EMPIRICAL STUDY ON LABOUR MARKET AND IMMIGRATION : NATIVE - IMMIGRANT WOMEN EARNINGS DIFFERENTIALS AND DISCRIMINATION IN CANADA

by

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INTRODUCTION

Wage-setting mechanisms are often assumed to be fair because they are based upon market forces and productivity of workers. However, studies of wage-setting practices demonstrate clear and persistent patterns of wage discrimination between women and men or minorities and non-minorities, i.e., when wage differences cannot be justified in terms of productivity-related job characteristics. Studies have shown that wage differences between men and women are only partly explained by workers' productivity characteristics. The remaining wage difference is associated with the gender or the race of particular individuals. In fact, the gender and race of the workers performing a job are, to a certain extent, a predictor of the compensation for that job, surpassing in importance education and experience. Wage gaps between females and males are now well documented. Therefore, the purpose of this paper is to assess wage differentials of immigrant workers, in particular that of visible minority immigrant women with respect to their Canadian native-born counterparts.

The employment equity statistics for 1989 showed that the estimated average full-time salary for women who are members of visible minorities was $ 26, 293 or 96.46 percent of the average full-time salary for all women, who earned only 71 percent of males' wages. The full-time salary distribution indicated that women of visible minorities were more likely to receive salaries of less than $ 25,000. The wage gap between all women and visible minority women was 3.54 percent. Although this gap is relatively small, it underlines the current concern over the socioeconomic position of immigrant women when sexual inequality, which is extensive in Canada, is combined with ethnicity and birthplace.

Labour force participation in an economy characterized by sex-segregated occupational and industrial structures and by unequal pay could mean that foreign-born women, like their Canadian-born counterparts, are likely to have lower incomes and low-paying jobs. Inequalities associated with country of origin could also imply that immigrant women may earn less or hold different jobs than native women who have equivalent endowments. These inequalities could lead to the observation that immigrant women are doubly disadvantaged by their status as females and as foreign-born vis-à-vis

native women. Improving the socioeconomic status of both women and immigrant women by eliminating the existing wage gap, requires supply and demand side policies. On the one hand, wage discrimination not only acts to impede the efficient allocation of resources and the utilization of all skills available in the economy, but it also undermines the obvious concerns of justice and equity in wage treatment. On the other hand, the elimination of wage differentials stemming from productivity differences would deprive non-discriminated groups of full compensation for their contribution to the economy. This paper is a way to test the view that, because of discrimination, immigrants, particularly visible minority women, may not fare in the same pattern as their native-born counterparts.

In the past, several studies have employed the wage differentials method as a way to measure discrimination in the labour market. This paper examines average earnings and the earnings differentials of native and immigrant women in Canada by using a human capital earnings function (Mincer, 1974) and the wage differentials technique [Oaxaca, (1973); Gunderson, (1979)]. Section I presents a theoretical discussion of the concept of discrimination. Section II provides an overview of previous studies pertaining to discrimination, the earnings differentials decomposition method, and the human capital earnings function. Section III outlines the methodology and the data used the study. Section IV reports the empirical findings of regression analysis of earnings of foreign-born and native women, followed by an analysis of native and immigrant women's earnings differentials.

I. THEORETICAL EXPLANATIONS OF DISCRIMINATION

Gender discrimination has been the subject of many empirical studies; however, few have focused on the earnings differentials of immigrant women. Long's 1980 study was, perhaps, the only study focusing on the comparison of economic attainment of immigrant and foreign-born women. In order to better understand the economics of labour market discrimination and earnings behaviour of immigrant women vis-à-vis those of their native born counterparts, the reasons, sources and forms of discrimination are discussed. Various theories of discrimination are then provided, followed by empirical evidence to document the existence of discrimination pertaining to gender discrimination and discrimination between native and male immigrants, both in the U.S. and Canada. This overview will set the context within which a discussion on native and immigrant women's earnings differentials can take place.

A. DISCRIMINATION: SOURCES AND REASONS

1. Sources of discrimination

Labour market discrimination against females/visible minorities may come from a variety of sources. Employers may discriminate in hiring, promotion and wage policies. Profit maximizing firms must respond to pressure from their customers and male employees, and may, therefore, be reluctant to hire or promote females/visible minorities, or to pay equally productive female workers the same wage that is paid to male workers. Male co-workers may also discriminate against such women for reason of prejudice, misinformation or job security. Discrimination also originates from customers who are reluctant to purchase the services of female and visible minority workers or who may not patronize establishments that employ females in positions of responsibility. Respecting the wishes of its majority, craft unions may discriminate through the hiring hall or apprenticeship system. Industrial unions may discriminate by bargaining for male wages that exceed that of females and visible minorities for the same work.

2. Reasons for discrimination

Majority males' preferences for working with or buying from other men precludes women's participation in the labour market. The same rationale may apply to the majority vis-à-vis minorities. In fact, discrimination also occurs due to information concerning women's and minorities' productivity. Low self-esteem may contribute to this misperception about themselves, in addition to being subjected to other forms of discrimination such as subjective reports by male co-workers or supervisors and race/sex-biased testing.

Since information on individual workers is costly to acquire, employers may judge individual women on the basis of average female performance. Statistical and signalling theories of discrimination are discussed in Aigner and Cain (1972), Lundberg and Startz (1972), Phelps (1972) and Stiglitz (1973). Majority (male) workers also discriminate for reasons of job security. To protect their high-wage jobs from low-wage female and visible minority competition, some majority males would use the forces of government, unions and business cartels to ensure that power remains in their hands.

B. THEORIES OF DISCRIMINATION

1. Demand Theories of Discrimination

Becker (1972) demonstrates that an employer may discriminate, on the basis of taste and preferences, by refusing to hire someone with a marginal value product greater than marginal cost (wages). When faced with the money wage rate k, an employer acts as if k(1+d) were the net wage rate, with d being a measure of the intensity of his taste for discrimination. Each employer compares the intensity of his tastes with the costs and determines the bringing the profit maximizing action. Suppose two groups W and N are perfect substitutes in production and an employer has a discrimination coefficient of value d against N. If the market wage rate of W, Π_W, is less than $\Pi_N(1+d)$, only W is hired, since the intensity of tastes is greater than that of the costs. If $\Pi_W=\Pi_N(1+d)$, both W and N are hired. Intensity of tastes equals that of costs.

In *The Economics of Discrimination,* Becker suggests that discrimination will not alter the individual firm's criterion of minimizing costs, but it will cause actual factor proportions to differ in such a way that there will be a smaller demand for those factors against which the employer discriminates, and the money cost at each output will be greater than the minimum cost without discrimination. Discrimination is not only enforced by employers, employees and trade unions but also by the structure of industries. As Becker suggests, given a dispersion of discrimination coefficients and identical production functions, an employer with a smaller discrimination coefficient will have lower costs, so that under competitive conditions the firm with the lowest coefficient must prevail. However, throughout monopolistic industries, the coefficient will not be subject to downward pressures. Thus, Becker suggests that monopolistic industries will discriminate more than competitive ones. In relation to the female labour market, competitive industries may employ more women than monopolistic ones.

The dual labour market theory partly explains discrimination against women in terms of employment opportunities and wage discrimination. According to Doeringer and Piore (1971) the market is divided into primary and secondary sectors. An important aspect of the dual labour market is the emphasis on the interaction between developments in the economic structure, technology, and the pattern of labour market behaviour. Technological developments require a reduction in labour mobility that allows firms greater control and certainty in their product and factors markets by forming a stable, high paid labour force. The secondary sector, in turn, provides the flexibility required by the system. Expansion of the primary sector over the trade cycle can be achieved by subcontracting to the secondary sector, or by employing secondary sector workers on a temporary basis. Workers confined to the secondary sector develop attitudes and modes of behaviour that turn them into unstable workers, unsuitable for employment in the primary sector. As a result, the primary sector is characterized by male-dominated occupations. The secondary sector, which pays low wages and is characterized by unpleasant working conditions, tends to employ more women.

Along with the dual labour market theory is the theory of labour market segmentation [Reich, Edwards, Gordon (1973)]. Labour market segmentation is defined as the historical process whereby political-economic forces encourage the division of the labour market into separate submarkets, or segments, distinguished by labour market characteristics and behavioral rules. The theoretical analysis focuses on the transition of the segmentation from competition to monopoly capitalism.

