

Earnings Differentials between Immigrants and Non-Immigrants in Canada due to Lower
Returns to Immigrants' Human Capital

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1. Introduction

Along with economic globalization, labour mobility between countries has rapidly been growing. Canada, in particular, has always been known as a multiracial country. Since the mid-1960s, when the criteria of eligibility to immigrate to Canada changed from screening based on national origin to family reunification and evaluating the candidates' possible contributions to the Canadian economy, Canada has become one of the most multiracial countries in the world. According to Statistics Canada, immigration and ethnocultural diversity in Canada (2016), in 2011 the share of immigrants in the Canada population had reached over 22% of the entire Canadian population. About 50% of immigrants were either from Asia or the Middle East, 20% of them were either from Africa or the Caribbean/Bermuda region, and only 30% of them were from either EU countries or the United States.

Due to the boom in labour mobility and since the proposal of Gary Becker's (1964) human capital theory, researchers have begun studying the impact of incoming foreign workers on host country's labour market. Within this context, researchers have found large average earnings differentials between immigrants and non-immigrants and have begun wondering if such differentials are due to differences in average endowments or due to discrimination against immigrants relative to non-immigrants. Almost all studies have used the Mincer-type earnings equation to estimate the returns to workers' human capital on their earnings. The most recognized studies among previous work in this area are Chiswick (1978) and Borjas (1985). The two studies both examine the presence of discrimination and assimilation, although each has their own different methods. For more recent studies, researchers have started adapting a conventional decomposition technique, called the Blinder-Oaxaca decomposition. This technique is used to decompose the average earnings differential into two different components, one due to

differences in average endowments and the other due to discrimination between two groups. In so doing, many previous studies have sub-divided immigrants into at least two groups, non-visible minorities (white) and visible minorities; some studies have also restricted the comparison group of non-immigrants to white non-immigrants only.

As for this study, the 2006 Canadian Census and the 2011 National Household Survey (NHS) are used to examine the returns to human capital of workers in Canada who belong to three specific groups: white non-immigrants, white immigrants, and visible-minority immigrants. Moreover, those rate of returns, i.e., estimated coefficients, are compared between groups. Then, using the Blinder-Oaxaca decomposition method, earnings differentials between groups due to differences in their endowments and due to differences in coefficients are calculated. Such observed differences in coefficients, again, indicate that there may exist discrimination against one group relative to the other; the decomposition allows one to measure the share of the earnings differential due solely to this discrimination.

2. Literature Review

Studies of immigrants' employment earnings can be divided into two types: studies of discrimination and studies of assimilation. These two types of study are related to each other, but not tied to each other; one does not need to discuss one of the types to discuss the other. In fact, since discrimination against immigrants relative to non-immigrants occurs at a point in time, but the effect of immigrants' assimilation on their earnings occurs over time, econometrically discrimination should be studied using cross-sectional analysis, whereas assimilation should be studied using longitudinal analysis. The early studies of immigrants' earnings, such as Chiswick (1978), interpreted results from cross-sectional analysis using earnings equations to address both

discrimination and assimilation, until Borjas (1985). Borjas (1985) pointed out that assimilation is time-varying, and therefore any result or interpretation on assimilation based on cross-sectional analysis is biased. Borjas (1985) then proposed a new approach that can eliminate the issues he raised. However, a limitation of this approach is that it does not provide much insight into discrimination. Nonetheless, both Chiswick's (1978) and Borjas's (1985) approaches are based on the human capital earnings equation. Since then, those who are interested in assimilation tend to follow Borjas's (1985) method, while other researchers continue to use the usual cross-sectional analysis to study discrimination, with few enhancements to Chiswick's (1978) specification of the earnings equation.

This literature review is therefore divided into two subsections. The first subsection discusses discrimination against immigrants and how Chiswick (1978) and others have measured it, and second subsection discusses Borjas's (1985) concerns about cross-sectional analysis and his different approach that can address those concerns. Because this study is primarily interested in discrimination, the review of the literature studying assimilation is rather brief.

2.1 Discrimination

An analysis of discrimination against immigrants as opposed to non-immigrants requires a good understanding of how discrimination is defined and measured in economics. To define discrimination, one needs three components: human capital theory, the earnings equation, and employers' "tastes". Human capital theory was first introduced by Becker (1964), then further developed into a wage earnings equation by Mincer (1974). Human capital theory is about workers' productivity; it postulates that workers' productivity is determined by some of the characteristics of those workers. Hence, workers may choose to invest in themselves to increase

their own productivity for given upfront costs. The equation is then specified to examine the relationship between workers' productivity-related characteristics and their earnings. Lastly, employers' tastes reflect the possibility that employers have preferences for certain groups of workers over others, judging workers by characteristics that are not productivity-related.

Discrimination exists when offered wages depend not only on workers' productivity, but also on employers' tastes.

There are two different economic environments in which one can consider the effects of discrimination: Adam Smith's neoclassical economy, and the more realistic set-up where market failure exists. In a neoclassical economy, in which there is perfect competition and there are profit-maximizing firms in labour market, employers might have tastes for certain groups of workers, but offered wages should only be determined by workers' productivity-related characteristics. If not, those firms who take their preferences into account when determining how much to offer in wages will be driven out of the labour market due to lower productivity relative to other firms without such preferences. However, in the latter scenario, where market failure can exist due to asymmetric information for instance, the demand side of the labour market may no longer be perfectly competitive. Hence, employers' preferences may play a role when workers' wages are determined.

To observe such discrimination empirically, most researchers use a Mincer-type earnings equation as the base, then modify it. The basic earnings equation always includes two key determinants, which are workers' educational attainment and work experience. After estimating workers' earnings using this equation, the coefficients of these variables will be their estimated effects on workers' earnings. In other words, these coefficients measure how human capital is evaluated by the labour market in determining workers' earnings. Therefore, if one divides a

sample of workers into two groups, immigrants and non-immigrants, estimating separate equations for each group and comparing the estimated coefficients would right away show if the evaluations of specific human capital components differ between immigrants and non-immigrants. Of course, for immigrants, there may exist difficulties in skills transfer due to credential problems in recognizing educational attainment and/or foreign work-experience. As this can be one cause of difference in coefficients, one should be careful before labelling such differences in coefficients as discrimination at this point.

