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The Earnings Gap between Black and White Workers in Canada: Evidence from the 2006 Census

Les écarts de revenus entre les travailleurs blancs et noirs au Canada : résultats selon les données du recensement de 2006

Las diferencias de ingreso entre los trabajadores blancos y negros en Canadá: resultados según los datos del censo de 2006

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Résumé de l'article

Cet article examine les écarts de revenus entre travailleuses et travailleurs de race blanche et noire dans l'économie canadienne selon les données du recensement de 2006. Plusieurs études se sont intéressées aux revenus des minorités visibles au Canada (e.g. Hou et Coulombe, 2010; Pendakur et Pendakur, 2011; Yap et Konrad, 2009). La recherche récente rapporte de façon constante que les travailleuses et travailleurs de race noire affichent le plus grand écart de revenus parmi les groupes ethniques au Canada (Pendakur et Pendkur, 2002, 2007; Hou et Coulombe, 2010). Toutefois il manque à la littérature empirique l'étude de l'effet combiné de la discrimination salariale et de la ségrégation professionnelle sur les écarts de revenus des travailleurs de race noire sur le marché du travail canadien.

Howland et Sakellariou (1993) tout comme Hou et Coulombe (2010) ont montré l'importance des différences dans les niveaux d'atteinte professionnelle sur le marché du travail. En conséquence la présente recherche retient le besoin d'incorporer le niveau d'atteinte professionnelle dans les modèles d'études des écarts de revenus. Nous retenons comme mesure de l'écart la méthode de décomposition développées par Brown et Zoloth (1980). Cette méthode que nous appellerons BMZ est une extension des méthodes de décomposition proposées par Blinder (1973) et par Oaxaca (1973) en y ajoutant explicitement le rôle joué par les différences d'atteinte professionnelle. Spécifiquement, la méthode BMZ mesure la part de l'écart de revenus attribuable à des différences de caractéristiques en lien avec la productivité des individus et à des facteurs inexpliqués (i.e., l'approche traditionnelle de décomposition) tout en étendant l'approche traditionnelle pour permettre le calcul de la part de l'écart de revenus expliquée par les différences d'atteinte professionnelle.

L'étude établit qu'environ le cinquième de l'écart de revenus entre Blancs et Noirs (soit un montant de 2 600 $) peut être attribué aux différences de caractéristiques en lien avec la productivité des individus. Ensuite, les quatre cinquièmes restants de l'écart de revenus (soit un montant de 9 800 $) serait attribuable au niveau de leur limite supérieure à la ségrégation professionnelle et à la discrimination salariale. Au niveau agrégé, les estimations de l'effet de la ségrégation professionnelle et de la discrimination salariale se traduisent par un manque à gagner d'environ 1,5 milliard de dollars pour l'ensemble des travailleuses et travailleurs noirs travaillant toute l'année et à temps complet dans la main-d'oeuvre canadienne.

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The Earnings Gap between Black and White Workers in Canada: Evidence from the 2006 Census

Gervan Fearon and Steven Wald

We analyze the Black-White earnings gap among Canadian workers using 2006 census data. The earnings gap is estimated using conventional earnings regressions, Oaxaca-Blinder decompositions and an empirical technique developed by Brown, Moon and Zoloth that allows an occupation attainment model to be incorporated into a standard earnings decomposition specification. Results from this latter method suggest that wage discrimination and occupational segregation account for the majority of the earnings gap, while endowment differences account for a fairly small portion. In light of the estimated impacts of wage discrimination and occupational segregation on full-time, full-year Black workers, we suggest various policy initiatives and further research aimed at reducing these earnings discrepancies.

KEYWORDS: **wage differentials, inequality, occupational attainment, visible minorities, Canada**

Introduction

This study investigates the earnings gap between Black and White workers in the Canadian economy. According to the 2006 Canadian census, the average employment income of full-year, full-time, Black workers was $40,179 in 2005 while the average for all Canadian workers was over $11,000 greater at $51,221.[1] Between 2000 and 2005, average real earnings of Black workers rose at a rate of 2.1 per cent compared to 5.5 per cent for all workers, resulting in a widening earnings gap.[2] Perhaps not surprising in light of these earnings statistics, a disproportionate share of Blacks are found in lower-skilled and lower-paid occupations and conversely are under-represented in many highly-skilled, well-paying occupations. For example, the 2006 Canadian census indicates that only 7.7 per cent of full-year, full-time Black workers were managers, in contrast to 13.3 per cent of all workers, while 7.4 per cent of Blacks were employed in lower-skilled service occupations, roughly 50 per cent more than that of all workers.

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Recent research consistently finds that Black workers face one of the largest earnings gaps amongst ethnic groups in Canada. For example, based on 1996 census data restricted to Canadian-born workers, Pendakur and Pendakur (2002) found that Black females faced the largest earnings gap of 26 ethnic groups and Black males faced the second largest earnings gap.[3] Similarly, Hum and Simpson (1999), using 1991 census data, found no statistically significant wage gaps between Canadian-born visible and non-visible workers, with the exception of Black males, and concluded that in light of "the finding of a significant wage differential between blacks and other Canadians, it is time to investigate this phenomenon more carefully." Pendakur and Pendakur (2007) applied quantile regression methods to 2001 census data and found that, unlike other Canadian-born visible minorities, Black workers face "great disparity across the distribution", implying that access to good jobs at all skill levels is problematic. Furthermore, Hou and Coulombe (2010) examined the relative earnings of Canadian-born Blacks, Chinese and South Asians using 2006 census data and concluded that the large earnings shortfalls faced by Blacks, particularly Black men, are "striking." These findings provide the motivation for the investigation conducted in the present study.

