Differences in the poverty between white and visible minority groups

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1. Introduction

Canada's immigration level has been very high since the Mulroney government opened the door more widely in the mid-1980s. The change in policy also considerably increased the racial diversity of the Canadian population. It is claimed that this increase in racial diversity has led to race-based discrimination against immigrants from non-white ethnic groups by employers in the Canadian labour market (Reitz and Banerjee, 2007).

During the same period, there has been a downward trend in the Canadian poverty rate defined as the percentage of people who live below the low income cut off. Immigrants from minority ethnic groups are generally poorer than their non-immigrant counterparts with similar labour market skills. As a consequence, the impact of the diversity of the population on the cohesion of the Canadian society has become more an important issue; particularly with regards to social inequality and race-based discrimination. According to the 2006 census, visible minorities make up 16 percent of the Canadian population.

In this study, we will use linear probability model to estimate the probability of living in poverty among white and visible minority groups (Chinese and Black). The 2006 Canadian census micro-data from Statistic Canada is the major data source.

This paper examines the following questions: why do visible minority ethnic groups (Black and Chinese) tend to be poorer than white people? Is there any difference in the probability of poverty among visible minority groups (Chinese and Black)? If there is, what causes the difference between Blacks and Chinese?

The first part of this paper reviews the literature and an appropriate estimation model. The second part describes the relevant data and sample. The third part analyses the results obtained from different linear probability estimations to compare differences in poverty among ethnic groups (visible minority and white). A brief conclusion and recommendation for future research on this topic will be made in the fourth part of this paper.

The Oaxaca decomposition shows that the differences in the probability of poverty between visible minority groups and white groups are almost explained by the differences in characteristics and in evaluation. It shows that white people are less poor than visible minority groups because they are more qualified in the labour market than visible minority groups. This is caused by the fact that most visible minority groups immigrated to Canada. However immigrants don't possess all Canadian market barriers such as languages skills, education and work experience requested in the labour market. Moreover, the probability of being below low income cut off for Chinese is approximately the same as the probability for Black to live below the low income cut off.

2. Literature review on racial disparities in income

There are several studies on racial inequalities in earnings and income in Canada. Our research focuses on a comparative assessment of the differences in poverty among visible minorities and non-visible minorities.

Phipps (1991) analyses differences in the incidence of poverty in Canada across six regions (Atlantic Canada, Quebec, Ontario, Alberta, British Columbia and Prairie). She uses the 1986 Statistics Canada Family Expenditure Survey and probit models for her estimations. She finds

that the differences in poverty depend on the characteristics of each individual in each region, such as language skills. For instance, she finds that if the mother tongue of a potential immigrant worker is French, then the probability that households would be poor is higher than if they are English speaking in Quebec and British Columbia. However, the evidence surveyed by Phipps does not support a similar finding for Atlantic Canada. Grenier and Nadeau (2010) examine why immigrants have lower employment rates in Montreal than in Toronto and use Statistic Canada 2006 micro-data masterfile, and the Blinder-Oaxaca decomposition to explain the difference in immigrant wage gaps. They reach a similar conclusion for language skills of potential immigrant workers, and conclude that the knowledge of French and the advantage of knowing French in Montreal is one of the most important reasons immigrants have lower employment rates in Montreal than in Toronto. Similar results hold for English-speaking immigrants. They also conclude that immigrants may suffer from discrimination in the labour market; however, discrimination is not caused by ethnicity, the cause of discrimination is attributed to language skills in both large metropolitan cities which are Montreal and Toronto.

In addition, Reitz and Banerjee (2007) conduct research on racial inequality, social cohesion and policy issues in Canada. They use data from the Ethnic Diversity Survey produced by Statistics Canada and Ordinary Least Square to analyse the evidence of racial inequality and discrimination in Canada. They find that visible minorities have the lowest income and highest probability of living below the poverty line compared to non-visible minorities controlling for other characteristics. They also find that visible minorities report having experiences of discrimination in the Canadian labour market. For example, 33.6 percent of visible minorities report to having experienced discrimination compared 19.2 percent of white people. Among

visible minorities, the percentage of Blacks and Chinese experienced discrimination is 44.8 percent and 35.4 percent respectively. Boyd (1992) studies gender, visible minority and immigrant earnings inequality. She analyses 1986 Canadian census data and finds that visible minorities, particularly immigrant minorities, are in an economically disadvantaged position compare to non-visible minorities.

Hum and Simpson (1999) employ the 1993 Survey of Labour and Income Dynamics and use logistic model to analyse visible minority wage opportunities in Canada. They find that immigration background has a large impact on the visible minority wages compared to non-visible minorities, and report that the immigration impact disappears when visible minorities have spent around 16 years in Canada. Using regression estimates for foreign born men and women, they find that men of the visible minority status have a wage disadvantage compared to non-visible minorities' men. For women, they find that women who are foreign born have the same wage disadvantage in the Canadian labour market whether they are or are not in visible minorities groups. By doing the regression for Canadian born, they find there are no differences in wages between visible minority and non-visible minority status. Consequently, they conclude that among immigrants, visible minority status has a wage disadvantage. Hum and Simpson appear to agree with Boyd (1992) who concludes that visible minorities face a wage disadvantage. Pendakur and Pendakur (2007) analyse disparity of minority earnings across distribution of the log earnings and use 2001 census micro-data and natural logarithms of earnings (salaries and wages) as dependent variable to estimate the quantile of log earnings. They first estimate quantile regressions by only using personal characteristics (age, education) and redo the regression using only work characteristics (occupation, industry and

work hours). Pendakur and Pendakur (2007) find there are small differences in the conditional average of log earnings between white and visible minority women in the Canadian labour market regardless whether or not work characteristics are controlled. By drawing the conditional average of log earnings distribution across quantiles, they conclude that visible minority women earn as much as white women do. They also find that controlling for only personal characteristics, visible minority men have lower conditional average log earnings compared to the conditional average log earnings of white men. However the conditional average log earnings increases for visible minority men when work characteristics are controlled. By drawing the conditional average of log earnings distribution across quantile, they find that for visible minority men, if work characteristics are not controlled, then the variation in earnings differentials is very large but otherwise there is no significant variation. These results lead them to argue that visible minority men have poor access to better jobs.