To address this issue, recent studies such as Kee (1995), Hum and Simpson (1999), and Chletsos and Roupakias (2012) divide educational attainment and work experience into that obtained in foreign countries and that obtained in the host country. They still find differences between immigrants and non-immigrants in the coefficients of human capital obtained in the host country, meaning human capital is still evaluated differently for the two groups even after addressing the issue of difficulties in skills transfer. In summary, Kee (1995), whose sample of immigrants to the Netherland is limited to Antilleans, Surinamese, Turks, and Moroccans, found after-tax hourly wage differentials between non-immigrants and the above groups of immigrants to be 11.8%, 22.9%, 36.9%, and 42.9%, respectively; Hum and Simpson (1999), who have examined the earnings gap between natives and different visible minority groups in Canada, found no statistically significant earnings disadvantage for visible-minorities that are native-born, but found that such earning differentials are rather present among the immigrants; lastly, Chletsos and Roupakias (2012), who have sub-divided immigrants to Greece into those from EU countries and those from elsewhere, found that the wage gap due to differences in coefficients is larger for immigrants from non-EU countries and for those whom terminated their education in Greece.

Chiswick's (1978) earnings equation does not divide education and experience into two components. However, Chiswick (1978) was one of the first to include a third key determinant of immigrants' earnings, which is a variable called years since migration (YSM). Researchers believe that when most immigrants first move to a new country, they may lack information on the host country's labour market as well as the culture of the working environment. In other words, newer immigrants need time to adjust themselves to fully migrate to the new society and obtain country specific human capital. This third variable is therefore included in earnings equations for immigrants to capture the effect the duration of an immigrant's stay in a host country has on their earnings. Chiswick (1978) finds its coefficient is significantly positive and large for immigrants in the U.S., then concludes that despite the fact that immigrants may face discrimination, their earnings grow as they remain longer in the host country, so that their earnings may catch up with those of non-immigrants given the same level of human capital. Some immigrants may even exceed non-immigrants' earnings by the time they fully integrate into the host country's labour market. Many other researchers have obtained similar results, including in the United States, Canada, Australia, and countries in Europe. However, Chiswick's (1978) conclusions with respect to YSM are what Borjas (1985) criticized, because he used cross-sectional data to explain a time-varying effect.

Before outlining Borjas's (1985) critique, one last key determinant which more recent studies began to emphasize when studying immigrants' earnings should be mentioned. As recent immigrants continue to diversify in race, culture, and especially in language, the language that immigrants use comfortably may not match with their host country's official language(s), despite language being the fundamental element in communication. For example, Chiswick and Miller (1985) have found that, in Australia, among immigrants from non-English-speaking countries,

those who use a language other than English at home have five percent lower incomes than those who only use English at home. In addition, if the individual reported poor proficiency in English, their income is found to be a further seven percent lower. In other words, language skills are one of the most critical assets for workers to have. They should also have a bigger impact on workers' earnings in those host countries with a less diversified labour market in language and vice versa. However, immigrants' language skills are very hard to measure objectively. Therefore, unless research is heavily focused on language, most researchers tend to include a variable indicating whether an immigrant's first language matches with the host country's official language(s), or simply do not include any language-related variables and instead divide the sample into groups based on country of origin.

2.2 Assimilation

The findings of the early studies of assimilation using cross-sectional analysis after Chiswick (1978), but before Borjas (1985), suggest two "facts": immigrants' earnings grow after they migrate to their host country, and the earnings of some immigrants with a certain stock of human capital will exceed those of non-immigrants' with the same level of human capital, 10-15 years after migration. However, Borjas (1985) pointed out two situations which may lead to serious bias in the coefficient of YSM when it is based on single cross-sectional analysis. The two cases are the following: first, some unsuccessful immigrants emigrate back to their country of origin, and second, the "quality" of immigrants may change over time as the origins of immigrants may shift from highly developed to less developed countries. The first case will most likely cause the coefficient of YSM to be upwardly biased. In the second case, if, for example a host country's immigration policy shifts from economic contribution to family reunification,

hence causing a higher intake from less developed countries, the coefficient of YSM will likely be overestimated. Therefore, Borjas (1985) suggested that the best option is to use longitudinal data to study assimilation. However, since such data are hard to find or difficult to gain access to, Borjas (1985) proposes another method that uses two or more different cross-sections which are years apart.

To avoid selection bias and its problems, Borjas (1985) has reexamined assimilation by taking samples from two different cross-sectional data sets that are several years apart, dividing immigrants into cohorts rather than using the variable YSM, taking difference between the earnings of each immigrant cohort and non-immigrants' in each sample, and finally taking the difference between two samples of those differences. In this way, Borjas estimates within-cohort growth and across-cohort growth; the former is the true change in immigrants' earnings by cohort over time relative to that of non-immigrants' earnings in each sample year, without any issues of selection bias. His findings suggest that within-cohort growth is not as big as the growth estimated using single cross-sectional analysis, confirming his hypothesis that the quality of immigrants declined over time as a result of shifts in the origins of immigrants to the United States. Borjas (1989) also uses longitudinal data and finds the same noticeable decline in the quality of the target population based on his sample. Subsequently, most studies following Borjas's (1985) method have yielded similar findings and conclusions; for example, Bloom, Grenier, and Gunderson (1995) also find that recent immigrants in Canada have more difficulty assimilating in the labour market. They use pooled 1971, 1981, and 1986 Canadian census data, and suggest explanations for their results: possible changes in Canadian immigration policy, discrimination against visible minorities, and recessions between the years of their data set.

Overall, Borjas's (1985) method is a more unbiased method of studying the effect of immigrants' assimilation on their earnings. Moreover, if differences in coefficients between groups are found, it still indicates the possible presence of discrimination. Focusing on discrimination, however, one can go one step further and measure average earnings differentials resulting from any existing discriminations. To do so, one cannot use equations with cohorts like that of Borjas (1985). Instead, one should use the Blinder-Oaxaca decomposition after performing a cross-sectional analysis using the original earnings equation. Such a decomposition method is discussed further in section 4 of this paper.

3. Data

For this study, the 2006 Canadian Census of Population and the 2011 National Household Survey (NHS) are used. One should note that the 2011 NHS was a voluntary survey, rather than the usual mandatory 2006 Census; results drawn from the 2011 NHS must be interpreted with care. The sample is restricted to males aged 18-64 who worked mostly full-time either in 2005 or 2010, since studying females in the labour market involves more complications than modeling males. The ages between 18-64 are the usual working ages in Canada. Note that non-immigrants are restricted to white persons to rule out any possible racial discrimination among non-immigrants themselves, where immigrants are sub-divided into non-visible minority immigrants and visible minority immigrants; i.e., white immigrants and visible-minority immigrants.

In addition, immigrants are restricted to recent immigrants, i.e., those who became landed immigrants between the years 2000-2004 or 2005-2009, respectively. The reason for limiting the years since arriving in Canada to a maximum of five years is because Borjas' (1985)

concerns become more severe as YSM increases. Five-year intervals are what most researchers use to define cohorts to address this concern. Note that in Canada, all persons approved for immigration first receive permanent residency (PR) status, and those PR holders who physically remain in Canada in four of the last six years from the date they obtained PR are eligible to apply for Canadian citizenship. Moreover, not all PR holders who meet the requirements immediately apply for citizenship, because many of them still want to keep their original citizenship and not all countries allow dual citizenship like Canada. Luckily, however, the only difference between PR and citizenship is that Canadian passports and the right to vote in Canada are given to immigrants with citizenship, but not to PR holders. In other words, regardless of whether the immigrant has PR or citizenship, the person is treated equally with equal chances in the Canadian labour market, hence one does not necessarily need to distinguish between PR holders and citizenship holders when studying the earnings of immigrants, unless there is a specific and valid reason.

