Why are the Relative Wages of Immigrants Declining? A Distributional Approach

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ABSTRACT

In this paper, we show that the decline in the relative wages of immigrants in Canada is far from homogenous over different points of the wage distribution. The well-documented decline in the immigrant-Canadian born mean wage gap hides a much larger decline at the low end of the wage distribution, while the gap hardly changed at the top end of the distribution. Using standard OLS regressions and unconditional quantile regressions, we show that both the changes in the mean wage gap and in the gap at different quantiles are well explained by standard factors such as experience, education, and country of origin of immigrants. Interestingly, an important source of change in the wages of immigrants relative to the Canadian born is the aging of the baby boom generation that has resulted in a relative increase in the labor market experience, and thus in the wages, of Canadian born workers relative to immigrants.

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1. Introduction

Canada and the United States are generally regarded as successful examples of countries where immigrants are well integrated in the labor market and other aspects of society. The successful experience of immigrants in these two countries is often contrasted in the popular press with the situation in Europe where immigrants are not perceived to be doing as well as on the other side of the Atlantic.

On closer examination, however, the economic performance of immigrants in Canada and the United States is far from uniformly positive. In particular, a large body of literature has documented a steep deterioration in the relative earnings of immigrants in both countries over the last two or three decades. For example, Green and Worswick (2010) and Aydemir and Skuterud (2005) find that immigrants who arrived in Canada in the 1990s earned around 30 percent less than Canadian-born workers. By contrast, earlier cohorts of immigrants who arrived in the 1970s were earning about the same as Canadian-born workers. A number of U.S. studies, starting with Borjas (1985), document a similar decline in the relative earnings of U.S. immigrants. These studies point out to a number of possible explanations for the declining economic performance of immigrants. In particular, secular changes in the country of origin of immigrants account for a substantial part of the decline. While most immigrants in the 1960s were from Europe and the United States, about two thirds of immigrants who arrived in Canada in the 1980s and 1990s were from Asia, Africa, and Central and Southern American.

With very few exceptions, however, existing studies only attempt to explain the decline in the *mean* wage of immigrants relative to natives.[1] From a welfare perspective, however, it is important to go beyond the mean to see how the whole distribution of wages of immigrants has changed relative to native-born workers. For instance, Picot and Hou (2003) and Picot, Hou, and Coulombe (2008) show that poverty rates are three times higher for recent immigrants than for the Canadian born. Since immigrants represent close to 20 percent of the Canadian population, this suggests that labor market

[1] One important exception is DiNardo and Butcher (2002) who look at the whole distribution of wages for the United States.

outcomes of immigrants are an important determinant of poverty and inequality in Canada.[2]

Furthermore, most of the explanations that have been suggested for the declining average earnings of immigrants also have important implications for the whole distribution. For instance, Aydemir and Skuterud (2005) find that the changing distribution of language skills and country of origin are important factors behind the decline of average immigrant earnings. These factors likely have an important impact on inequality too since immigrants from countries like France and the United States do well in Canada, while others from Asia or Africa tend to have much lower earnings than the Canadian born. Other sources of low immigrant earnings such as age at arrival (Schaafsma and Sweetman, 2001), low returns to education and credentials (Ferrer and Riddell, 2008), poor literacy skills (Ferrer, Green, and Riddell, 2006), and imperfect portability of human capital (Goldmann, Sweetman, and Warman, 2011) also have important implications for the whole distribution of earnings.

More generally, the fact that recent immigrants earn substantially less, on average, than the Canadian born may be hiding important differences across subgroups of immigrants. Perhaps a substantial fraction of immigrants still do as well as or better as the Canadian born, while a large group of immigrants have very low earnings that makes it unlikely they will ever "catch-up" and enjoy standards of living comparable to those of earlier immigrants or the Canadian born.[3] When thinking about the prospects of successful integration of immigrants, it is thus essential to look at the whole distribution of earnings of wages relative to the Canadian born.

The goal of this paper is two-fold. We first want to describe the evolution of the wage distribution of immigrants relative to the Canadian born to see whether the well documented decline the mean relative wages of immigrants is spread over the whole wage distribution, or more concentrated in specific parts of the distribution, and in particular in the low end of the distribution. We use simple quantile plots to illustrate these changes. The second goal is to try to explain these distributional changes using the standard explanatory factors used in the literature on the mean relative earnings of

[2] Card (2009) finds that immigration has been one of the drivers of inequality growth in the United States.

[3] Picot, Hou, and Coulombe (2008) find that both the incidence and persistence of poverty is high among recent immigrants to Canada.

immigrants. Those include, in particular, the decline in the return to foreign labor market experience (Green and Worswick, 2010) and secular changes in immigrants' country of origin and language ability (Aydemir and Skuterud, 2005).[4] We explore whether these factors and others can also account for observed changes in the earnings of immigrants at different points of the distribution.[5]

Note that unlike the literature on the mean immigrant-native earnings gap that has mostly focused on explanations for the declining earnings of entry cohorts, we look at what happened to the distribution of earnings of immigrants for all cohorts pooled together. When looking at means, it is convenient and informative to look at trends in average earnings for subgroups based on entry cohort, years in Canada, etc. The large decline in mean earnings observed for entry cohorts has, indeed, pointed towards explanations such as country of origin or language skills that have been changing at the cohort level. In a distributional context, however, it is difficult to conclude what has happened to the whole earnings distribution by just studying changes in conditional distributions (conditional on cohort).[6] For instance, declining mean earnings from one cohort to the next is only one among many other factors that can account for changes in the whole distribution of earnings for immigrants. But yet, when looking at questions such as the impact of immigration on poverty and inequality in Canada, it is important to look at what happens to all immigrants, and not only to new cohorts. So while the explanatory factors we look at have traditionally been used in studies of entry cohorts, we look at the contribution of these factors on the wage distribution for all immigrants.

Although the goal of the paper is relatively straightforward, trying to account for the role of different explanatory factors at different points of the earnings distribution is a challenging econometric problem. When looking at means, it is well known that OLS estimates can be used to perform a standard Oaxaca-Blinder decomposition that precisely

[4] Another important factor that we only indirectly explore here (by looking at changes in the returns to Canadian experience) is that there has been a deterioration over time in the earnings of all new labor market entrants, including new immigrants (Green and Worswick, 2010).
[5] Picot and Hou (2003) and Picot, Hou, and Coulombe (2008) also look at distributional issues, but they only focus on the low-income threshold, while we look through the entire wage distribution.
[6] The mean of earnings for all immigrants is a weighted average of conditional means for each cohort. Thus, it is straightforward to find how changes in mean earnings for different cohorts "aggregate up" into an effect on the overall mean. This property does not extend, however, to most distributional measures such as those based on quantiles.

accounts for the contribution of each explanatory factor to the overall mean gap. In the case of quantiles or other distributional statistics, however, comparable decomposition procedures have only been developed recently. In this paper, we use the unconditional quantile regression method of Firpo, Fortin, and Lemieux (2009) to decompose changes in the immigrant-Canadian born wage gap at different quantiles of the wage distribution. Since the wage distribution can be fully characterized in terms of its various quantiles, decomposing the immigrant-Canadian born wage gap at "enough" quantiles amounts to decomposing the whole difference in distributions between immigrants and the Canadian born.

The plan of the paper is as follows. In Section 2, we describe the (census) data and present a descriptive analysis of the distribution of earnings of immigrant and Canadian-born workers. In section 3, we discuss the estimation method used to decompose quantiles and explain how different factors are expected to differentially impact the earnings of immigrants at different quantiles of the wage distribution. We present our main results in section 4, and conclude in section 5.

2. Data and Descriptive Statistics

2.1. Data

Since 1981, the Canadian Census has been collecting consistent information on immigrant status (including year of immigration and country of origin), educational attainment, earnings and work experience during the previous year (annual earnings from different sources, weeks worked, and full-time employment status), and other socio-economic characteristics of individuals.[7] The information on educational attainment is unusually rich. The Census provides detailed information on years of schooling and degrees and diplomas obtained. We combine these variables to compute the number of years of completed schooling, and to classify workers into six education groups: some elementary or secondary schooling, high school diploma, trade certificate, some post-secondary degree or diploma below a university bachelor's degree, university bachelor's degree, and post-graduate degree (Masters, PhD, and professional degrees).

[7] Microdata are available for the 1971 census, but education is coded quite differently and it is not possible to compute weekly earnings directly (because the weeks worked variable is grouped in few categories).

Another advantage of the Census for studying immigration and wages is large sample sizes. In the Census, basic questions about demographics are asked to all individuals in the population. Twenty percent of individuals are also asked an additional set of questions (the "long form") about additional issues such as educational attainment, earnings and labor market activities. Data used in this study are drawn from the census master files, which include all individuals who completed the "long form".[8] Besides the size of the sample, one important advantage of the master files is that information is more detailed than in the public use files (for instance, country of birth).[9] Following the existing literature, we focus our analysis on "adults" age 16 to 65 at the time of the Census (June).[10] We perform our analysis for the first (1981) and last (2001) year for which consistent data are available for educational achievement and earnings.[11]

One drawback of the Census for studying the evolution of the wage structure is that it only provides limited information on annual hours of work. As a result, it is not possible to construct a direct measure of average hourly wages by dividing annual earnings by annual hours of work.[12] Following Card and Lemieux (2001) and many U.S. studies such as Katz and Murphy (1992), we use weekly earnings of full-time workers as our main measure of wages.[13] Following most of the literature, we focus on wage and salary workers. We also present a number of robustness checks to show that our main

[8] Statistics Canada also makes available public use samples that are random samples of 10 to 15 percent (depending on the years) of individuals who completed the "long form". These represent samples of 2 to 3 percent of all individuals in the country. Though the public use files are easier to access, the smaller sample sizes and lack of detailed information about some key variables (e.g. all immigrants from Asia are pooled in the same "country of origin" group in the 1981 Census) make them inadequate for this study.

[9] For instance, information on the country of origin is limited in public use files. In this regard, there is only one category for Asia in the 1981 public use file.

[10] The information on weeks worked and annual wage and salary earnings refers to the previous year. Thus, the individuals in our samples were age 15 to 64 during the period for which our wage measures apply.

[11] Question about educational achievement changed in the 2006 Census. Furthermore, while earnings and other income items were self reported prior to 2006, respondents were given the option of using their tax record items instead in the 2006 Census. Over 80 percent of respondents agreed to do so. So while the quality of income reports has arguably improved thanks to this change, it also makes the comparability with earlier censuses more challenging.

[12] The census asks about weeks of work and part-time/full-time status during the previous year, as well as actual weekly hours of work during the census week (in June). Since weekly hours of work vary considerably over time for many individuals, hours of work in the survey week is a poor proxy for average weekly hours of work during the previous year. In particular, many individuals who did not work during the Census week did work during the previous year.

[13] Another common practice in the literature that we do not follow here is to limit the sample to "full-year" workers who worked at least 49 or 50 weeks during the previous year. Using this alternative wage measure has little impact on the results.

findings are robust to the inclusion of self-employed or part-time workers. Finally, we trim all wage observations with weekly earnings below $75 (in $2000) since they yield implausibly low values for hourly wages.[14]

2.2. Descriptive Statistics.

Tables 1a and 1b show the means of the key variables used in the analysis of immigrant and Canadian-born workers in 1981 and 2001 for males and females, respectively. In all tables and figures, we report separate results for full-time men and women. As discussed earlier, we focus on full-time workers to get measures of earnings that are not contaminated by too much variation in hours of work. We report separate results for men and women since the earnings and participation rates of the two groups have evolved very differently over the last three decades. Starting with men, Table 1a shows that while immigrants used to earn eight percent more than Canadian-born workers in 1980 (difference of 0.08 log points), they now earn the same (0 log point difference) as Canadian-born workers in 2000. This broadly confirms the findings of existing studies like Green and Worswick (2010) and Aydemir and Skuterud (2005) who both document a large decline in the earnings of new cohorts of immigrants throughout the 1980s and 1990s.

Turning to standard human capital variables, the table first compares the level of experience of immigrants and the Canadian born. Since actual labor market experience is not available in the census, we compute years of potential experience as age minus years of schooling minus 6. Following Green and Worswick (2010), we further divide years of experience of immigrants into years of experience in Canada and years of foreign experience, which are presumably not valued as much as Canadian experience in the Canadian labor market. Table 1a shows that years of Canadian experience of male immigrants increase from 15.4 to 16.4 between 1981 and 2001, which is half as much as the increase in experience for Canadian-born workers (for whom Canadian experience is the same as total potential experience). This large increase in years of experience of Canadian-born workers is a direct consequence of the aging of the baby-boom

[14] Since full-time workers work at least 30 hours a week, a full-time worker earning $75 a week makes at most $2.50 an hour. This represents less than half of the minimum wage in any province in 2000.

generation. We will later see that the growing experience gap between Canadian-born workers and immigrants is a surprisingly important source of change in the wage gap between these two groups of workers. Furthermore, foreign experience of immigrants declines by 0.2 years, which means that total experience (Canadian plus foreign) of immigrants increases by 0.8 years between 1981 and 2001.

For education, we group workers into six education categories based on their highest degree or diploma. For both immigrants and Canadian-born workers, there is a clear increase in the level of education. Most noticeably, the fraction of workers without a high school diploma declines from around 40 percent in 1981 to slightly above 20 percent in 2001. Education at the top end (university bachelors and above) also increases substantially for the Canadian born and especially immigrants. For instance, the fraction of immigrants with a post-graduate degree increases from 7.7 percent in 1981 to 12.8 percent in 2001, which is more than twice as large as the corresponding fraction for the Canadian born (5.5 percent). Looking more broadly at years of completed education confirms that immigrants are more educated than the Canadian born, and that the education gap is slightly growing over time. Given the strong link between wages and education, the large education upgrading between 1981 and 2001 should increase the wages of the Canadian born and, in particular, immigrants.

