Even apart from the Aboriginal group, which has extremely low hours and weeks, there are substantial differences. Males of French origin work only 35.1 hours per week, on average, compared to 42.3 for the Dutch. This implies approximately one full working day difference per week. For women the difference in percentage terms is about the same. Weeks of employment per year also show marked differences for both sexes, although they are not nearly as large as those for hours.

## V.2 Own Generation Correlations

Most of what follows consists of correlations between 15 (or 12 when the 1971 census in involved) sets of ethnic group averages. Table 4 lists correlations between average levels of, and

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[12] However, Tomes employed a slightly different specification than that here. He had a linear "years of education variable" as well as a "university degree" dummy variable. In the study using the 1970 census, the continuous variable had a higher coefficient than that of each of the other religious groups (Protestant and Catholic and other/no religion), but the degree dummy was much lower. While he interpreted this as the Jewish group having a higher return in 1970, but other interpretations are possible.

rates of return to, education for the 15 groups in the 1986/91 pooled sample. In it, and the following Table, Pearson correlations, both unweighted, and weighted by the sample size in the appropriate regression, are presented along with Spearman's rank correlations.[13] The weighted Pearson has the advantage of recognizing that the estimates are based on substantially different sample sizes. The Spearman correlation, being based on the ranks only, is less sensitive to outliers, but is also less efficient in that it does not use all of the available information. This efficiency loss may be quite important in the current situation given the small number of ethnic groups being studied. Further, the outliers are likely to contain substantial information and, being group averages, are almost certainly not the result of measurement error. Thus the three estimates presented cannot be viewed as equivalent, and the Pearson, or weighted Pearson, correlations are preferred.

Overall, for men the correlations are positive, statistically significant at conventional levels, as seen by the probability values (p-values) presented, and remarkably large. Of the nine correlations presented, only the Spearman one for the wage model is not statistically significant at conventional levels. It remains, however, large and positive. For women the results are quite different; there is no evidence of any correlation between years of schooling and the return to education. For the full-time, full-year model the correlations are positive and moderately large, but not statistically significant (given the number of ethnic groups, even correlations of 0.4 are not sufficiently large to be statistically significant). Elsewhere they are close to zero and even, in the earnings model without controls for hours and weeks, negative. Given women's more intermittent labour force attachment this should, perhaps, not be surprising.

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[13] Given there are only 15 observations used to compute these estimates, the minimum correlation that can be statistically significant is about 0.44. This implies that if a correlation exists, but is small, it cannot be reliably detected in this study. Significance levels are calculated using the standard approximation: $p = \text{t-prob}(n-2, \rho(n-2)^{1/2} / (1-\rho^2)^{1/2})$.

Men's positive correlations suggest that for them ethnic groups with high average levels of education also, on average, have high returns to education. Some might find this a surprising finding. Card (1995) following Becker (1993) in discussing the latter's endogenous schooling model for *individuals*, suggests that, if "ability" is inherited, $b_i$ and $r_i$ might be negatively correlated since high ability parents are likely to have high ability children and high ability parents are likely to have less expensive access to funds. While our results reflect a different situation, the positive correlation remains interesting and is in accord with the findings of Chiswick (1988). At the level of the group means, variation in the supply of funds curve might be quite small and most of the variation observed might originate from shifts in the marginal benefit curve. Alternatively, the major component of the marginal rate of substitution between schooling and future earnings might be the opportunity cost of not taking a job currently (which increases with years of education), or group specific rates of time preference. Groups with high marginal benefits might also have high outside options so that their marginal cost of obtaining additional education might be also be high; hence the positive correlation. This is in accord with one possibility raised in the discussion by Griliches (1977).