Lastly, due to the extremely low number of immigrants living in certain provinces, the samples are restricted to those who lived in either Ontario, Quebec, Alberta, or British Columbia. One should note here that in the PUMFs, the reported provinces are where the individuals have lived in year 2006 or 2011, respectively, whereas the earnings reported are the total earnings in years 2005 or 2010, respectively. Therefore, for individuals who moved, earnings may not correspond perfectly to the province in which the individual lives. After restricting the samples and appending the data sets for the two years, the total number of observations is 239,821, including 9,802 immigrants and 230,019 non-immigrants.

The variables used in this study are called $\ln(\text{inc})$, *eduyrcan*, *eduyrfor*, *expn*, *ysm*, *ysmsqr*, *expfor*, *expforsqr*, *mtcol*, *quebec*, *alberta*, *bc*, *single*, *div_wd*, *pkid0_1*, *pkid2_5*,

pkid6_14, o1, o2, o3, o4, o5, o6, o7, o8, o9, and *wf2010* (all are defined below). The natural logarithm of *inc* is the dependent variable, where *inc* is the individual's wage and salary income (earnings in 2010 are deflated to 2005 values using the CPI). One should note here that since the PUMFs only provide categorical age variables, the mid-points of each interval are re-assigned as individuals' ages. Years of schooling are also approximated according to the information on each individual's highest level of education attained, i.e., 9 years for those who did not finish high school, 12 years for those who finished high school, 14 years for those who finished post-secondary but with less than a bachelor's degree, 16 years for those who obtained a bachelor's degree, 18 years for those who obtained a master's degree, and 23 years for those who obtained a doctoral degree. Total years of education are divided into those obtained in Canada (*eduyrcan*), and those obtained elsewhere (*eduyrfor*). Because the PUMFs do not indicate how much education was completed in Canada, it is assumed that individuals whose highest level of education was attained in Canada obtained all their education in Canada, and vice versa. One can argue that many individuals might complete part of their education in one country and finish the rest of their education in another country, leading to measurement errors. However, what employers care most about is the employee's highest level of education, and this is the reasoning behind many researchers' use of dummy variables for highest level of education attained. Hence the way in which the years of schooling variables are constructed is consistent with the use of the educational dummies.

Years of work experience are measured differently for non-immigrants and immigrants. For non-immigrants, the usual Mincer proxy is used: $expn = age - \text{years of schooling} - 6$. For immigrants, experience is divided into experience in Canada and experience outside Canada. The

experience in Canada is simply measured as their years since migration (*ysm*), and foreign work-experience (*expfor*) is calculated using Mincer proxy – *ysm*.

For the last core explanatory variable, language skills, the dummy variable *mtcol*, indicating whether the person’s first learned language at home in childhood which is still understandable is either one of Canada’s official languages, i.e., English or French, is used. Note that both the 2006 Census and the 2011 NHS have other language variables. One could potentially create an ordinal variable by combining different questions. For example, from the NHS 2011, Kwon (2016) constructs the “language proficiency level” out of four different measures of knowledge of Canada’s official languages. However, a strong theory on how to construct such a variable is required to ensure the validity of the constructed variable. Moreover, as the construction is based on more than one other variable, the chance of having a measurement error is worse than when using a single direct response from the individuals. Hence, any construction of new variables based on other variables is avoided in this paper.

For other dummy variables, province (*quebec*, *alberta*, *bc*, where *ontario* is omitted as the reference group), marital status (*single*, *div_wd*, where *married*, is omitted as the reference group), and dummies indicating presence of one or more young children in the census family at different ranges of age (*pkid0_1*, *pkid2_5*, and *pkid6_14*, where the reference group is individuals with no children) are included in the model. For occupations, according to NOCS (2011), there are ten occupational classifications. In this study, however, only seven occupational dummies (*o1*, *o2*, ..., *o7*) are included in the full models, because the number of immigrants working in arts, culture, recreation and sport, or in natural resources, agriculture and related production are very small in the sample used; hence individuals in either of these two occupational categories have been dropped from the full models. The reference occupation is *o8*,

sales and service. Lastly, a binary variable *wf2010*, indicating whether the observation is from the NHS rather than the Census, is included in all models.

Summary statistics are shown in Table 1 for these sub samples: white non-immigrants, white immigrants, and visible-minority immigrants. First, looking at the dependent variable, one can see that the average visible-minority immigrant's earnings are much lower than the average white non-immigrant's earnings. However, the average white immigrant's earnings are not that different from those of the average white non-immigrant. Secondly, looking at the core explanatory variables, the average total years of schooling of white non-immigrants with their highest level of education obtained in Canada is only around 13 years and is lower than that of immigrants. However, the average total years of schooling of white non-immigrants with their highest level of education obtained outside Canada is almost 17 years, and is higher than that of immigrants. This means that Canadians who pursue their education outside Canada tend to pursue higher education than immigrants, on average. This is somewhat surprising, because first, Canada has many universities that are ranked in the top 100 worldwide universities, and second, most immigrants are highly educated and highly skilled, since those are the ones who self-select to move to other countries. Even the host countries themselves invite more highly educated and highly skilled personnel. Nonetheless, the number of immigrants obtaining their highest level of education in Canada has grown from 2005 to 2010. This may be due to Canada having created more opportunities and reserving more spots for international students in Canada with high levels of education to become Canadian immigrants.

On average, white non-immigrants' work experience is greater than immigrants' work experience before coming to Canada, and is higher as well than the sum of immigrants' foreign work experience and their years since migration. This is likely due to restricting the sample of

immigrants to those who have been an immigrant to Canada for less than five years as the sample of immigrants includes more younger people, while non-immigrants are more evenly distributed with respect to age. As for the language skills, the proportion whose first language learned in childhood is either English or French is 96.2% for white non-immigrants, 35.4% for white immigrants, and 10.5% for visible-minority immigrants.