Canada is a very diverse country with large visible minority populations in many of its major cities. Nonetheless, instances of workplace and societal discrimination point to potential challenges in the labour market, including racial discrimination being intertwined with incidences of poverty and other socio-economic challenges (Cassin, Krawchenko and Vander Plaat, 2007).[4] Amongst visible minority groups in Canada, survey evidence suggests that Black workers may face the largest potential challenges in the labour market. In focus group analysis, it was revealed that between 10 and 38 per cent of participants had "experienced unequivocal racial discrimination at work or in trying to obtain work" and Blacks were most likely to have experienced discrimination (Canadian Race Relations Foundation, 2000). Similarly, in the 2002 Ethnic Diversity Survey conducted by Statistics Canada, the highest rate of perceived discrimination was reported by Blacks at 49.6 per cent compared to the visible minority average of 35.9 per cent (Reitz and Banerjee, 2007). Consequently, the potential impact that labour market discrimination may exert on the earnings of Black workers warrants further investigation.

The present study aims to provide an understanding of the earnings differential between Black and White workers in the Canadian setting. While there have been a number of recent studies examining visible minority earnings in Canada (e.g., Hou and Coulombe, 2010; Pendakur and Pendakur, 2007, 2011; Yap and Konrad, 2009), this literature lacks a recent investigation of the combined impact of wage discrimination and occupational segregation on the earnings gap faced by Black workers. To our knowledge, Howland and Sakellariou (1993) was the last paper to decompose the earnings gap faced by Canadian Blacks into the portion attributable to differences in productive endowments, and those which

may reflect wage discrimination and occupational segregation.[5] We remedy this gap in the literature by utilizing the decomposition method developed by Brown, Moon and Zoloth (1980).

The traditional earnings decompositions separate the earnings differential into two distinct portions, namely: (i) the share due to productivity-related differences (i.e., endowments) and (ii) the share not due to endowment differences. In this study, we also conduct the traditional earnings decomposition consisting of the Mincer (1958) approach as well as the Blinder (1973) and the Oaxaca (1973) approaches. These traditional earnings decompositions have been used by several researchers investigating the earnings gap in the Canadian setting (Pendakur and Pendakur, 2002, 2007; Hou and Coulombe, 2010). However, we extend this analysis by also using the Brown, Moon and Zoloth method. This method extends the traditional decomposition by also identifying the role specifically played by occupational differences, namely, differences in the return to productive endowments within an occupation (referred to as wage discrimination) and differential access to occupations despite possessing similar productive endowments (referred to as occupational segregation). By incorporating an occupational attainment model into the more traditional earnings decomposition, the Brown, Moon and Zoloth technique allows for an explicit quantitative estimate of the role of occupational segregation in earnings differences. This has the attractive feature of neither implying that occupational differences are by themselves "legitimate" determinants of the earnings gap nor ignoring occupational attainment in the formal analysis.[6]

The literature suggests that the Brown, Moon and Zoloth technique is particularly well-suited for an examination of Black-White earnings differentials for numerous reasons. First, prior analyses of Canadian data found substantial occupational differences unrelated to individual characteristics (Howland and Sakellariou, 1993; Darden, 2005). Second, previous applications of this technique to Black-White earnings differentials concluded that occupational segregation is indeed a major contributing factor to the earnings gap (Howland and Sakellariou, 1993). For example, using 1986 Canadian census data on male workers, Howland and Sakellariou (1993) attributed about 19 per cent of the Black-White earnings gap to occupational segregation while Gabriel and Schmitz (1989) utilized 1980 U.S. Census of Population data and concluded that the occupational segregation of Black men accounts for nearly half of the observed Black-White earnings differential. Third, analysis of 2006 Canadian census data is highly suggestive that occupational segregation is an important contributing factor to the earnings gap. For instance, Hou and Coulombe (2010) concluded that for Black males working in the public sector, the earnings disadvantage stems more from working part-time and in lower-paying occupations than from lower pay in the same job, while for Black

males working in the private sector, job sorting was concluded to play a similar role as lower pay in the same job. Similarly, Torczyner (2010) found that Black workers in Montreal were significantly under-represented in high paying occupations and over-represented in low paying occupations, even when possessing relatively similar educational qualifications as their non-Black co-workers.

The Brown, Moon and Zoloth method attempts to provide further insights into the portion of the earnings gap unexplained by differences in productivity characteristics. Consistent with any empirical analysis, the findings from this method of earnings decompositions are subject to interpretation. For instance, Dougherty (2005) suggests that "discrimination, tastes and circumstances" may explain occupational differences and, in turn, the portion of earnings gap unexplained by differences in productivity characteristics yet attributed to wage discrimination and occupational segregation. On the other hand, Fouad and Byers-Winston (2005) suggest that there are few meaningful differences in occupational preferences across groups. Similarly, evolutionary economic theory suggests that individuals have an incentive to select strategies (occupations) that maximize their expected return from the utilization of their productive endowments. These varying interpretations in the literature suggest that the Brown, Moon and Zoloth method can be conservatively interpreted as providing upper-bound estimates of wage discrimination and occupational segregation (Gabriel and Schmitz, 1989).