According to this theory, monopoly capitalist corporations devised deliberate strategies to resolve the contradiction between the increased proletarianization of the work force and the growth and consolidation of concentrated corporate power. The first element of the strategy involved the creation of segmented internal labour markets. Job ladders were created, with definite "entry-level" jobs and patterns of promotion. White-collar workers entered the firm's work force and were promoted within it in different ways from the blue-collar production force. Less qualified workers benefited less, or were totally excluded from access to the firm's job ladder.

At the same time that firms were segmenting their internal labour markets, similar efforts were under way with respect to the firm's external relations. Employers often hired groups from rival nationalities to achieve segmentation, or tried to weaken the union movement by favouring the conservative "business-oriented" craft unions against the newer "social-oriented" industrial unions. The net effect of these efforts was not only to promote internal segmentation, but also segmentation by industry.

As different firms and industries grew at different rates, a dichotomization of industrial structure developed. Monopoly corporations, with more stable production and sales, developed job structures and internal relations reflecting this stability. The result was the dichotomization of the urban labour market into primary and secondary sectors, as the dual labour market theory has proposed [Doeringer and Piore, (1971)], the segmentation by sex and by race.

The crowding hypothesis is attributed to a statement made by Edgeworth in a 1922 paper to the effect that *"the pressure of male trade unions appears to be largely responsible for that crowding of women into a comparatively few occupations, which is universally recognized as a main factor in the depression of their wages"*. The hypothesis was first applied to the problem of racial discrimination by B. Bergmann in 1971. The enforced abundance of supply will lower marginal productivity in certain female occupations, whilst maintaining it at a higher level in the male sector. If an overcrowded market is to be cleared the marginal productivity must be pushed to a relatively low level and even in the absence of exploitation, women would receive a wage below that received by males for similar levels of skill.

Phelps (1972) introduces the concept of statistical discrimination. This occurs where the employer must incur some cost to determine a potential employee's true productivity but assesses a job applicant based on pre-considered ideas about the average characteristics of the group or groups to which the applicant belongs rather than the individual's characteristics. The employer who seeks to maximize expected profit will discriminate against women or racial minorities if he believes them to be less qualified, reliable, etc., on the average than whites and men, respectively, and if the cost of gaining information about the individual applicants is excessive. Skin colour or sex is taken as a proxy for relevant data not sampled. The a priori belief in the probable preferability of a white or a male over a black or a female candidate who is not known to differ in other respects might stem from the employer's previous statistical experience with the two groups; or it might stem from prevailing sociological beliefs affecting racial minorities and women's productivity or performance in employment.

2. Supply Theories of Discrimination

On the supply side of the labour market, Becker (1972) and other neo-classical economists have pointed out that a portion of racial and sexual wage discrimination is due to differential

productivity. Mincer (1974) argues that the lower relative wage received by blacks and women reflects their lower relative investment in human capital, including both formal and on-the-job training. Moreover, women have different expectations than men with respect to labour force participation over their lifetime, and these expectations lead to a investment differential. As a consequence of this, the concentration of women in a limited number of occupations that are suitable for discontinuous employment appears to be a product of a rational process rather than of labour market discrimination.

According to the theory of post-school investment, or on-the-job training, Polachek, in his article entitled *Differences in Expected Post-School Investment as A Determinant of Market Wage Differentials*, demonstrates that both the quantity of investment and its rate of accumulation differ with the degree of attachment to the labour force. Post-school investment functions behaves differently according to sex and marital status, and expected human capital investment is measured to explain male-female and married-single earnings differentials. In fact, the volume and the life-cycle distribution of human capital investment are important in explaining women's productivity and commitment to the labour force. Since job-related investment in human capital commands a return which is received at work, the shorter the expected and actual duration of work experience, the weaker the incentive to augment job skills over the life-cycle. Given the discontinuity of work experience,as a result of women's decisions, the labour-market activities of women are less likely to contain skill training and learning components. For example, some employers are reluctant to train females for more responsible and higher paying positions because of greater expectations that single women will marry and leave the labour force, and that married women will be more committed to family life and their husbands' career than their own. Thus, there is relatively high risk involved for employers who attempt to identify females with genuine long-term career interests, and for this reason some would conclude that females are justifiably denied access to better job training involving relatively high training costs for the employers. Similarly, it can be argued that women who enter

the labour force at a time when much of their education or training for employment is obsolete, could not be considered for the more challenging, rewarding and responsible positions.

Mincer and Polachek (1974) define the concept of discrimination as a total of two components - direct and indirect discrimination. Direct discrimination occurs when different rental prices (wage rates) are paid by employers for the same unit of human capital owned by different persons. In this sense, the wage gap residual is the upper limit of the direct effects of market discrimination. The indirect effect occurs when the existence of market discrimination discourages the degree of market orientation in the expected allocation of time and diminishes incentives to invest in market-oriented human capital. Hence the lesser job investments and greater depreciation of female market earnings power may to some extent be affected by expectations of discrimination.

II. PREVIOUS STUDIES & EMPIRICAL EVIDENCE

1. Earnings Differentials and Discrimination

Empirical studies have been using the decomposition of earnings differentials method based on the human capital earnings function to demonstrate the existence and to measure the extent of discrimination between men and women in the labour market, in terms of wage discrimination and endowment differences within the same establishment, occupation or industry. The methodology was first developed by Oaxaca (1973) to decompose male-female wage differentials in urban U.S. labour force. By using the 1967 Survey of Economic Opportunity data, Oaxaca's study consisted of black and white adults aged 16 and over living in urban areas of the U.S.. Oaxaca found that, on the full-scale wage regressions, wage discrimination accounted for 58.4 percent of the wage differential for whites and 55.6 percent for blacks. On the personal characteristics wage regressions, discrimination accounted for approximately 77.7 percent of the wage differential for whites and 93.3 percent for blacks. Oaxaca defines the personal characteristics wage regression as the one for which occupation, industry and class of worker variables are not standardized or controlled for in order to avoid the underestimation of the effects of discrimination. By controlling for a broadly defined occupation, industry and class of worker, some of the effects of occupational barriers as source of discrimination are eliminated. This type of regression is defined as full-scale wage regression.

Based on the 1971 Canadian Census, Gunderson (1979) estimated separate earnings function equations for males and females who worked full-time and full-year. Gunderson found that the over-all earnings disadvantages of females was $ 3,061 of which $ 1,754 (or 63 percent) was attributable to wage discrimination and the difference of $ 1,307 (or 37 percent) was attributable to endowment differences.

With respect to endowments of wage-determining characteristics, the over-all advantage of males is explained by their greater experience, favourable occupational and industrial distribution and marital status. For none of the wage-determining characteristics do females have an advantage that has a positive impact on their earnings. Education, experience and marital status are the major explanations of women's discrimination. Consequently, for the same level of education, experience and marital status, females receive considerable less than what men earn for the same work.

Based on the 1971 data for urban Ontario only, Robb (1978) compared all males versus all females, and all males versus single females. Regarding all males and all females earnings differentials, Robb found that discrimination accounts for 58.9 percent of the over-all earnings in the full regression (with standardization of occupations and industries) and 75.4 percent of the differentials in the personal characteristics regression (without standardization of occupations and industries). These results were quite similar to Oaxaca's 1973 results. Regarding the regression for males vis-à-vis single females, it was found that discrimination accounted for only 14.7 percent of the differential in the full regression and 36.9 percent in the personal characteristics regression.

From the two sets of comparison, it is observed that age, education and the iterative age*education estimated coefficients are more favourable to males than to females. Males are rewarded more highly than females for comparable education and experience, regardless of which group of females is compared to males. This result supports the contention according to which there is earnings discrimination against women in labour market.

Based on the 1967 Survey of Consumer Finances, Holmes (1976) estimated the potential lifetime earnings, rather than actual annual earnings, of males and females in seven educational classes. Holmes found that the largest negative effects on potential female earnings are observed from marital status, occupation and weeks worked variables. Using a similar technique to Oaxaca's, Holmes

observes that about one-fourth of the gross differential in male-female earnings are accounted for by the worker's characteristics considered in the study. The remaining three-quarters of the gross differential may be explained by the effects of wage and employment discrimination.

2. Immigrant Earnings

The Human Capital Earnings Function is widely utilized to capture the life cycle earnings profile of workers in various studies. Immigrant earnings analyses have been conducted by many authors using mainly data for male immigrants in the United States. The standard human capital earnings function developed by Mincer (1974) is of the form:

$$\ln Y = \beta_0 + \beta_1 S + \beta_2 X_1 - \beta_3 X^2_1 + u_i,$$

The schooling coefficient, β_1, provides an estimate of the rate of return to education. The concavity of the observed earnings profile is captured by the quadratic experience terms, X_1 and X_2, whose coefficients, β_2 and β_3, are respectively positive and negative. In order to compensate for the absence of adequate information on experience, a transformation of the worker's age was used as a proxy for his experience. The transformation X = A-S-6 assumes that a worker begins full-time work immediately after completing his education and that age of school completion is S+6.