Lastly, looking at the other explanatory variables, one should first notice the change from 2005 to 2010 in the provinces that immigrants live in. Even though Ontario is the largest province in terms of population, a smaller population of immigrants settled in Ontario and more settled down in other provinces in 2010. There are three possible reasons for this change; maybe job opportunities have increased in other provinces compared to those with high immigrant population, maybe the fact that the 2008 recession hit Ontario harder than other provinces is reflected, or maybe different provincial nominee programs have influenced immigrants' locational choices. Next, there is clearly a large portion of married individuals among immigrants, as well as good portion of immigrants with young children in their census family. There is no clear answer to how being married or having young children effects men's earnings. The best explanation is perhaps that being married or having kids affect one's willingness to work harder. However, this implies that many unmarried workers are not using their full capacity to earn the most income and rather willing to have more leisure. Lastly, looking at the occupational categories, worth mentioning are the following: fewer visible-minority immigrants have management positions, but a higher proportion have business, finance and administration occupations; the largest proportion of immigrants work in natural and applied sciences and related occupations; and a relatively high percentage work in sales and service, or manufacturing

and utilities, but a lower shares work in trades, transport and equipment operators and related occupations.

4. Empirical Model

For this study, the usual human capital earnings equation is estimated, and then the Blinder-Oaxaca decomposition method is used in analyzing the results and to measure the size of earning differentials due to differences in returns to human capital between immigrants and non-immigrants, which can be interpreted as a measure of discrimination. The full model estimated in this study is:

$$\ln inc_{ij} = \beta_{ij} X_{ij} + \epsilon_{ij}, \quad i = N, I; j = V, W \quad (1)$$

where $\ln inc$ denotes the natural logarithm of income from wages and salary, X represents a vector of the specified individual's human capital, the subscript i indicates either non-immigrants (N) or immigrants (I), and the subscript j indicates either visible-minority (V) or white (W). For simplicity, a subscript identifying individuals has been omitted. As mentioned, earlier studies such as Chiswick (1978) estimated equations similar to equation (1) for each group of workers, and then simply comparing them the estimated coefficients across groups. Any differences in coefficients would suggest that there exists discrimination, because these coefficients represent returns to workers' human capital on average for each group. Therefore, differences in coefficients show how on average workers' human capital is evaluated differently across different groups by employers. However, these differences do not measure the earning differences due solely to the presence of discrimination.

Another way to measure earnings differences would be to simply take differences between $\overline{\ln inc}$ of each group, that is, in average earnings for two groups. The problem with this

approach is that the resulting earnings differentials confounds two causes of differences: (1) differences in average endowments between groups, and (2) differences in coefficients between groups. Hence, a better technique is needed to decompose the total difference in average log earnings in order to measure only the earning gap caused by the latter.

Blinder (1973) and Oaxaca (1973) each developed a conventional econometric technique that decomposes such wage differentials, which is called the Blinder-Oaxaca decomposition method (BOD). This methodology starts by rewriting the difference:

$$\overline{\ln inc}_N - \overline{\ln inc}_{Ij} = \beta_N' \overline{X}_N - \beta_{Ij}' \overline{X}_{Ij}, \quad j = V, W \quad (2)$$

as:

$$\Delta = \beta_N' (\overline{X}_N - \overline{X}_{Ij}) + (\beta_N - \beta_{Ij})' \overline{X}_{Ij}, \quad j = V, W \quad (3)$$

where the transformation from equation (2) to equation (3) is achieved by simply adding and subtracting the same term on the right-hand side. Note that the left-hand side of equation (3) is still the differential in mean log earnings between non-immigrants and immigrants, while on the right-hand side this difference is decomposed into two terms. The first term measures differences in average endowments evaluated at the coefficient vector of non-immigrants, while the second term measures differences in how non-immigrants and immigrants are treated by the labour market evaluated at immigrants' average endowments. Note that the decomposition of equation (3) is from the non-immigrants' point of view; i.e., average earnings of immigrants are subtracted from the average earnings of non-immigrants. Alternatively, one can easily convert the differential to the immigrants' point of view by switching the subscripts N and I and reversing the interpretation, since the equation is symmetric.

Applying the BOD method to the earnings equations estimated in this study requires one further modification to equation (3), because the models have unequal numbers for immigrants

and non-immigrants of explanatory variables due to the division of immigrants' work experience into before and after migration amounts. To address this issue, one needs to modify equation (3) for further decomposition. A modification is made in this study similar to that of Chletsos and Roupakias' (2012) version of the BOD equation:

$$\Delta = (\bar{X}_N^c - \bar{X}_{Ij}^c)' \beta_N^c + \bar{X}_{Ij}^c' (\beta_N^c - \beta_{Ij}^c) + (\bar{X}_N - \bar{X}_{Ij}^{post} - \bar{X}_{Ij}^{pre})' \beta_N + \bar{X}_{Ij}^{post}' (\beta_N - \beta_{Ij}^{post}) + \bar{X}_{Ij}^{pre}' (\beta_N - \beta_{Ij}^{pre}), \quad j = V, W \quad (4)$$

where the first two terms on the right-hand side with superscript c are equivalent to the terms in the equation (3), but with work experience excluded; the \bar{X} s without a superscript c are natives' average work experience (\bar{X}_N), immigrants' experience in Canada (\bar{X}_{Ij}^{post}), and immigrants' work experience before becoming Canadian immigrants (\bar{X}_{Ij}^{pre}); and the β s without a superscript c are the labour market's valuation of natives' and immigrants' Canadian experience and immigrants' foreign work experience. In other words, the first and third terms represent the average earnings differential due to differences in endowments, and the second, fourth, and last terms represent the average earnings differential due differences in how non-immigrants' and immigrants' endowments are recognized, i.e., measures of discrimination.

One important note needs to be made here, however. Although this paper interprets the earning gaps due to differences in estimated coefficients as discrimination itself, the link between these two is not a clear cut. For example, as Professor Gilles Grenier at the University of Ottawa comments, "if access to some occupations is limited for some groups due to discrimination, including occupations in the regression will underestimate discrimination. At the opposite, if some human capital characteristics are omitted (such as effort), the decomposition will

overestimate discrimination.¹” Thus, the second component of the decomposition should be labeled as the unexplained cause of the earnings differentials, and it is at best approximate measure of discrimination.

5. Results

The results section is divided in three subsections: (1) interpretation of results of the models without occupation dummies, (2) interpretation of results of the full model, and (3) the measurement of earnings differentials due to discrimination using Blinder-Oaxaca decomposition method.

5.1 Results without Occupational Dummies

Table 2 shows the estimated coefficients, with robust standard errors. Note that robust standard errors are used since all four models have failed both the Breusch-Pagan-Godfrey test and White’s test, indicating the presence of heteroskedasticity. The models are estimated separately for each subsample. The models are presented in the following order: white non-immigrants (1), all immigrants (2), white immigrants only (3), and visible-minority immigrants only (4). First, simply comparing columns (1) and (2), clearly the returns to years of education are much lower for immigrants compared to white non-immigrants even when the location of the worker’s highest level of education attained is Canada; the returns to immigrants’ foreign experience are also much lower than those to white non-immigrant workers’ work experience; and the language disadvantage due to not having a mother tongue that is English or French is

¹ Personal communication from Gilles Grenier, December 13, 2017

around ten times heavier for immigrants compared to white non-immigrants. Also, the estimated coefficient of YSM is positive and statistically significant, and what is interesting is that the size of this coefficient is much larger than that of foreign work experience. However, one should note that the return on YSM is found to be decreasing faster than the return on white non-immigrants' work experience, as the experiences increase. From the estimated coefficients, the return to white non-immigrants work experience exceeds the return to immigrants' YSM after 13 to 14 years. Nonetheless, these such differences in the coefficients of the human capital variables clearly suggest the presence of discrimination against immigrants relative to non-immigrants.