The key findings of the study are as follows: The total earning gap identified through the study after standardizing for productive endowments was about $12,400 in 2005 using the 2006 Canadian census. We find that roughly one-fifth of the Black-White earnings gap (equaling $2,600) can be attributed to productivity-related endowment differences. The remaining four-fifths of the earnings gap (equaling $9,800) can be attributed to occupational segregation and wage discrimination. The upper-bound estimate of wage discrimination is calculated at slightly over half the overall earnings differential and occupational segregation is estimated to account for up to the remaining one-fifth of the gap. Black workers were found to be under-represented in high-income occupations while over-represented in low-income occupations. For instance, given the productive endowments possessed, 13.3 per cent of Black workers were predicted to be in the managerial occupations while the actual number was found to be 7.3 per cent. It was predicted that 5.3 per cent of Black workers would be employed in elemental service occupations yet the actual number was 7.7 per cent. In aggregate, these estimates translate into annual earnings losses due to wage discrimination and occupational segregation of approximately $1.5 billion for full-time full-year Black workers in the Canadian workforce.

The policy implications of the findings relate to the need for public policy and private sector efforts to address the vast majority of the earnings gap, which is

primarily due to wage discrimination and occupational segregation, while the remainder of the earnings gap can be shrunk through individual and community efforts as well as complementary public and private initiatives. By implication, the contemporarily observed socio-economic outcomes (e.g., incidence of poverty and educational attainment) can be reasonably anticipated to be directly related to the disincentives and financial deficits caused by the earnings gap. Additionally, we conclude that the Brown, Moon and Zoloth decomposition technique is an important methodological device for investigating the earnings gap of Black workers in Canada in light of the role of occupational attainment differences in earnings. Furthermore, this technique may hold promise in investigating the earnings gaps pertaining to other groups in the Canadian workforce.

The paper is organized as follows: next section presents the data we utilized; it is followed by a section discussing the econometric methods and a section presenting empirical results. The last section concludes the paper with a discussion of public policy implications and suggestions for further research into this area.

Data

The data set used in the study is derived from the 2006 Canadian Census Public Use Microdata File (PUMF) on individuals. The PUMF contains 844,476 records, representing 2.7 per cent of the Canadian population. In this study, weighted data are generally reported and analyzed. We restrict the sample to individuals between the ages of 18 and 64, who worked mostly full-time (30 hours or more per week) on a full-year basis (i.e., between 49 and 52 weeks) with positive employment earnings in 2005. Self-employed workers are excluded from the analysis by removing those with non-zero self-employment earnings in 2005.[7] These restrictions result in a sample of 209,346.[8]

For much of the analysis, we also restrict the sample to workers who are Black or White. The "Visible Minority Indicator" variable is utilized to categorize an individual's race.[9] As these data are based on a question posed only to non-Aboriginal Canadians, we exclude Aboriginal individuals from the "Not Visible Minority" category to derive the subset of workers whom we define as White. This latter restriction reduces the sample size to 180,003 of which 4,219 are Black and 175,784 are White. The sample size represents a population proportional to 6,669,135 individuals which is comprised of 156,080 Blacks and 6,503,054 Whites across Canada.

Table 1 contrasts weighted mean values for the Black and White workers in our data sample. In terms of labour market earnings in 2005, White males earned nearly $18,000 more per year or about $340 more per week than Black males, while White females earned about $5,200 more per year or $100 more per week than Black females. The reported difference in the total weeks worked is very minor (0.1 week for either gender) as can be anticipated, since the sample is restricted

TABLE 1

Weighted Means by Ethnicity and Gender

Variable	White Females	White Males	Black Females	Black Males
Annual earnings ($)	43,055.12	61,130.36	37,875.40	43,186.61
Weekly earnings ($)	831.71	1,181.74	733.76	837.37
Ln weekly earnings	6.522	6.821	6.403	6.508
Weeks worked	51.7	51.7	51.6	51.6
Immigrant	0.101	0.107	0.759	0.764
English or French mother tongue[1]	0.853	0.857	0.723	0.671
Age (years)	41.7	41.7	40.8	40.1
Married	0.537	0.583	0.454	0.540
Schooling (years)[2]	14.1	13.7	14.2	13.8
Highest level of schooling				
Less than high school	0.083	0.126	0.084	0.117
High school	0.268	0.254	0.211	0.287
Trade diploma	0.083	0.170	0.108	0.131
College	0.319	0.244	0.377	0.273
University	0.247	0.206	0.219	0.192
Potential work experience (years)[3]	22.6	23.0	21.7	21.3
Province of Residence				
Atlantic provinces	0.081	0.071	0.027	0.026
Quebec	0.269	0.262	0.224	0.220
Ontario	0.377	0.374	0.649	0.603
Prairie provinces	0.063	0.062	0.018	0.033
Alberta	0.107	0.119	0.050	0.073
BC and Territories	0.103	0.112	0.033	0.046
Resides in Census Metropolitan Area	0.688	0.669	0.968	0.948
Occupation				
Manager	0.111	0.154	0.070	0.075
Professional	0.223	0.146	0.205	0.139
Semi-professional	0.085	0.076	0.090	0.071
Supervisor	0.030	0.053	0.023	0.037
Clerical	0.296	0.077	0.255	0.121
Sales	0.147	0.110	0.186	0.112
Trades	0.006	0.158	0.006	0.118
Semi-skilled	0.046	0.182	0.089	0.249
Elemental services	0.056	0.044	0.076	0.078
Public sector	0.111	0.154	0.070	0.075
Observations	77,366	98,418	2,050	2,169