Among those studies was Chiswick's pioneer study on *"The effect of Americanization on the earnings of foreign-born men"*. In this study, Chiswick fitted a standard wage equation to cross-sectional data on immigrant and native men, as evidenced in the 1970 Public Use Sample of the U.S. Census. The basic equation of the natural logarithm of the annual earnings is an extension of the standard human capital earnings function of Mincer (1974). The earnings function of the native-born men can be written as:

$$\ln Y_{n,i} = \ln Y_0 + rS_i + b_1 T_i + b_2 T_i^2 + U_i,$$

and that of the foreign men is:

$$\ln Y_{n,i} = \ln Y_0 + rS_i + c_1 T_i + c_2 T_i^2 + c_3(YSM) + c_4(YSM)^2 + U_i,$$

where T is labour market experience; Y is earnings; S is schooling, taking into account schooling acquired before and after migration; T^2 is experience squared; YSM is years since migration and $(YSM)^2$ is years since migration squared. The major contribution of Chiswick to the standard function is the inclusion of the variables YSM and YSM^2 to capture the earnings trends for foreign-born men with respect to time spent in the U.S.. Chiswick finds that the impact of YSM is positive. When they first enter the labour market, immigrants earn approximately 25 percent less than the natives with comparable years of schooling, experience, marital status, etc.. Chiswick also found that immigrants have steeper experience-earnings profiles than natives, with immigrants overtaking native earnings within 13 years after their entry to the U.S. . In fact, the earnings of foreign-born men with respect to time spent in the U.S. rise at a decreasing rate. The earnings of the foreign born are 9.5 percent lower than the native born after 5 years in the country, equal after about 13 years and 6.4 percent greater after 20 years in the country. The high earnings may be explained by a process of self-selection in migration in favour of people with ability, high motivation and low discount rates for human capital investments.

Borjas (1985) studied the response of immigrant earnings to the assimilation process by using the 1970 and 1980 U.S. Public Use Samples Census to compare cross-sectional results with findings obtained from within-cohort analyses. Two samples of immigrants are selected from the 1970 and the 1980 Censuses. The first sample involved immigrants belonging to the 18-54 years age brackets in 1970. The sample was, then, partitioned into four cohorts: arrivals in 1965-69, arrivals in 1960-64, arrivals in 1950-59, and immigrants who arrived prior to 1950. The second sample involved immigrants between 28-64 years age brackets. Six cohorts of immigrants were partitioned from this sample: arrivals in 1975-79, arrivals in 1970-74, arrivals in 1965-69, arrivals in 1960-64, arrivals in 1950-59, and immigrants who arrived prior to 1950. The last four cohorts defined in the 1980 Census match exactly the definition of the cohorts selected from the 1970 Census, i.e., the composition of the two samples ensures that (if the census data contained all observations from the

population) the same individuals are included in each of these cohort samples. The immigrant earnings are, then, evaluated as follows:

$$\ln W_{70} = X\gamma_{80} + \alpha_{65}D_{65} + \alpha_{60}D_{60} + \alpha_{50}D_{50} + \alpha_{40}D_{40} + \xi_{70};$$

$$\ln W_{80} = X\gamma_{80} + \beta_{75}D_{75} + \beta_{70}D_{70} + \beta_{65}D_{65} + \beta_{60}D_{60} + \beta_{50}D_{50} + \beta_{40}D_{40} + \xi_{80};$$

where the dummy variables indexing years-since-migration/cohort are defined by $D_{75} = 1$ if immigration occurred in 1975-79; $D_{70} = 1$ if immigration occurred in 1970-74; $D_{65} = 1$ if immigration occurred in 1965-69; $D_{60} = 1$ if immigration occurred in 1960-64; $D_{50} = 1$ if immigration occurred in 1950-59, and $D_{40} = 1$ if immigration occurred prior to 1950.

Based on this analysis, Borjas concluded that the earnings of a cohort of immigrants grow at a lower rate than that predicted by cross-section studies, and the over-taking point of immigrant earnings occurs at a later moment in an immigrant's life-cycle earnings than that predicted by cross-sectional analysis. Borjas argues that when immigrants first arrive in the U.S., they lack U.S.-specific human capital, which results in relatively low earnings; however, immigrants rapidly begin an investment path with high investment costs. The high levels of human capital investment depress the current earnings of recent immigrants but guarantee high rates of growth in earnings as the immigrants assimilate into the U.S. labour market. In the cross-section equation $\ln w_i = x_i\lambda + \beta t_i + \xi_i$, where w_i is the wage rate of immigrant i; X_i is a vector of his socioeconomic characteristics, t_i measures the length of stay in the US and β measures the differential value placed in the U.S. labour market between U.S. experience and foreign experience . Borjas remarked that the positive estimated β obtained in cross-section captures the trend of earning growth with respect to the assimilation process. Two factors are advanced by Borjas as playing a major effect on immigrants' earnings. The first is related to the self-selection process. The estimated β will be biased upward since earlier cohorts of immigrants will have been self-selected to include only the most successful, while the recent cohorts contain a more representative selection of the migrant pool. The second factor refers to the quality of the successive cohorts of immigrants. If the decline of quality of immigrants is not taken into account, the cross-sectional estimate of β would be upwardly biased and the impact of the

assimilation process on immigrant earnings will be over-estimated.

Bloom and Gunderson (1991) estimate the earnings of native and male immigrants in Canada by using simple wage equations fitted to cross-sectional and pseudo-longitudinal data of the 1971 and 1981 Canadian Census. In addition to estimating the wage patterns of employed native and immigrant males, this study compares the earnings of immigrant males with regard to their length of stay in Canada, and measures the extent to which the dispersion of immigrant earnings varies with the length of stay.

Based on the 1971 data, the cross-sectional analysis estimates indicate that, when they first enter the country, immigrants earn roughly 7 percent less than comparable natives. The crossing point will occur 12.8 years after entry to Canada. The 1981 data indicate that entering immigrants earn 16.6 percent less than comparable natives and their crossing point does not occur before 21.6 years are spent in Canada.

The pseudo-longitudinal regression is then conducted, by pooling the 1971 and the 1981 data together, in order to obtain estimates of earnings growth within cohorts. Bloom and Gunderson find that the coefficient estimate of YSM (year since migration) is large in magnitude (2.02 percent) compared to that of cross-cohort analysis (0.0076 percent). This implies that the within-cohort growth rate of earnings is five times larger than the cross-cohort growth rate of earnings.

In order to obtain the assimilation effect, which is measured by the wage growth associated with changes taking place in the economy over time, Bloom and Gunderson adjust the 1971 earnings data for changes in labour productivity that occurred among native Canadian males between 1971-1981. The within-cohorts model using sample average productivity adjustment shows that the estimated coefficient of YSM is 0.24, which is substantially smaller than the estimate computed using non-productivity adjusted data (2.02). It is, therefore, assumed that the effect of assimilation on the earnings of pseudo-cohorts of immigrants is small. When more elaborated productivity adjustment data are used, it is observed that the assimilation effect is still small at 0.42 percent per year. Bloom

and Gunderson agree with Borjas (1985) that cross-sectional analysis effectively over-estimates immigrant earnings growth over time. As observed by Bloom and Gunderson, the relaxation of Canadian immigration policies had a negative impact on the quality of immigrants arriving between 1978 and 1980.

III. DATA BASE AND METHODOLOGY

1. Data Base

This study uses data obtained from the Statistics Canada's 1986 *Census of Canada: Public Use Microdata File on Individuals*, accessed by using machine-readable magnetic tape. The tape contains responses of about 500 000 individuals of the non-immigrant and of the immigrant population (about 2 percent of the Canadian population), concerning personal data, geographic location and selected social and economic characteristics. About 10 percent of the observations are randomly chosen for the native women sample, while immigrant women samples are retrieved from the entire data set.

The population under study is native women and foreign-born women belonging to the visible minority groups, aged 15-65 in 1986, residing in Canada, excluding the NorthWest Territories and Yukon, who are full-time, full-year workers (45-52 weeks/year) and who reported earnings from wages and salaries in 1985 as observed in the 1986 Canada Census. Only married native and immigrant women are considered in the analysis, i.e. single, widowed, separated and divorced women constitute the reference group.