Looking at the other variables, workers living in Alberta earn the most, followed by Ontario, British Columbia, then Quebec; being married or having one or more children at a young age (0-5) are positively correlated with earnings. These results hold for both white non-immigrants and immigrants. However, when making these comparisons, one must keep in mind that earnings fluctuate differently for white non-immigrants and immigrants. This could be a sign that the employers hiring the two groups of workers are not necessarily the same in terms of nationality and/or race. The need to control for employer characteristics is discussed further in the conclusion.

Moving on to marital status, again, although married individuals earn the most, divorced or widowed individuals earn the next highest amount, and single individuals earn the least for both samples, the differences between types of marital status are smaller for immigrants, which can be interpreted as a sign that immigrants are overall more motivated than white non-immigrants, regardless of their marital status. Lastly, note that on average, white non-immigrants in 2010 earned less than those in the 2005, although the size of the difference is very small. In contrast, immigrants in 2010 earned more than those in 2005, on average. There can be many

possible reasons why in the same labour market, immigrants' average earnings have grown while white non-immigrants' average earnings have not, but the precise cause cannot be determined from these results. Nonetheless, all the results with respect to returns to human capital and the differences between white non-immigrants and immigrants match with the predictions based on the theories and results discussed earlier, such as Chiswick (1978), Kee (1995), Chletsos and Roupakias (2012), and many others who find negative differences in coefficients between immigrants and non-immigrants. The results are also consistent with Chiswick's (1978) finding that there are positive returns to years since migration, even after this study limited the sample of immigrants to those who have been in Canada no more than five years. However, one should immediately ask whether the discrimination against immigrants is the same or at least similar for all immigrants, or whether certain groups of immigrants face heavier discrimination.

A comparison of the results for models (3) and (4) confirms that there exists racial discrimination between immigrants. What is interesting is that when white immigrants are examined alone, although their foreign work experience is still valued very poorly compared to that of white non-immigrants, and they suffer a heavy language penalty, the estimated returns to both years of education variables are almost as high as for non-immigrants. Interestingly, YSM no longer have a statistically significant effect on white immigrants' earnings. On the other hand, it is clear that visible-minority immigrants are suffering from discrimination with respect to their years of education. Surprisingly, the size of the language disadvantage is smaller for visible-minority immigrants than for white immigrants. This again is can be a sign that as the population of Canada itself diversifies in race over time, language may not be as important for certain groups. In other words, if for example a particular ethnic group of immigrants grows and accounts for a reasonably high proportion of the population, they may hire workers from their

same ethnic group. In this case, it will be more important for workers to speak their own language, and less important to speak fluent English or French, Canada's two official languages. However, since this study has no information on the ethnicity of employers, it is hard to conclude anything about the effects of growing diversity in race on earnings at this point. For more information on language diversity in Canada, refer to Statistics Canada (2017).

Another interesting difference between the two groups of immigrants is with respect to marital status. For white immigrants, being single is more disadvantageous relative to being married than for visible-minorities. In addition, having one or more young children has a bigger positive impact on the earnings of white immigrants than on other immigrants. This may mean that the average motivation of immigrants also varies across different ethnic groups in the context of cultural differences. Lastly, although both white immigrants' earnings and visible minority immigrants' earnings have grown over time, for white immigrants the effect is actually not statistically significant. For visible minority immigrants, the relevant coefficient is statistically significant and large.

5.2 Results with Occupational Dummies

Up until now, neither occupation nor industry with occupational dummies are included in the models. However, it is important to control for either the occupation or industry (or even both if sample size is large enough), since labour markets differ across occupations and industries. In this study, only occupation is controlled for. The three models, (5), (6), and (7) in table 3 correspond to models (1), (3), and (4) with occupational dummies added. Note that an additional 14,710 observations must be deleted from the sample since workers in art, culture, recreation and sport, and in natural resources, agriculture and related production have been

excluded, as mentioned earlier. The reference occupation is sales and service. Nonetheless, R-squared has gone up slightly for all three models. Also, not surprisingly, all the estimated returns have gone down slightly in all three samples, meaning that they were upwardly biased without occupation dummies included. The biggest changes in the size of the coefficients are in the returns to the years of education variables. The coefficient of white immigrants' years of education is no longer similar to that for white non-immigrants, and visible-minority immigrants are suffering even worse discrimination with respect to years of education. The coefficients of the years of education variables for visible-minority immigrants are now about one-third of those for white immigrants and about one-fourth those for white non-immigrants. Lastly, one should note that for both models (6) and (7), especially the white immigrants, average earnings fluctuate more across different types of occupations than do white non-immigrants' earnings. However, there is one concern with respect to the interpretation of the coefficients of the occupational dummies. This is that, even though this study follows Canada's national occupational classification (NOCS), there is no clear 'rule of thumb' for grouping types of occupations. In fact, the judgement on how to merge certain occupations together is debatable and any misjudgments can result in totally different results. Yet, controlling for occupation when studying earnings is very important as it is obvious that wages differ across occupations. Also, the same problem with how to group occupations applies to how to group industries.

5.3 Earnings Differentials and Their Decomposition

Using the estimates in Table 3, the Blinder-Oaxaca decomposition of equation (4), is used to decompose the average earnings differential between white non-immigrants and white immigrants in Table 4, and between white non-immigrants and visible-minority immigrants

Table 5. A detailed decomposition for each variable is shown in Table 6. As discussed earlier, what this study is interested in are the terms labelled term_2, term_4, and term_5 in Tables 4-6, which measure the possible extent of discrimination.

First, looking at the overall average earnings differential between white non-immigrants and visible-minority immigrants, it is larger at 0.4536, than the earnings gap between white non-immigrants and white immigrants, which is 0.1357. The decomposition reveals that the gap due to differences in endowments is bigger between white non-immigrants and visible minority immigrants than between white non-immigrants and white immigrants. However, the gap due to differences in coefficients, i.e., discrimination, is also larger when comparing white non-immigrants to visible minority immigrants. Furthermore, it is interesting that the total contribution of both earnings differentials due to differences in average endowments have negative signs, meaning that their effects reduce the earnings differentials. This is interesting, because the average white non-immigrants' work experience is larger than that of both groups of immigrants, in the sample this paper is using. This can be explained by looking at table 6.