The next figures in Table 1a show that male immigrants are more likely to be married (in part because they are older), and more likely to know only English or neither French nor English than Canadian-born men. Essentially no Canadian born and very few immigrants respond that they neither know French nor English. Since this question about the knowledge of official languages may not measure the language abilities of immigrants very well, we also include information on the mother tongue for immigrants. While the fraction of male immigrants whose mother tongue is French is very small, the fraction of male immigrants whose mother tongue is English is almost 40 percent in 1981 but only 30 percent in 2001. This mostly reflects the changes in the distribution of country of origin that are also reported in the table.

For the sake of simplicity, country of origin is grouped into eight categories in Table 1.[15] As is well known, there has been a steep decline in the fraction of immigrants

[15] In the empirical analysis, we will use a very detailed list of countries of origin.

coming from Europe over the last few decades. Table 1a shows that immigrants from Western Europe and the United States accounted for 66 percent of immigrants in 1981, but only 37 percent in 2001. By contrast, the fraction of immigrants from Asia increased from 14 to 37 percent over the same period. The fraction of immigrants from Africa and South and Central America (including the Caribbean) also increased substantially. This change in the composition of immigrants has been shown to have a negative impact on the relative wage of immigrants. The rest of the table shows that immigrants are disproportionately concentrated in high wage provinces (Ontario and British Columbia) and in large cities (CMA). As a result, we expect the relative location of immigrants to have a positive effect on their relative wages.

The pattern of descriptive statistics for Canadian-born and immigrant women reported in Table 1b is generally quite similar to the one for men with a couple of important exceptions. Most importantly, the wage gap between Canadian-born and immigrant women is essentially unchanged over time, while the gap grows by 0.08 log points for men. Second, compared to men, Canadian-born women gained more in terms of Canadian experience relative to immigrant women, but less in terms of educational achievement.

2.3 Changes in the distribution of wages

A simple way of characterizing the changes in the wage distribution of immigrants and the Canadian born is to compute wage differences between the two groups (and over time) at each wage percentile. Figure 1a shows the 1980-2000 change in real log wages for immigrants and Canadian-born men considered separately. The solid line for the Canadian born shows a clear expansion in wage inequality over this period. While wages at the top end of the distribution increased by close to 20 percent, wages at the bottom end declined by more than ten percent. The changes are even more striking for immigrants. While immigrant wages at the very top end of the distribution increased as much as for the Canadian born, immigrant wages at the bottom of the distribution declined by almost 30 percent in real terms. The figure clearly shows that inequality expanded more dramatically among immigrants than the Canadian born, and that immigrants at the low end of the distribution lost considerable ground relative to the

Canadian born. A similar pattern can be observed for women in Figure 1b. Although the mean wage gap does not change as much for women, as in the case of men most of the growth in the wage gap happens at the lower end of the distribution.

Figures 2a and 2b show instead the wage gap at each percentile between immigrants and the Canadian born in both 1980 and 2000. Consistent with Table 1a, Figure 2a confirms that immigrant men earned substantially more than the Canadian born in 1980. Interestingly, however, the difference is mostly due to the fact that immigrant men in lower percentiles of the wage distribution used to earn substantially more than Canadian-born men. By contrast, in 2000 all immigrant men except those in the very top percentiles of the wage distribution earn less than the Canadian born. The primary goal of the paper is to try to account for these dramatic changes in the relative wages of immigrants at different percentiles of the distribution using Firpo, Fortin, and Lemieux (2009) unconditional quantile regression method described in the next section of the paper. The pattern of the wage gap at each percentile is similar for women (Figure 2b) except that immigrant women earn substantially more than Canadian-born women at the top end of the distribution (both in 1980 and 2000).

3. Estimation Method and Decompositions

3.1 Standard decomposition of the mean wage gap

Before discussing how to decompose the wage gap between immigrants and the Canadian born at each quantile, it is useful to discuss the familiar case of the mean where the standard Oaxaca-Blinder decomposition can easily be used. Consider a standard (log) wage equation for immigrants

$$W_{it} = \delta_{It} + X_{it}\beta_{It} + u_{it}\,, \qquad (1a)$$

and for Canadian-born workers

$$W_{Ct} = \delta_{Ct} + X_{it}\beta_{Ct} + u_{it}\,, \qquad (1b)$$

at time *t*. Under the usual assumption that the error term u_{it} has a conditional mean of zero given the covariates X_{it} ($E(u_{it} \mid X_{it})=0$), β_{It} and β_{Ct} (and the intercepts δ_{It} and δ_{Ct}) can be consistently estimated using OLS, and the mean wage gap between immigrants and the Canadian born can be decomposed as:

$$\Delta_t = \overline{W}_{It} - \overline{W}_{Ct} = (\delta_{It} - \delta_{Ct}) + (\overline{X}_{It}\beta_{It} - \overline{X}_{Ct}\beta_{Ct})$$

$$= (\delta_{It} - \delta_{Ct}) + (\overline{X}_{It} - \overline{X}_{Ct})\beta_{Ct} + \overline{X}_{It}(\beta_{It} - \beta_{Ct}), \qquad (2)$$

where $\overline{W}_{Ct}$ and $\overline{W}_{It}$ are the mean wages for Canadian-born workers and immigrants, respectively, while $\overline{X}_{Ct}$ and $\overline{X}_{It}$ are the corresponding mean values of the explanatory variables. Note that some variables specific to immigrants, such as years of foreign experience and country of origin, only appear in the wage equation for immigrants. One simple way of capturing this in our framework is to set the corresponding values of these variables and the regression parameters for the Canadian born to zero.

We also consider a restricted version of the wage equation where the regression coefficients (except the constant) are constrained to be the same for immigrants and the Canadian born. This results in the wage equation

$$W_{it} = \delta_t I_{it} + X_{it}\beta_t + u_{it}, \qquad (3)$$

where I_{it} is a dichotomous variable indicating whether person *i* is an immigrant. Under this alternative assumption, the decomposition of the mean earnings gap can be written as:

$$\Delta_t = \overline{W}_{It} - \overline{W}_{Ct} = \delta_t + (\overline{X}_{It} - \overline{X}_{Ct})\beta_t , \qquad (4)$$

where δ_t is the unexplained (or adjusted) part of the overall mean wage gap Δ_t, while $(\overline{X}_{It} - \overline{X}_{Ct})\beta_t$ is the part explained by differences in explanatory variables.

One advantage of this specification is that it makes it easier to decompose the evolution of the immigrant-Canadian born wage gap over time. For instance, the change in the wage gap from a base period *t*=0 to an end period *t*=1 is:

$$\Delta_1 - \Delta_0 = (\delta_1 - \delta_0) + (\overline{X}_{I1} - \overline{X}_{C1})\beta_1 - (\overline{X}_{I0} - \overline{X}_{C0})\beta_0 \qquad (5)$$

In the more general case where the β's are not constrained to be the same for immigrant and Canadian-born workers we instead have:

$$\Delta_1 - \Delta_0 = [(\delta_{I1} - \delta_{C1}) - (\delta_{I0} - \delta_{C0})] + [(\overline{X}_{I1} - \overline{X}_{C1})\beta_{C1} - (\overline{X}_{I0} - \overline{X}_{C0})\beta_{C0}]$$
$$+ [\overline{X}_{I1}(\beta_{I1} - \beta_{C1}) - (\overline{X}_{I0}(\beta_{I0} - \beta_{C0})]. \qquad (6)$$

The advantage of this more general decomposition is that it separates the contribution of changes in returns to characteristics (e.g. the decline in the return to foreign experience and, potentially, Canadian experience for immigrants) from changes in the average levels of these characteristics (e.g. the relative increase in experience for Canadian-born

workers).[16] We present results based on both decompositions (equations 5 and 6) in the empirical section.

3.2 Unconditional quantile regressions and decomposition of the quantile gaps.

We would now like to perform a similar decomposition across quantiles of the wage distribution. Consider the τ^{th} quantile of the wage distribution for the Canadian born, $q_{Ct}(\tau)$, and for immigrants, $q_{It}(\tau)$. The quantile wage gap, $\Delta_t(\tau)$, is defined as

$$\Delta_t(\tau) = q_{It}(\tau) - q_{Ct}(\tau),$$

and the change in the quantile wage gap between time t=0 and t=1 is:

$$\Delta_1(\tau) - \Delta_0(\tau) = (q_{I1}(\tau) - q_{C1}(\tau)) - (q_{I0}(\tau) - q_{C0}(\tau)).$$

Firpo, Fortin, and Lemieux (2009) and Fortin, Lemieux, and Firpo (2011) show that it is possible to decompose these quantile gaps by running regressions where the dependent variable W_{it} is replaced by the (recentered) influence function, or "RIF". When the quantile of interest is $q(\tau)$, $RIF_{it}(\tau)$ is defined as:

$$RIF_{it}(\tau) = q(\tau) + [1(W_{it} \geq q(\tau)) - (1 - \tau)] / f(q(\tau)), \quad (7)$$

where 1(.) is the indicator function (equals 1 when $W_{it} \geq q(\tau)$, 0 otherwise), and $f(q(\tau))$ is the wage density evaluated at the τ^{th} quantile. Since $1(W_{it} \geq q(\tau))$ is simply a dummy variable indicating whether a wage observation is above a given quantile while all other terms in equation (7) are constants, running a regression of $RIF_{it}(\tau)$ on the X variables essentially amounts (up to a linear transformation) to running a linear probability model for whether the wage for a given observation is above or below the quantile. The coefficients from a regression of $RIF_{it}(\tau)$ on the X_{it} variables are, thus, the same as in the linear probability model except that they need to be divided by the density $f(q(\tau))$.

By analogy with the case of the mean considered above (equation 3), consider the regression model:

$$RIF_{it}(\tau) = \theta_t I_{it} + X_{it}\gamma_t + e_{it} . \quad (8)$$

The coefficients have the same interpretation as in the case of the mean. The coefficient θ_t captures the adjusted, or unexplained, quantile difference between immigrants and the

[16] One downside of the more general decomposition is that the components linked to changes in the intercepts and the returns to characteristics (third component is square brackets in equation 6) are sensitive to the choice of the base group (Oaxaca and Ransom, 1999). We discuss how we choose the base group in the Section 4.4.

Canadian born, while γ_t indicates the effects of the other covariates on the unconditional quantile. As in the case of the mean, equation (8) can also be used to decompose the quantile gap as:

$$\Delta_t(\tau) = \theta_t + (\overline{X}_{It} - \overline{X}_{Ct}) \gamma_t , \quad (9)$$

A similar expression can also be obtained in the case of the more general decomposition (equation 6 in the case of the mean) where returns to characteristics γ_t are allowed to differ for immigrant and Canadian-born workers.

Firpo, Fortin, and Lemieux (2009) and Fortin, Lemieux and Firpo (2011) discuss in more detail the interpretation of these unconditional quantile regressions. One useful piece of intuition is that, in the case of the mean, the recentered influence function is simply the outcome variable (the wage here) W_{it}. This follows from the fact that the influence function for the mean μ_t is the difference $W_{it} - \mu_t$. Intuitively, this captures the influence that observation *i* has on the mean μ_t. If W_{it} is much larger than μ_t, adding observation *i* will have large and positive effect on the mean. The recentered influence function is obtained by adding back the distributional statistic of interest (μ_t in this case) to the influence function, which yields $RIF_{it}(\mu) = \mu_t + (W_{it} - \mu_t) = W_{it}$. As a result, the RIF-regression for the mean is just a standard OLS regression and the decomposition based on RIF-regressions for the mean is a conventional Oaxaca decomposition.

The analogy with standard OLS regressions also helps interpret the coefficients in the unconditional quantile regressions. While the β's in a standard regression represent the effect of the X's on the conditional mean of W, they can also be interpreted as effects on the unconditional mean. Indeed, when the conditional mean is $E(W|X) = X\beta$, we can use the law of iterated expectations to obtain:

$$E(W) = E_X[E(W|X)] = E_X[X\beta] = E(X)\beta.$$

Thus, we have an alternative interpretation of β as the effect of a change in the mean value of X, E(X), on the mean value of W, E(W). Oaxaca decompositions rely on the convenient property of the mean to construct various counterfactuals (i.e. what is the effect of changes in the average level of education on average wages) using OLS coefficients. The law of conditional expectations does not extend, however, to the case of quantiles (Fortin, Lemieux and Firpo, 2011). Therefore, one cannot use conventional quantile regressions (models for the conditional quantiles) to perform Oaxaca-type

decompositions on unconditional quantiles. By contrast, the coefficients γ in the RIF regression do have an interpretation as effect of the X's on unconditional quantiles. For instance, the component of γ corresponding to years of experience indicates by how much a given quantile of unconditional wage distribution would increase in response to an increase in the mean value of experience.

A second piece of intuition is illustrated in Figure 3. The figure shows an example of two cumulative (log) wage distributions for immigrants and the Canadian born. In the example, we assume that log wages are normally distributed with a standard deviation of .5 for both immigrants and the Canadian born. We also set the mean for the Canadian born at 2, and the mean for immigrants at 2.2 (20 percent gap in favor of immigrants).