Native-born women are defined as those who were born in Canada of white parents. Visible minority immigrant women are those who are "not white in colour and not Caucasian in race." (1) The composition of visible minority immigrant women is as follows: Blacks, Chinese, Japanese, Korean, Filipino, Indo-Pakistani, West Asian and Arab, Southeast Asian, Latin Americans, Indonesian and Pacific Islanders. In this paper, the composition of immigrant women samples is as follows: Western Asia and Arab Origin Women(2); Southern Asian Women(3); Eastern and Southeastern Asian Women(4) ; Black/African Black and Caribbean Women(5).

As the 1986 Census tape is a 2 percent data sample, the proportion of subsets of foreign-born women is quite small. Therefore, the combination of a) Southern Asian Women with Western Asian/Arab Origin Women and b) Chinese and Philippines women with Southeast Asian women allows a larger sample size and a representation of all visible minority women groups in the analysis.

Quebec and Atlantic provinces are combined due to absence of data for Western Asian and Arab women in Atlantic provinces.

2. Methodology

The decomposition of earnings differential method (Gunderson, 1979) which is based on a human capital model of earnings is used to compare earnings between native-born and immigrant women in Canada. Traditionally, the decomposition method is used to compare earnings of women with respect to that of men of equivalent productivity-related characteristics. In this paper, immigrant women's earnings are evaluated by the native-born women's wage structure.

A woman's earnings is assumed to be a function of her earnings-related characteristics and the rewards for each of these characteristics as determined by the labour market. The returns to the characteristics are estimated by fitting a regression equation for each female sub-population. The results are then used to calculate the percentage of the logarithm earnings differentials attributable to endowments and discrimination for each of the following groups:

i. All native women vs. all immigrant women;

ii. All native women vs. Arab origin and Western Asian women;

iii. All native women vs. Eastern and Southeastern Asian women;

iv. All native women vs. Black/African Black and Caribbean women.

3. The Human Capital Earnings Function

The basic model is an extension of the human capital earnings function (Mincer 1974).

$$\ln Y = \beta_0 + \ln WKS + \beta_1 EDUC + \beta_2 EXP - \beta_3 EXP^2 + \beta_4 Z + U \qquad (1)$$

where EDUC = years of schooling completed;

EXP = labour market experience;

EXP^2 = labour market experience squared;

lnWKS= natural logarithm of weeks worked;

Z = vector of social and economic variables,

Marital Status (MARSTP):

Occupational Categories (OCC81P);

Province of Residence (PROV);

Presence of Children (PRESCHP).

The basic equation is a linear regression of the natural logarithm of average earnings Y on explanatory variables EDUC, EXP, EXP^2 and social economic variables Z_i.

Logs of weeks worked [Mincer, (1974)] in women's current jobs are included in the regression to examine the impact of the number of weeks worked on earnings profile of native and immigrant women. The effect of weeks worked on earnings is assumed to be positive.

The effect of education on earnings is assumed to be positive. Schooling will enhance women's productivity thus their wages. In this study, education variable refers to the highest degree, certificate or diploma obtained. The reference group for degree and certificate categories are individuals with and without a high school graduation certificate.

The experience variable plays the same role as education in explaining individuals' earnings profile over time. Since Census data do not provide an exact measure for experience, Mincer's commonly accepted definition for labour market is used to capture women workers' experience instantaneously after their completion of education. Based on Mincer's theory (1974), the experience squared variable is included to capture the expected decrease of life cycle experience-wage profile.

Regarding occupational categories, clerical positions are used as reference group in this study. It is assumed that occupations substantially influence some women's earnings.

Geographical locations are represented by all Canadian provinces excluding the NorthWest Territories and the Yukon. Ontario is the reference province. As previously indicated, some provinces are combined together to ensure the representability of immigrant women. According to the 1986 Census, the visible minority population is unevenly distributed from coast to coast. Some

70 percent of the visible minority workforce is concentrated in Ontario and British Columbia, with more than half in the metropolitan areas of Toronto and Vancouver. In Newfoundland, less than 1 percent of the workforce is composed of visible minorities, while in British Columbia the proportion is over 10 percent.

Oaxaca (1973) suggested that the number of children ever born to women be included in the earnings function to control for the experience and earning power losses resulting from labour force withdrawal for child care. Marital status (MARSTP) and presence of children in household (PRESCHP) variables are included to control for these factors. The presence of children in household variable represents households with a/ at least one child between 1 and 4 years old; b/ at least one child between 2 and 5 years old; c/ at least one child between 5 and 6 years old, and d/ at least one child between 6 and 14 years old. Children 14 years old and over and household without the presence of children form the reference group for this variable. The presence of children is used as an alternate measure for the number of hours worked for women.

4. Wage Differentials Decomposition Method

From the human capital earnings function, estimates of the wage differentials between native and foreign-born women are derived using the decomposition of earnings differentials technique, [Gunderson (1979)]. Average earnings, in logarithm form, for native *n* and immigrant women *i* respectively are:

$$\ln Y_n = \Sigma\, b_n X_n \quad (2)$$

$$\ln Y_i = \Sigma\, b_i X_i \quad (3)$$

where Y is earnings, b a vector of regression coefficients representing the βs in the regression equation (1), including the constant, and X a vector of explanatory variables that determine earnings.

The hypothetical average earnings without wage discrimination, $\ln Yi^* = \Sigma\, b_n X_i$,exists when immigrant women, for a given endowment of wage-determining characteristics X_i,are paid according

to the same pay structure as that of the natives.

The difference between immigrant actual earnings and the hypothetical average earnings indicates the extent of wage discrimination:

$$\ln Y_i^* - \ln Y_i = \Sigma\, b_n X_i - \Sigma\, b_i X_i = \Sigma\, (b_n - b_i) X_i \quad (4)$$

Similarly, the difference between the immigrant hypothetical earnings without wage discrimination and the actual earnings of the natives gives the differences in endowment of wage-determining characteristics:

$$\ln Y_n - \ln Y_i^* = \Sigma\, b_n X_n - \Sigma\, b_n X_i = \Sigma\, b_n (X_n - X_i) \quad (5)$$

Wage discrimination and endowment differences account for the over-all average earnings differential between native and immigrant women.

$$\ln Y_n - \ln Y_i = \Sigma\, (b_n - b_i) X_i + \Sigma\, b_n (X_n - X_i)\ . \quad (6)$$

The first term on the right-hand side is the differences in pay structure (b's) between native and immigrant women, evaluated for the immigrant women's wage-determining endowments X_i's. The second term is the difference in the endowments of wage-determining characteristics between native and immigrant women, evaluated according to the wage structure of native women as a norm.

A positive entry indicates an advantage in favour of native women, hence a positive contribution to the over-all differential of the natives. A negative entry indicates an advantage in favour of immigrant women, hence a negative contribution to over-all differential of immigrant women.

IV. EMPIRICAL RESULTS

A. REGRESSION ANALYSIS OF EARNINGS FOR NATIVE AND FOREIGN-BORN WOMEN

1. Native and Immigrant Women Earnings

The regression results for native and immigrant women are illustrated by Tables A(1a), A(1b), A(2a) and A(2b) from the Appendix.

Tables A(1a) and A(1b) show that the average earnings of native-born women, aged 15-65 who worked in 1985 was $ 14 511 compared with $ 13 856 for immigrant women. The mean of the natural logarithm of earnings is 9.5827 for native women and 9.5365 for immigrant women. Overall, the immigrant wage level is 4.6 percent less than that of the native born women.

The explanatory power (R^2) of the earnings function is lower for the native than for the foreign-born women. From the regression analysis, the proportion of the contribution of human capital investment in earnings is 49 percent for the natives and 61 percent for immigrant women. t-statistics for the same set of human capital and social and economic variables are more strongly significant for native-born women than for immigrant women.

From Tables A(1b) and A(2b) one observes that an extra year of education will increase average weekly earnings of foreign-born women by 4.7 percent compared with 6.7 percent for their native counterparts. The partial effect of experience on earnings is lower for immigrant women (2.8 percent) than for the native (3.8 percent). In terms of education, foreign-born women, in general, have 12.1 years of schooling compared to 12.2 years of schooling for the natives. However, the level of education varies when immigrant women are broken down into distinct groups, and compared to their native-born counterparts. For example, black, African black women have the lowest educational levels (11.8 years) and Arab origin and Western Asian women have the highest (12.5 years) [See Tables

A(5a) and A(3a)]. The low partial effect of education on earnings may suggest that recent immigrants have less education than earlier cohorts of immigrants. The increase of the role of kinship in rationing immigration in 1976 has contributed to the reduction of schooling of immigrants, in particular of immigrant women.