In the framework of the parental investment, child quality-quantity, model, the observed correlation is easier to interpret. Parents with fewer children invest more heavily in them which induces more years of educational accumulation, possibly in part by parental financing, and they also increase the productivity of education by providing complementary inputs in home production. Thus groups with higher average levels of education also have greater average returns. To be consistent with the previous model, however, the magnitude in the shift out (or up) of the marginal benefit curve induced by the action of home production on the productivity of education must exceed the shift down of the marginal cost curve which follows from any parental financing that may occur. In short, demand factors matter a lot in the educational process and there seems to be substantial variation

across groups. That the sexes have quite different patterns in the data should perhaps not be surprising. As illustrated by Sweetman and Riddell (1997), the distribution of years of education among women in Canada has historically had lower variance than that for men. Historically, women's high school completion rate was higher, but they were much less likely to proceed to postsecondary education. Additionally, these results do not support the "taste for schooling" argument since groups with more schooling have at least the same return as those with less. In contrast, a lower return would be expected if "taste" caused over-consumption relative to that expected based on monetary outcomes.

The magnitude of the correlations observed is quite large. It is likely that, as in intergenerational studies of income among individual families observed by Zimmerman (1992), Behrman and Taubman (1990), and Couch and Dunn (1997), averaging increases the observed correlation because it alleviates problems of measurement error and individual specific transitory fluctuations.

## V.3 Intergenerational Correlations

If the child quality-quantity investment model is credible, then one prediction is that the previous generation's fertility will be negatively correlated with the next generation's educational and employment outcomes. Since investment is costly, smaller families will invest more in each child on average. Table 5 explores this issue by looking at the correlation between one generation's fertility and the subsequent generation's years of education and returns to education. For both men and women the correlation with schooling is everywhere large and negative, about –0.7, and strongly statistically significant suggesting the investment model is plausible. The results for the returns to

education need to be interpreted carefully. They are quite strong for men; across the three models the correlations are always negative and usually large, but sometimes statistically insignificant at conventional levels — not unsurprising given that they are based on only 12 ethnic group averages which implies that the correlation must be quite large to be statistically significant. The earnings model controlling for hours and weeks worked which includes income from self employment appears to have stronger results for the men. Looking at the underlying data in Table 1, including the self employed seems quite important for some groups. Overall, the pattern of results lend substantial support to the investment hypothesis.

For women, the earnings model without controls for hours and weeks of work contains little information since controlling for part time work is very important for women given their propensity to work part time. The wages model, and the earnings one controlling for hours and weeks of work, are much more similar to those for the men and lend support for the investment hypothesis. For men, and especially for women, the Spearman rank correlations tend to be smaller in absolute value than the Pearson correlations. Clearly, the ranking information alone, based on only 12 observations, is not sufficient to support the investment hypothesis, but there remains substantial evidence that fertility is negatively correlated with the return to education across ethnic groups since we do not believe that any of the data points are spurious.

To explore intergenerational issues further, in Table 6 we compare other group averages from the 1971 census with years of education and the returns to education measured in the 1986/91 pooled sample. Only the weighted Pearson correlations are presented but the relationship between the three estimates remains substantially similar to those in Table 5. Rows in the table represent characteristics from the 1971 census, and the columns the education variables as in Table 5. Parents' total income (from all sources), in the first two rows, is highly positively correlated with the next generation's total

years of schooling for both sexes. The correlation with the returns from the three regression models estimated are always positive, fairly large and usually statistically significant at conventional levels. Interestingly, women's income in the previous generation has a similar correlation to men's. Moving down the table, the previous generation's wages do not seem to have the same association with schooling as total income does, but the association with the estimated returns is similar and in some places quite strong. Earnings is very similar to total income, which is understandable since earnings is the largest component of total income.

Perhaps surprisingly, the intergenerational ethnic group average correlation between the levels of schooling attained (second to the bottom row of columns 1 and 2), while similar to total income and earnings for men in the earlier (1971) generation, is substantially weaker for women. However, both parents' ethnic group average schooling has a large positive impact on the rate of return to education of the subsequent generation. Finally, an interesting question in the 1971 census asks female respondents if they have never been in the labour force. We use this as a measure of female labour force participation and look at its correlation with the next generation's returns. We find there is a strong negative correlation between the fraction of women in each ethnic group who, in the previous generation, were never in the labour force, and the returns to education of the subsequent generation for both sexes. While this is interesting, we cannot claim to have an interpretation. Perhaps women who have spent at least some fraction of their lives in the paid labour market are more likely to encourage their children, or their community's children, to excel in school, or their income may play a positive role in their child's education. This seems to differ with, for example, Hanushek's (1992) finding that within low income nuclear families, a mother's working or not has no effect on the children's achievement in school, but he was looking at young children.