Looking at the detailed decomposition by variable in Table 6, one can notice that although the contribution of non-immigrants' work experience minus immigrants' total experience to earnings differentials (term 3) are both positive, the contribution of the work experience squared terms to the earnings differentials are both negative and larger in absolute value than the non-squared terms. The former represents the fact that, within this sample, the average work experience of white non-immigrants is bigger than that of both groups of immigrants. The latter, however, represents the fact that the return to non-immigrants' work experience is diminishing faster compared to both groups of immigrants' total work experiences. This matches with the finding of Chiswick (1978) that, although immigrants may face lower

returns to their work experience, immigrants still may be able to have better returns 'later on' due to the faster diminishing return to non-immigrants' work experience compared to immigrants' total work experience. This further implies that, although visible minority immigrants have less average experience in Canada (not surprising since immigrants have been limited to a maximum of five years since migration in this study), employers actually prefer visible-minority immigrants over white non-immigrants in the context of experience in Canada. In fact, many other categories have negative signs, but the magnitudes are relatively small and some of them are based on statistically in significant coefficients.

Looking into the main factors contributing to differences in endowments, years of education, non-immigrants' work-experience and its square, and immigrants' average foreign work-experience and its square are the main ones. On the other hand, the main contributors to differences in coefficients for white non-immigrants versus white immigrants are years of education with termination outside Canada, immigrants' foreign work-experience, and language skills; for white non-immigrants versus visible minority immigrants, discrimination with respect to years of education terminated in Canada and outside Canada, immigrants' Canadian work-experience and foreign work-experience, and language skills are all contribute to the earnings gap. In other words, not only do visible-minority immigrants face greater discrimination relative to non-immigrants than white immigrants, they are discriminated against with respect to more components of human capital. It is very surprising to find that visible-minority immigrants face bigger discrimination related to years of education compared to white immigrants, even when they both achieved their highest level of education in Canada (only 0.0336 natural log points compared to 0.1151 natural log points).

6. Conclusion and Remarks

In this study, returns to workers' human capital are examined for white non-immigrants, white immigrants, and visible-minority immigrants. Then, using a modified Blinder-Oaxaca decomposition technique, the earnings differentials between white non-immigrants and white immigrants, and between white non-immigrants and visible-minority immigrants, are decomposed to extract the average earnings differentials solely due to differences in coefficients, i.e., discrimination. When non-immigrants and all immigrants are compared, the presence of discrimination against immigrants is clearly observed. When immigrants are sub-divided into white immigrants and visible-minority immigrants, the results suggest that discrimination differs a lot between white and visible-minority immigrants. Focusing on discrimination, all core wage determinants are found to be evaluated differently between non-immigrants and immigrants. Furthermore, the total average earnings differential is 0.1357 for white non-immigrants versus white immigrants, and 0.4536 for white non-immigrants versus visible-minority immigrants. When the differential is decomposed using the BOD method, the large sizes of the contribution of the presence of discrimination against immigrants relative to white non-immigrants to their earnings differentials are exposed: 0.4094 for white non-immigrants versus white immigrants, and 0.6707 for white non-immigrants versus visible-minority immigrants. Comparing these results to those of previous work using the same decomposition method, the contribution of discrimination to the earnings gaps in this study is much bigger than that obtained by Kee (1995) with respect to the wage gap between non-immigrant Dutch and immigrant groups: Antilleans (0.1095 out of a total mean wage gap of 0.3128 is due to discrimination), Surinamese (0.0045 out of a total mean wage gap of 0.3480 is due to discrimination), Turks (0.0629 out of a total mean wage gap of 0.4173 is due to discrimination), and Moroccans (-0.0412 out of a total mean wage

gap of 0.3559 is due to discrimination). It is also bigger than Chletsos and Roupakias' (2012) measure of the contribution of discrimination to the wage gap between native Greek workers and immigrants from non-EU countries (0.17 out of a total mean wage gap of 0.28 is due to discrimination) and between native Greek workers and immigrants from EU countries (0.04 out of a total mean wage gap of 0.12 is due to discrimination). It is hard to say whether the difference in the importance of discrimination is due to the choice of country or years, or due to slightly different definitions of variables.

Lastly, there are a few limitations of this study as mentioned throughout the paper. It is perhaps the most important part of this paper, since these concerns offer guidance as to how the study could be further extended. First, it is well known that there is selection bias in immigration. Immigrants are on average better educated and more motivated when compared to average Canadians. This is because those who immigrate to Canada for purposes other than family reunification are highly motivated to work and earn a better salary, and many are highly educated and highly skilled workers. This bias may be more severe if occupations or industries are not controlled for. However, as mentioned earlier there is no best way to aggregate occupations or industries, and any small mistake can easily lead to another misspecification problem.

The second concern is that the data used in earnings studies usually rely on observed wages rather than offered wages. One can argue that workers would only accept the best wage offer; from the employers' perspective, in the presence of perfect competition they can only offer the same wage to all given the workers' assumed productivity based on their stock of human capital. However, due to asymmetries in the labour market, results based on observed wages do not necessarily coincide with results based on offered wages. Search theory provides an example of such asymmetries.

The third concern is the small number of immigrants in the sample, especially due to limiting the maximum years since migration to five years. Not only may discrimination vary across ethnic groups of immigrants, the ethnicity of employers may matter, especially in such racially diverse countries like Canada. The reason is that even if a certain ethnic group has relatively harsh attitudes towards another ethnic group, if there are enough employers from the disadvantaged ethnic group, hiring their kind without discriminatory 'tastes' would mask discrimination, since most studies are based on observed wages rather than offered wages. To address this issue and the previous issue, more information on employers is required. Such data are hard to obtain, but one could try collecting private firm data.

The last concern is the calculation of the Blinder-Oaxaca decomposition when more than one dummy variable is included in the model. Because the intercept term is sensitive to the choice of omitted variables, the decomposition calculation will change as the choice of omitted variables changes. To address this issue, many researchers usually run all possible combinations of omitted variables, then take the average of the intercepts. Yun (2005), however, has refined the problem by estimating a model without any omitted variables, that is, normalized regressions. More details on estimating normalized regressions and finding how to adjust the intercept without running all possible combinations can be found in Yun (2005).