The number of weeks worked for immigrant and native women is respectively 42.5 weeks (exp 3.75) and 43.3 weeks (exp 3.77), a difference of one week which accounts for 2 percent (ln WKS) lower in earnings for immigrant women in comparison with native women [See Tables A(1a) and A(2a)].

Tables A(1b) and A(2b) indicate that the coefficient of presence of children (PRESCHP) and experience (EXP) variables reveal a different earnings and human capital accumulation for native and immigrant women. Both coefficients are significant for native women having very young and old children present in household. This results imply that highly educated women (women with strong labour-force attachment) prefer to combine work and home time to job discontinuity for child care. As proposed by the human-capital theory, higher human capital investment levels should be observed in groups with stronger labour force commitment. In this study, this tendency is observed among married native working women. On the other hand, the negative coefficient of presence of children variable indicates that family size does affect work experience for native women having older children. As a matter of fact, the result may indicate that this particular group of women belongs to the traditional family structure in which men are the only bread-earners in the household. For immigrant women, in fact, family and child bearing and rearing responsibilities do prevent this group of women from entering the work force and from investing in human capital wealth.

The occupational coefficients are strongly significant for all groups, in particular in social sciences, management and science. Being in sales or services sectors would negatively affect women's earnings in all groups. Regarding province of residence, residing in Québec and the Atlantic provinces seems to affect negatively earnings of both groups. The earning gap however is larger for

immigrant than for native women. Immigrants in the Prairies experience a lesser earning gap than those in Quebec and Atlantic provinces.

2. Southwestern Asian and Arab Origin Women Earnings

Table A(3a) shows that Southwestern and Arab women have the highest educational levels (12.5 years) and the lowest earnings ($ 12 423 or ln 9.4273) among groups under study. The main explanation for the negative impact of education on earnings would be the low participation of this group in the labour force and the immigration pattern of this particular group. According to the 1986 Census, only 36 percent of West Asian and Arab women are in the labour force, compared with 58 percent of Filipino women. The immigration point system explains the particularity of this group in comparison to others, with respect to the negative impact of education on earnings. Cultural factors explain, to a certain extent, the low participation rate in the labour force of Arab origin and Western Asian women, who often came to Canada as dependants of their husbands entrepreneurs. In fact, the majority of Arab origin and Western Asian immigrants came to Canada under the entrepreneurship category .(6) t-statistics are insignificant for this group at 99 percent of confidence.

3. Eastern, Southeastern Asian Women Earnings

Eastern and Southeastern Asian women have average earnings of $ 13 784 or ln 9.5313 [Table A(4a)], a difference of 5 percent compared to that of the native women with a similar level of education, 12.3 years for Eastern and Southeastern Asian women and 12.2 years for native women. The partial effects of education and weeks worked are smaller for Asian women than for native women. Eastern and Southeastern Asian women have a higher level of experience (18.7 years) than native women (17.2 years).

4. Native and Black, African Black and Caribbean Women Earnings

The average earnings of Black, African black and Caribbean Islands women are the highest among groups under study, $ 15 079 (ln 9.6211), a difference of 3.7 percent higher than native women [Table A(5a)]. The educational levels of the group are however the lowest with 11.8 years. An extra year of education will increase the average earnings of black women by 5.4 percent [Table (5b)] compared with 6.7 percent for native-women [Table A(1b)], while an extra year of experience will increase the average earnings of black women by 4.1 percent compared with 3.8 percent for native women. The effects on earnings of labour market experience are higher for black than for native and other women under study. t-statistics are more significant for occupations in Science categories than in sales and services sectors. The presence of children in household and marital status coefficients are insignificant for black women. The implication is that Black, African Black and Caribbean Islands women spent more time than native-born women in the labour market.

B. DECOMPOSITION OF NATIVE AND IMMIGRANT EARNINGS DIFFERENTIALS

1. Native and Immigrant Over-All Earnings Differentials

Table 1 gives the summary of endowment differences and wage discrimination to the over-all earnings differentials for all groups under study. The over-all differential results show that discrimination against immigrant women exists. Wage discrimination rather than endowment differences explains the discrepancies in earnings between immigrant and native women, i.e. for a better endowment, immigrant women earn less, except for Black women. The results, however, show a different pattern for Arab origin and Western Asian women and for Black, African Black and Caribbean Islands women. Wage discrimination and endowment differences both account for the earnings differential between Arab origin and Western Asian and native women. Black, African Black and Caribbean Islands women earn more than the native; however, they still are discriminated against in terms of wage.

2. Decomposition of Native and Immigrant Earnings Differentials

Tables 2, 3, 4 and 5 indicate the over-all wage differentials and their components for each group. The substantial contribution of the constant term to the wage discrimination against immigrant women - which could be identified as unexplained discrimination component of the earnings differentials - is attributable to the baseline wage paid to immigrant women regardless of their productivity-related characteristics. The unexplained portion (-0.4293) of the wage gap which is found to be in favour of immigrant women, does not compensate for discrimination observed in other attributes [See Table 2].

i. Native and Immigrant Women

Table 2 indicates that immigrant women still suffer from wage discrimination, even though immigrant women have a better endowment vis-à-vis that of their native counterparts. The 4.6 percent over-all wage differentials are explained as 1.6 percent attributable to endowment differences in favour of immigrant women and 6.2 percent to wage discrimination against immigrant women. The actual earnings level of the native women is $ 14 501.(7) The actual earnings level of immigrant women is $ 13 850.(8) The immigrant earnings level without discrimination is $ 14 735.(9) The over-all differential(10) is $ 651 of which $ 885 is attributable to wage discrimination(11) and $ -234 to endowment differences.(12) With respect to endowments of wage-determining characteristics, the over-all differentials advantage of native women could be explained by their education and number of weeks worked. Wage discrimination against immigrant women occurs through education, experience and number of weeks worked. The constant term favours the immigrants but does not compensate for the discrimination in other attributes.

ii. Native and Arab origin and Western Asian Women

Table 3 indicates that Arab women earn less compared with natives due to both wage discrimination and endowment differences.

The endowment differences account for 7 percent while wage discrimination accounts for 8.5 percent for a total over-all differential of 15.5 percent. The actual earnings level of Arab women is $ 12 413.(13) Compared with native women, the non-discrimination wage level is $ 13 534(13) The contribution of wage discrimination is therefore $ 1 121, and that of endowment differences is $ 967 for an over-all differentials level of $ 2 088. In comparison with other groups, they are discriminated against both in terms of wage and endowments. Discrimination against Arab origin and Western Asian women occurs through experience and number of weeks worked. The constant term, in favour of Arab and Western Asian women, does not compensate the discrimination observed in other attributes.

iii. Native and Eastern-Southeastern Asian Women

Table 4 shows that Southeastern Asian women earn less compared with native women. The contribution of wage discrimination is 8.8 percent and the contribution of endowment contribution is 3.6 percent in favour of South Asian women for an over-all wage differentials level of 5.2 percent. The actual earnings level of Southeastern Asian women is $ 13 780.(13) The wage level without discrimination is $ 15 048.(13) The wage discrimination amounts to $ 1 268, and the endowment differences level is $ -547 for an over-all wage differential level of $ 721. With respect to endowments of wage-determining characteristics, the over-all advantage of native women is explained by their education, experience and number of weeks worked. The wage discrimination against Eastern and Southeastern Asian women occurs through education, experience and number of weeks worked.

iv. Native and Black-African Black and Caribbean Islands Women

Table 5 indicates that for black women the over-all differentials are favourable. They earn more than native women by $ 577, however they still are discriminated against in terms of wages. Their actual earnings level is $ 15 078[13]. The wage level without discrimination $ 15 662[13],made up of $ 584 as wage discrimination and $ -1 161 as endowment differences in favour of black women. Contrary to other immigrant women, the over-all advantage of Black, African and Caribbean Islands women is explained by their experience in the labour market. Discrimination occurs through education and weeks worked, but not through experience like other immigrant groups.