Now, consider a specific quantile, say the median (τ=.5). In the distribution for the Canadian born, the median corresponds to the case where the cumulative probability is P_C=.5. Thus, the median is q_C for the Canadian born. The corresponding median for immigrants is q_I. We are interested in decomposing the median gap q_I-q_C, but doing so cannot be done using conventional methods. In contrast, however, it is much easier to decompose the probability gap P_C-P_I, where P_I indicates the fraction of immigrants who earn less than the median wage for the Canadian born (q_C). We can indeed construct a dummy variable $1(W_{it} \geq q_C)$, and then run a simple linear probability model (or a logit or probit) to do a standard Oaxaca-Blinder decomposition of the probability gap.

Looking at Figure 3, we see that the probability gap P_C-P_I and the median gap q_I-q_C are closely linked. The ratio of P_C-P_I over q_I-q_C is simply the slope of the cumulative distribution, i.e. the probability density function. Roughly speaking, one can simply perform a probability decomposition and then translate it into a median decomposition by dividing everything by the density, f(.). This provides the rough intuition for why the unconditional quantile regressions consists of running a model for the dummy variable divided by the density, where the density can be readily estimated using kernel density estimation methods.

The approach we just described relies on a first order approximation to translate a decomposition of a probability gap (P_C-P_I) into a quantile gap (q_I-q_C). More generally, Fortin, Lemieux and Firpo (2011) contrast this procedure based on a local inversion (from proportions to quantiles) to an arguable more accurate, but more complicated,

global inversion procedure suggested by Chernozhukov, Fernandez-Val and Melly (2013). Since Fortin, Lemieux and Firpo (2011) show that results based on the two methods are very similar in the context of wage decompositions like those considered here, we only report the results based on RIF regressions which have the advantage of being directly comparable to a standard Oaxaca decomposition for the mean.

4. Estimation Results

4.1 Results for the mean wage gap

Before attempting to decompose the full distribution of wages at different quantiles, we start with the standard case of the mean. Tables 2a and 2b show standard OLS estimates of the wage equation for the Canadian born, immigrants, and both groups pooled together in 1980 and 2000. First note that while there are some differences in the estimated coefficients for immigrants and the Canadian born, these differences are not too important qualitatively.[17] We will thus focus the discussion on the case of the pooled models in columns 3 and 6, but also present complementary results based on separate regressions for immigrants and the Canadian born in Section 4.4.

Starting with men (Table 2a), there is a large increase in the return to education over this period, which is consistent with Boudarbat, Lemieux, and Riddell (2006). For example, the wage gap between university graduates (with a bachelor's degree) and high school graduates (the base group) increases from 29 to 40 percent between 1980 and 2000. The return to Canadian experience also increases, but not as much as the return to education. Consistent with Green and Worswick (2010), we also find a dramatic decline in the return to foreign experience, which goes from half of the return to Canadian experience in 1980 to essentially zero in 2000. Note, however, that the interaction term between Canadian and foreign experience also declines substantially. The fact that the interaction term is negative means that workers with more foreign experience have a lower return to Canadian experience, which is consistent with the two forms of experience being substitutes for each other. To see this, consider total effective experience, E, as the sum of Canadian experience, E_C, and a fraction λ of foreign

[17] One exception is the return to education for women, which tends to be sizably larger for Canadian-born than immigrant women.

experience, E_F. With a standard quadratic model for experience, we get the wage equation (ignoring other wage determinants):

$$W = b_1E - b_2E^2 = b_1(E_C + \lambda E_F) - b_2(E_C + \lambda E_F)^2$$
$$= b_1E_C + b_1\lambda E_F - b_2E_C^2 - b_2(\lambda E_F)^2 - 2b_2\lambda E_C E_F$$

The decline in the return to foreign experience is consistent with λ going from about .53 in 1980 to close to zero in 2000. As a result, we also expect to see the interaction term (with a coefficient of $2b_2\lambda$) going close to zero as well. We will see later in the decompositions that the decline in the interaction term offsets most of the decline in the return to foreign experience. In other words, immigrants make up for the much smaller return to foreign experience by getting a larger return to Canadian experience.

Having a mother tongue (for immigrants) other than French or English, has a negative impact especially in year 2000. Since we are using census master files, we have a detailed breakdown of countries of origin. Thus, we include 42 dummy variables each representing a country of origin, and 7 other dummy variables for regions of origin regrouping the rest of the countries with a limited number of observations in 1980 or 2000 (results not shown in tables). The base group is the United Kingdom. In the existing literature, immigrants from the United Kingdom and the United States are often pooled together. With our detailed breakdown of countries, we can see whether immigrants from these two (traditional) sources of immigration behave in similar ways. The adjusted UK immigrants-Canadian born wage gap (the intercept in the regression) was 6.4 percent in favor of UK immigrants in 1980, and increased to 8.5 percent in 2000.

Detailed estimates by country (not reported in the tables) indicate that U.S. immigrants have a 2.4 percent wage disadvantage compared to the Canadian born in 1980, but this gap is almost nil in 2000. By contrast, there is a large and growing negative premium for immigrants from the two most important new immigration sources China and India. The wage gap was 18.2 percent in 1980 and 23.9 percent in 2000 for Chinese immigrants, and 6.9 percent and 12.6 percent for Indian immigrants. Overall, these results are similar to what has been found earlier in the literature regarding the effect of coming from nontraditional countries.

Recall from Table 1a that the unadjusted immigrant-Canadian born wage gap increased by 8 percentage points between 1980 and 2000. After controlling for all the

explanatory factors in Table 2a, the immigrant-Canadian born wage gap *decreases* by two percentage points (change in the regression intercepts). In other words, the 8 percentage point decline between 1980 and 2000 can *all* be explained by the regression models. Note, however, that the positive immigrant wage gaps of 6 and 9 percent only apply to the base group of immigrants who come from the United Kingdom, have English as their mother tongue, and have zero years of foreign experience.

A number of important regression results are different for men and women. In particular, Table 2b shows modest changes in the return to education over time for women, a result once again consistent with Boudarbat, Lemieux, and Riddell (2006). Interestingly, even in 1980 there was essentially no return to foreign experience for immigrant women. So the decline in the return to foreign experience is unlikely to play much of a role in the case of women. Note also that the return to Canadian experience increases more for women than men. This likely reflects the fact that women now have more actual labor market experience for a given level of potential experience, because of the secular increase in female employment rates, as opposed to a more standard increase in the return to experience. Similar to men, the immigrant wage gap expanded over time going from 2 to about 6 percent, but once again these gaps only apply to the base group of female immigrants.

Tables 3a and 3b show a detailed decomposition of the change in the wage gap based on equation (5). For men, Table 3a first shows that two thirds of the change in the gap (0.054 out of 0.085) can be explained by the effect of Canadian experience. The factor driving this change is the aging of the baby boom generation discussed earlier. Because of this large demographic shift, the average experience of Canadian-born workers has increased substantially more than for immigrants.

Interestingly, the contribution of foreign experience is large because of the steep decline in the return to foreign experience documented in Table 2a. Most of this effect is offset, however, by the countervailing effect of the interaction term discussed above. Taken together, these two effects nonetheless explain another 2.7 percentage point change in the gap. Broadly speaking, experience effects alone go a long way towards explaining why the immigrant-Canadian born gap changed so much over time.

Consistent with existing research, the other large contributor to changes in the wage gap is country of origin that accounts for a 7.4 percent decrease in the relative wage of immigrants. Language also plays a role (1.5 percent) in changes in the wage gap. While the above mentioned factors explain well above 100 percent of the growth in the wage gap, they are partly offset by other factors such as the educational upgrading of immigrants (2.4 percent) and the fact that immigrants increasingly tend to be located in places (CMA, Ontario and BC) where wages are higher (2.7 percent effect).

As discussed earlier, the mean wage gap changed much less for women than men. Nonetheless, Table 3b shows that, as in the case of men, changes in Canadian experience and in country of origin are two main contributors to the growth in the wage gap. They account for a 5.1 and 6.5 percent growth in the gap, respectively. Location plays an even larger offsetting role (5.9 percent) than in the case of men, while the contribution of education (2.4 percent) is similar to what we found for men. As in the case of men, and consistent with the existing literature, the model slightly over explains the actual change in the mean wage gap.

4.2 Results for the quantile gaps

The results of the unconditional quantile regressions for the 10^{th}, 50^{th} (median), and 90^{th} quantile are reported in Tables 4a (men) and 4b (women). Note first that the results for the median are very similar to those from standard mean regressions reported in Table 2. Since means tend to be very similar to medians in practice, this gives us confidence in the reliability of the unconditional quantile regression method.

Generally speaking, factors that we think matter most at the bottom of the distribution should have a larger impact on the 10^{th} quantile than on the 90^{th} quantile, and vice versa. This is indeed what we tend to find in the regression estimates. For instance, being a high school dropout has a much more negative impact on the 10^{th} quantile than on the median or the 90^{th} quantile, while the positive impact of a post-graduate degree is much larger at the 90^{th} quantile. We then use the regression results to perform a decomposition of the changes in the quantile wage gaps. Tables 5a (men) and 5b (women) provide results similar to those in Tables 3a and 3b (mean) for the three quantiles analyzed in Table 4. We also estimate (but do not report in the tables) models

for each quantile from the 5th to the 95th (5, 10, 15, 20,…, 95), and report both the adjusted and unadjusted quantile gaps in Figures 4a (men) and 4b (women).

The unadjusted gaps in Figure 4 are very similar to those reported in Figure 2 for both men and women. Once the gaps are adjusted using the unconditional quantile regressions, however, the resulting adjusted gaps for 1980 and 2000 are very close to each other, except perhaps at the very top of the distribution. This is particularly striking in the case of men in Figure 4a. As in the case of the mean, the large changes in the immigrant-Canadian born quantile wage gaps between 1980 and 2000 can be explained to a large extent by the regression models. Figure 5 plots the changes over time in the adjusted and unadjusted gaps, which clearly illustrates how well our models explain the dramatic changes in the relative wages of immigrants throughout the wage distribution. For instance, the models explain essentially all the 10-15 percent decline in the relative wages of immigrant men at the bottom end of the distribution. The more modest change for women at the bottom end is also well explained (Figure 5b). For men, the only part of the distribution where a substantial wage gap is unexplained is at the top end (80th percentile and above) of the wage distribution, where immigrants are actually predicted to do better than the Canadian-born after all other factors have been adjusted for.

The detailed decomposition results in Table 5 for the 10th, 50th, and 90th quantiles are qualitatively similar to those for the mean presented in Table 3. Recall from Figures 4 and 5 that the explained change in the gap is much larger at the bottom end than at the top end of the wage distribution. Table 5 shows that, once again, Canadian experience explains well the changes, this time at the different quantiles. The effect of experience is indeed largest at the bottom end. The reason is that there was a large concentration of young Canadian born workers with very low values of experience in 1980, which is precisely the place where returns to experience are the largest.

Looking at place of birth and language does not explain the pattern of observed changes very well, as they have a larger impact on changes at the top end rather than at the lower end of the distribution. In the case of men (Table 5a), we get an effect of -.083 at the bottom end compared to -0.124 at the top end. So while country of origin and language explain well the mean decline in immigrant wages, they cannot account for the observed distributional changes. One factor that works better in this regard is education

which has a larger positive impact at the top end, because returns to university education increased a lot over this period, and immigrants are relatively more likely to hold university degrees.

In the case of women, the raw quantile gaps do not change that much over time. Table 5b indicates, nonetheless, that as in the case of men Canadian experience helps explain why the wage gap expanded more at the bottom than at the top end of the distribution. Unlike men, however, education effects are similar throughout the female distribution, while language and country of origin do help account for some of the larger increase in the wage gap at the bottom end.

Finally, note that, as in Figure 5, Table 5 shows that there is a substantial unexplained positive relative growth in the wages of immigrants for both men and women. For men, the unexplained gap at the 10^{th} and 50^{th} quantiles is essentially zero, but is large (9 percentage points) at the 90^{th} quantile. For women, the unexplained gap is only 1.6 percentage points at the 10^{th} quantile, and is a bit larger (2.8 percentage points) at the 50^{th} and 90^{th} quantiles.

4.3 Robustness to sample choice

Up to now we have only reported findings for full-time wage and salary workers. Our main analysis sample also includes all full-time wage and salary immigrants, regardless of how old they were when they came to Canada. We now show that the changes in the wage distribution for immigrant relative to Canadian-born workers are robust to these sample choices.

Table 6 compares the evolution of mean wages and of the 10^{th}, 50^{th} and 90^{th} quantiles under different sample choices. As a baseline, Panel A reports these statistics for the main analysis sample used throughout the paper (all immigrant and Canadian-born full-time wage and salary workers).

As is well known (e.g. Schaafsma and Sweetman, 2001), immigrants who arrive as children tend to have earnings that are similar to those of the Canadian-born workers, while immigrants who arrive at a later age tend to earn substantially less. To explore whether our finding are sensitive to age at arrival, we present results in Panel B for immigrants who arrived in Canada at age 25 or above. The results indicate that earnings

for this subsample of immigrants decline by even more than for all immigrants. For instance, means wages for male immigrants who arrived at age 25 or older decline by 15 percentage points between 1980 and 2000, compared to 9 percentage points for all immigrants. Furthermore, inequality for this subgroup of immigrants increased substantially more than for all immigrants. For examples, the 10^{th} quantile declined by 35 percent compared to 26 percent for all immigrants, while the reverse happened at the top end of the distribution (decline of 4 percent for immigrants who arrived after age 25, compared to 8 percent for all immigrants). Interestingly, in the case of women the wage distribution for immigrants who arrived after age 25 is shifted uniformly by about five percentage points relative to immigrants. Overall, focusing on immigrants who arrived after age 25 makes, if anything, the difference between immigrants and the Canadian born even more striking.