1. French mother tongue in Quebec, English elsewhere.

2. As information on years of schooling was not collected in the 2006 census, we used imputed years of schooling based on estimated years of schooling by the highest level of certificate or degree for individuals aged 25 to 64 from the 2001 census as presented in Hou and Coulombe (2010) under their footnote 7, page 41.

3. Potential years of work experience calculated as age – years of schooling – 5.

to those who worked on a full-year basis in 2005. The most marked difference between the White and Black worker samples is the much higher percentage of Black workers who are immigrants (76.4 per cent for males and 75.9 per cent for females) compared to White workers (10.7 per cent of males and 10.1 per cent of females). Similarly, a lower percentage of Black workers in 2005 have English or French as a mother tongue (67.1 per cent for males and 72.3 per cent for females) compared to White workers (about 85 per cent for either gender). Other reported human capital characteristics are fairly similar amongst the Black and White workers in the sample. For instance, years of schooling are nearly the same at 13.7 years for White males and 13.8 for Black males (14.1 for White females and 14.2 for Black females), while years of potential work experience was slightly higher for White workers (by about one percentage point).

The geographic distribution of White and Black workers is quite different. Black workers are much more likely to reside in Ontario (60.3 per cent of males and 64.9 per cent of females) whereas White workers are more evenly distributed across Canada. Black workers are also more likely to reside in urban areas as 94.8 per cent of Black males live in Census Metropolitan Areas (CMAs) compared to 37.4 per cent of White males (numbers for females are 64.9 per cent and 37.7 per cent, respectively). Since the cost of living is generally higher in large urban centres, these geographical differences imply that Black workers require higher wages than their White counterparts in order to achieve a comparable purchasing power. The earnings gap therefore suggests that an even greater purchasing power gap faces Black workers.

The distribution of workers within fairly broad occupational categories varies between the two groups of workers. White workers have greater representation in managerial, professional, supervisory, and trade occupations whereas Black workers have a relatively higher representation within the clerical, sales, semi-skilled and low level service occupations.[10] As seen in Table 2, the occupations in which Whites are over-represented are the four occupations with the highest annual earnings (managerial, professional, trade, and supervisory). In contrast, those occupational categories where Black workers are over-represented are the four lowest paying occupations (elemental services, clerical, semi-skilled and sales).

The average earnings for the sample group consisting of Black and White workers between 18 and 64 is found to be $52,880. This average income, however, only partially reflects the dispersion of worker income on the basis of occupation. For instance, managers are at the top-end of the annual earnings distribution with an average income of $81,909. In comparison, individuals in the elemental services occupation are earning an annual income well below the average at $27, 294.

Table 3 provides further insight into the earnings gap between Black and White workers by examining the gap along occupational and gender lines. It shows

TABLE 2

Annual Earnings by Ethnicity, Gender and Occupation ($)

	White			Black			Total		
Occupation	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**
Manager	61,090.67	94,180.33	82,229.38	52,496.04	61,146.63	57,075.77	60,948.61	93,830.95	81,909.06
Professional	58,803.33	80,294.50	68,575.25	54,053.49	57,814.57	55,626.69	58,690.68	79,833.27	68,286.96
Semi-Professional	39,523.06	56,753.40	48,687.30	38,336.96	45,915.59	41,789.95	39,490.66	56,533.73	48,524.66
Supervisory	37,432.33	58,693.92	52,056.21	35,531.91	44,175.02	40,976.39	37,395.04	58,472.81	51,872.23
Clerical	37,711.05	48,909.95	40,506.56	35,460.18	36,916.03	35,946.08	37,660.82	48,511.41	40,392.27
Sales	31,237.05	54,107.18	42,388.98	29,492.15	39,061.48	33,222.05	31,180.29	53,775.13	42,137.28
Trades	37,082.88	52,969.13	52,476.33	26,500.00	43,808.59	43,033.58	36,834.36	52,821.11	52,321.59
Semi-skilled	31,240.98	43,701.10	41,646.11	28,256.83	37,820.37	35,399.73	31,094.18	43,528.97	41,442.39
Elemental services	22,342.99	32,387.82	27,366.57	21,664.52	28,757.40	25,364.20	22,319.37	32,250.47	27,293.83
Total	43,055.12	61,130.36	53,175.09	37,875.40	43,186.61	40,605.91	42,921.42	60,743.43	52,880.49