Furthermore, research conduct by Brettell and Asltatt (2007) on the immigrant entrepreneurs reveals that self-employment rates among visible minorities tend to increase due to the fact that there is labour market discrimination against visible minorities. The authors reach this conclusion by examining interview data and biographies of the entrepreneurships.

Similarly, Nakhaie, Lin and Guan (2009) analyse self-employment among visible minorities groups and social capital using evidence of the Ethnic Diversity Survey. In this survey, the authors exclude people under 15 years old, aboriginal people and people who are living in dwellings and use the logistic regressions. They conclude that participation in self-employment is not uniformly distributed across all ethno-racial groups. The differences are due to industrial

sector and social-capital endowments such as socio-demographics, ethnic identity and human capital. They suggest that there is evidence that inequality exists with respect to self-employment, and self-employment rate is lower among visible minority groups. For instance, visible minorities have about 13 per cent of self-employment compared to 87 percent of white. They also conclude that many visible minorities enter self-employment because of the restricted opportunities on labour market, since they are confronted with language, experiences and education barriers on the labour market.

Oreopoulos (2009) examines a field experiment study to determine the cause of why immigrants are getting along much poorly in the labour markets since they are allowed living permanently in Canada based on skills. The author uses a survey that consists of sending different resumes in response of thousands job postings across many occupations and industries in Toronto city. He randomized multiple resume characteristics by including the English name, Chinese name and others name, Canadian university degree, foreign university degree, experience in the Canadian labour market, experience in foreign labour market and the knowledge in both Canadian official languages. Hence he utilises the random assignments to compare the callback rates of the different resume characteristics and uses the linear probability model to estimate the callback rate for each resume sent to job posting. He first finds that Canadian born individuals with English-sounding names, Canadian education and experience are more likely to get a callback compared to foreign-born individuals with English-sounding names, foreign education and experience for a job interview that they applied. For example, 16 percent of Canadian born individuals with Canadian characteristics (English name, education, experience) got a callback for job interview compared to 5 percent of foreign born

with foreign characteristics. Second, he finds that employers consider more Canadian experience than Canadian education to give a callback for interview when foreign born individuals with strong backgrounds applied for job position. He finally finds that foreign-born individuals such as Chinese, Pakistan suffer from discrimination by the names of their country they provided on their resume. Hence when switching a Canadian resume with English-sounding name to one of the usual Chinese, Indian names, the callback rate for interview by the employers decrease by 40 percent. Employers discriminate immigrants specially visible minority groups by the name they provided on the resume.

3. Model

We are particularly interested in the relationship between individual characteristics and poverty among visible minorities in Canada. In order to examine this relationship, we analyse the poverty rate between visible minority and white groups using a binary choice model framework, in which the probability of being below the poverty line is considered to be function of the individual's characteristics. We have three different binary choice models: probit, logit and the linear probability model. All three models are used to model binary dependent variable when the low income cut off of an individual takes the value one and zero. We have estimated the probability of poverty by using linear probability model instead of probit and logit models because of the reason I mentioned in the linear probability model section.

3.1. Probit Model and logit model

Assume an individual in low income cut off or not depends on its unobservable income index T_i that is determined by the explanatory variables, in such that the lower the value of income, the greater the probability of an individual being below the poverty line.

We definite the index T_i as

$$T_i = X'\beta$$

Where X is the vector of individual characteristics, β is the vector of the coefficients. As described above, let Y=1 if the individual is below the low income cut off and Y=0 if it does not. Hence we can assume that there is a threshold level of the index T_i^*, such that if T_i exceeds T_i^*, the individual will be below the low income cut off, otherwise it will not.

3.1.1 Probit model

Suppose that the observable income of an individual is T_i^* and T_i is an unobservable low income level. Based on Cameron and Trivedi (2005) assumption that the low income cut off is normally distributed with the same mean and variance, the probability that T_i^* is less than or equal to T_i can be computed from the standardized normal Cumulative density function as follows

$$P_i = P(Y = 1|X) = P(T_i^* \leq T_i|X) = P(\varepsilon_i \leq X'\beta|X) = F(X'\beta)$$

Where F is the cumulative density function specified in the regression for the error term in the analysis and ε_i is the standard normal variable, $\varepsilon \sim N(0, \sigma^2)$ and P_i is the probability that the individual will be below low income cut off.

The coefficients of the probit model can not be interpreted as marginal impacts on the probability of low income. However to interpret the model we are required to compute the marginal effect of a unit change in the value of a regressor.

$$\frac{DP_i}{DX} = F(X'\beta)\beta_i$$

Here we can observe that the marginal effect of a unit change in the value of a regressor depend on the probability density function and on the coefficient of characteristic variable.

3.1.2 Logit model

As assumed by Cameron and Trivedi (2005), the probability that an individual will be in low income cut off is given by

$$P_i = \frac{1}{1+e^{-T_i}} = \frac{e^{T_i}}{1+e^{T_i}}$$

This function of the probability is known as the cumulative logistic distribution function. As T_i goes from minus infinity to plus infinity, P_i ranges between 0 and 1.

If P_i is the probability of being below the low income, then$(1 - P_i)$, the probability of not being in low income is

$$(1 - P_i) = \frac{1}{1+e^{T_i}}$$

Therefore we can write $\frac{P_i}{1-P_i} = e^{T_i}$, which is the odds ratio in favor of being below the low income.

The interesting result is that taking the natural log of the odds ratio, we obtain $T_i = X'\beta$. This implies that the log of the odds ratio is not only linear in X, but linear in the parameters.

The logit and probit analysis produce statistical results by allowing a transformation from the dichotomous dependent variable to a continuous variable ranging from minus infinity to infinity to avoid the problem of out of range estimates. The logit and probit analysis gives an asymptotically consistent, efficient and normal parameter so that t-tests can be applied. The logit model provides a very easily interpretable result and simple method compared to probit model in which the model is difficult and the results are hard to interpret. The main difference between probit and logit models is that the logistic distribution has slightly fatter tails. Consequently, the conditional probability approaches 0 or 1 at a lower rate in logit than in probit. In general, both probit and logit model provides a similar result compared to linear probability model.