C. TABLES

Table 1
NATIVE AND IMMIGRANT
EARNINGS DIFFERENTIALS

	Due to endowments $b_n(X_n-X_i)$	**Due to wage discrimination** $(b_n-b_i)X_i$	**Due to both** $b_nX_n-b_iX_i$
Native/Immigrants	-0.0159	0.0622	0.0462
Native/Arab women	0.0694	0.0855	0.1554
Native/Asian women	-0.0368	0.0887	0.0517
Native/Black women	-0.0768	0.0382	-0.0384

Table 2

DECOMPOSITION OF EARNINGS DIFFERENTIALS
(NATIVE-IMMIGRANTS)

	Due to endowments $b_n(X_n-X_i)$	**Due to wage discrimination** $(b_n-b_i)X_i$	**Due to both** $b_nX_n-b_iXi$
CONSTANT	0	-0.4293	-0.4293
EDUCATION	0.0032	0.2505	0.2538
EXPERIENCE	-0.0442	0.1184	0.0742
LNWKS	0.0195	0.1416	0.1611
MARSTP	-0.0024	0.0042	0.0018
OCCUPATIONS	0.0133	-0.0293	-0.0160
PROVINCES	-0.0073	0.0155	0.0083
PRESCHP	0.0019	-0.0096	-0.0077
TOTAL	**-0.0159**	**0.0622**	**0.0462**

Table 3

DECOMPOSITION OF EARNINGS DIFFERENTIALS

(NATIVE-ARAB WOMEN)

	Due to endowments $b_n(X_n-X_i)$	**Due to wage discrimination** $(b_n-b_i)X_i$	**Due to both** $b_nX_n-b_iX_i$
CONSTANT	0	-0.5110	-0.5110
EDUCATION	-0.0172	0.1954	0.1782
EXPERIENCE	-0.0268	0.1829	0.1561
LNWKS	0.1169	0.2120	0.3290
MARSTP	-0.0067	0.0244	0.0176
OCCUPATIONS	0.0116	-0.0158	-0.0038
PROVINCES	-0.0099	0.0092	-0.0006
PRESCHP	0.0015	-0.0116	-0.0101
TOTAL	**0.0694**	**0.0855**	**0.1554**

Table 4

DECOMPOSITION OF EARNINGS DIFFERENTIALS

(NATIVE-S.E.ASIAN WOMEN)

	Due to endowments $b_n(X_n-X_i)$	**Due to wage discrimination** $(b_n-b_i)X_i$	**Due to both** $b_nX_n-b_iX_i$
CONSTANT	0	-0.4053	-0.4053
EDUCATION	-0.0056	0.2796	0.2739
EXPERIENCE	-0.0458	0.1568	0.1111
LNWKS	0.0140	0.1375	0.1515
MARSTP	-0.0039	0.0212	-0.0252
OCCUPATIONS	0.0163	-0.0541	-0.0379
PROVINCES	-0.0135	0.0130	-0.0005
PRESCHP	0.0017	-0.0176	-0.0159
TOTAL	**-0.0368**	**0.0887**	**0.0517**

Table 5

DECOMPOSITION OF EARNINGS DIFFERENTIALS

(NATIVE-BLACK/AFRICAN BLACK WOMEN)

	Due to endowments $b_n(X_n-X_i)$	**Due to wage discrimination** $(b_n-b_i)X_i$	**Due to both** $b_nX_n-b_iX_i$
CONSTANT	0	-0.1801	-0.1801
EDUCATION	0.0280	0.1564	0.1845
EXPERIENCE	-0.0779	-0.0069	-0.0848
LNWKS	-0.0391	0.0685	0.0294
MARSTP	0.0029	0.0246	0.0275
OCCUPATIONS	-0.0002	-0.0068	-0.0068
PROVINCES	0.0029	0.0083	0.0112
PRESCHP	0.0066	-0.0258	-0.0193
TOTAL	**-0.0768**	**0.0382**	**-0.0384**

D. OMITTED VARIABLES BIAS

Model builders often tend to omit variables from various functions in order to render the model identified because of data limitations or simply due to sheer ignorance of all the factors that determine the phenomenon being studied. As a matter of fact, some variables which could be found to influence immigrants' earnings are not included in this study. Among those excluded are: years since migration, education and experience before and after migration and proficiency of official languages. The main reason for their exclusion is to allow the native and foreign-born women to have the same social and economic characteristics. To perform the wage differentials decomposition technique, the same regression models must be estimated for both immigrant and native women (see Chiswick, 1978; Borjas, 1985).

Years since migration is a relevant variable in explaining immigrants' earnings. However, it is not included for the reason that most of visible minorities are recent immigrants. According to the 1986 Census, more than four-fifths of Black and Chinese groups were born outside Canada and, as of 1986, had been in the country for an average of about 12 years, compared with an average of almost 24 years for immigrants other than visible minorities. Southeast Asians were the most recent arrivals. They had been in Canada an average of less than 7 years.

In this study, immigrants' experience and education prior to migration are not included as explanatory variables for immigrant women. Regarding education, no exact measure could be provided to quantify and qualify foreign education with regard to comparable Canadian standards. According to Chiswick (1978), immigrants' education (EDUC) could be divided into two components - EDUCPRE and EDUCPOST. EDUCPRE, which could be estimated indirectly by assuming that immigrant was in school continuously from age 5 to the lesser of a/ the age at migration, or b/ the age at which schooling was completed, seems to be over-estimated vis-à-vis EDUCPOST. A similar rationale could be given to differentiate experience acquired prior and after migration.

However, in the real world, immigrants face a great concern in terms of education and experience acquired abroad - neither one is recognized by the Canadian labour market; but

statistically, immigrants have a higher level of education and experience compared with native-born Canadians. Due to the complexity in measuring immigrants' experience and education prior to and post migration, the actual measure of experience and education prevails.

According to the popular view, language is an influential variable on immigrants' earnings. However, the preliminary analysis of this study and Miller's (1987) paper show that results are not affected substantially when language attributes are included. As indicated in the regression analysis, immigrant and native women have similar educational attainment (12.17 years versus 12.2 years). The relative high educational level of immigrant women and the Canadian immigration point system which requires immigrants to demonstrate a satisfactory proficiency of English or French explain the poor performance of the language variables in this study.

V. CONCLUSION

This paper examines separate earnings function for native-born and immigrant women. Using the regression results, the native and immigrant women's earnings differentials is decomposed into the percentage attributable to endowments and the percentage of discrimination.

Overall, the results obtained indicate that immigrant women have an average earnings 4.6 percent lower than native women. The decomposition of their earnings differentials indicates that wage discrimination accounts for only 6.2 percent which is too small to affirm that discrimination exists against visible minority women. This paper concludes that visible minority women do relatively well when they are compared to native-born women in the labour market. However, one observation is clear. The insignificant earnings differences observed between two groups are due to the over-representation of women, both native and immigrants, in low-paying jobs, often in clerical, sales and service occupations. The better endowments in favour of immigrant women are perhaps due to Canadian immigration policy which requires immigrants to be graded in terms of education and professional abilities before their admission to Canada.

The evidence for Canada through the Employment Equity and Pay Equity legislation suggests that inequality of wages and the unequal occupational and industrial distribution of employment by sex and race receive equal weight in terms of public policy. However, one has to take into account the fact that if the legislation is to be effective, employers must obtain a positive utility from its implementation and reinforcement. The question is how the legislation will be reinforced, given the constant uncertainty of the economy.

DESCRIPTIVE STATISTICS

VARIABLE	SUM	MEAN	UNCORRECTED SS	VARIANCE	STD DEVIATION
LNWAGES	368216.62	9.5827356	3553229	0.6430	0.8018700
EDUC	469623.50	12.2218217	5995667	6.6628	2.5812432
EXP	660435.50	17.1876513	17094414	149.4659	12.2256257
EXPSQ	17094413.75	444.8773910	18707326860	288944.6354	537.5357061
LNWKS	145084.76	3.7757907	554749	0.1806	0.4249835
MARRIED	23411.00	0.6092648	23411	0.2381	0.4879215
MANAGER	4399.00	0.1144828	4399	0.1014	0.3184008
SCIENCE	4282.00	0.1114379	4282	0.0990	0.3146777
SOCSCIEN	3923.00	0.1020950	3923	0.0917	0.3027771
SALESERV	7050.00	0.1834743	7050	0.1498	0.3870599
QUEATL	12705.00	0.3306441	12705	0.2213	0.4704512
PRAIRIES	6551.00	0.1704880	6551	0.1414	0.3760658
BC	3648.00	0.0949382	3648	0.0859	0.2931334
CHILD25	1510.00	0.0392973	1510	0.0378	0.1943040
CHILD255	1677.00	0.0436435	1677	0.0417	0.2043032
CHILD65	1547.00	0.0402602	1547	0.0386	0.1965715
CHILD614	6001.00	0.1561744	6001	0.1318	0.3630253
INTERCEP	38425.00	1.0000000	38425	0.0000	0.0000000