TABLE 3

Annual Earnings Differences by Ethnicity, Gender and Occupation

	Absolute Difference ($)			Relative Difference: Black as a Share of White (%)			Relative Difference: Black Females as Share of White Males (%)
Occupation	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	
Manager	8,594.63	33,033.70	25,153.61	85.9	64.9	69.4	55.7
Professional	4,749.84	22,479.93	12,948.56	91.9	72.0	81.1	67.3
Semi-Professional	1,186.10	10,837.81	6,897.35	97.0	80.9	85.8	67.6
Supervisory	1,900.42	14,518.90	11,079.82	94.9	75.3	78.7	60.5
Clerical	2,250.87	11,993.92	4,560.48	94.0	75.5	88.7	72.5
Sales	1,744.90	15,045.70	9,166.93	94.4	72.2	78.4	54.5
Trades	10,582.88	9,160.54	9,442.75	71.5	82.7	82.0	50.0
Semi-skilled	2,984.15	5,880.73	6,246.38	90.4	86.5	85.0	64.7
Elemental services	678.47	3,630.42	2,002.37	97.0	88.8	92.7	66.9
Total	5,179.72	17,943.75	12,569.18	88.0	70.6	76.4	62.0

the striking differences in earnings differentials by gender; the male Black-White earnings gap is more than three times that of females. This table shows that while Black females nearly achieve earnings parity with White females across a number of occupations (e.g., professionals, supervisory, clerical and sales), Black males significantly lag White males irrespective of occupation. Table 3 also indicates that the earnings gap varies significantly across occupations, both in absolute and relative terms.[11] At the low end of the spectrum, Black managers earned 69.4 per cent of White managers' earnings, whereas Blacks who worked in elemental services, earned 92.7 per cent of their White counterparts. These earnings differentials are further expanded when gender and ethnicity are jointly considered (i.e., earnings of Black females as compared with White males in Table 3).

Given that 76.2 per cent of the black workers in the data sample are immigrants, compared to a corresponding figure of 10.4 per cent for White workers, it might be thought that the observed earnings differentials are largely spurious. Specifically, recent immigrants have been shown to fare poorly in the Canadian labour market due to a combination of factors, including lack of Canadian work experience, non-recognition of foreign credentials, lower levels of English or French language proficiency and lack of social and job networks (Nadeau and Seckin, 2010; Statistics Canada, 2003). However, the general patterns in the raw earnings gap persist, even when the analysis is restricted to Canadian-born workers.[12]

Econometric Model

The Black-White earnings gap is investigated as follows: first, we apply the standard econometric and decomposition approaches and, second, we utilize the Brown, Moon and Zoloth technique. For the standard econometric approach, Equation 1 represents the traditional Mincer (1958) earnings function:

$$ln(e_i) = x_i\beta + u_i \quad (1)$$

where the index i refers to the individual, $ln\ e_i$ denotes the natural logarithm of earnings, x_i are the observed productivity-related characteristics that determine earnings (including a dichotomous variable capturing ethnicity), β is a vector of coefficients (including the constant term) and u_i is the error term.

The second econometric approach to derive the magnitude of the earnings gap is the decomposition technique advanced by Blinder (1973) and Oaxaca (1973). In this model, Equation 1 is estimated separately for both groups under examination (i.e., Black and White workers). While the dummy variable approach essentially equates discrimination with the difference between the intercepts of the two earnings regression lines, the decomposition approach equates discrimination with the part of the gap resulting from differences in coefficient values. Specifically, it can be shown that the difference in average earnings can be decomposed as follows (Gunderson, 1979)[13]:

$$\ln(\overline{e}^{w}) - \ln(\overline{e}^{b}) = \sum \overline{x}^{b} (\beta^{w} - \beta^{b}) + \sum \beta^{w} (\overline{x}^{w} - \overline{x}^{b}) \quad (2)$$

where: the *w* and *b* indexes refer to White and Black workers respectively. In this equation, the first term on the right hand side represents that part of the earnings differential that is unexplained by attribute differences and the second portion represents the part of the earnings gap explained by differences in the mean values of characteristics. The first term on the right hand side of Equation 2 is often interpreted as an upper-bound measure of labour market discrimination (Dougherty, 2005; Nadeau and Seckin, 2010).

In addition to estimating Equation 2, we utilize the approach originally advanced by Brown, Moon and Zoloth (1980), who point out that when occupational control variables are included in Equation 2, differences in occupational representation appear in the part of the earnings gap that is characterized as "legitimate." They contend, however, that if occupational attainment is even partially a result of discrimination, then this is an inappropriate claim. Therefore, an alternative formulation of the earnings gap is required and represented as follows:

$$\ln(\overline{e}^{w}) - \ln(\overline{e}^{b}) = \sum_{j=1}^{n} (p_j^{w} - p_j^{b}) \ln \overline{e}_j^{w} + \sum_{j=1}^{n} p_j^{b} (\ln \overline{e}_j^{w} - \ln \overline{e}_j^{b}) \quad (3)$$

where $\ln\overline{e}^{w}$ and $\ln\overline{e}^{b}$ are the natural logarithm of mean earnings of Whites and Blacks, and p_j^{w} and p_j^{b} are the proportions of White and Black workers in the j[th] occupation. The first term on the right hand side of Equation 3 is the portion of the earnings gap due to inter-occupational differences[14] and the second term of this gap represents the earnings gap within occupations (i.e., the intra-occupational differences).[15]