Since many immigrants may have a hard time finding full-time jobs, we add part-time workers to our main analysis sample in Panel C. For both immigrant and Canadian-born men, adding part-time workers has little impact on changes in the 50^{th} and 90^{th} quantile of wages. Doing so has a large impact, however, on the 10^{th} quantile that now declines by and extra 10 percentage point for both immigrants and the Canadian born. In the case of women the effect of adding part-time workers is even smaller as it has little impact on any of the wage quantiles considered in the table. Since the effect of adding part-time workers is similar for immigrants and the Canadian born, expanding the sample in this dimension has little impact on the relative inequality trends we seek to explain in the paper.

Adding self-employed workers in Panel D also has little impact on the inequality trends. It results in a further 5 percentage drop in the 10^{th} quantile of wages for immigrant men, but no substantial changes in the mean or the other quantiles. Overall, Table 6 shows that the differences in the immigrant and Canadian-born wage distribution we seek to explain are robust to different sample choices. If anything, focusing on full-time wage and salary workers (for all immigrants) slightly understates the expansion in wage inequality for immigrants relative to the Canadian born.

4.4 Alternative decomposition

As mentioned in Section 3, the advantage of constraining regression coefficients to be the same for immigrant and Canadian-born workers makes the wage decompositions easier to interpret. The disadvantage of this approach, however, is that it ignores some potentially important factors, such as differential changes in returns to education or Canadian experience. For instance, Table 2a shows that returns to Canadian experience for Canadian born men increased between 1980 and 2000, while they decreased for immigrants. Likewise, the university-high school gap increased by 12 percentage points for Canadian-born men, but only 7 percentage points for immigrants. We now present in Table 7 the results of a more general decomposition based on equation (6) (and its equivalent for quantiles) that allows for different returns to characteristics for immigrant and Canadian-born workers.

As pointed out by Oaxaca and Ransom (1999), results from such decompositions are sensitive to the choice of the base group. Most of the variables in the regression models are categorical variables. The base group we choose for the decomposition is the same as what is used in the regression models reported in Tables 2 and 4 (unmarried high school graduates living in Ontario who speak only English, have English as their mother tongue, and don't live in a CMA). We also use workers with ten years of Canadian experience and zero years of foreign experience for the base group.[18]

In this more general decomposition, the "unexplained gap" corresponds to the component $(\delta_{I1} - \delta_{C1}) - (\delta_{I0} - \delta_{C0})$ in equation (6). This relative change in intercepts (for immigrants compared to the Canadian born) tracks down what happens to the base group. Choosing a different base group would change what goes into the unexplained gap relative to the gap linked to changes in returns to characteristics, $\overline{X}_{I1}(\beta_{I1} - \beta_{C1}) - (\overline{X}_{I0}(\beta_{I0} - \beta_{C0})$, that we label as "$\overline{X} \cdot \Delta\beta$" in Table 7. It does not affect, however, the "explained" part of the gap linked to differences in average characteristics, $(\overline{X}_{I1} - \overline{X}_{C1})\beta_{C1} - (\overline{X}_{I0} - \overline{X}_{C0})\beta_{C0}$, that is labeled as "$\Delta\overline{X} \cdot \beta$" in Table 7. Note also that in the case of variables that are observed only for immigrants (e.g. foreign experience), we can only compute the

[18] For most variables, the decomposition results are relatively insensitive to the choice of the base group. The two exceptions are Canadian experience and education for which the choice of the base group matters more. After some experimentation we settled on a base group that is less skilled than average (high school graduates with ten years of experience), without being at the very bottom of the skill distribution. Results from alternative decomposition based on other base groups are available on request.

component linked to differences in returns to characteristics since the coefficients (and average characteristics) are zero for the Canadian born.

Broadly speaking, the total effects (sum of the components linked to differences in characteristics and coefficients) reported in Table 7 are similar to the estimates based on the simpler decompositions reported in Tables 3 and 5. The two important exceptions are education and, to some extent, language. As we pointed out earlier, returns to education increased for the Canadian born relative to immigrants between 1980 and 2000. Table 7 shows that this change accounts for close to a three percentage point increase in the average wage gap. Since the effect is relatively uniform across quantiles for men, it does not help explain the larger increase in the gap at the bottom of the distribution. Interestingly, the effect is much more skewed in the case of women and actually over explains the change in the wage gap at the bottom of the distribution.

Changes in the returns to language skills also play an important role (2 percentage point impact at the mean for both men and women) and, unlike education, help account for the pattern of changes across quantiles. In other words, the fact that poor language skills are increasingly penalized in the Canadian labor market is an important contributor to changes in the wage gap both at the mean and across the distribution.

Note finally that the effect of Canadian experience and country of origin are still important contributors, just as the case of the simpler decomposition. Relative to that simpler decomposition, the new finding here is that immigrants now get relatively lower returns for the skill (education) for which they have an advantage compared to the Canadian born, but also get increasingly penalized for the skill (language) for which they have a disadvantage relative to the Canadian born.

5. Conclusion

In this paper, we show that the decline in the relative wages of immigrants in Canada is far from homogenous at different points of the wage distribution. For example, the 8 percent decline in the immigrant-Canadian born mean wage gap for men between 1980 and 2000 hides a much larger decline at the low end of the wage distribution, while the gap hardly changed at the top end of the distribution. For women, the immigrant-Canadian born mean wage gap barely changed over time. Yet, the wage distribution

shows significant changes both at the bottom and top end. Using decompositions based on standard OLS regressions and unconditional quantile regressions, we show that changes in both the mean wage gap and the gap at different quantiles are well explained by standard factors such as experience, education, language and country of origin of immigrants. Interestingly, one important source of change in the wages of immigrants relative to the Canadian born is the aging of the baby boom generation, which has resulted in a relative increase in the labor market experience, and thus in the wages, of Canadian-born workers relative to immigrants.

From a policy perspective, this finding means that an important part of the growing wage gap (at the mean and for the whole distribution) is linked to life-cycle effects and has, therefore, limited welfare consequences. By contrast, the part of the growing gap linked to the fact that immigrants increasingly get lower returns for their educational skills, and get more penalized for lower language skills, is a more permanent effect that has important welfare consequences. This suggests that low earnings and high poverty rates among immigrants are likely to remain quite persistent over time.

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Figure 1a: Change in Log Wage of Full-time Males
By Percentile from 1980 to 2000

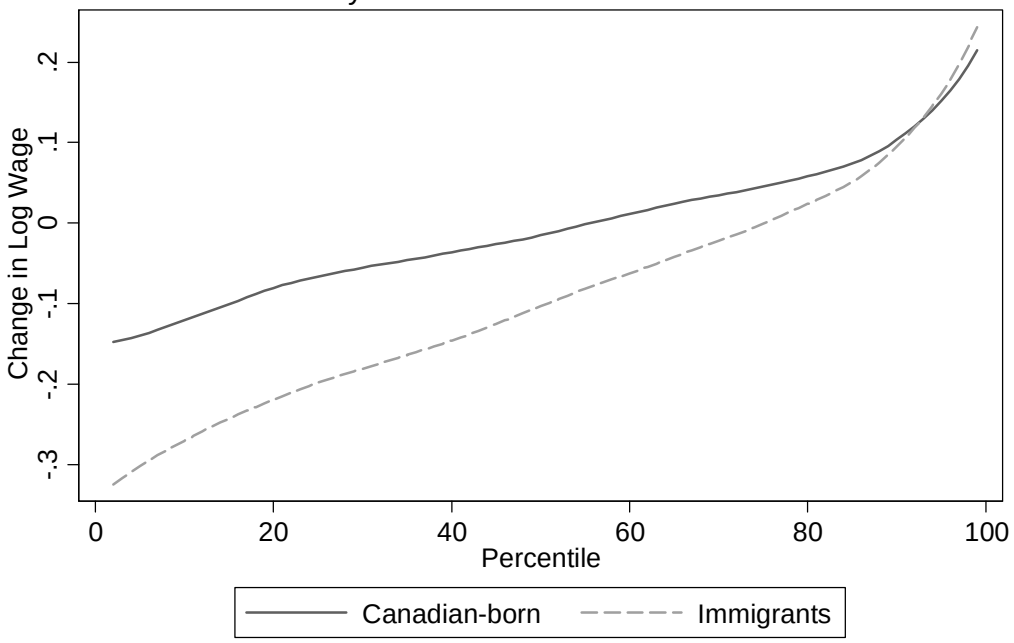

Figure 1b: Change in Log Wage of Full-time Females
By Percentile from 1980 to 2000

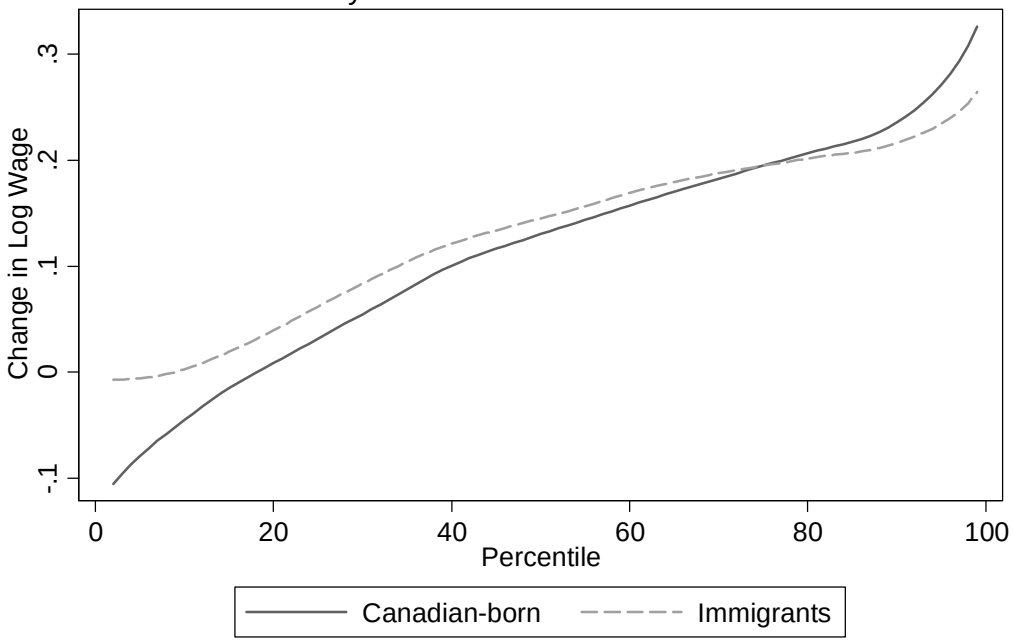

Figure 2a: Immigrant-Canadian Born Wage Gap for Full-time Males
By Percentile in 1980 and 2000

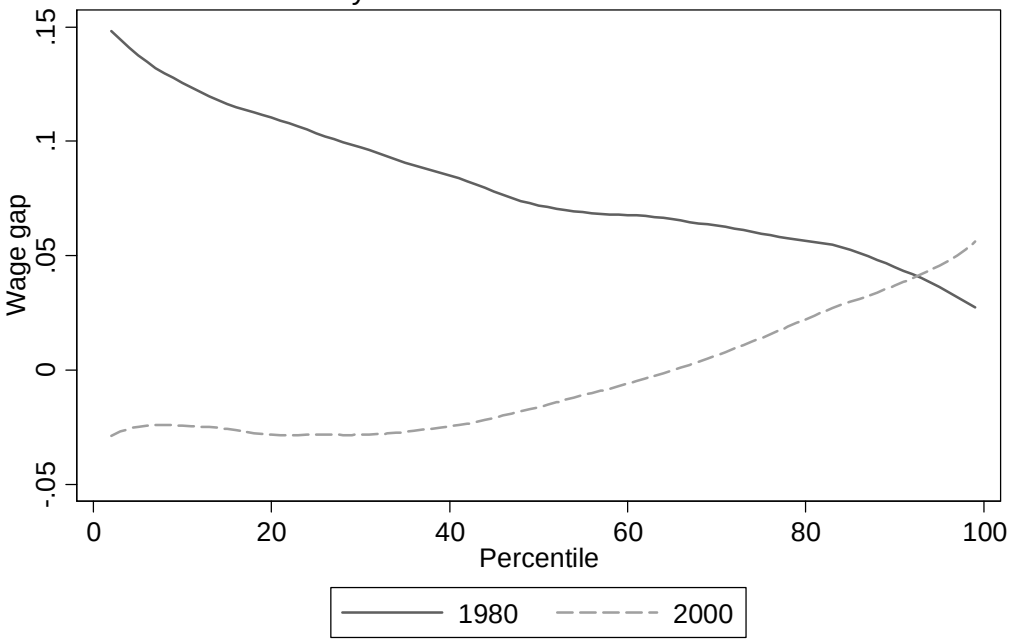

Figure 2b: Immigrant-Canadian Born Wage Gap for Full-time Females
By Percentile in 1980 and 2000