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Table 1. Means of variables: Male workers, aged 18-64, white-natives or immigrants have been in Canada for no more than five years, and lived in one of five provinces, either in 2005 or 2010

Variables	white-natives	white-immigrants	non-white-immigrants
<i>A. Dependent Variable</i>			
Yearly Wages and Salary (CAD)	\$56,869.56	\$52,318.66	\$35,475.55
in 2005	\$55,574.23	\$49,719.54	\$32,639.97
in 2010	\$58,192.27	\$55,139.49	\$38,302.64
<i>B. Education</i>			
Years of Schooling with Highest Level of Education Obtained in Canada	13.29	15.92	15.83
Years of Schooling with Highest Level of Education Obtained in Elsewhere	16.88	15.04	14.48
Obtained Highest Level of Education in Canada (%)	98.76	11.06	13.61
in 2005	98.82	9.88	11.58
in 2010	98.71	12.33	15.63
<i>C. Work-Experience</i>			
Years of Natives' Work-Experience	21.39		
Years Since Migration		3.09	3.17
Years of Immigrants' Foreign Work-Experience		13.49	13.94
<i>D. Language</i>			
First Language Learned is Either English or French, and Only (%)	96.18	35.40	10.46
<i>E. Residency by Provinces</i>			
Resided in Ontario (%)	38.58	43.78	54.74
in 2006	38.89	49.26	61.29
in 2011	38.27	37.84	48.20
Resided in Quebec (%)	33.06	29.28	15.71
in 2006	32.85	26.69	13.41
in 2011	33.28	32.09	18.00
Resided in Alberta (%)	15.20	12.60	12.63
in 2006	15.06	10.27	9.15
in 2011	15.34	15.12	16.09
Resided in British Columbia (%)	13.16	14.34	16.92
in 2006	13.20	13.77	16.14
in 2011	13.11	14.95	17.70
<i>F. Marital Status</i>			
Single (%)	33.82	18.06	18.68
Married or Living Common-Law (%)	59.20	78.01	78.64
Divorced or Widowed (%)	6.98	3.93	2.67
<i>G. Presence of Young Child</i>			
Have One of More Child Aged Between 0-1 (%)	6.79	13.73	14.17
Have One of More Child Aged Between 2-5 (%)	11.16	18.91	19.84
Have One of More Child Aged Between 6-14 (%)	20.93	25.27	28.92
<i>H. Occupation</i>			
Management (%)	13.27	12.23	8.25
Business, Finance and Administration (%)	10.16	9.36	13.34
Natural and Applied Sciences and Related (%)	10.87	26.08	20.14
Health (%)	1.75	2.23	1.94
Education, Law and Social, Community and Government Services (%)	5.39	6.52	3.72
Art, Culture, Recreation and Sport (%) *	2.16	3.04	1.09
Sales and Service (%)	15.36	11.75	19.88
Trades, Transport and Equipment Operators and Related (%)	29.44	21.18	16.65
Natural Resources, Agriculture and Related Production (%) *	4.11	1.50	1.35
Manufacturing and Utilities (%)	7.51	6.12	13.64
Number of Observations	230,019	2,469	7,333
Note: 2010 Earnings are Deflated to 2005 Currency			
*individuals working in these occupation categories are dropped in regression			

Table 2: Regression Results of Equation (1) using OLS, without Occupational Dummies

	White Non-Immigrants	All Immigrants	White Immigrants	Visible-Minority Immigrants
	(1)	(2)	(3)	(4)
Dependent Variable: Natural Logarithmic of Wages and Salary Income				
Years of Education + Terminated in Canada	0.0954*** (0.0008)	0.0690*** (0.0035)	0.0881*** (0.0070)	0.0583*** (0.0040)
Years of Education + Terminated Elsewhere	0.0926*** (0.0012)	0.0658*** (0.0033)	0.0908*** (0.0063)	0.0519*** (0.0039)
Natives' Work Experience	0.0732*** (0.0006)			
Natives' Work Experience Squared	-0.0013*** 0.0000			
Years Since Migration		0.1621*** (0.0329)	0.0884 (0.0648)	0.1854*** (0.0375)
Years Since Migration Squared		-0.0151** (0.0052)	-0.0064 (0.0105)	-0.0174** (0.0059)
Immigrants' Foreign Work Experience		0.0296*** (0.0032)	0.0304*** (0.0074)	0.0289*** (0.0036)
Immigrants' Foreign Work Experience Squared		-0.0007*** (0.0001)	-0.0006** (0.0002)	-0.0008*** (0.0001)
Mother Tongue Not Canadian Official Languages	-0.0362*** (0.0088)	-0.3592*** (0.0235)	-0.3442*** (0.0376)	-0.2067*** (0.0307)
Quebec	-0.1622*** (0.0038)	-0.2079*** (0.0236)	-0.2994*** (0.0426)	-0.2274*** (0.0290)
Alberta	0.1631*** (0.0052)	0.2702*** (0.0271)	0.2517*** (0.0539)	0.2503*** (0.0309)
British Columbia	-0.0287*** (0.0053)	-0.0747** (0.0245)	-0.0531 (0.0558)	-0.1020*** (0.0270)
Single	-0.2794*** (0.0044)	-0.1786*** (0.0275)	-0.2000*** (0.0573)	-0.1638*** (0.0311)
Divorced or Widowed	-0.1516*** (0.0068)	-0.0914 (0.0539)	-0.2050* (0.1023)	-0.0628 (0.0625)
Have Child Age Between 0-1	0.0744*** (0.0064)	0.0477 (0.0253)	0.1325** (0.0497)	0.0347 (0.0287)
Have Child Age Between 2-5	0.0692*** (0.0053)	0.0620** (0.0226)	0.1088* (0.0452)	0.0536* (0.0255)
Have Child Age Between 6-14	0.0189*** (0.0043)	-0.0045 (0.0214)	0.0888* (0.0440)	-0.0104 (0.0240)
Individual from 2011 NHS	-0.0159*** (0.0033)	0.110*** (0.0175)	0.059 (0.0366)	0.1339*** (0.0198)
Constant	8.6640*** (0.0130)	8.9992*** (0.0786)	8.8902*** (0.1535)	8.9702*** (0.0910)
Number of Observations	230,019	9,802	2,469	7,333
R-square	0.2478	0.1336	0.1772	0.1166

Note: Robust standard errors are in parentheses. Reference group speak either English or French as their first language, lived in Ontario either in 2006 or 2011, married, does not have any child at age between 0-14, and sampled from 2006 Census. *: significant at 10%, **: significant at 5%, *** significant at 1%.