Howland and Sakellaniou (1993) show that Equation 3 can be further decomposed into the following components:

$$\ln(\overline{e}^{w}) - \ln(\overline{e}^{b}) = \sum_{j=1}^{n} p_j^{b} (\overline{x}_j^{w} - \overline{x}_j^{b}) \beta_j^{w} + \sum_{j=1}^{n} \ln \overline{e}^{w} (p_j^{w} - p_j^{b'}) + \sum_{j=1}^{n} p_j^{b} \overline{x}_j^{b} (\beta_j^{w} - \beta_j^{b}) + \sum_{j=1}^{n} \ln \overline{e}^{w} (p_j^{b'} - p_j^{b}) \quad (4)$$

where $p_j^{b'}$ is a measure of the predicted share of Blacks in the j[th] occupation according to White's predicted occupational distribution. Equation 4 allows the earnings gap to be decomposed into four components. These components are: (1) Black-White differences in individual attributes; (2) occupational segregation due to differences in individual attributes; (3) differences in returns to characteristics; and (4) differences in occupational segregation not due to differences in characteristics.[16] On the one hand, since the first two components of this wage gap are due to differences in productivity-related characteristics, they can be described or characterized as "justifiable." On the other hand, these latter two components

are not justifiable according to endowment differences and represent, to some extent, intra-occupational differences in returns (i.e., wage discrimination) and differential access to occupations (i.e., occupational segregation), respectively.

To obtain the $p_j^{b'}$ term appearing in the second and fourth elements of Equation 4, we utilize a multinomial logit model of occupational attainment as in Liu, Zhang and Chong (2004). Specifically, we model occupational choice, for nine discrete occupational categories, as a function of: immigration status, official language spoken, gender, marital status, years of schooling, years of work experience, years of work experience squared, province of residence, and urban status. These factors represent a fairly standard list of variables utilized in similar studies (e.g., Gabriel and Schmitz, 1989; Howland and Sakellariou, 1993; Liu, Zhang and Chong, 2004). Unfortunately, some factors likely important in modeling occupational attainment, such as the occupational attainment of parents and career aspirations, are unavailable in the census data utilized in this study (Harper and Haq, 2001)

The equations from the multinomial can be solved to compute the predicted probabilities.[17] Following the notation appearing in Liu, Zhang and Chong (2004), the predicted probabilities of occupational attainment are calculated as follows:

$$P_{mj} = \text{prob}(y_m = occ_j) = \frac{\exp(Z_m \gamma_j)}{\sum_{k=1}^{j} \exp(Z_m \gamma_k)} \quad \text{for m = 1 to N and j = 1 to J} \quad (5)$$

where N is the sample size, J is the number of occupational categories, P_{mj} is the probability of individual m working in occupation j, Z_m is a vector of determinants of occupational choice, and γ_j is a vector of these coefficients corresponding to the k^{th} occupation.

Results

The results emerge from the application of econometric techniques to the standard approach represented by Equation 1, the Oaxaca-Blinder decomposition approach reflected by Equation 2, and the Brown, Moon and Zoloth approach in Equation 4, which includes a multinomial logit model as specified by Equation 5.

Standard Approach

The initial results are derived from the estimation of Equation 1. Table 4 shows the results of three regressions where the natural logarithm of weekly earnings is regressed separately by gender. The explanatory variables included in this model are fairly conventional characteristics such as immigration status, language proficiency, marital status, years of education, highest level of schooling, work experience (years), work experience squared, province of residence, urban status,

TABLE 4

Earnings Regressions by Gender, All Workers

	Female	Male	Total
Black	-0.069 (4.25)***	-0.203 (12.42)***	-0.137 (11.78)***
Male	– –	– –	0.306 (81.16)***
Immigrant	-0.091 (10.17)***	-0.095 (11.48)***	-0.097 (15.91)***
English or French mother tongue	0.008 (1.06)	0.047 (6.62)***	0.031 (5.88)***
Married	0.006 (1.14)	0.190 (36.55)***	0.105 (28.24)***
Total years of schooling	0.063 (18.36)***	0.051 (15.32)***	0.055 (22.71)***
Highest level of schooling (Less than high school)			
High school	0.069 (5.69)***	0.012 (1.12)	0.036 (4.65)***
Trade	-0.018 (1.11)	0.017 (1.30)	0.020 (1.95)*
College	0.084 (4.60)***	0.040 (2.33)**	0.070 (5.56)***
University	0.141 (5.07)***	0.111 (4.11)***	0.140 (7.24)***
Work experience (years)	0.044 (50.22)***	0.050 (60.12)***	0.047 (77.91)***
Work experience squared (/100)	-0.070 (36.98)***	-0.084 (48.31)***	-0.077 (59.89)***
Province of residence (Ontario)			
Atlantic provinces	-0.203 (20.69)***	-0.234 (24.55)***	-0.221 (32.12)***
Quebec	-0.160 (25.24)***	-0.145 (24.37)***	-0.154 (35.23)***
Prairie provinces	-0.141 (13.39)***	-0.159 (16.05)***	-0.154 (21.19)***
Alberta	-0.011 (1.33)	0.048 (6.35)***	0.024 (4.21)***
BC and Territories	-0.042 (4.91)***	-0.038 (4.93)***	-0.040 (6.93)***
Resides in Census Metropolitan Area	0.118 (21.10)***	0.050 (9.73)***	0.082 (21.57)***