3.2 Linear probability model

Let assuming the following regression model:

(1) $$Y_i = X'\beta + \varepsilon_i$$

Where we denote Y=1 if the individual declare to be a member of low income and Y=0 if it does not.

Carmeron and Trivedi assume that the expectation of the error term given X' is equal to zero.

Let compute the conditional expectation of Y_i given X'.

(2) $E(Y_i|X) = P(Y_i = 1|X) = X'\beta$ Since $E(\varepsilon_i|X) = 0$

Which is interpreted as the conditional probability that the individual will declare to be a member of low income.

P_i is the probability that the individual will be a member of low income (Y=1) and $(1 - P_i)$ is the probability that the individual will not be a member of low income (Y=0). Therefore Y follows the Bernoulli probability distribution and then $E(Y) = 0 * (1 - P_i) + 1 * P_i = P_i$. Hence

(3) $$E(Y_i|X) = X'\beta = P_i$$

Since the probability P_i must be between 0 and 1, we have the restriction that the condition expectation must also lie between 0 and 1.

There are certain problems associated with linear probability models such as:

- non-normality assumptions of the disturbances $(\varepsilon's)$

As Y_i can only take the value of one and zero, the error term is binary as well and not normally distributed but because of the central limit theorem, the assumption of normality is not critical to least squares estimation of the normal probability model.

- heteroscedastic variances of the disturbances,
- nonfulfillment of conditional expectation

This is a serious problem with the Linear Probability model. Since the assumption that the mean of error term is equal to zero, that implies the assumption of linearity is only valid over a limited range of characteristics values. However, the predicted estimated probability can lay

out of the range 0 and 1. Therefore it does not make sense to interpret the result as the probability.

- Questionable value of R square as a measure of goodness fit.

The common disadvantage of the three models is that we have a problem of heteroskedastic variance of the disturbances term and questionable value of R square as a measure of goodness fit. In the probit and logit model, we don't have any problem of non-normality assumptions of the disturbances and nonfulfillment of conditional expectation since the assumptions of normality in the probit and logistic in the logit range perfectly the predict probability between 0 and 1 compared to linear probability model. Despite the disadvantages of linear probability model, Robert Moffit (1999) argues that linear probability model has some advantages. He said that since the fitted value of Y is closed to the mean of the data, then it is unlikely that linear probability model could produce fitted values of Y outside of zero-one range. He also argues the problem of heteroskedasticity is not a big deal for the linear probability model since there are many methods for correcting heteroskedasticity. Therefore there are no problems with linear probability model if predictions of the probability are closed to the mean of the data. Consequently, linear probability model can be considered as linear approximation to the true model. Taking into account these advantages of the linear probability model, in this paper, we will use it instead of using probit and logit model to analyse the poverty among visible minority groups.

3.3 OAXACA Decomposition Methods

During 1970, there has been a remarkable difference in the wage between male-female in the American economy. As a consequence, many questions regarding the cause of the wage differential between men and women has become important, particularly the questions of how much of the male-female wage differential is attributable to differences in characteristics such as education, employment, age and marital status? How much of the male-female wage differential is attributable to the differences in coefficients (if the male and female have the same equal job, what is the difference in the wage between male and female)? In this context, Oaxaca (1973) proposed the decomposition of the male-female wage differential called Oaxaca decomposition which consists of measuring how much the wage differential between male and female can be attributed to the differences in characteristics and differences in the coefficients called discrimination.

He argued that the discrimination against women may exist if the relative wage of male is higher than the relative wage of female, assuming that men and women were paid according the same job characteristics. Hence he proposed that the measure of discrimination (D) can be computed in the followings way:

(4)
$$D = \frac{\frac{W_m}{W_F} - \left(\frac{W_m}{W_f}\right)^*}{\left(\frac{W_m}{W_f}\right)^*}$$

Where $\frac{W_m}{W_f}$ is the observed male-female wage ratio and $\left(\frac{W_m}{W_f}\right)*$ is the male-female wage ratio in the absence of discrimination.

D can be express as:

(5) $$D = \frac{\frac{W_m}{W_f}}{\left(\frac{W_m}{W_f}\right)_*} - 1$$

Taking natural logarithm of D gives (6) $\ln(D+1) = \ln\left(\frac{W_m}{W_f}\right) - \ln\left(\frac{W_m}{W_f}\right)_*$

The measure of discrimination is defined as the log of the men-women wage ratio when there is discrimination minus the log of the men-women wage ratio in the absence of discrimination.

In order to estimate the wage ratio for men and women without discrimination, he equivalently estimates the equation D.

Consider the example of Chinese and blacks instead of men-women for the estimation since this paper is concerned with visible minority groups which include Chinese and Blacks; and instead of the wages we will take low income cut off. Since our dependent variable is binary, then we proposed that the measure of discrimination between black and Chinese can be represented as the followings:

(7) $D = P - P^*$, where P is the difference in the probability of poverty when there is discrimination (difference due to differences in characteristics and in coefficients) and P^* is the difference in the probability when there is no discrimination (difference due only to individual characteristics). We can rewrite equation (7) in the following form: $P = D + P^*$

The assumption is that without discrimination, both Chinese and Blacks have the same proportion of being below the low income cut off when we applied the same characteristics to each group. When we consider discrimination, the proportion of Chinese who live below the low income cut off is more or less compare to the proportion of Blacks who live below the low

income cut off when we applied the same characteristics to each group. With respect to the two assumptions, we can estimate the proportion of Chinese below the low income by applying Black characteristics to Chinese people and we can estimate the proportion of Blacks in the same way and vice-versa. However, for any given group (Chinese and Blacks) we will provide a linear probability estimation of a low income equation. We will estimate the low income equation separately for each visible minority groups (Black and Chinese). The low income equation for each group has the following form:

(8) $$Y_i = X'_i \beta + \varepsilon_i$$

Where Y_i=1 if an individual from an ith group declare to be in low income; otherwise Y_i=0, X'_i is the vector of individual characteristics, β is a vector of coefficients and ε_i is a disturbance term.