Many of these estimated correlations are much larger than those observed between parents

and their children, see for example Couch and Dunn (1997). It is plausible that averaging across individuals increases the correlation by alleviating transitory fluctuations and measurement error in much the same way that looking at family level correlations across several periods does (see Couch and Dunn [1997]; taking logarithms of wages and earnings, which we do not do, also seems to increase the correlations). But overall, in accord with Borjas (1994b), there appears to be substantial persistence in educational and labour market outcomes across generations at the level of the ethnic group.

Finally, in Table 7, we look at ethnic group level intergenerational mobility of wages and earnings. The group average correlations among "fathers" and "sons" is very large and is highly statistically significant at 0.82 for earnings and 0.61 for wages suggesting that, although there may be substantial mobility within groups, convergence among groups is very slow. The relationship between "fathers" and "daughters" is weaker and, though large, statistically insignificant at conventional levels — however, the p-values are in the 15-17% range, so a positive correlation remains quite likely. Further, "Mothers" seem to have a weaker relationship with either men's or women's wages and income in the next generation. Overall, there seems to be only very slow convergence among male group means for wages and earnings across generations.

## VI. Discussion and Conclusion

Substantial heterogeneity in educational outcomes, years of schooling, and returns to schooling, are observed across 15 ethnic groups in Canada for both men and women. For men there is a positive correlation between years of education attained and the return to education, suggesting that there may be greater variation in the marginal benefit of education across ethnic groups than in

the marginal cost. For women no such correlation is observed.

Substantial evidence is observed to support a parental investment model consistent with that proposed by Chiswick (1988). For both sexes lower fertility in one generation is found to be associated with higher educational outcomes in the next both in terms of the level and return to schooling. Across ethnic groups, both years of schooling and the return to schooling increase with decreasing fertility in the previous generation. Further, in accord with work by Borjas (1992, 1994a, 1994b) using data from the United States, in Canada there are substantial intergenerational correlations in educational and labour market outcomes at the ethnic group level. This suggests that there is substantial persistence in ethnic group differences and that economic ethnic group level mobility (convergence) is very slow.

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TABLE 1 — Schooling and Rates of Return to Education - Men