TABLE A(1a)

DEP VARIABLE: LNWAGES

ANALYSIS OF VARIANCE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	16	12349.02852	771.81428	2398.867	0.0001
ERROR	38408	12357.43262	0.32174111		
C TOTAL	38424	24706.46114			

ROOT MSE	0.5672223	R-SQUARE	0.4998
DEP MEAN	9.582736	ADJ R-SQ	0.4996
C.V.	5.91921		

PARAMETER ESTIMATES

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PROB > |T|
INTERCEP	1	4.42356545	0.03252894	135.989	0.0001
EDUC	1	0.06778265	0.001443688	46.951	0.0001
EXP	1	0.03856767	0.000943833	40.863	0.0001
EXPSQ	1	-0.000620783	0.000021259	-29.202	0.0001
LNWKS	1	1.02957532	0.007109736	144.812	0.0001
MARRIED	1	0.04023156	0.006432103	6.255	0.0001
MANAGER	1	0.22292723	0.009728627	22.915	0.0001
SCIENCE	1	0.23099251	0.009806408	23.555	0.0001
SOCSCIEN	1	0.18932129	0.01093305	17.316	0.0001
SALESERV	1	-0.18194121	0.008054490	-22.589	0.0001
QUEATL	1	-0.02973495	0.006837965	-4.349	0.0001
PRAIRIES	1	0.02768618	0.008373180	3.307	0.0009
BC	1	0.04002748	0.01046146	3.826	0.0001
CHILD25	1	0.09245883	0.01549845	5.966	0.0001
CHILD255	1	0.05352361	0.01462965	3.659	0.0003
CHILD65	1	0.008961446	0.01531547	0.585	0.5585
CHILD614	1	-0.06514344	0.008918481	-7.304	0.0001

TABLE A(1b)

DESCRIPTIVE STATISTICS

VARIABLE	SUM	MEAN	UNCORRECTED SS	VARIANCE	STD DEVIATION
LNWAGES	32338.498	9.5365668	310156	0.5186	0.7201160
EDUC	41280.000	12.1734002	543689	12.1448	3.4849462
EXP	63102.000	18.6086700	1566598	115.7386	10.7581855
EXPSQ	1566598.000	461.9870245	1514681529	233313.7404	483.0256105
LNWKS	12739.387	3.7568232	48526	0.1966	0.4433609
MARRIED	2272.000	0.6700088	2272	0.2212	0.4702789
MANAGER	257.000	0.0757889	257	0.0701	0.2646990
SCIENCE	542.000	0.1598349	542	0.1343	0.3665069
SOCSCIEN	173.000	0.0510174	173	0.0484	0.2200657
SALSERV	738.000	0.2176349	738	0.1703	0.4126987
QUEATL	450.000	0.1327042	450	0.1151	0.3393048
PRAIRIES	511.000	0.1506930	511	0.1280	0.3578022
BC	494.000	0.1456797	494	0.1245	0.3528369
CHILD25	173.000	0.0510174	173	0.0484	0.2200657
CHILD255	231.000	0.0681215	231	0.0635	0.2519914
CHILD65	372.000	0.1097022	372	0.0977	0.3125642
CHILD614	781.000	0.2303155	781	0.1773	0.4210969
INTERCEP	3391.000	1.0000000	3391	0.0000	0.0000000

TABLE A(2a)

DEP VARIABLE: LNWAGES

ANALYSIS OF VARIANCE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	16	1072.54181	67.03386292	329.986	0.0001
ERROR	3374	685.40054	0.20314183		
C TOTAL	3390	1757.94235			

ROOT MSE	0.4507126	R-SQUARE	0.6101
DEP MEAN	9.536567	ADJ R-SQ	0.6083
C.V.	4.726151		

PARAMETER ESTIMATES

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PROB > |T|
INTERCEP	1	4.85288322	0.07625063	63.644	0.0001
EDUC	1	0.04720002	0.002728105	17.301	0.0001
EXP	1	0.02821117	0.002707552	10.419	0.0001
EXPSQ	1	-0.000459903	0.000060380	-7.617	0.0001
LNWKS	1	0.99187877	0.01827829	54.265	0.0001
MARRIED	1	0.03386332	0.01914613	1.769	0.0770
MANAGER	1	0.29177636	0.03108484	9.386	0.0001
SCIENCE	1	0.32062095	0.02322227	13.807	0.0001
SOCSCIEN	1	0.20034518	0.03745016	5.350	0.0001
SALSERV	1	-0.13915193	0.02024734	-6.873	0.0001
QUEATL	1	-0.08277681	0.02385883	-3.469	0.0005
PRAIRIES	1	-0.01199317	0.02261396	-0.530	0.5959
BC	1	0.02184859	0.02304153	0.948	0.3431
CHILD25	1	0.02314270	0.03826526	0.605	0.5454
CHILD255	1	-0.04134273	0.03333829	-1.240	0.2150
CHILD65	1	0.02316079	0.02831646	0.818	0.4135
CHILD614	1	0.01303117	0.02191536	0.595	0.5521

TABLE A(2b)

DESCRIPTIVE STATISTICS

VARIABLE	SUM	MEAN	UNCORRECTED SS	VARIANCE	STD DEVIATION
LNWAGES	4100.9152	9.4273913	38970.2	0.7126	0.8441647
EDUC	5427.0000	12.4758621	73622.5	13.6313	3.6920629
EXP	7782.0000	17.8896552	193731.5	125.6088	11.2075316
EXPSQ	193731.5000	445.3597701	198367410.1	258265.4236	508.1982129
LNWKS	1593.0373	3.6621548	5985.7	0.3496	0.5912671
MARRIED	338.0000	0.7770115	338.0	0.1737	0.4167300
MANAGER	34.0000	0.0781609	34.0	0.0722	0.2687337
SCIENCE	56.0000	0.1287356	56.0	0.1124	0.3352927
SOCSCIEN	30.0000	0.0689655	30.0	0.0644	0.2536873
SALSERV	83.0000	0.1908046	83.0	0.1548	0.3933878
QUEATL	49.0000	0.1126437	49.0	0.1002	0.3165208
PRAIRIES	63.0000	0.1448276	63.0	0.1241	0.3523321
BC	88.0000	0.2022989	88.0	0.1617	0.4021764
CHILD25	27.0000	0.0620690	27.0	0.0584	0.2415586
CHILD255	30.0000	0.0689655	30.0	0.0644	0.2536873
CHILD65	61.0000	0.1402299	61.0	0.1208	0.3476252
CHILD614	106.0000	0.2436782	106.0	0.1847	0.4297950
INTERCEP	435.0000	1.0000000	435.0	0.0000	0.0000000

TABLE A(3a)

DEP VARIABLE: LNWAGES

ANALYSIS OF VARIANCE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	16	212.84002	13.30250122	57.660	0.0001
ERROR	418	96.43449549	0.23070453		
C TOTAL	434	309.27451			

ROOT MSE	0.4803171	R-SQUARE	0.6882
DEP MEAN	9.427391	ADJ R-SQ	0.6763
C.V.	5.09491		

PARAMETER ESTIMATES

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PROB > |T|
INTERCEP	1	4.93458163	0.19184229	25.722	0.0001
EDUC	1	0.05211694	0.007853365	6.636	0.0001
EXP	1	0.01813877	0.007846268	2.312	0.0213
EXPSQ	1	-0.000210980	0.000174932	-1.206	0.2285
LNWKS	1	0.97167574	0.04296483	22.616	0.0001
MARRIED	1	0.008802943	0.06550673	0.134	0.8932
MANAGER	1	0.16515265	0.09089596	1.817	0.0699
SCIENCE	1	0.37165055	0.07628751	4.872	0.0001
SOCSCIEN	1	0.10701398	0.09888660	1.082	0.2798
SALSERV	1	-0.14208966	0.06400854	-2.220	0.0270
QUEATL	1	-0.19178826	0.07773483	-2.467	0.0140
PRAIRIES	1	0.12396509	0.06972821	1.778	0.0762
BC	1	0.01542173	0.06554765	0.235	0.8141
CHILD25	1	0.06749356	0.10819385	0.624	0.5331
CHILD255	1	-0.13784949	0.10015352	-1.376	0.1694
CHILD65	1	0.05898550	0.07909235	0.746	0.4562
CHILD614	1	0.01378459	0.06637757	0.208	0.8356