Continued on next page

TABLE 4 (*continued*)

	Female	Male	Total
Occupation (Clerical)			
Manager	0.250 (28.50)***	0.344 (34.27)***	0.285 (45.13)***
Professional	0.214 (26.42)***	0.220 (20.47)***	0.204 (32.00)***
Semi-professional	-0.015 (1.50)	0.120 (10.29)***	0.038 (5.15)***
Supervisor	-0.023 (1.54)	0.142 (11.12)***	0.068 (7.37)***
Sales	-0.203 (25.90)***	0.038 (3.56)***	-0.106 (17.04)***
Trades	0.008 (0.25)	0.152 (14.95)***	0.106 (14.00)***
Semi-skilled	-0.102 (8.19)***	0.018 (1.79)*	-0.040 (5.98)***
Elemental services	-0.396 (34.55)***	-0.277 (20.53)***	-0.361 (41.93)***
Public sector	0.046 (8.13)***	0.011 (1.64)	0.040 (9.23)***
Constant	4.964 (131.64)***	5.237 (142.71)***	4.986 (190.70)***
Observations	79,416	100,587	180,003
R-squared	0.23	0.21	0.24

Notes: Reference categories in square brackets, Absolute value of t statistics in parentheses, Significance is denoted by *at 10%; ** at 5%; and *** at 1%.

occupation, industry sector and gender (in the case of the pooled male and female regression). As can be seen, Black workers faced significant negative earnings differentials of approximately 7 per cent for females, 20 per cent for males and 14 per cent for the combined sample. When these data samples are restricted to Canadian-born workers, the magnitude on the negative pay differentials faced by Black workers fall somewhat, but are still quite pronounced at 7 per cent for females, 18 per cent for males and 12 per cent for the combined sample. Restricting the analysis to immigrants results in larger estimated earnings differentials faced by Black workers: 10 per cent for females, 23 per cent for males and 17 per cent for the combined sample.[18]

These results are consistent with those of other studies. Pendakur and Pendakur (2002), using 1996 census data, found that Canadian-born black females faced an earnings disadvantage of 22 per cent and black males faced an earnings disadvantage of 36 per cent. These estimated negative earnings differentials exceed our findings for two main reasons. First, they did not include occupational categories as explanatory variables. Second, while our reference category for

Blacks was all White workers, their reference group was more narrowly defined as British-origin Whites who have relatively high earnings compared to other ethnic groups (e.g., Greek, Spanish, etc.).

Hum and Simpson (1999), using 1993 data from the Survey of Labour and Income Dynamics (SLID), estimated a version of Equation 1 with a correction for sample-selection bias. Specifically, they utilized an inverse Mills ratio term constructed from a probit regression to enable them to analyze differences in wage offers rather than observed wages. Hum and Simpson's (1999) estimated earnings disadvantage for Canadian-born Black males of 24 per cent and Canadian-born Back females of 9 per cent are close to our findings (18 per cent for males and 7 per cent for females) despite differences in the data sets, time periods covered, explanatory variables, and treatment for sample selection.

Oaxaca-Blinder Decomposition Approach

Table 5 presents the Oaxaca-Blinder decompositions (i.e., Equation 2) which are based on earnings regressions very similar to those reported in Table 4.[19]

TABLE 5
Oaxaca-Blinder Decomposition of Earnings Differentials

	Differential		Endowments			Discrimination		
	Logarithms	$	Logarithms	$	Per cent of gap	Logarithms	$	Per cent of gap
Females	0.119	97.95	0.051	41.63	0.425	0.068	56.32	0.575
Males	0.313	344.37	0.110	120.87	0.351	0.203	223.50	0.649
Total	0.232	240.66	0.096	99.15	0.412	0.137	141.51	0.588

Note: For ease of interpretation, when differences are expressed in dollar terms, the percentages figures are based on applying the percentage of gap to the actual mean dollar figures which appear in Table 1. An alternative method is to derive the dollar figures as differences in the antilogs of the mean logarithms. Differences between the two methods are trivial in terms of the figures generated.

According to the Oaxaca-Blinder decomposition method, the $240.66 weekly earnings differential between Black and White workers is comprised of $99.15 (41.2 per cent) due to differences in endowments of productive characteristics and $141.15 (58.8 per cent) that is not attributable to endowment differences. The latter is attributed to wage discrimination. Nonetheless, it is important to note that correlated and confounding factors (e.g., self-selection and preferences) may have emerged from historical events and influenced occupational choices even though current circumstances may or may not still precipitate these occupational selections. For females, the percentage attributable to wage discrimination is smaller than for males (57.5 per cent compared to 64.9 per cent) and combined with the fact that the raw gap is much larger for Black males than for females ($344.37 compared to

$97.95), the corresponding discrimination-related earnings losses experienced by males is approximately four times that of females ($223.50 compared to $56.32).