| Ethnic Group | Average Schooling | Wage Model | | | Earnings Models | | | |
|---|---|---|---|---|---|---|---|---|
| | Years | N | Wages | Returns | N | Earnings | Returns hrs & wks | Returns no hr wks |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| British | 12.3 | 14074 | 18.76 | .050 | 16597 | 41260 | .059 | .070 |
| | (.020) | | (.078) | (.001) | | (188) | (.002) | (.002) |
| French | 11.7 | 9268 | 17.69 | .046 | 10972 | 37370 | .044 | .054 |
| | (.027) | | (.082) | (.001) | | (197) | (.002) | (.002) |
| Aboriginal | 9.5 | 879 | 14.74 | .027 | 981 | 31120 | .030 | .050 |
| | (.065) | | (.232) | (.004) | | (534) | (.005) | (.005) |
| Black/Carib. | 12.8 | 299 | 15.08 | .065 | 332 | 31340 | .070 | .088 |
| | (.125) | | (.412) | (.009) | | (916) | (.012) | (.012) |
| Chinese | 14.7 | 583 | 17.89 | .077 | 699 | 38700 | .071 | .080 |
| | (.092) | | (.386) | (.007) | | (903) | (.009) | (.009) |
| Dutch | 12.3 | 1860 | 17.85 | .050 | 2434 | 38590 | .047 | .056 |
| | (.053) | | (.188) | (.003) | | (419) | (.004) | (.004) |
| German | 11.9 | 5320 | 17.72 | .048 | 6831 | 38270 | .050 | .058 |
| | (.033) | | (.117) | (.002) | | (283) | (.002) | (.003) |
| Greek | 13.3 | 282 | 16.19 | .044 | 354 | 35510 | .054 | .050 |
| | (.127) | | (.545) | (.008) | | (1214) | (.011) | (.012) |
| Hungarian | 12.5 | 443 | 19.43 | .061 | 552 | 40590 | .066 | .071 |
| | (.113) | | (.479) | (.007) | | (1015) | (.008) | (.009) |
| Italian | 13.0 | 3146 | 18.46 | .041 | 3779 | 40590 | .047 | .055 |
| | (.043) | | (.150) | (.003) | | (375) | (.003) | (.004) |
| Jewish | 15.0 | 938 | 24.62 | .044 | 1485 | 63300 | .081 | .083 |
| | (.059) | | (.493) | (.005) | | (1135) | (.006) | (.007) |
| Polish | 12.7 | 1074 | 19.36 | .049 | 1298 | 42200 | .074 | .079 |
| | (.076) | | (.278) | (.005) | | (710) | (.006) | (.006) |
| Portuguese | 11.7 | 437 | 16.04 | .037 | 503 | 35560 | .034 | .038 |
| | (.122) | | (.324) | (.006) | | (952) | (.009) | (.009) |
| Ukrainian | 12.2 | 2692 | 19.26 | .052 | 3373 | 40630 | .069 | .078 |
| | (.044) | | (.172) | (.003) | | (416) | (.003) | (.004) |
| Other E/SE Asian | 14.1 | 335 | 19.75 | .052 | 363 | 41830 | .056 | .069 |
| | (.124) | | (.533) | (.009) | | (1171) | (.011) | (.012) |
| p-value: no difference | 0.000 | n/a | 0.000 | 0.000 | n/a | 0.000 | 0.000 | 0.000 |
| $R^2$ | n/a | n/a | n/a | .215 | n/a | n/a | .278 | .173 |

Sample definitions:

All samples include only individuals 25-65 who were born in Canada or immigrated before age 15. Additionally, for the wage equation only full-time (35+ hrs/wk), full year (48+ wks/yr) workers whose primary source of income is wages (between $2/hr and $100/hr), who were not full-time students in the preceding 9 months are selected into the sample. Similarly, for the two earnings equations only employed workers who were not full-time students in the preceding 9 months are selected. The p-values are for F-tests of the null hypothesis that the coefficients, or averages, in the column above are all equal. Standard errors in parentheses.