Table 3: Regression Results of Equation (1) using OLS, with Occupation Dummies			
	White Non-Immigrants	White Immigrants	Visible-Minority Immigrants
	(5)	(6)	(7)
Dependent Variable: Natural Logarithmic of Wages and Salary Income			
Years of Education + Terminated in Canada	0.0829*** (0.0009)	0.0640*** (0.0079)	0.0297*** (0.0044)
Years of Education + Terminated Elsewhere	0.0823*** (0.0012)	0.0672*** (0.0072)	0.0247*** (0.0041)
Natives' Work Experience	0.0678*** (0.0006)		
Natives' Work Experience Squared	-0.0012*** (0.0000)		
Years Since Migration		0.0828 (0.0642)	0.1710*** (0.0367)
Years Since Migration Squared		-0.0064 (0.0104)	-0.0167** (0.0058)
Immigrants' Foreign Work Experience		0.0220** (0.0074)	0.0277*** (0.0036)
Immigrants' Foreign Work Experience Squared		-0.0004 (0.0002)	-0.0007*** (0.0001)
Mother Tongue Not Canadian Official Languages	-0.0383*** (0.0087)	-0.3165*** (0.0381)	-0.1873*** (0.0300)
Quebec	-0.1542*** (0.0038)	-0.2855*** (0.0424)	-0.2325*** (0.0285)
Alberta	0.1512*** (0.0051)	0.2559*** (0.0539)	0.2390*** (0.0304)
British Columbia	-0.0305*** (0.0053)	-0.0175 (0.0557)	-0.0661* (0.0268)
Single	-0.2563*** (0.0043)	-0.2052*** (0.0579)	-0.1311*** (0.0304)
Divorced or Widowed	-0.1372*** (0.0067)	-0.1578 (0.1056)	-0.0299 (0.0606)
Have Child Age Between 0-1	0.0709*** (0.0063)	0.1104* (0.0502)	0.0405 (0.0274)
Have Child Age Between 2-5	0.0637*** (0.0052)	0.0871 (0.0450)	0.0542* (0.0247)
Have Child Age Between 6-14	0.0217*** (0.0042)	0.0915* (0.0431)	-0.0244 (0.0234)
Management	0.4471*** (0.0063)	0.6639*** (0.0752)	0.4932*** (0.0434)
Business, Finance and Administration	0.1455*** (0.0064)	0.3152*** (0.0807)	0.2908*** (0.0331)
Natural and Applied Sciences and Related	0.3054*** (0.0061)	0.5513*** (0.0630)	0.6299*** (0.0313)
Health	0.1586*** (0.0150)	0.7529*** (0.1128)	0.4874*** (0.0750)
Education, Law&Social, Community&Govern't Services	0.1006*** (0.0085)	0.2587** (0.0896)	0.2753*** (0.0603)
Trades, Transport and Equipment Operators and Related	0.0887*** (0.0050)	0.1941** (0.0635)	0.1601*** (0.0317)
Manufacturing and Utilities	0.1378*** (0.0067)	0.2220** (0.0825)	0.1867*** (0.0314)
Individual from 2011 NHS	-0.0114*** (0.0033)	0.0761* (0.0361)	0.1383*** (0.0195)
Constant	8.731*** (0.0140)	8.943*** (0.165)	9.097*** (0.0916)
Number of Observations	215,600	2,357	7,154
R-square	0.2760	0.2290	0.1671

Note: Robust standard errors are in parentheses. Reference group speak either English or French as their first language, lived in Ontario either in 2006 or 2011, married, does not have any child at age between 0-14, worked in sales and service, and sampled from 2006 Census.
*: significant at 10%, **: significant at 5%, *** significant at 1%.

Table 4: BOD of Earnings Differentials between White Non-Immigrants (Model(5)) and White Immigrants (Model(6))

Term_1	Term_3	Term_2	Term_4	Term_5						
-0.2071	-0.0666	-0.0121	0.0140	0.4075						
Total Average Earnings Differentials Due to Differences in Endowments										-0.2737
Total Average Earnings Differentials Due to Differences in Coefficients										0.4094
Total Average Earnings Differentials										0.1357

Note: All differentials are differences in natural logarithms and are computed according to equation (4). The parameter estimates used can be found in Table 3. Terms 1 and 3 relate to differences in endowments, which terms 2, 4, and 5 reflect differences in coefficients.

Table 5: BOD of Earnings Differentials between White Non-immigrants (Model(5)) and Visible-Minority Immigrants (Model(7))

Term_1	Term_3	Term_2	Term_4	Term_5						
-0.1485	-0.0676	0.4079	-0.1413	0.4040						
Total Average Earnings Differentials Due to Differences in Endowments										-0.2171
Total Average Earnings Differentials Due to Differences in Coefficients										0.6707
Total Average Earnings Differentials										0.4536

Note: All differentials are differences in natural logarithms and are computed according to equation (4). The parameter estimates used can be found in Table 3. Terms 1 and 3 relate to differences in endowments, which terms 2, 4, and 5 reflect differences in coefficients.

Table 6: Details of Decomposition by Earnings Determinants

	White Natives - White Immigrants					White Natives - Visible-Minority Immigrants				
	Term_1	Term_3	Term_2	Term_4	Term_5	Term_1	Term_3	Term_2	Term_4	Term_5
Years of Education & Terminated in Canada	0.9437		0.0336			0.9115		0.1151		
Years of Education & Terminated Elsewhere	-1.0854		0.2030			-1.0150		0.7227		
Natives' Experience - Immigrants' Total Experience		0.3305					0.3047			
Natives' Experience Squared - Immigrants' Total Experience Squared		-0.3971					-0.3724			
Natives' Experience - Immigrants' YSM				-0.0464					-0.3278	
Natives' Experience - Immigrants' YSM Squared				0.0604					0.1865	
Natives' Experience - Immigrants' Foreign Experience					0.6204					0.6338
Natives' Experience - Immigrants' Foreign Experience Squared					-0.2129					-0.2298
Mother Tongue Not Canadian Official Languages	0.0235		0.1815			0.0328		0.1334		
Quebec	-0.0061		0.0386			-0.0272		0.0123		
Alberta	0.0041		-0.0127			0.0033		-0.0111		
British Columbia	0.0003		-0.0018			0.0010		0.0058		
Single	-0.0399		-0.0090			-0.0373		-0.0233		
Divorced or Widowed	-0.0043		0.0008			-0.0060		-0.0029		
Have Child Age Between 0-1	-0.0050		-0.0055			-0.0053		0.0043		
Have Child Age Between 2-5	-0.0050		-0.0045			-0.0056		0.0019		
Have Child Age Between 6-14	-0.0009		-0.0175			-0.0018		0.0135		
Management	0.0060		-0.0278			0.0255		-0.0039		
Business, Finance and Administration	0.0015		-0.0166			-0.0041		-0.0199		
Natural and Applied Sciences and Related	-0.0480		-0.0672			-0.0276		-0.0670		
Health	-0.0007		-0.0139			-0.0002		-0.0065		
Education, Law&Social, Community&Govern't Services	-0.0011		-0.0108			0.0019		-0.0067		
Trades, Transport and Equipment Operators and Related	0.0082		-0.0234			0.0127		-0.0122		
Manufacturing and Utilities	0.0022		-0.0054			-0.0082		-0.0068		
Individual from 2011 NHS	-0.0002		-0.0421			0.0001		-0.0749		

Note: Reference group speak either English or French as their first language, lived in Ontario either in 2006 or 2011, married, does not have any child at age between 0-14, worked in sales and service, and sampled from 2006 Census.