If we assume that if there is no discrimination then the difference in the probability of being poor between Chinese and black will be zero. In contrast if there is discrimination then the difference in the probability between Chinese and black will be represented in the following form:

(9) $$P = P_C - P_B = Y_C - Y_B$$

Where Y_C is the proportion of group C who declares to be in the low income class and Y_B is the proportion of group B who declare to be below the low income cut off?

The assumptions about which proportion of low income structure must prevail in the absence of discrimination imply that low income differential can be decomposed into the effect of differences in coefficients (discrimination) and the effects of differences in individual

characteristics. Now suppose that the difference in the proportion of being in low income between Chinese and Black can be represented by the following term:

(10) $N = \bar{Y}_C - \bar{Y}_B$, where $\bar{Y}_C$ is the average of Chinese who declare to have low income cut off and $\bar{Y}_B$ is the average of Black who are below the low income cut off. Estimating equations below from Ordinary Least Square estimation

(11) $$\bar{Y}_C = \bar{X}_C\beta + \bar{\varepsilon}_C$$

and

$$\bar{Y}_B = \bar{X}_B\beta + \bar{\varepsilon}_B.$$

We get

(12) $$\bar{Y}_C = \bar{X'}_C\hat{\beta}_C$$

(13) $$\bar{Y}_B = \bar{Y}_B\hat{\beta}_B$$

where $\bar{X}_C$ and $\bar{X}_B$ are the vectors of the average value of characteristics for Chinese and Blacks; and; $\hat{\beta}_C$ and $\hat{\beta}_B$ are the vector of the estimated coefficients. Now we can write from equation (10) that

(14) $$\mathrm{N} = \bar{X'}_C\hat{\beta}_C - \bar{X'}_B\hat{\beta}_B$$

Adding and subtracting $\bar{X}_C\hat{\beta}_B$; and rearranging equation (10) we have

(15) $$\mathrm{N} = (\bar{X}_C - \bar{X}_B)\hat{\beta}_B + (\hat{\beta}_C - \hat{\beta}_B)\bar{X}_C$$

Replacing $N\ by\ \bar{Y}_C - \bar{Y}_B$ we get

(16) $$\bar{Y}_C - \bar{Y}_B = (\bar{X}_C - \bar{X}_B)\hat{\beta}_B + (\hat{\beta}_C - \hat{\beta}_B)\bar{X}_C$$

Comparing equation (10) and equation (16), we can say that equation (16) is just the predicted value of the ordinary least square estimation of the equation (7), consequently,

(17) $\widehat{P^*} = (\bar{X}_C - \bar{X}_B)\hat{\beta}_B$ and (18) $\widehat{D} = (\hat{\beta}_C - \hat{\beta}_B)\bar{X}_C$. Hence these two equations (17 and 18) are respectively the effect of differences in individual characteristics and the effect of coefficients (discrimination) in the decomposition of the low income differential. As in the case of male-female wage differential proposed by Oaxaca, we find that using the same technique of Oaxaca to decompose male- female wage differential, Chinese-Blacks low income differential can be decomposed into two components. The first one is the effect of individual characteristics on Chinese-Blacks differentials income called endowments and the second is the effect of differences in coefficients called discrimination.

Dependent variable

Our dependent variable is a 0-1 indicator of whether an individual's income is Low-income cut-off or not. There are two kinds of low income cut off: low income after tax and low income before tax but we will only focus on the low income before tax as it is based on the market incomes and since we examine the impact of labour market discrimination on an individual from visible minority groups.

Independent variables

Our independent variables only contain categorical variables which include geographic areas, ages, education, marital status and immigrants status. Education, ages and marital status

are the main determinant factors to understand how much an individual from any Chinese or Black can earn on the labour market. From human capital theory, individuals with higher levels of education will have higher incomes compared to individuals with low education level Becker (1962). He also argued that age determines the number of experienced years in labour market after finishing school and then an increase in ages is associated with an increase in individual earnings. Moreover, Becker (1974) argued that marital status plays an important role on the labour market earnings and that people get married whenever their income of being married exceeds their income if they were not married. He also found that during the marriage, if the expected utility gain from marriage is less than the expected earning utility gain from divorcing, the husband or wife will divorce to optimize her or his expected earnings utility. Furthermore, a widowed individual will be remarried if only and if the expected earnings utility of being widow is less than the expected earning utility of being married again. An important reason that husband or wife does or does not want the divorce is the cost of divorce. Another important reason which is related to the labour market is the fact that married couples have more consideration and credibility on the labour market. Chiswick (1978) also argued the participation rate of married person is higher and holding age, education, and other characteristics married person have higher earnings compared those who are not. in this study, we control for marital status and immigrants status.

4. Data and Sample

In this study, we use the public micro data file on individuals from 2006 Canadian Census. This data represents 2.7 percent of population with approximately 844,400 individuals.

In this sample, 15.82 percent are visible minorities with Chinese and Blacks representing respectively 4.05 and 2.5 percent.

We restrict our sample to individuals who are in the prime working ages (people who are between 35 and 55 years old). Immigrants (person who obtained permission to live permanently from Canadian government) and non –immigrants (Canadian born citizen) are included, but we excluded aboriginal peoples (Statistics Canada defines this group people as persons who declare least one aboriginal ancestry in the ethnic origin question in 2006 Census) and individuals with visitors' visas (person from another country who got work or study permit or who were looking for humanitarian admission to Canadian land as refugee claimants or people who resided in the dwellings).

People who live in the territories (Yukon Territory, Northwest Territories and Nunavut) and people who immigrated in 2005 and 2006 are excluded due to the fact that there is no information on low-income status in these areas and for these immigrants. We include five regions of Canada (Prairie, Atlantic Canada, Quebec, Ontario and British Columbia). Disregarding individuals who are not permanent resident, aboriginal, recent immigrants and people aged between 15 and 34; and between 55 and over, our sample represents 1.3 per cent of population with approximately 208478 individuals with 103144 men and 105334 women.