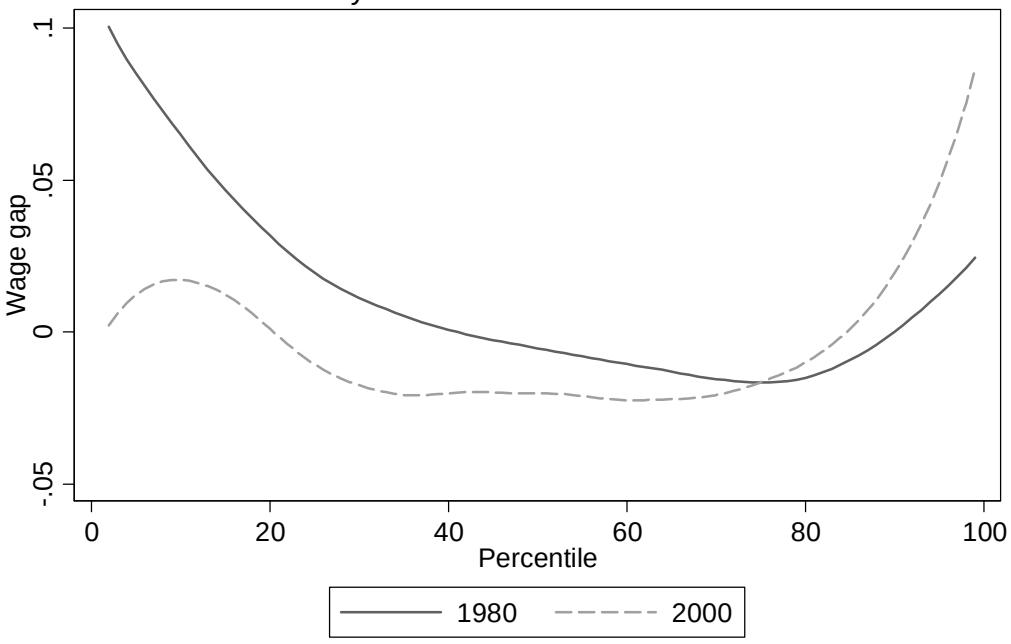

Figure 3: Relationship Between Differences in Wage Quantiles and Probabilities

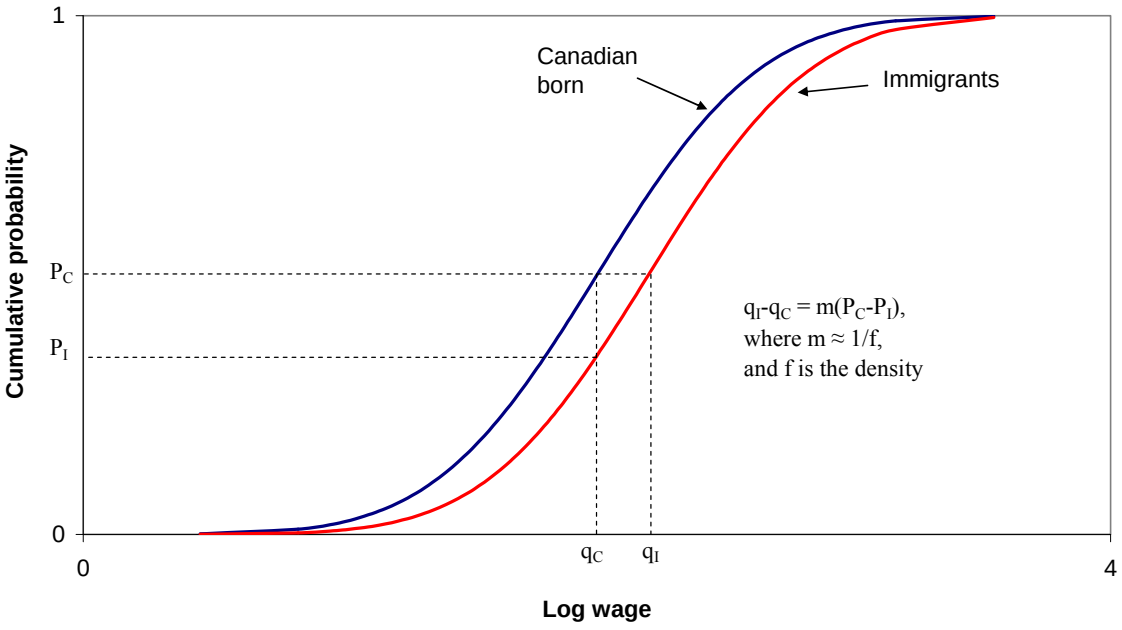

Figure 4a: Unadjusted and Adjusted (using Unconditional Quantile Regressions) Immigrant-Canadian Born Wage Gap by Quantile, Full-Time Males

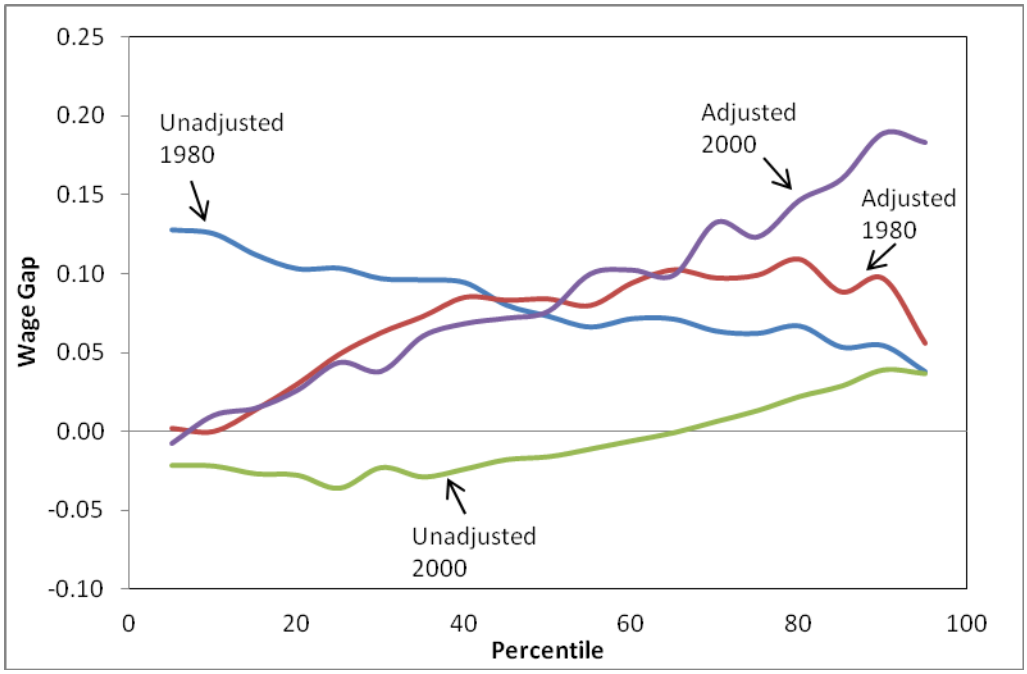

Figure 4b: Unadjusted and Adjusted (using Unconditional Quantile Regressions) Immigrant-Canadian Born Wage Gap by Quantile, Full-Time Females

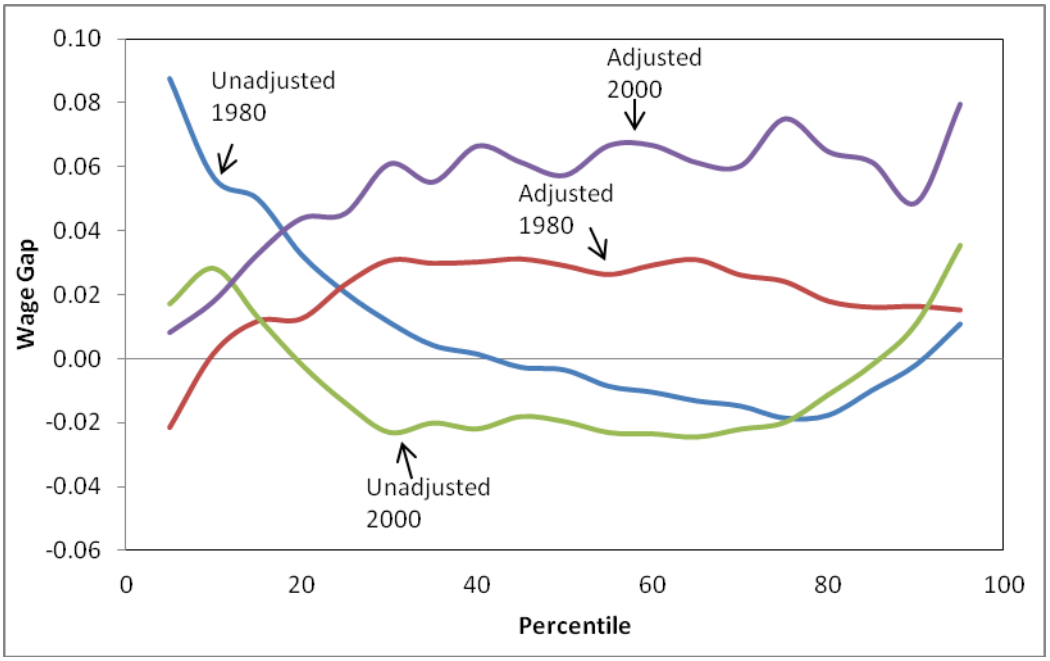

Figure 5a: Unadjusted and Adjusted (1980-2000) Change in the Immigrant-Canadian Born Wage Gap by Quantile, Full-Time Males

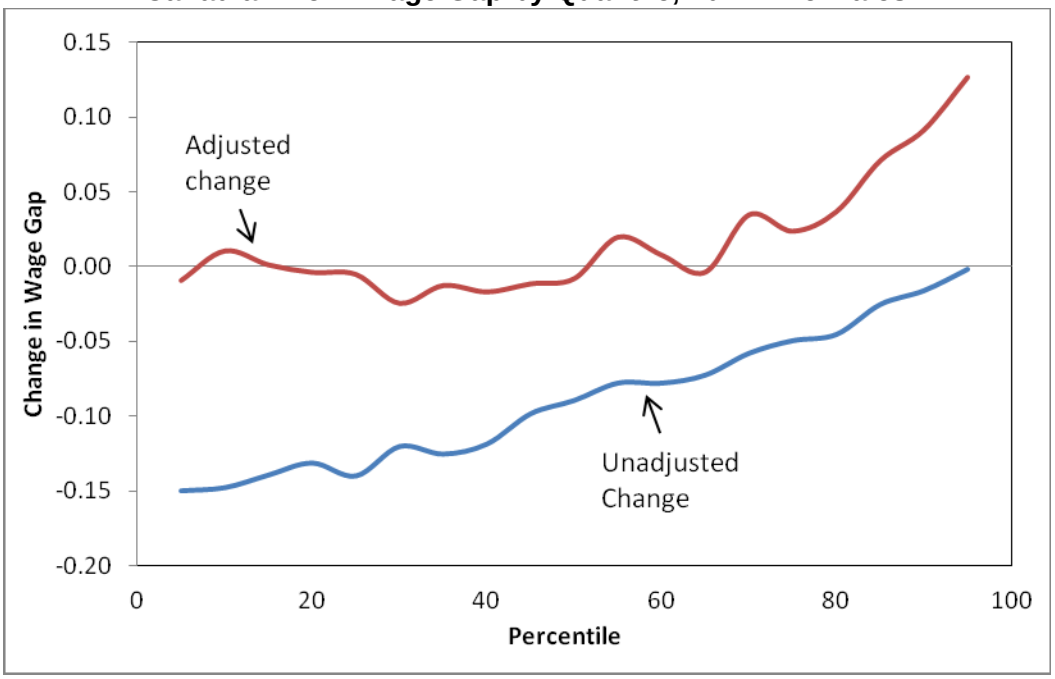

Figure 5b: Unadjusted and Adjusted (1980-2000) Change in the Immigrant-Canadian Born Wage Gap by Quantile, Full-Time Females