TABLE 2 — Schooling and Rates of Return to Education - Women

| Ethnic Group | Average Schooling | Wage Model | | | Earnings Models | | | |
|---|---|---|---|---|---|---|---|---|
| | Years | N | Wages | Returns | N | Earnings | Returns hrs & wks | Returns no hr wks |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| British | 12.6 | 7863 | 13.82 | .080 | 8495 | 28060 | .090 | .099 |
| | (.019) | | (.069) | (.002) | | (153) | (.002) | (.003) |
| French | 12.2 | 5080 | 13.34 | .070 | 5537 | 25860 | .081 | .091 |
| | (.027) | | (.082) | (.002) | | (173) | (.002) | (.003) |
| Aboriginal | 10.4 | 631 | 11.94 | .036 | 665 | 23950 | .056 | .077 |
| | (.072) | | (.205) | (.005) | | (434) | (.006) | (.007) |
| Black/Carib. | 13.0 | 261 | 13.27 | .068 | 281 | 25650 | .083 | .095 |
| | (.116) | | (.305) | (.010) | | (677) | (.013) | (.016) |
| Chinese | 14.6 | 382 | 14.63 | .065 | 410 | 30440 | .071 | .065 |
| | (.091) | | (.288) | (.008) | | (694) | (.012) | (.014) |
| Dutch | 12.5 | 844 | 13.33 | .066 | 961 | 27220 | .065 | .075 |
| | (.055) | | (.187) | (.005) | | (429) | (.006) | (.007) |
| German | 12.2 | 2672 | 13.19 | .069 | 3039 | 26350 | .080 | .086 |
| | (.032) | | (.115) | (.003) | | (249) | (.004) | (.004) |
| Greek | 13.2 | 187 | 13.15 | .053 | 210 | 27530 | .029 | .047 |
| | (.137) | | (.425) | (.012) | | (1088) | (.015) | (.017) |
| Hungarian | 12.7 | 277 | 13.71 | .079 | 308 | 27410 | .098 | .107 |
| | (.106) | | (.371) | (.010) | | (800) | (.012) | (.014) |
| Italian | 12.8 | 1996 | 14.10 | .058 | 2142 | 28230 | .064 | .070 |
| | (.046) | | (.129) | (.003) | | (281) | (.004) | (.005) |
| Jewish | 14.6 | 564 | 17.38 | .062 | 638 | 36900 | .070 | .071 |
| | (.058) | | (.352) | (.008) | | (811) | (.009) | (.010) |
| Polish | 12.8 | 618 | 14.66 | .068 | 691 | 29060 | .086 | .094 |
| | (.072) | | (.234) | (.006) | | (552) | (.008) | (.010) |
| Portuguese | 11.8 | 282 | 12.34 | .051 | 307 | 24060 | .038 | .046 |
| | (.130) | | (.268) | (.009) | | (593) | (.012) | (.014) |
| Ukrainian | 12.3 | 1700 | 13.75 | .073 | 1884 | 27810 | .091 | .095 |
| | (.042) | | (.140) | (.004) | | (316) | (.005) | (.006) |
| Other E/SE Asian | 13.8 | 245 | 14.78 | .066 | 263 | 29400 | .066 | .051 |
| | (.119) | | (.374) | (.011) | | (289) | (.014) | (.016) |
| p-value: no difference | 0.000 | n/a | 0.000 | 0.000 | n/a | .0000 | .0000 | .0000 |
| $R^2$ | n/a | n/a | n/a | .225 | n/a | n/a | .367 | .118 |

Sample definitions:

All samples include only individuals 25-65 who were born in Canada or immigrated before age 15. Additionally, for the wage equation only full-time (35+ hrs/wk), full year (48+ wks/yr) workers whose primary source of income is wages (between $2/hr and $100/hr), who were not full-time students in the preceding 9 months are selected into the sample. Similarly, for the two earnings equations only employed workers who were not full-time students in the preceding 9 months are selected. The p-values are for F-tests of the null hypothesis that the coefficients, or averages, in the column above are all equal. Standard errors in parentheses.