After the restrictions, table 1 shows that white men are less likely to have income below the low income cut off than Black and Chinese men and vice-versa for women. For example, 9.67 percent of white men are below the low income cut off compared with 23 percent of Black men and 24 percent of Chinese men. According to table 1, Chinese men are more educated

than White and Black men and vice-versa for women. For instance, Chinese men who have diplomas below bachelor degree level are 24.2 percent compared with 40.5 percent of White men and 40.5 percent of Black men and Chinese men who have bachelor degree are 25.8 percent compared with 12.2 percent of white men and 10.6 percent of Black men. The proportion of Chinese women with diploma below bachelor degree is 28.5 percent compared with 38.9 of white women and 48.6 percent of Black women. The proportion of Chinese women who has bachelor degree is 22.6 percent compared with 13.2 percent of white women and 10.2 percent of Black women. The proportion of white, black and Chinese men employed in the labour market is approximately the same for the three ethnic groups. But Chinese women are less likely to be employed than White and Black women due to the fact Chinese women are more likely to be out of the labor force than White and Black women (see Table 1). According to the language skills, there are large proportions of Chinese (women and men) who speak neither English nor French compared to Black and White. For example, 14.3 percent and 11.8 percent of Chinese women and men reported to know neither English nor French compared with 0.10 percent and 0.2 percent of white men and women respectively.

5. Results

This section first analyses changes in the probability of poverty of Black and Chinese groups obtained from linear probability estimations. The results from Table 2 are obtained by estimating separately equation (1) for Blacks and Chinese groups.

Table 2 shows the change in the probability of poverty for Black and Chinese groups if one characteristic changes, holding all others factors constant. According to Table 2, Black men

living in Quebec have 10 percentage points higher probability of being poor than those living in Ontario when other characteristics are constant. But Black men who live in others regions such as British Columbia, the Prairies and Atlantic Canada have no difference in the probability of being poor than their Ontario counterparts. For Chinese men, we have similar results, holding other characteristics constant, if Chinese men live in Quebec, the probability of living below the poverty line increases by 11.2 percentage points compared to Chinese men who live in Ontario. The probability increases by 7.7 percentage points if the Chinese men live in British Columbia.

Our results from Table 2 show that age, marital status, immigrant (foreign-born) and unemployment have no impact on the probability of poverty for Black men. Black men who have bachelor degrees have lower probability of being poor compared to those who don't possess bachelor degrees. Chinese men who are in the first prime working aged (between 35 years old and 44 years old) have higher probability of living in the poverty. The probability of poverty increases by 3.4 percentage points for Chinese men who are aged between 35 and 44 years compared to Chinese men aged between 45 and 54 years old. For language skills, if Chinese men speak English or French, then the probability of living in low income cut off decreases. For example, if a Chinese man speaks French the probability that he will be in low income decreases by 21.3 percentage points holding other characteristics constant. The probability of poverty for a Chinese man is negatively associated with the level of education. Immigrants status also play an important role in the probability of poverty for Chinese men. A Chinese man who was born in Canada has a lower probability of being in poverty than a Chinese man who is a foreign-born. For example, the probability of poverty for Chinese men who immigrated in Canada is 12.3 percentage points higher than those who were born in

Canada. The largest marginal effect is being employed, which lowers the probability of poverty. The probability of being poor for a Chinese man and Black man who are employed falls by 33 percentage points and 30.4 percentage points respectively.

For Black women and Chinese women, employment is also very important. As for Black men and Chinese men, employment is negatively associated with the probability of living below the low income cut off level for Black and Chinese women. For instance, if Black and Chinese women are employed, the probability that they can be in poverty decreases by 31.7 percentage points and 24.4 percentage points respectively. For language skills, if a Chinese woman knows English or French then the probability of being under the poverty line decreases but for Black women language skills are not statistically significant. The probability of Chinese woman who speaks English decreases by 21.2 percentage points. This result obtained for both visible minorities can be explained by the fact that most Black people who are immigrants come from English speaking countries or French speaking countries compared to Chinese people who come from a country that does not speak one of the Canadian official languages. According to Table 2, an increase in the level of education is negatively associated with the probability of poverty for Black and Chinese women. If a Black or Chinese woman has a bachelor degree, the probability that she would be in the poverty decreases respectively by 7.4 percentage points and 15.4 percentage points keeping all others variables constants. This seems to be consistent with the fact that, people who receive a better education tend to have high income, thus lower probability of being in low income.

1. **Explanation of differences in the probability of poverty between whites and Blacks.**

The results from Table 3 are obtained by estimating equation (11) with the Oaxaca decomposition method. Table 3 provides the decomposition of the differences in the poverty between White and Black groups. Table 3 shows that Black men and women reported having 23.1 percent and 28.1 percent of being poor respectively compared to 9.7 percent and 10.5 percent of White men and women respectively. Taking the difference between Black and White probability of being poor leads to having 13.4 percentage points of difference between Black men and White men and 17.6 percent of difference between Black women and White women. Here it is remarkable to note that the differences in the poverty between Black women and White women are larger than the difference in the probability of poverty between Black men and White men. For men, this difference in the probability between Black and White is only due to the differences in the coefficients (discrimination) since the differences in characteristics is not statistically significant. For example, Table 3 shows that 11.7 percentage points of difference in coefficients explained the differences in the probability of poverty between Black and White. This finding is consistent with the fact that Black men are more likely to feel that they have experienced discrimination on the labour market. Moreover, Black men have lower employment and employment income and higher unemployment rates compared to White men who are in the prime working age (Nakhaie, Lin, and Guan 2009). For women, 17.6 percent of the difference in the probability of poverty between Black women and White women is explained by differences in characteristics and differences in the coefficients. Here the differences in coefficients only explained 4.6 percentage points of the differences in the probability between White and Blacks which is a very small magnitude. But the differences in characteristics explained almost all the differences in the probability of poverty between White

and Black individuals. It explained 12.9 percentage points of the differences in the probability between these groups.