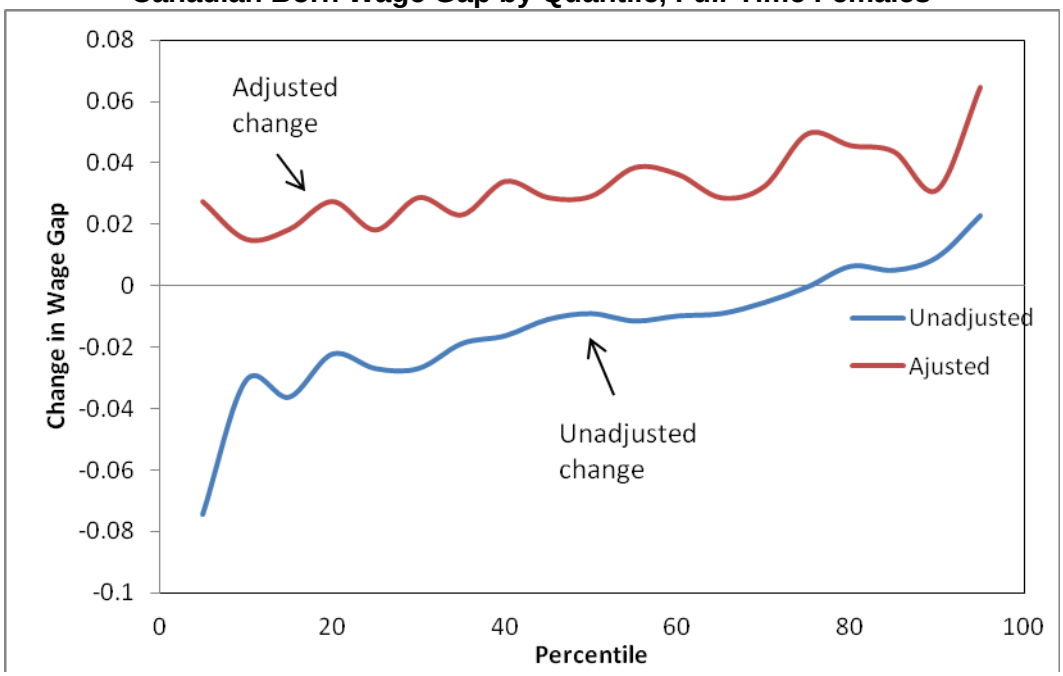

Table 1a: Sample Means, Males

	1981		2001	
	Cdn born	Immigrant	Cdn born	Immigrant
Log weekly wage	6.65	6.73	6.64	6.64
Canadian experience	17.6	15.4	19.5	16.4
Foreign experience	-	6.4	-	6.2
Age	35.7	40.8	39.1	43.1
Schooling				
Less than HS	0.413	0.365	0.224	0.204
High School degree	0.209	0.134	0.246	0.186
Trade Certificate	0.161	0.207	0.174	0.140
Post-secondary	0.104	0.133	0.184	0.182
Bachelors' degree	0.074	0.085	0.117	0.160
Post-graduate	0.038	0.077	0.055	0.128
Years of schooling	11.822	12.369	13.548	14.277
Married	0.684	0.803	0.516	0.719
Language				
English only	0.637	0.802	0.649	0.816
French only	0.146	0.028	0.124	0.023
Bilingual	0.217	0.142	0.227	0.136
Neither fr. nor eng.	0.000	0.029	0.000	0.025
Mother tongue				
English	0.654	0.385	0.676	0.301
French	0.304	0.037	0.288	0.036
Country of Origin				
US	-	0.054	-	0.037
Central/South America, Caribbean and Bermuda	-	0.069	-	0.122
UK	-	0.211	-	0.113
Northern/Western/Southern Europe	-	0.398	-	0.218
Eastern Europe	-	0.092	-	0.072
Africa	-	0.029	-	0.059
Asia	-	0.137	-	0.368
Rest of world	-	0.010	-	0.010
CMA	0.549	0.814	0.588	0.886
Province				
Maritimes	0.100	0.018	0.090	0.013
Quebec	0.288	0.138	0.269	0.123
Ontario	0.323	0.550	0.336	0.573
Manitoba	0.041	0.032	0.039	0.027
Saskatchewan	0.037	0.012	0.035	0.007
Alberta	0.103	0.095	0.117	0.091
British Columbia	0.109	0.154	0.115	0.165
Number of Observations	958,998	223,137	1025882	241,870

Table 1b: Sample Means, Females

	1981		2001	
	Cdn born	Immigrant	Cdn born	Immigrant
Log weekly wage	6.23	6.24	6.36	6.36
Canadian experience	14.7	13.6	18.7	15.9
Foreign experience	-	6.2	-	5.9
Age	33.1	38.2	38.7	42.0
Schooling				
Less than HS	0.339	0.418	0.158	0.198
High School degree	0.284	0.199	0.259	0.216
Trade Certificate	0.094	0.104	0.094	0.079
Post-secondary	0.182	0.160	0.275	0.241
Bachelors' degree	0.075	0.077	0.153	0.169
Post-graduate	0.026	0.041	0.061	0.096
Years of schooling	12.267	11.746	13.997	14.008
Married	0.579	0.705	0.476	0.649
Language				
English only	0.636	0.791	0.626	0.812
French only	0.158	0.034	0.132	0.027
Bilingual	0.206	0.124	0.242	0.129
Neither fr. nor eng.	0.000	0.052	0.000	0.032
Mother tongue				
English	0.660	0.428	0.669	0.325
French	0.295	0.039	0.290	0.036
Country of Origin				
US	-	0.062	-	0.046
Central/South America, Caribbean and Bermuda	-	0.108	-	0.146
UK	-	0.209	-	0.107
Northern/Western/Southern Europe	-	0.343	-	0.182
Eastern Europe	-	0.074	-	0.073
Africa	-	0.031	-	0.050
Asia	-	0.161	-	0.384
Rest of world	-	0.012	-	0.011
CMA	0.608	0.856	0.624	0.901
Province				
Maritimes	0.092	0.016	0.092	0.012
Quebec	0.283	0.141	0.270	0.116
Ontario	0.338	0.577	0.346	0.587
Manitoba	0.042	0.035	0.039	0.026
Saskatchewan	0.037	0.011	0.035	0.007
Alberta	0.104	0.083	0.108	0.085
British Columbia	0.104	0.138	0.109	0.168
Number of Observations	546,742	125,483	756,728	183,748

Table 2a: OLS regressions, log weekly wage for full-time males

	1980			2000		
	Cdn born	Immigrant	Pooled	Cdn born	Immigrant	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)
Immigrant			0.064***			0.085***
			(0.003)			(0.004)
Cdn experience	0.037***	0.043***	0.038***	0.041***	0.035***	0.041***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)
Cdn exper squared/100	-0.066***	-0.079***	-0.067***	-0.071***	-0.059***	-0.070***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)
Foreign exper.		0.022***	0.020***		0.000	0.001
		(0.001)	(0.001)		(0.001)	(0.001)
For exper squared/100		-0.049***	-0.047***		-0.006***	-0.005
		(0.002)	(0.001)		(0.002)	(0.002)
Cdn-for experience interaction/100		-0.094***	-0.083***		-0.024***	-0.036***
		(0.002)	(0.002)		(0.003)	(0.002)
HS dropout	-0.125***	-0.079***	-0.119***	-0.084***	-0.048***	-0.078***
	(0.002)	(0.004)	(0.001)	(0.002)	(0.005)	(0.002)
Trade certif.	0.022***	0.043***	0.024***	0.082***	0.093***	0.085***
	(0.002)	(0.004)	(0.002)	(0.002)	(0.005)	(0.002)
Some Post-sec.	0.106***	0.133***	0.111***	0.161***	0.159***	0.161***
	(0.002)	(0.004)	(0.002)	(0.002)	(0.004)	(0.002)
Bachelors degree	0.289***	0.283***	0.287***	0.409***	0.354***	0.397***
	(0.002)	(0.005)	(0.002)	(0.002)	(0.005)	(0.002)
Post-graduate	0.424***	0.439***	0.426***	0.526***	0.512***	0.524***
	(0.003)	(0.005)	(0.003)	(0.003)	(0.006)	(0.003)
Single	-0.118***	-0.105***	-0.117***	-0.112***	-0.072***	-0.108***
	(0.003)	(0.007)	(0.003)	(0.002)	(0.006)	(0.002)
Married	0.110***	0.087***	0.106***	0.106***	0.084***	0.101***
	(0.003)	(0.005)	(0.002)	(0.002)	(0.005)	(0.002)
Bilingual	0.005*	0.015***	0.004*	0.005*	0.038***	0.008***
	(0.003)	(0.004)	(0.002)	(0.003)	(0.006)	(0.003)
French only	-0.058***	-0.084***	-0.060***	-0.063***	-0.080***	-0.063***
	(0.003)	(0.008)	(0.003)	(0.004)	(0.011)	(0.004)
Neither fr nor eng	-0.270***	-0.060***	-0.063***	-0.200***	-0.100***	-0.088***
	(0.032)	(0.007)	(0.007)	(0.047)	(0.010)	(0.010)
Mother tongue neither fr or eng	-0.049***	-0.036***	-0.045***	-0.049***	-0.060***	-0.050***
	(0.003)	(0.004)	(0.002)	(0.003)	(0.005)	(0.003)
Mother tongue French	0.003	0.005	0.010***	0.025***	-0.012	0.033***
	(0.003)	(0.009)	(0.002)	(0.003)	(0.011)	(0.003)
CMA	0.053***	0.036***	0.051***	0.073***	0.053***	0.072***
	(0.001)	(0.003)	(0.001)	(0.001)	(0.005)	(0.001)
N.F.L.	-0.093***	0.030	-0.095***	-0.162***	-0.076**	-0.167***
	(0.004)	(0.021)	(0.004)	(0.005)	(0.037)	(0.005)
P.E.I.	-0.206***	-0.295***	-0.215***	-0.254***	-0.230***	-0.261***
	(0.008)	(0.044)	(0.008)	(0.009)	(0.049)	(0.009)
Nova Scotia	-0.130***	-0.084***	-0.132***	-0.204***	-0.209***	-0.210***
	(0.003)	(0.012)	(0.003)	(0.004)	(0.018)	(0.004)
New Brunswick	-0.092***	-0.052***	-0.097***	-0.170***	-0.123***	-0.179***
	(0.003)	(0.015)	(0.003)	(0.004)	(0.021)	(0.004)
Quebec	-0.014***	-0.061***	-0.025***	-0.101***	-0.193***	-0.121***
	(0.002)	(0.004)	(0.002)	(0.003)	(0.006)	(0.003)
Manitoba	-0.058***	-0.076***	-0.064***	-0.193***	-0.205***	-0.198***
	(0.003)	(0.006)	(0.003)	(0.003)	(0.008)	(0.003)

Saskatchewan	-0.012***	-0.029***	-0.019***	-0.174***	-0.189***	-0.181***
	(0.003)	(0.011)	(0.003)	(0.004)	(0.015)	(0.004)
Alberta	0.142***	0.103***	0.133***	-0.003	-0.068***	-0.016***
	(0.002)	(0.004)	(0.002)	(0.002)	(0.005)	(0.002)
BC	0.157***	0.089***	0.140***	-0.007***	-0.074***	-0.024***
	(0.002)	(0.003)	(0.002)	(0.002)	(0.004)	(0.002)
Other controls						
Country of birth[(a)] (Ref. = UK)	NO	YES	YES	NO	YES	YES
Observations	958,998	223,137	1182135	1025882	241,870	1267752
R-squared	0.236	0.221	0.235	0.231	0.200	0.224

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
(a) 49 different countries and regions of origin (with the base group) are included.

Table 2b: OLS regressions, log weekly wage for full-time females

	1980			2000		
	Cdn born	Immigrant	Pooled	Cdn born	Immigrant	Pooled
	(1)	(2)	(3)	(4)	(5)	(6)
Immigrant			0.019***			0.055***
			(0.003)			(0.005)
Cdn experience	0.030***	0.037***	0.031***	0.039***	0.037***	0.039***
	(0.000)	(0.001)	(0.000)	(0.000)	(0.001)	(0.000)
Cdn exper squared/100	-0.055***	-0.073***	-0.057***	-0.069***	-0.066***	-0.069***
	(0.000)	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)
Foreign exper.		0.003***	0.003***		-0.004***	-0.003***
		(0.001)	(0.001)		(0.001)	(0.001)
For exper squared/100		-0.005***	-0.007***		0.010***	0.013***
		(0.002)	(0.002)		(0.002)	(0.002)
Cdn-for experience interaction/100		-0.041***	-0.032***		-0.028***	-0.027***
		(0.003)	(0.002)		(0.003)	(0.002)
HS dropout	-0.168***	-0.125***	-0.160***	-0.130***	-0.086***	-0.121***
	(0.002)	(0.004)	(0.002)	(0.002)	(0.005)	(0.002)
Trade certif.	0.008***	0.000	0.007***	0.012***	0.037***	0.017***
	(0.003)	(0.005)	(0.002)	(0.003)	(0.006)	(0.002)
Some Post-sec.	0.197***	0.138***	0.188***	0.188***	0.157***	0.183***
	(0.002)	(0.005)	(0.002)	(0.002)	(0.004)	(0.002)
Bachelors degree	0.457***	0.343***	0.438***	0.496***	0.360***	0.470***
	(0.003)	(0.006)	(0.003)	(0.002)	(0.005)	(0.002)
Post-graduate	0.618***	0.523***	0.597***	0.640***	0.510***	0.610***
	(0.005)	(0.008)	(0.004)	(0.003)	(0.006)	(0.003)
Single	-0.026***	-0.009	-0.023***	-0.030***	-0.019***	-0.029***
	(0.003)	(0.006)	(0.002)	(0.002)	(0.005)	(0.002)
Married	0.002	-0.010**	0.000	0.017***	-0.008*	0.012***
	(0.002)	(0.005)	(0.002)	(0.002)	(0.004)	(0.002)
Bilingual	-0.010***	0.040***	-0.003	0.027***	0.077***	0.034***
	(0.0030	(0.006)	(0.003)	(0.003)	(0.006)	(0.003)
French only	-0.070***	-0.058***	-0.065***	-0.086***	-0.047***	-0.081***
	(0.004)	(0.010)	(0.004)	(0.004)	(0.012)	(0.004)
Neither fr nor eng	-0.093	-0.054***	-0.049***	-0.135*	-0.074***	-0.050***
	(0.057)	(0.007)	(0.007)	(0.069)	(0.009)	(0.009)
Mother tongue neither fr or eng	-0.009***	-0.039***	-0.018***	-0.001	-0.065***	-0.020***
	(0.003)	(0.006)	(0.003)	(0.003)	(0.005)	(0.003)
Mother tongue French	0.004	0.002	0.005*	0.011***	0.002	0.016***
	(0.003)	(0.012)	(0.003)	(0.003)	(0.012)	(0.003)
CMA	0.093***	0.084***	0.093***	0.140***	0.123***	0.140***
	(0.002)	(0.005)	(0.001)	(0.002)	(0.005)	(0.001)
N.F.L.	-0.068***	0.023	-0.070***	-0.224***	-0.081*	-0.229***
	(0.005)	(0.031)	(0.005)	(0.005)	(0.042)	(0.005)
P.E.I.	-0.110***	-0.093*	-0.113***	-0.162***	-0.171**	-0.169***
	(0.009)	(0.048)	(0.009)	(0.009)	(0.067)	(0.009)
Nova Scotia	-0.109***	-0.112***	-0.113***	-0.222***	-0.196***	-0.226***
	(0.004)	(0.016)	(0.004)	(0.004)	(0.020)	(0.004)
New Brunswick	-0.066***	-0.076***	-0.072***	-0.184***	-0.185***	-0.193***
	(0.004)	(0.021)	(0.004)	(0.004)	(0.023)	(0.004)
Quebec	0.057***	0.007	0.046***	-0.096***	-0.187***	-0.115***
	(0.003)	(0.005)	(0.003)	(0.003)	(0.007)	(0.003)
Manitoba	-0.031***	-0.058***	-0.035***	-0.166***	-0.204***	-0.174***
	(0.003)	(0.007)	(0.003)	(0.004)	(0.008)	(0.003)

Saskatchewan	0.045***	0.025*	0.041***	-0.177***	-0.200***	-0.183***
	(0.004)	(0.014)	(0.004)	(0.004)	(0.017)	(0.004)
Alberta	0.093***	0.071***	0.088***	-0.096***	-0.131***	-0.104***
	(0.002)	(0.005)	(0.002)	(0.003)	(0.005)	(0.002)
BC	0.123***	0.097***	0.117***	0.002	-0.028***	-0.005**
	(0.003)	(0.005)	(0.002)	(0.002)	(0.004)	(0.002)
Other controls						
Country of birth[(a)] (Ref. = UK)	NO	YES	YES	NO	YES	YES
Observations	546,742	125,483	672,225	756,728	183,748	940,476
R-squared	0.197	0.178	0.192	0.238	0.185	0.225

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
(a) 49 different countries and regions of origin (with the base group) are included.