TABLE 3 — Mean Weekly Hours and Weeks per Year, by Sex and Ethnic Group

| Ethnic Group | Men | | Women | |
|---|---|---|---|---|
| | Hours / Week | Weeks / Year | Hours / Week | Weeks / Year |
| British | 37.8 | 44.9 | 27.7 | 41.0 |
| | (.122) | (.081) | (.124) | (.112) |
| French | 35.1 | 43.6 | 26.9 | 40.6 |
| | (.134) | (.102) | (.141) | (.154) |
| Aboriginal | 25.7 | 32.9 | 22.5 | 32.7 |
| | (.393) | (.331) | (.382) | (.390) |
| Black/Carib. | 33.1 | 43.8 | 28.0 | 40.2 |
| | (.794) | (.605) | (.722) | (.682) |
| Chinese | 37.9 | 45.4 | 31.8 | 43.3 |
| | (.530) | (.397) | (.559) | (.500) |
| Dutch | 42.3 | 46.4 | 27.7 | 41.0 |
| | (.339) | (.192) | (.378) | (.315) |
| German | 41.3 | 45.6 | 28.8 | 41.6 |
| | (.207) | (.120) | (.313) | (.179) |
| Greek | 38.4 | 44.4 | 30.4 | 41.1 |
| | (.847) | (.582) | (.830) | (.760) |
| Hungarian | 39.7 | 45.2 | 30.8 | 42.3 |
| | (.703) | (.440) | (.708) | (.610) |
| Italian | 37.8 | 45.9 | 28.7 | 43.1 |
| | (.223) | (.164) | (.255) | (.222) |
| Jews | 40.8 | 47.2 | 26.3 | 42.4 |
| | (.374) | (.240) | (.418) | (.360) |
| Poles | 38.6 | 46.3 | 28.8 | 42.9 |
| | (46.2) | (.275) | (.454) | (.384) |
| Portuguese | 37.8 | 45.2 | 31.5 | 43.5 |
| | (.598) | (.447) | (.665) | (.594) |
| Ukrainian | 39.6 | 44.9 | 29.0 | 42.0 |
| | (.298) | (.180) | (.284) | (.235) |
| Other E/SE Asian | 35.6 | 45.6 | 29.5 | 41.8 |
| | (.708) | (.527) | (.736) | (.660) |

Notes: Sample as in the earnings models of Tables 1 and 2. Standard errors in parentheses.

TABLE 4 — Correlations between Returns to Schooling and Population Average Years of Schooling (same generation)

| Type of Correlation: | Wages Model | | Earnings Model hrs & wks | | Earnings Model | |
|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women |
| | 1 | 2 | 3 | 4 | 5 | 6 |
| Pearson | .571 | .374 | .726 | .078 | .561 | -.228 |
| | (.026) | (.169) | (.002) | (.784) | (.030) | (.414) |
| Weighted Pearson | .437 | .250 | .690 | .078 | .554 | -.179 |
| | (.104) | (.369) | (.004) | (.782) | (.032) | (.053) |
| Spearman | .371 | -.050 | .668 | .036 | .571 | -.207 |
| | (.173) | (.860) | (.007) | (.899) | (.026) | (.459) |

Notes: P-values in parentheses.

TABLE 5 — Educational Outcomes and Previous Generation Fertility Correlations

| Type of Correlation | Schooling | | Wage Model | | Earnings Model with hrs & wks | | Earnings Model no hrs or wks | |
|---|---|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women | Men | Women |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Pearson | -.766 | -.767 | -.430 | -.623 | -.632 | -.355 | -.378 | .072 |
| | (.004) | (.006) | (.163) | (.031) | (.027) | (.258) | (.225) | (.823) |
| Weighted | -.806 | -.775 | -.760 | -.689 | -.871 | -.625 | -.807 | -.375 |
| Pearson | (.002) | (.003) | (.004) | (.014) | (.000) | (.030) | (.002) | (.229) |
| Spearman | -.734 | -.671 | -.091 | .154 | -.636 | -.063 | -.469 | .378 |
| | (.007) | (.017) | (.779) | (.633) | (.026) | (.846) | (.125) | (.226) |

Notes: P-values in parentheses.

TABLE 6 — Weighted Pearson Correlations between Current Educational Outcomes and Characteristics of the Previous Generation