Table 3 shows that if Black women were likely to be as employed as White women are likely employed then the differences in the probability will increase by an additional 1.3 percentage points. If Black women were awarded good employment as White women are awarded better employment then the differences in the probability will decrease by an additional 11.5 percentage points. This will lead to have only 2.8 of the differences in the probability of poverty between White women and Black women. These results almost explained the differences in the probability of poverty and confirm that Black women have lower employment rate which leads them to having low income and higher unemployment rate among the Canadian population and then to report having low income on the labour market. Another important finding is immigrant status. Table 3 shows that Black women immigrants have high probability of being below the low income compared to White women immigrants. It shows that if White women were likely to immigrant in Canada as the same Black women are likely to immigrants in Canada then the differences in the probability of poverty between White women and Black women will decrease by an additional 8.4 percentage which account for 47 percent of the difference in poverty between White and Black women.

We can conclude that the differences in the probability of poverty are explained by the fact that Black people have lower rate of employment, employment income and higher unemployment rate among the Canadian population compared to White people.

2. Differences in the probability of poverty between Chinese and whites.

In this section, we computed the probability of poverty of Chinese and White; and then we take the differences between the probability of poverty of Chinese and White. We decomposed the differences in the probability of poverty between Chinese and White in two components (differences in coefficients and differences in characteristics) by estimating equation (10).

Table 4 depicts the decomposition of the differences in the probability of poverty between White and Chinese. It shows that the probability of poverty for Chinese men to be in low income cut off is 24.3 percentages points and the probability of poverty is 9.7 percent for White men. Therefore, the difference in the probability of poverty between Chinese men and White men is 14.7 percentage points. Table 4 also shows that the probability that Chinese women live in poverty is 25.4 percentage points and the probability of living below the poverty line is 10.5 percentage points for White women. Hence the differences in the poverty between Chinese women and White women are 14.9 percentage points. As we can remark for the differences in the probability of poverty between Chinese and White are almost the same for men and women. The differences in the probability of being poor between Chinese and White are explained by the differences in characteristics for both men and women. The differences in characteristics explained 15.8 percentage points of the differences in poverty between White and Chinese men; and 18 percentage points of the differences in the probability of poverty between Chinese and White women.

From our results in Table 4, we observe that the major reason Chinese are more likely to be poorer than White is immigrants status. It shows that people who are more likely to

immigrant to Canada have high probability of being in poverty than people who are Canadian born. For example, if Whites were as likely to immigrate to Canada as Chinese then the differences in the probability of poverty will decrease by an additional 9.8 percentage points and 12.7 percentage points for both men and women respectively which represents approximately 66.5 percent and 85.1 percent of the reduction in poverty gap between Chinese and White. This result shows that immigrants have more difficulty to enter in the labour market and employers have more incentive to hire non-immigrants, consequently immigrants tend have lower employment and higher employment rate compared to non-immigrants. The fact that the employment rate is lower among immigrants and more Chinese are immigrants is consistent with the fact that Chinese have high probability of being poor.

In addition to immigrants status, we consider the impact of Canadian official language knowledge. Language skills play a major role in the explanations of the differences in poverty between Chinese and White. If Chinese were as likely to know English as white are likely to know English then the probability of poverty will decrease by an additional 7.4 percentage points and 5.6 percentage points for men and women. This implies that the differences in probability of poverty between Chinese and White will decrease by (7.4/14.7) 50.68 percent and 37.2 percent for men and women respectively. For education, the level of education does not explain so much the difference in the probability of living in the poverty between White and Chinese. In contrast of immigrants status and language skills; age, education and employment don't explain much the differences in the probability of poverty between White and Chinese.

In summary, the differences in the probability of poverty between Black and White men are explained by differences in coefficients. In counterparts, the differences in poverty between Black and White women are explained by differences in characteristics which imply that White women tend to be more qualified in the labour market than Black women. The differences in poverty between Chinese and White are explained by differences in characteristics for both women and men.

6. Conclusion

Our finding suggest that the major reason that White groups are likely to be less poor than visible minority groups (Chinese and Black) is due to the fact that there are many visible minority immigrants compared to White immigrants. In fact, immigrant people are confronted to the lack of knowledge of languages, culture and experience in the Canadian labour market. It is difficult for them to find jobs that describe their level of competences because they don't have Canadian experience or Canadian university degree as required in the labour market. Consequently, the employment rates for immigrants become lower and since most of the immigrants are from visible minority groups (Black and Chinese) then employment rate for Chinese and Black are lower.

The probability of poverty for Black and Chinese men is respectively 23.1 percentage points and 24.3 percentage points. The probability of living below poverty between Black and Chinese women is respectively 28.1 percentage points and 25.4 percentage points. As we can remark there are no differences in the probability of poverty between Chinese and Blacks.

The differences in the probability of poverty between Chinese and White are explained by the differences in characteristics for both men and women; but the differences in the probability between White and Black are explained by differences in the coefficients of Black men and differences in characteristics for Black women. This dictates that Black men suffer from discrimination on the labour market compared to Chinese men who don't acquire the knowledge of the Canadian labour market barriers.

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Appendix:

List of Variables and their definition.

Note that all variables with asterism * are excluded in the sample and variables with asterism *** are not included in the regression equation

Variables	Definition
Low income before tax	Equal to one if the household is member of low income economic family or low income person before tax; otherwise 0.
Ontario***	Equal to one if the household was in Ontario during the census; otherwise 0.
Quebec	Equal to one if the household was in Quebec during the census; otherwise 0.
British Columbia	Equal to one if the household in British Columbia; otherwise 0
Prairie	Equal to one if the household was in Saskatchewan, Manitoba or Alberta; otherwise 0.
Atlantic	Equal to one if the household was in New Brunswick, Newfoundland; Prince Island Edward or Nova scotia; otherwise 0.
Female ***	Equal to one if the household is female; otherwise 0.
Chinese ***	Equal to one if the household is member of Chinese group; otherwise 0.
Black ***	Equal to one if the household is member of Black group; otherwise 0.
Not visible minority group (white) ***	Equal to one if the household is a member of white group; otherwise 0.
Non-immigrants*	Equal to one if the household is international student, or temporary worker or refuge; otherwise 0.
Aboriginal*	Equal to one if the household declared to be aboriginal person by ancestry; otherwise 0.
Age between 35 and 44	Equal to one if the household is between 35 and 54 years old; otherwise 0.
Age between 45 and 54***	Equal to one if the household is between 55 and 64 years old; otherwise 0.
French	Equal to one if the household speaks French; otherwise 0.
English	Equal to one if the household speaks English; otherwise 0.