Table 3a: Decomposition of the Mean Wage Gap between Immigrant and Canadian-born Full-time Males

	1980	2000	Change
Raw (unadjusted) gap	0.080	-0.005	-0.085
Unexplained (adjusted) gap	0.064	0.085	0.022
Gap explained by:			
Canadian experience	0.015	-0.039	-0.054
Foreign experience	0.080	0.001	-0.080
Cnd*foreign experience	-0.079	-0.027	0.053
Education	0.030	0.053	0.024
Marital status	0.027	0.040	0.013
Language	-0.021	-0.036	-0.015
Place of birth	-0.068	-0.142	-0.074
Location[(a)]	0.033	0.060	0.027
Total explained	0.016	-0.090	-0.106

Notes: Decomposition based on the regression models in columns 3 and 6 of Table 2a. (a) Includes CMA and province.

Table 3b: Decomposition of the Mean Wage Gap between Immigrant and Canadian-born Full-time Females

	1980	2000	Change
Raw (unadjusted) gap	0.011	-0.004	-0.015
Unexplained (adjusted) gap	0.019	0.055	0.036
Gap explained by:			
Canadian experience	0.021	-0.029	-0.051
Foreign experience	0.013	-0.008	-0.021
Cnd*foreign experience	-0.026	-0.019	0.007
Education	-0.006	0.018	0.024
Marital status	0.003	0.007	0.004
Language	-0.004	-0.013	-0.009
Place of birth	-0.033	-0.098	-0.065
Location[(a)]	0.024	0.083	0.059
Total explained	-0.008	-0.059	-0.051

Note: Decomposition based on the regression models in columns 3 and 6 of Table 2b. (a) Includes CMA and province.

Table 4a: Unconditional quantile regressions, log weekly wage for full-time males

	1980			2000		
	10th	50th	90th	10th	50th	90th
	(1)	(2)	(3)	(4)	(5)	(6)
Immigrant	0.000	0.084***	0.097***	0.010	0.076***	0.189***
	(0.006)	(0.003)	(0.006)	(0.008)	(0.004)	(0.009)
Cdn experience	0.053***	0.035***	0.035***	0.078***	0.033***	0.022***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Cdn exper squared/100	-0.096***	-0.063***	-0.059***	-0.144***	-0.057***	-0.031***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
Foreign exper.	0.029***	0.016***	0.023***	0.028***	-0.006***	-0.008***
	(0.001)	(0.000)	(0.001)	(0.002)	(0.001)	(0.001)
For exper squared/100	-0.088***	-0.041***	-0.034***	-0.084***	0.011***	0.030***
	(0.004)	(0.001)	(0.002)	(0.006)	(0.002)	(0.003)
Cdn-for experience interaction/100	-0.076***	-0.078***	-0.106***	-0.111***	-0.020***	-0.011***
	(0.004)	(0.002)	(0.003)	(0.005)	(0.002)	(0.003)
HS dropout	-0.183***	-0.106***	-0.086***	-0.107***	-0.072***	-0.048***
	(0.004)	(0.001)	(0.002)	(0.005)	(0.002)	(0.002)
Trade certif.	0.031***	0.042***	-0.024***	0.180***	0.088***	0.005*
	(0.004)	(0.002)	(0.003)	(0.005)	(0.002)	(0.003)
Some Post-sec.	0.134***	0.118***	0.080***	0.233***	0.158***	0.098***
	(0.004)	(0.002)	(0.003)	(0.004)	(0.002)	(0.003)
Bachelors degree	0.230***	0.258***	0.419***	0.388***	0.349***	0.449***
	(0.005)	(0.002)	(0.004)	(0.005)	(0.002)	(0.004)
Post-graduate	0.177***	0.345***	0.866***	0.364***	0.441***	0.735***
	(0.005)	(0.002)	(0.007)	(0.005)	(0.002)	(0.006)
Single	-0.350***	-0.083***	0.033***	-0.153***	-0.115***	-0.046***
	(0.007)	(0.003)	(0.004)	(0.005)	(0.002)	(0.004)
Married	0.185***	0.099***	0.057***	0.114***	0.087***	0.100***
	(0.006)	(0.002)	(0.004)	(0.004)	(0.002)	(0.003)
Bilingual	-0.034***	0.001	0.062***	-0.044***	0.003	0.064***
	(0.005)	(0.002)	(0.004)	(0.006)	(0.002)	(0.005)
French only	-0.051***	-0.081***	-0.015***	-0.053***	-0.083***	-0.026***
	(0.008)	(0.003)	(0.005)	(0.009)	(0.003)	(0.006)
Neither fr nor eng	-0.143***	-0.058***	0.010	-0.333***	-0.078***	0.056***
	(0.020)	(0.007)	(0.008)	(0.031)	(0.008)	(0.011)
Mother tongue neither fr or eng	-0.082***	-0.028***	-0.046***	-0.038***	-0.045***	-0.058***
	(0.006)	(0.002)	(0.004)	(0.007)	(0.003)	(0.005)
Mother tongue French	0.066***	0.019***	-0.065***	0.142***	0.042***	-0.076***
	(0.006)	(0.002)	(0.004)	(0.007)	(0.003)	(0.005)
CMA	0.095***	0.037***	0.036***	0.090***	0.047***	0.084***
	(0.003)	(0.001)	(0.002)	(0.003)	(0.001)	(0.002)
N.F.L.	-0.173***	-0.099***	-0.035***	-0.256***	-0.156***	-0.079***
	(0.010)	(0.003)	(0.005)	(0.013)	(0.005)	(0.008)
P.E.I.	-0.302***	-0.226***	-0.099***	-0.286***	-0.286***	-0.172***
	(0.025)	(0.007)	(0.010)	(0.025)	(0.008)	(0.011)
Nova Scotia	-0.155***	-0.145***	-0.088***	-0.265***	-0.185***	-0.164***
	(0.008)	(0.003)	(0.004)	(0.010)	(0.004)	(0.006)
New Brunswick	-0.084***	-0.125***	-0.061***	-0.207***	-0.186***	-0.123***
	(0.009)	(0.003)	(0.005)	(0.011)	(0.004)	(0.006)
Quebec	-0.043***	-0.041***	0.015***	-0.142***	-0.119***	-0.097***
	(0.005)	(0.002)	(0.004)	(0.007)	(0.003)	(0.005)
Manitoba	-0.054***	-0.075***	-0.051***	-0.225***	-0.181***	-0.182***

	(0.007)	(0.003)	(0.004)	(0.008)	(0.003)	(0.004)
Saskatchewan	-0.040***	-0.021***	0.011**	-0.295***	-0.139***	-0.141***
	(0.008)	(0.003)	(0.005)	(0.010)	(0.004)	(0.005)
Alberta	0.148***	0.100***	0.195***	-0.074***	-0.017***	0.056***
	(0.004)	(0.002)	(0.003)	(0.005)	(0.002)	(0.004)
BC	0.132***	0.143***	0.155***	-0.051***	0.008***	-0.034***
	(0.004)	(0.002)	(0.003)	(0.005)	(0.002)	(0.003)
Other controls						
Country of birth[(a)] (Ref. = UK)	NO	YES	YES	NO	YES	YES
Observations	1182135	1182135	1182135	1267752	1267752	1267752
R-squared	0.098	0.203	0.099	0.085	0.187	0.084

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
(a) 49 different countries and regions of origin (with the base group) are included.

Table 4b: Unconditional quantile regressions, log weekly wage for full-time females

	1980			2000		
	10th	50th	90th	10th	50th	90th
	(1)	(2)	(3)	(4)	(5)	(6)
Immigrant	0.002	0.029***	0.016***	0.018**	0.057***	0.049***
	(0.006)	(0.003)	(0.006)	(0.008)	(0.004)	(0.007)
Cdn experience	0.027***	0.029***	0.035***	0.052***	0.032***	0.027***
	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)
Cdn exper squared/100	-0.048***	-0.054***	-0.065***	-0.092***	-0.058***	-0.047***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.001)
Foreign exper.	0.008***	0.000	0.006***	0.012***	-0.009***	-0.003***
	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)	(0.001)
For exper squared/100	-0.026***	0.000	0.002	-0.044***	0.026***	0.023***
	(0.004)	(0.002)	(0.003)	(0.006)	(0.002)	(0.002)
Cdn-for experience interaction/100	-0.011**	-0.028***	-0.062***	-0.029***	-0.015***	-0.042***
	(0.005)	(0.002)	(0.003)	(0.006)	(0.002)	(0.003)
HS dropout	-0.243***	-0.151***	-0.067***	-0.204***	-0.109***	-0.028***
	(0.004)	(0.002)	(0.002)	(0.006)	(0.002)	(0.002)
Trade certif.	-0.015***	0.006**	0.023***	0.071***	-0.004	0.004
	(0.005)	(0.002)	(0.003)	(0.006)	(0.002)	(0.003)
Some Post-sec.	0.118***	0.178***	0.207***	0.262***	0.166***	0.080***
	(0.003)	(0.002)	(0.003)	(0.004)	(0.002)	(0.002)
Bachelors degree	0.201***	0.336***	0.832***	0.438***	0.430***	0.391***
	(0.004)	(0.002)	(0.006)	(0.004)	(0.002)	(0.003)
Post-graduate	0.190***	0.385***	1.332***	0.415***	0.507***	0.758***
	(0.005)	(0.003)	(0.011)	(0.005)	(0.002)	(0.006)
Single	-0.081***	-0.024***	0.061***	-0.058***	-0.027***	-0.001
	(0.004)	(0.002)	(0.004)	(0.005)	(0.002)	(0.003)
Married	0.010***	-0.005**	-0.008**	0.016***	0.007***	0.007***
	(0.004)	(0.002)	(0.004)	(0.004)	(0.002)	(0.003)
Bilingual	-0.037***	0.000	0.018***	-0.009*	0.026***	0.073***
	(0.005)	(0.002)	(0.005)	(0.005)	(0.002)	(0.004)
French only	-0.094***	-0.071***	0.009	-0.109***	-0.094***	-0.001
	(0.007)	(0.004)	(0.006)	(0.008)	(0.003)	(0.005)
Neither fr nor eng	-0.025	-0.092***	0.033***	-0.110***	-0.046***	0.041***
	(0.016)	(0.007)	(0.008)	(0.026)	(0.008)	(0.009)
Mother tongue neither fr or eng	-0.003	-0.017***	-0.024***	-0.006	-0.020***	-0.019***
	(0.006)	(0.003)	(0.005)	(0.006)	(0.003)	(0.004)
Mother tongue French	-0.001	0.010***	0.010**	0.059***	0.023***	-0.038***
	(0.006)	(0.003)	(0.005)	(0.007)	(0.003)	(0.004)
CMA	0.149***	0.097***	0.010***	0.184***	0.123***	0.087***
	(0.003)	(0.001)	(0.002)	(0.004)	(0.001)	(0.002)
N.F.L.	-0.063***	-0.080***	-0.023***	-0.458***	-0.182***	-0.166***
	(0.011)	(0.005)	(0.007)	(0.015)	(0.005)	(0.006)
P.E.I.	-0.085***	-0.114***	-0.108***	-0.158***	-0.163***	-0.154***
	(0.022)	(0.008)	(0.011)	(0.024)	(0.008)	(0.009)
Nova Scotia	-0.118***	-0.129***	-0.082***	-0.274***	-0.201***	-0.195***
	(0.009)	(0.004)	(0.005)	(0.010)	(0.004)	(0.005)
New Brunswick	-0.002	-0.083***	-0.092***	-0.248***	-0.170***	-0.169***
	(0.010)	(0.004)	(0.006)	(0.012)	(0.004)	(0.005)
Quebec	0.090***	0.024***	0.039***	-0.071***	-0.114***	-0.135***
	(0.005)	(0.003)	(0.005)	(0.006)	(0.003)	(0.004)
Manitoba	0.022***	-0.060***	-0.048***	-0.156***	-0.165***	-0.177***

	(0.007)	(0.003)	(0.005)	(0.008)	(0.003)	(0.004)
Saskatchewan	0.078***	0.042***	0.007	-0.219***	-0.167***	-0.175***
	(0.007)	(0.004)	(0.005)	(0.010)	(0.004)	(0.004)
Alberta	0.106***	0.084***	0.063***	-0.150***	-0.091***	-0.091***
	(0.004)	(0.002)	(0.004)	(0.005)	(0.002)	(0.003)
BC	0.089***	0.124***	0.108***	-0.006	0.026***	-0.068***
	(0.004)	(0.002)	(0.004)	(0.005)	(0.002)	(0.003)
Other controls						
Country of birth[(a)] (Ref. = UK)	NO	YES	YES	NO	YES	YES
Observations	672225	672225	672225	940476	940476	940476
R-squared	0.046	0.161	0.150	0.069	0.191	0.100

Robust standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%
(a) 49 different countries and regions of origin (with the base group) are included.