TABLE A(3b)

DESCRIPTIVE STATISTICS

VARIABLE	SUM	MEAN	UNCORRECTED SS	VARIANCE	STD DEVIATION
LNWAGES	13172.3438	9.5313631	126271.0	0.5218	0.7223401
EDUC	17006.0000	12.3053546	230040.5	15.0439	3.8786480
EXP	25940.0000	18.7698987	648765.5	117.2153	10.8266014
EXPSQ	648765.5000	469.4395803	654337037.4	253280.8351	503.2701413
LNWKS	5199.3062	3.7621608	19823.2	0.1901	0.4360392
MARRIED	978.0000	0.7076700	978.0	0.2070	0.4549978
MANAGER	104.0000	0.0752533	104.0	0.0696	0.2638950
SCIENCE	238.0000	0.1722142	238.0	0.1427	0.3777032
SOCSCIEN	50.0000	0.0361795	50.0	0.0349	0.1868040
SALSERV	324.0000	0.2344428	324.0	0.1796	0.4238034
QUEATL	118.0000	0.0853835	118.0	0.0781	0.2795527
PRAIRIES	304.0000	0.2199711	304.0	0.1717	0.4143767
BC	308.0000	0.2228654	308.0	0.1733	0.4163194
CHILD25	72.0000	0.0520984	72.0	0.0494	0.2223059
CHILD255	102.0000	0.0738061	102.0	0.0684	0.2615497
CHILD65	136.0000	0.0984081	136.0	0.0888	0.2979735
CHILD614	321.0000	0.2322721	321.0	0.1785	0.4224345
INTERCEP	1382.0000	1.0000000	1382.0	0.0000	0.0000000

TABLE A(4a)

DEP VARIABLE: LNWAGES

ANALYSIS OF VARIANCE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	16	455.02316	28.43894757	146.185	0.0001
ERROR	1365	265.54847	0.19454100		
C TOTAL	1381	720.57163			

ROOT MSE	0.441068	R-SQUARE	0.6315
DEP MEAN	9.531363	ADJ R-SQ	0.6272
C.V.	4.627544		

PARAMETER ESTIMATES

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PROB > |T|
INTERCEP	1	4.82891804	0.11912260	40.537	0.0001
EDUC	1	0.04505802	0.003921055	11.491	0.0001
EXP	1	0.02374634	0.004090912	5.805	0.0001
EXPSQ	1	-0.000362321	0.000089005	-4.071	0.0001
LNWKS	1	0.99302059	0.02825040	35.151	0.0001
MARRIED	1	0.07028300	0.03162845	2.222	0.0264
MANAGER	1	0.39421239	0.04786536	8.236	0.0001
SCIENCE	1	0.41330422	0.03513459	11.763	0.0001
SOCSCIEN	1	0.27355751	0.06674540	4.099	0.0001
SALSERV	1	-0.15201102	0.03055760	-4.975	0.0001
QUEATL	1	-0.01109907	0.04452127	-0.249	0.8032
PRAIRIES	1	-0.02084389	0.03133094	-0.665	0.5060
BC	1	0.02231195	0.03096976	0.720	0.4714
CHILD25	1	0.08871506	0.05890314	1.506	0.1323
CHILD255	1	-0.02659095	0.05018750	-0.530	0.5963
CHILD65	1	0.05382221	0.04591567	1.172	0.2413
CHILD614	1	0.01818305	0.03435141	0.529	0.5967

TABLE A(4b)

DESCRIPTIVE STATISTICS

VARIABLE	SUM	MEAN	UNCORRECTED SS	VARIANCE	STD DEVIATION
LNWAGES	5137.7006	9.6211622	49639.5	0.3919	0.6259948
EDUC	6305.5000	11.8080524	78525.3	7.6352	2.7631912
EXP	10897.5000	20.4073034	277360.3	103.1363	10.1556056
EXPSQ	277360.2500	519.4012172	253618123.1	205547.6015	453.3735783
LNWKS	2036.5806	3.8138214	7822.7	0.1043	0.3229385
MARRIED	286.0000	0.5355805	286.0	0.2492	0.4992001
MANAGER	30.0000	0.0561798	30.0	0.0531	0.2304845
SCIENCE	120.0000	0.2247191	120.0	0.1745	0.4177886
SOCSCIEN	34.0000	0.0636704	34.0	0.0597	0.2443938
SALSERV	115.0000	0.2153558	115.0	0.1693	0.4114544
QUEATL	120.0000	0.2247191	120.0	0.1745	0.4177886
PRAIRIES	30.0000	0.0561798	30.0	0.0531	0.2304845
BC	11.0000	0.0205993	11.0	0.0202	0.1421716
CHILD25	15.0000	0.0280899	15.0	0.0274	0.1653846
CHILD255	31.0000	0.0580524	31.0	0.0548	0.2340618
CHILD65	62.0000	0.1161049	62.0	0.1028	0.3206510
CHILD614	140.0000	0.2621723	140.0	0.1938	0.4402282
INTERCEP	534.0000	1.0000000	534.0	0.0000	0.0000000

TABLE A(5a)

DEP VARIABLE: LNWAGES

ANALYSIS OF VARIANCE

SOURCE	DF	SUM OF SQUARES	MEAN SQUARE	F VALUE	PROB>F
MODEL	16	120.59305	7.53706539	44.143	0.0001
ERROR	517	88.27335878	0.17074151		
C TOTAL	533	208.86640			

ROOT MSE	0.4132088	R-SQUARE	0.5774
DEP MEAN	9.621162	ADJ R-SQ	0.5643
C.V.	4.294791		

PARAMETER ESTIMATES

VARIABLE	DF	PARAMETER ESTIMATE	STANDARD ERROR	T FOR H0: PARAMETER=0	PROB > |T|
INTERCEP	1	4.60374043	0.23210224	19.835	0.0001
EDUC	1	0.05453269	0.008153446	6.688	0.0001
EXP	1	0.04098125	0.006804853	6.022	0.0001
EXPSQ	1	-0.000702327	0.000150603	-4.663	0.0001
LNWKS	1	1.01159836	0.05985842	16.900	0.0001
MARRIED	1	-0.005721363	0.04002935	-0.143	0.8864
MANAGER	1	0.27944714	0.08314694	3.361	0.0008
SCIENCE	1	0.20029293	0.04822420	4.153	0.0001
SOCSCIEN	1	0.18163322	0.08130787	2.234	0.0259
SALSERV	1	-0.13086733	0.04865339	-2.690	0.0074
QUEATL	1	-0.08259733	0.04440233	-1.860	0.0634
PRAIRIES	1	0.09162358	0.07961335	1.151	0.2503
BC	1	0.04619010	0.12796172	0.361	0.7183
CHILD25	1	0.02638399	0.11430428	0.231	0.8175
CHILD255	1	0.08628260	0.08290654	1.041	0.2985
CHILD65	1	-0.05278515	0.06350060	-0.831	0.4062
CHILD614	1	0.05999375	0.04739659	1.266	0.2062

TABLE A(5b)

ENDNOTES

[1] See Boxhill W. p.3

[2] Armenian, Iranian, Israeli, Turk, Arab n.i.e., Egyptian, Lebanese, Palestinian, Syrian.

[3] Bengali, Gujarati, Punjabi, Singhalese, Tamil, Bangladeshi,n.i.e. Pakistani,n.i.e. Sri Lanki,n.i.e.East Indian n.i.e.

[4] Japanese, Korean, Burmese, Cambodian, Laotian, Thai, Vietnamese, Indonesian, Malay, other Asian n.i.e., Chinese, Filippinos.

[5] Black, African Black, Haitian, Jamaican, West Indian.

[6] Kuwait, United Arab Emirates, Saudi Arabia and Lebanon are ranked, in 1989, fourth, fifth, sixth and seventh respectively among the top ten countries in the immigrant-entrepreneur category. (Immigration Statistics 1989-Employment and Immigration Canada).

[7] $\Sigma b_n X_n$= ln 9.582

[8] $\Sigma b_i X_i$=ln 9.536

[9] $\Sigma b_n X_i$=ln 9.598

[10] Over-all differential=Native actual earnings-Immigrant wage without discrimination.

[11] Wage discrimination=Immigrant wage without discrimination-Immigrant actual wages.

[12] Endowment differences=Native actual wages-immigrant wage without discrimination.

[13] ln9.427
ln9.513
ln9.531
ln9.619
ln9.621
ln9.654

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