Both French and English	Equal to one if the household both French and English; otherwise 0.
Neither French and English***	Equal to one if the household does not speak French or English; otherwise 0.
No-diploma	Equal to one if the household does not have any diploma or certificate; otherwise 0.
High school diploma***	Equal to one if the household has high school diploma; otherwise 0.
Diploma below bachelor degree	Equal to one if the household has college diploma or certificate, non-university diploma or certificate, university diploma below bachelor or trade certificate; otherwise 0.
Bachelor degree	Equal to one if the household has bachelor degree; otherwise 0.
Diploma above bachelor degree	Equal to one if the household has master degree, doctorate degree, university certificate or diploma above bachelor degree, diploma in medicine, dentist, veterinary medicine or optometry; otherwise 0.
Divorced	Equal to one if the household is divorced; otherwise 0.
Widowed	Equal to one if the household is widowed (his husband or wife is died); otherwise 0.
Legally married	Equal to one if the household is legally married but never separated or divorced; otherwise 0.
Single ***	Equal to one if the household is never married in his life; otherwise 0.
Separated married	Equal to one if the household is married but separated from her husband or his wife; otherwise 0.
Non-immigrants***	Equal to one if the household is Canadian-born; otherwise 0
Immigrants	Equal to one if the household is foreign-born but is Canadian or have permanent resident ; otherwise 0
Employed	Equal to one if the household worked between 2005 and 2006; otherwise 0.
Unemployed	Equal to one if the household didn't work between 2005 and 2006; otherwise 0.
Not in labour force***	Equal to one if the household was not in the labour force between 2005 and 2006; otherwise 0.

Table 1

Common characteristics of whites and visible minority groups (Blacks and Chinese)

	Men			Women		
Proportion of individuals	White	Black	Chinese	White	Black	Chinese
Low income before tax	0.097	0.231	0.243	0.105	0.281	0.254
Ontario	0.361	0.618	0.482	0.367	0.652	0.483
Quebec	0.266	0.215	0.056	0.267	0.216	0.049
British Columbia	0.115	0.047	0.349	0.112	0.033	0.359
Prairie	0.171	0.091	0.109	0.164	0.065	0.105
Atlantic	0.086	0.028	0.003	0.089	0.034	0.003
Aged between 35 and 44	0.473	0.563	0.512	0.468	0.577	0.506
Aged between 45and 54	0.526	0.437	0.488	0.532	0.423	0.494
Speaks French	0.719	0.798	0.855	0.718	0.804	0.833
Speaks English	0.273	0.176	0.011	0.273	0.175	0.011
Speaks Both French and English	0.006	0.022	0.015	0.006	0.014	0.013
Speaks Neither French and English	0.001	0.004	0.118	0.002	0.006	0.142
With no diploma	0.159	0.124	0.129	0.126	0.14	0.154
With high school diploma	0.242	0.272	0.179	0.283	0.219	0.24
With diploma below bachelor	0.405	0.405	0.242	0.389	0.486	0.285
With bachelor degree	0.121	0.105	0.258	0.132	0.102	0.227
With diploma above bachelor	0.072	0.093	0.191	0.068	0.052	0.094
Single	0.255	0.249	0.121	0.191	0.25	0.108
Divorced	0.107	0.106	0.045	0.135	0.159	0.065
Legally married	0.592	0.572	0.813	0.605	0.458	0.791
Widowed	0.005	0.002	0.002	0.017	0.019	0.01
Separated married	0.041	0.069	0.017	0.051	0.113	0.026
Immigrant	0.113	0.859	0.908	0.112	0.845	0.918
Non-immigrant	0.887	0.141	0.092	0.887	0.154	0.082
Employed	0.876	0.848	0.832	0.792	0.749	0.696
Unemployed	0.04	0.064	0.048	0.034	0.072	0.049
Not in labour force	0.083	0.087	0.119	0.174	0.179	0.253
Number of Observation	96405	2120	4619	97846	2318	5170
Total number of Observation		103144			105334	

Table 2

Linear Probability Regression Model Coefficients

	Black				Chinese			
	Men		Women		Men		Women	
Change in the probability of being in low income when characteristics change	Coef.	P>|t|	Coef.	P>|t|	Coef.	P>|t|	Coef.	P>|t|
Quebec	0.1	0.002	0.044	0.145	0.112	0	0.064	0.024
British Columbia	0.025	0.547	0.075	0.114	0.077	0	0.071	0
Prairie	0.043	0.167	-0.012	0.718	-0.037	0.062	-0.042	0.029
Atlantic	-0.022	0.7	0.043	0.39	-0.062	0.564	-0.108	0.316
Age 35 and 44	0.018	0.31	0.111	0	0.034	0.005	0.04	0
French	-0.064	0.657	0.0798	0.465	-0.213	0	-0.181	0
English	-0.06	0.68	0.133	0.237	-0.284	0	-0.212	0
Both French and English	-0.004	0.981	0.285	0.028	-0.254	0	-0.142	0.009
No-diploma	0.019	0.53	0.064	0.027	-0.081	0	-0.049	0.008
Diploma below bachelor degree	-0.034	0.122	-0.056	0.009	-0.063	0.001	-0.053	0.001
Bachelor degree	-0.081	0.011	-0.154	0	-0.065	0.001	-0.074	0
Diploma above bachelor degree	-0.038	0.26	-0.114	0.005	-0.051	0.011	-0.071	0.001
Divorced	0.015	0.652	0.028	0.29	0.04	0.219	0.113	0
Legally married	-0.039	0.069	-0.165	0	0.043	0.023	-0.012	0.521
Widowed	0.133	0.462	0.049	0.431	0.135	0.249	0.08	0.174
Separated married	0.036	0.344	0.092	0.002	0.138	0.004	0.212	0
Immigrant	0.019	0.495	0.115	0	0.123	0	0.158	0
Employed	-0.33	0	-0.317	0	-0.304	0	-0.244	0
Unemployed	-0.056	0.221	-0.005	0.893	-0.081	0.011	-0.024	0.386
Constant	0.565	0	0.353	0.002	0.544	0	0.434	0