| 1971 Characteristics | Schooling (1986/91) | | Returns - Wage Model | | Returns - Earnings hrs & wks | | Returns - Earnings Model | |
|---|---|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women | Men | Women |
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| Total Inc. (men) | .635 | .669 | .361 | .597 | .729 | .435 | .689 | .274 |
| | (.027) | (.017) | (.249) | (.040) | (.007) | (.158) | (.013) | (.389) |
| Total Inc. (women) | .659 | .683 | .486 | .576 | .875 | .533 | .888 | .360 |
| | (.020) | (.015) | (.109) | (.050) | (.000) | (.074) | (.000) | (.251) |
| Wages (men) | .314 | .377 | .420 | .760 | .770 | .698 | .794 | .593 |
| | (.326) | (.227) | (.175) | (.004) | (.003) | (.012) | (.002) | (.042) |
| Wages (women) | .051 | .172 | .202 | .814 | .548 | .768 | .609 | .764 |
| | (.876) | (.594) | (.529) | (.001) | (.065) | (.004) | (.036) | (.004) |
| Earnings (men) | .624 | .685 | .348 | .619 | .670 | .432 | .626 | .300 |
| | (.030) | (.014) | (.267) | (.032) | (.017) | (.161) | (.030) | (.344) |
| Earnings (women) | .426 | .508 | .258 | .418 | .426 | .442 | .451 | .370 |
| | (.168) | (.092) | (.419) | (.176) | (.167) | (.150) | (.142) | (.237) |
| Schooling (men) | .520 | .602 | .672 | .720 | .763 | .595 | .759 | .435 |
| | (.083) | (.038) | (.017) | (.008) | (.004) | (.041) | (.004) | (.157) |
| Schooling (women) | .282 | .373 | .526 | .822 | .650 | .723 | .684 | .638 |
| | (.374) | (.233) | (.079) | (.001) | (.022) | (.008) | (.014) | (.026) |
| % of Women Never in LF | -.426 | -.419 | -.552 | -.624 | -.807 | -.583 | -.820 | -.416 |
| | (.167) | (.175) | (.063) | (.030) | (.002) | (.047) | (.001) | (.179) |

Notes: P-values in parentheses.

TABLE 7 — Intergenerational Mobility: Previous Generation's Wages and Earnings

| Weighted Pearson Correlations | | Men | Women |
|---|---|---|---|
| Men | Wages | .615 | .432 |
| | | (.033) | (.161) |
| | Earnings | .817 | .434 |
| | | (.001) | (.159) |
| Women | Wages | .440 | .254 |
| | | (.152) | (.426) |
| | Earnings | .418 | .564 |
| | | (.177) | (.056) |

Notes: P-values in parentheses.

Appendix TABLE 1 — Log Wage/Earnings Regressions

| Variable | Log-Wage Regression | | Log-Earnings hrs & wks | | Log-Earnings no hrs & wks | |
|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women |
| age | .069 | .050 | .075 | .041 | .093 | .057 |
| | (.002) | (.002) | (.002) | (.003) | (.003) | (.003) |
| age2_100 | -.069 | -.053 | -.076 | -.042 | -.097 | -.059 |
| | (.002) | (.003) | (.003) | (.003) | (.003) | (.004) |
| urban | .094 | .126 | .102 | .140 | .124 | .186 |
| | (.005) | (.006) | (.006) | (.008) | (.007) | (.009) |
| never married | -.181 | -.008 | -.315 | .017 | -.387 | .145 |
| | (.007) | (.007) | (.008) | (.011) | (.009) | (.012) |
| widow/sep/ | -.104 | .001 | -.128 | .045 | .178 | .115 |
| divorced | (.009) | (.008) | (.012) | (.011) | (.012) | (.013) |
| immig | .002 | -.015 | -.010 | .006 | -.019 | -.002 |
| | (.008) | (.010) | (.011) | (.013) | (.011) | (.016) |
| French | -.039 | -.034 | -.024 | -.023 | -.054 | -.058 |
| | (.014) | (.017) | (.018) | (.022) | (.020) | (.026) |
| English and | .019 | .011 | .034 | .052 | .032 | .049 |
| French | (.010) | (.011) | (.013) | (.016) | (.014) | (.019) |
| neither English | -.182 | -.076 | -.338 | -.185 | -.354 | -.248 |
| nor French | (.072) | (.097) | (.083) | (.107) | (.089) | (.126) |
| self-empl | n/a | n/a | -.284 | -.372 | -.259 | -.290 |
| | | | (.008) | (.014) | (.008) | (.016) |
| hrswk | n/a | n/a | .003 | .015 | n/a | n/a |
| | | | (.000) | (.000) | | |
| wkswk | n/a | n/a | .028 | .034 | n/a | n/a |
| | | | (.000) | (.000) | | |
| cen86 | .032 | .026 | .030 | .000 | .026 | -.037 |
| | (.004) | (.006) | (.006) | (.007) | (.006) | (.009) |
| Atlantic | -.094 | -.084 | -.104 | -.046 | -.190 | -.115 |
| | (.010) | (.012) | (.013) | (.016) | (.013) | (.019) |
| Quebec | -.067 | -.043 | -.105 | -.023 | -.105 | -.024 |
| | (.011) | (.012) | (.014) | (.017) | (.015) | (.020) |
| Prairies | -.124 | -.122 | -.176 | -.126 | -.196 | -.156 |
| | (.009) | (.011) | (.011) | (.013) | (.011) | (.016) |
| Alberta | -.032 | -.051 | -.048 | -.043 | -.066 | -.079 |
| | (.008) | (.010) | (.010) | (.013) | (.011) | (.015) |
| British | .001 | -.026 | .003 | -.013 | -.045 | -.094 |
| Columbia | (.008) | (.010) | (.010) | (.013) | (.011) | (.015) |
| French | .072 | .131 | .229 | .137 | .204 | .085 |
| | (.026) | (.038) | (.033) | (.048) | (.035) | (.056) |
| Constant | .563 | .319 | 6.469 | 5.467 | 7.436 | 7.078 |
| | (.040) | (.051) | (.053) | (.068) | (.055) | (.079) |