Table 5a: Decomposition of Quantile Wage Gap between Immigrant and Canadian-born Full-time Males

	1980	2000	Change
A. 10th quantile			
Raw (unadjusted) gap	0.126	-0.022	-0.148
Unexplained (adjusted) gap	0.000	0.010	0.010
Gap explained by:			
Canadian experience	0.024	-0.061	-0.086
Foreign experience	0.097	0.089	-0.007
Cnd*foreign experience	-0.073	-0.083	-0.010
Education	0.023	0.038	0.015
Marital status	0.064	0.051	-0.013
Language	-0.057	-0.058	-0.001
Place of birth	-0.002	-0.084	-0.082
Location[(a)]	0.050	0.076	0.026
Total explained	0.126	-0.032	-0.158
B. 50th quantile			
Raw (unadjusted) gap	0.073	-0.016	-0.089
Unexplained (adjusted) gap	0.084	0.076	-0.008
Gap explained by:			
Canadian experience	0.016	-0.032	-0.048
Foreign experience	0.063	-0.024	-0.086
Cnd*foreign experience	-0.075	-0.015	0.060
Education	0.027	0.045	0.019
Marital status	0.022	0.038	0.016
Language	-0.012	-0.032	-0.020
Place of birth	-0.084	-0.125	-0.041
Location[(a)]	0.033	0.053	0.019
Total explained	-0.011	-0.092	-0.081

C. 90th quantile			
Raw (unadjusted) gap	0.054	0.039	-0.016
Unexplained (adjusted) gap	0.097	0.189	0.092
Gap explained by:			
Canadian experience	0.009	-0.031	-0.039
Foreign experience	0.110	-0.017	-0.127
Cnd*foreign experience	-0.102	-0.008	0.094
Education	0.043	0.073	0.030
Marital status	0.003	0.029	0.026
Language	-0.010	-0.019	-0.009
Place of birth	-0.114	-0.230	-0.115
Location[(a)]	0.018	0.052	0.034
Total explained	-0.043	-0.150	-0.107

Table 5b: Decomposition of Quantile Wage Gap between Immigrant and Canadian-born Full-time Females

	1980	2000	Change
A. 10th quantile			
Raw (unadjusted) gap	0.057	0.028	-0.029
Unexplained (adjusted) gap	0.002	0.018	0.016
Gap explained by:			
Canadian experience	0.018	-0.039	-0.057
Foreign experience	0.023	0.032	0.009
Cnd*foreign experience	-0.009	-0.020	-0.011
Education	-0.018	0.003	0.022
Marital status	0.012	0.012	0.000
Language	0.012	-0.009	-0.021
Place of birth	-0.010	-0.066	-0.056
Location[(a)]	0.028	0.097	0.070
Total explained	0.055	0.010	-0.045
B. 50th quantile			
Raw (unadjusted) gap	-0.003	-0.020	-0.016
Unexplained (adjusted) gap	0.029	0.057	0.028
Gap explained by:			
Canadian experience	0.021	-0.024	-0.045
Foreign experience	-0.001	-0.026	-0.025
Cnd*foreign experience	-0.023	-0.011	0.012
Education	-0.009	0.015	0.024
Marital status	0.003	0.005	0.003
Language	-0.007	-0.012	-0.005
Place of birth	-0.046	-0.101	-0.055
Location[(a)]	0.030	0.077	0.047
Total explained	-0.033	-0.077	-0.044

C. 90th quantile			
Raw (unadjusted) gap	-0.003	-0.020	-0.016
Unexplained (adjusted) gap	0.029	0.057	0.028
Gap explained by:			
Canadian experience	0.021	-0.024	-0.045
Foreign experience	-0.001	-0.026	-0.025
Cnd*foreign experience	-0.023	-0.011	0.012
Education	-0.009	0.015	0.024
Marital status	0.003	0.005	0.003
Language	-0.007	-0.012	-0.005
Place of birth	-0.046	-0.101	-0.055
Location[(a)]	0.030	0.077	0.047
Total explained	-0.033	-0.077	-0.044

(a) Includes CMA and province.

Table 6: Mean and quantiles of the log weekly wage for alternative sample choices

		Males				Females			
		Mean	10th	50th	90th	Mean	10th	50th	90th
A- Main analysis sample: Full-time wage and salary workers									
Canadian-born	1980	6.650	5.948	6.701	7.280	6.232	5.568	6.241	6.856
	2000	6.644	5.827	6.683	7.363	6.361	5.561	6.394	7.070
	Change	**-0.007**	**-0.122**	**-0.018**	**0.083**	**0.129**	**-0.007**	**0.152**	**0.214**
Immigrants	1980	6.730	6.059	6.763	7.323	6.243	5.628	6.241	6.853
	2000	6.639	5.800	6.654	7.402	6.357	5.596	6.365	7.085
	Change	**-0.091**	**-0.259**	**-0.109**	**0.079**	**0.114**	**-0.033**	**0.124**	**0.231**
B- Only immigrants who landed at age 25 or older									
	1980	6.759	6.120	6.785	7.355	6.238	5.628	6.241	6.873
	2000	6.607	5.768	6.626	7.399	6.304	5.534	6.324	7.051
	Change	**-0.152**	**-0.352**	**-0.158**	**0.044**	**0.066**	**-0.094**	**0.083**	**0.178**
C- Add part-time workers									
Canadian-born	1980	6.571	5.729	6.650	7.258	6.063	5.165	6.121	6.806
	2000	6.525	5.492	6.620	7.339	6.165	5.147	6.244	7.018
	Change	**-0.047**	**-0.236**	**-0.030**	**0.080**	**0.102**	**-0.018**	**0.123**	**0.212**
Immigrants	1980	6.683	5.954	6.752	7.312	6.104	5.300	6.147	6.814
	2000	6.558	5.596	6.620	7.385	6.220	5.277	6.274	7.051
	Change	**-0.125**	**-0.358**	**-0.132**	**0.073**	**0.116**	**-0.023**	**0.127**	**0.237**
4- Add self-employed workers									
Canadian-born	1980	6.657	5.936	6.701	7.310	6.231	5.556	6.241	6.863
	2000	6.642	5.802	6.672	7.387	6.355	5.521	6.390	7.084
	Change	**-0.015**	**-0.134**	**-0.029**	**0.077**	**0.124**	**-0.035**	**0.149**	**0.221**
Immigrants	1980	6.733	6.059	6.760	7.351	6.243	5.628	6.241	6.866
	2000	6.630	5.751	6.645	7.423	6.351	5.559	6.358	7.097
	Change	**-0.104**	**-0.308**	**-0.115**	**0.072**	**0.108**	**-0.069**	**0.116**	**0.231**

Table 7a: Full Decomposition of the 1980-2000 Change in the Wage Gap Between Immigrant and Canadian-born Full-time Male Workers

	Mean			10th quantile			50th quantile			90th quantile		
	$\Delta\overline{X}\cdot\beta$	$\overline{X}\cdot\Delta\beta$	Total	$\Delta\overline{X}\cdot\beta$	$\overline{X}\cdot\Delta\beta$	Total	$\Delta\overline{X}\cdot\beta$	$\overline{X}\cdot\Delta\beta$	Total	$\Delta\overline{X}\cdot\beta$	$\overline{X}\cdot\Delta\beta$	Total
Raw gap			-0.085			-0.148			-0.089			-0.016
Unexplained gap		0.051	0.051		0.059	0.059		0.009	0.009		0.122	0.122
Canadian exper.	-0.054	-0.004	-0.057	-0.087	-0.017	-0.104	-0.048	0.002	-0.046	-0.038	-0.004	-0.042
Foreign exper.		-0.094	-0.094		-0.066	-0.066		-0.091	-0.091		-0.126	-0.126
Cnd*for. exper.		0.073	0.073		0.042	0.042		0.074	0.074		0.103	0.103
Education	0.025	-0.028	-0.003	0.013	-0.028	-0.015	0.019	-0.020	-0.001	0.032	-0.020	0.012
Marital status	0.014	0.009	0.023	-0.014	0.013	-0.001	0.018	0.014	0.032	0.027	-0.006	0.021
Language	-0.007	-0.017	-0.024	0.025	-0.051	-0.026	-0.013	-0.024	-0.038	-0.011	0.013	0.001
Place of birth		-0.067	-0.067		-0.058	-0.058		-0.028	-0.028		-0.127	-0.127
Location	0.025	-0.012	0.014	0.020	0.000	0.020	0.019	-0.019	-0.001	0.033	-0.012	0.021

Note: The column heading $\Delta\overline{X}\cdot\beta$ refers to contribution of changes in the distribution of characteristics (the X's) in changes in the wage gap. In the case of the mean, it corresponds to the component $(\overline{X}_{I1} - \overline{X}_{C1})\beta_{C1} - (\overline{X}_{I0} - \overline{X}_{C0})\beta_{C0}$ in equation (6) in the text. In the case of quantiles the OLS estimates of β are replaced by the unconditional quantile estimates of γ. Likewise, The column heading $\overline{X}\cdot\Delta\beta$ refers to contribution of changes in the returns to characteristics (the β's) in changes in the wage gap. In the case of the mean, it corresponds to the component $\overline{X}_{I1}(\beta_{I1} - \beta_{C1}) - (\overline{X}_{I0}(\beta_{I0} - \beta_{C0})$ in equation (6) in the text. Again, in the case of quantiles the OLS estimates of β are replaced by the unconditional quantile estimates of γ.

Table 7b: Full Decomposition of the 1980-2000 Change in the Wage Gap Between Immigrant and Canadian-born Full-time Female Workers

	Mean			10th quantile			50th quantile			90th quantile		
	$\Delta\overline{X}\cdot\beta$	$\overline{X}\cdot\Delta\beta$	Total	$\Delta\overline{X}\cdot\beta$	$\overline{X}\cdot\Delta\beta$	Total	$\Delta\overline{X}\cdot\beta$	$\overline{X}\cdot\Delta\beta$	Total	$\Delta\overline{X}\cdot\beta$	$\overline{X}\cdot\Delta\beta$	Total
Raw gap			-0.015			-0.029			-0.016			-0.016
Unexplained gap		0.010	0.010		0.223	0.223		0.027	0.027		-0.097	-0.097
Canadian exper.	-0.050	0.001	-0.049	-0.057	-0.017	-0.074	-0.044	0.006	-0.038	-0.045	0.008	-0.037
Foreign exper.		-0.024	-0.024		-0.010	-0.010		-0.026	-0.026		-0.025	-0.025
Cnd*for. exper.		0.014	0.014		0.012	0.012		0.015	0.015		0.021	0.021
Education	0.025	-0.027	-0.002	0.023	-0.072	-0.050	0.025	-0.015	0.009	0.017	0.006	0.023
Marital status	0.004	-0.008	-0.005	0.001	-0.009	-0.008	0.003	-0.008	-0.005	0.010	0.000	0.011
Language	-0.001	-0.024	-0.025	-0.009	-0.034	-0.043	0.003	-0.030	-0.027	0.005	0.007	0.012
Place of birth		-0.044	-0.044		-0.037	-0.037		-0.029	-0.029		-0.054	-0.054
Location	0.057	-0.014	0.043	0.066	-0.042	0.023	0.047	-0.021	0.026	0.060	-0.003	0.056

Note: The column heading $\Delta\overline{X}\cdot\beta$ refers to contribution of changes in the distribution of characteristics (the X's) in changes in the wage gap. In the case of the mean, it corresponds to the component $(\overline{X}_{I1}-\overline{X}_{C1})\beta_{C1}-(\overline{X}_{I0}-\overline{X}_{C0})\beta_{C0}$ in equation (6) in the text. In the case of quantiles the OLS estimates of β are replaced by the unconditional quantile estimates of γ. Likewise, The column heading $\overline{X}\cdot\Delta\beta$ refers to contribution of changes in the returns to characteristics (the β's) in changes in the wage gap. In the case of the mean, it corresponds to the component $\overline{X}_{I1}(\beta_{I1}-\beta_{C1})-(\overline{X}_{I0}(\beta_{I0}-\beta_{C0})$ in equation (6) in the text. Again, in the case of quantiles the OLS estimates of β are replaced by the unconditional quantile estimates of γ.