Table 3

Estimated differences in probability of poverty between Blacks and whites using Oaxaca decomposition

	Men		Women	
Estimated probability of being in low income	Coef.	P>|z|	Coef.	P>|z|
For Black	0.231	0	0.281	0
For White	0.097	0	0.105	0
Difference in probability between black and white	0.133	0	0.176	0
Difference due to differences in characteristics	0.016	0.422	0.129	0
Difference due to differences in coefficients	0.117	0	0.046	0.024
Differences in characteristics				
Quebec	-0.005	0.006	-0.002	0.157
British Columbia	-0.002	0.547	-0.006	0.115
Prairie	-0.003	0.169	0.001	0.718
Atlantic	0.001	0.701	-0.002	0.391
Age 35 and 44	0.002	0.313	0.012	0
French	-0.005	0.658	0.007	0.466
English	0.006	0.68	-0.013	0.239
Both French and English	0	0.981	0.002	0.069
No-diploma	0	0.534	0	0.141
Diploma below bachelor degree	0.00E+00	0.993	-0.005	0.012
Bachelor degree	0.001	0.085	0.005	0.001
Diploma above bachelor degree	0	0.286	0.002	0.028
Divorced	0.00E+00	0.961	0	0.314
Legally married	0	0.196	0.025	0
Widowed	0	0.478	0	0.62
Separated married	0.001	0.352	0.0057	0.003
Immigrant	0.014	0.495	0.0845	0
Employed	0.009	0.001	0.013	0
Unemployed	-0.001	0.237	0	0.893

Table 3 (Continued)

differences in coefficients				
Quebec	0.019	0.02	0.007	0.388
British Columbia	0	0.909	0.007	0.167
Prairie	0.006	0.26	-0.002	0.721
Atlantic	-0.001	0.806	0.003	0.5
Age 35 and 44	0.007	0.447	0.045	0
French	-0.028	0.791	0.135	0.091
English	-0.003	0.941	0.073	0.02
Both French and English	0	0.931	0.002	0.007
No diploma	-0.003	0.472	-0.002	0.621
Diploma below bachelor degree	-0.007	0.411	-0.019	0.021
Bachelor degree	-0.006	0.135	-0.015	0
Diploma above bachelor degree	0	0.87	-0.005	0.066
Divorced	0.005	0.173	0.002	0.52
Legally married	0.032	0.015	-0.023	0.067
Widowed	0	0.409	0	0.426
Separated married	0.002	0.11	0.001	0.254
Immigrant	-0.004	0.235	0.008	0.004
Employed	-0.045	0.108	-0.115	0
Unemployed	0.003	0.068	0	0.616
Constant	0.139	0.357	-0.059	0.618

Table 4

Linear Probability Decomposition of Poverty rate Gap between Chinese and Whites

	Men		Women	
Estimated probability of being in in low income	Coef.	P>|z|	Coef.	P>|z|
For Chinese	0.243	0	0.254	0
For White	0.097	0	0.105	0
differences in the probability between white and Chinese	0.147	0	0.149	0
Difference due to differences in characteristics	0.158	0	0.18	0
Difference due to differences in coefficients	-0.011	0.657	-0.031	0.212
Differences in characteristics				
Quebec	-0.024	0	-0.014	0.024
British Columbia	0.018	0	0.017	0
Prairie	0.002	0.065	0.002	0.031
Atlantic	0.005	0.564	0.009	0.316
Age between 35 and 44	0.001	0.013	0.001	0.003
French	-0.029	0	-0.021	0
English	0.074	0	0.056	0
Both French and English	-0.002	0.001	0	0.027
No-diploma	0.002	0.002	-0.001	0.017
Diploma below bachelor degree	0.01	0.001	0.006	0.001
Bachelor degree	-0.009	0.001	-0.007	0
Diploma above bachelor degree	-0.006	0.012	-0.002	0.004
Divorced	-0.002	0.22	-0.008	0
Legally married	0.01	0.023	-0.002	0.521
Widowed	0	0.275	0	0.187
Separated married	-0.003	0.005	-0.005	0
Immigrant	0.098	0	0.127	0
Employed	0.013	0	0.023	0
Unemployed	0	0.074	0	0.393

Table 4 (continued)

differences in coefficients				
Quebec	0.023	0.003	0.012	0.106
British Columbia	0.006	0	0.007	0
Prairie	-0.008	0.025	-0.007	0.031
Atlantic	-0.005	0.615	-0.01	0.277
Age between 35 and 44	0.014	0.015	0.013	0.02
French	-0.135	0	-0.052	0.01
English	-0.064	0	-0.022	0.202
Both French and English	-0.002	0	0	0.263
No-diploma	-0.019	0	-0.016	0
Diploma below bachelor degree	-0.02	0.01	-0.019	0.003
Bachelor degree	-0.004	0.093	-0.005	0.027
Diploma above bachelor degree	-0.001	0.376	-0.002	0.145
Divorced	0.007	0.033	0.014	0
Legally married	0.081	0	0.069	0
Widowed	0	0.198	0.001	0.173
Separated married	0.007	0.001	0.008	0
Immigrant	0.008	0.001	0.013	0
Employed	-0.022	0.176	-0.057	0
Unemployed	0.002	0.068	0	0.988
Constant	0.118	0.008	0.022	0.581