| Variable | Log-Wage Regression | | Log-Earnings hrs & wks | | Log-Earnings no hrs & wks | |
|---|---|---|---|---|---|---|
| | Men | Women | Men | Women | Men | Women |
| Appendix Table 1 Continued | | | | | | |
| Aboriginal | .196 | .533 | .172 | .444 | -.072 | .203 |
| | (.049) | (.065) | (.055) | (.074) | (.059) | (.087) |
| Black/Carib. | -.334 | .143 | -.367 | .079 | -.467 | .004 |
| | (.121) | (.138) | (.153) | (.181) | (.164) | (.213) |
| Chinese | -.463 | .180 | -.257 | .330 | -.221 | .550 |
| | (.106) | (.126) | (.133) | (.177) | (.142) | (.208) |
| Dutch | -.014 | .182 | .161 | .298 | .197 | .251 |
| | (.048) | (.074) | (.056) | (.086) | (.060) | (.102) |
| German | -.000 | .133 | .109 | .122 | .154 | .158 |
| | (.030) | (.046) | (.036) | (.055) | (.038) | (.065) |
| Greek | -.056 | .277 | -.054 | .751 | .117 | .649 |
| | (.115) | (.168) | (.150) | (.203) | (.161) | (.239) |
| Hungarian | -.157 | -.041 | -.104 | -.122 | -.064 | -.117 |
| | (.095) | (.132) | (.110) | (.161) | (.118) | (.190) |
| Italian | .125 | .311 | .185 | .404 | .203 | .441 |
| | (.040) | (.049) | (.051) | (.066) | (.054) | (.078) |
| Jewish | .158 | .285 | -.100 | .384 | .010 | .418 |
| | (.084) | (.114) | (.099) | (.135) | (.106) | (.159) |
| Polish | .009 | .203 | -.205 | .091 | -.118 | .112 |
| | (.063) | (.089) | (.077) | (.112) | (.082) | (.133) |
| Portuguese | .171 | .367 | .292 | .686 | .379 | .772 |
| | (.079) | (.111) | (.106) | (.147) | (.113) | (.173) |
| Ukrainian | -.005 | .092 | -.113 | .036 | -.113 | .121 |
| | (.040) | (.056) | (.048) | (.070) | (.052) | (.082) |
| Other E/SE Asian | -.053 | .169 | .038 | .351 | .010 | .661 |
| | (.134) | (.155) | (.159) | (.198) | (.170) | (.233) |

Notes: Additional regression coefficients for the regressions reported in Tables 1 and 2. Standard errors in parentheses.

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