Brown, Moon, and Zoloth Decomposition Approach

The multinomial logit estimation models the determinants of access into nine occupational categories and is based on the White workers in the data sample.[20] After these coefficients are estimated, the predicted share of Black workers in a given occupation is calculated at the mean value of each characteristic parameter (i.e., $p_j^{b'}$ in Equation 4). These predicted results along with the actual distribution for Black and White workers are presented in Table 6.

TABLE 6
Actual and Predicted Occupational Distribution

Occupation	Black's Actual Distribution	Black's Predicted Distribution	White's Actual Distribution
Manager	0.073	0.133	0.135
Professional	0.171	0.176	0.180
Semi-professional	0.080	0.082	0.080
Supervisory	0.030	0.038	0.043
Clerical	0.186	0.173	0.174
Sales	0.148	0.135	0.126
Trades	0.064	0.085	0.092
Semi-skilled	0.171	0.123	0.122
Elemental services	0.077	0.053	0.049
Total	1.000	1.000	1.000

As can be seen, based on their productive attributes, Black workers are predicted to be more highly represented in managerial positions (actual probability of 7.3 per cent compared to predicted probability of 13.3 per cent), professional occupations (actual probability of 17.1 per cent compared to predicted probability of 17.6 per cent), semi-professional occupations (actual probability of 8.0 percent compared to predicted probability of 8.2 per cent) and supervisory positions (from 3.0 percent actual to a 3.8 percent predicted probability). Consistent with these findings, Black workers are also over-represented in the lowest level occupations. For example, 7.7 per cent of Black workers are concentrated in elemental services while based on their attributes, only 5.3 percent of Black workers are predicted to hold these occupations. Although these results suggest that the observed earnings gap between Black and White workers is largely due to occupational differences, a decomposition of the earnings differential as specified in Equation 4 is necessary to confirm these impressions.

Table 7 below presents the decomposition of the earnings differential based on Equation 4. On the one hand, it shows that endowment differences explain a

relatively small 21.1 per cent of the earnings gap. On the other hand, differential returns within occupations explain about 56.4 per cent of the earnings gap and differential access to occupations explains another 22.5 per cent of the gap.[21] These two components represent upper-bound estimates of wage discrimination and occupational segregation.

TABLE 7

Decomposition of White-Black Earnings Differential

	Differential		Per cent of differential
	Logarithms	$	
Intra-occupational Factors			
Endowment differences (1)	0.042	43.07	0.179
Wage discrimination (3)	0.131	135.65	0.564
Intra-occupational (1+3)	0.173	178.71	0.743
Inter-occupational Factors			
Endowment differences (2)	0.008	7.79	0.032
Occupational segregation (4)	0.052	54.16	0.225
Inter-occupational (2+4)	0.060	61.95	0.257
Total endowment differences (1 + 2)	0.049	50.85	0.211
Total segregation and discrimination (3 + 4)	0.183	189.80	0.789
Total differential	0.232	240.66	1.000

Notes: The numbers in parenthesis refer to the constituent parts on the right hand side of Equation 4. As in Table 5, when differentials are expressed in dollar terms, percentages derived from the econometric estimations are applied to the actual mean earnings.

The results in Table 7, therefore, conclude that nearly 80 per cent of the total weekly earnings differential of $240.66 is not explained by differences in endowments of productivity-related attributes. These findings clearly highlight the value of explicitly modeling occupational attainment. In Table 5, where occupation is exogenously determined, the component of the earnings differential attributed to endowment differences was about twice as large (i.e., 41.2 per cent compared to 21.1). Since Equation 2 and Table 5 do not account for occupational segregation, the earnings differential attributable to endowment differences can be anticipated to be overstated. Correspondingly, the scale of discrimination estimated is likely understated. Nevertheless, even as estimated at $141.51 on a weekly basis, lost earnings of this magnitude impose a substantial economic burden on individuals.[22]

Across Canada, the total cost of occupational segregation and wage discrimination affecting full-year, full-time, Black workers is estimated at $1.5 billion.[23] Since immigration status is controlled for in estimations of occupational attainment and earnings, these estimated earnings losses cannot be dismissed as arising from assumptions of the relatively poor labour market performance of new Canadians. Indeed, when the analysis as presented in Table 5 is repeated

with only Canadian-born workers, the portion of the earnings gap remaining unexplained by productivity differences falls from the estimated 58.8 per cent, yet remains relatively high at 44.3 per cent.[24]

The estimated aggregate costs of occupational and wage discrimination of $1.5 billion may understate the true economic impact of occupational segregation and wage discrimination in two respects. First, the conventional multiplier effect associated with the absence of earnings equivalent to $1.5 billion. Specifically, the loss of income would result in lower spending and employment activities attributable to Black workers, including contributing to lower economic activities within these communities. Second, there may be intergenerational aspects reflective of current income losses that constrain the human capital investments and bequests of current and future generations as well as community prosperity. These impacts are likely to be particularly acute for recent immigrants who depend on the social capital and prosperity of their family and community for support in their integration into their new society. Hence, historical wage and occupational discrimination can be anticipated to exhibit socio-economic persistence and intergenerational transference will be observed in current and future earnings, education, and occupational outcomes, if not redressed through countervailing policy efforts.

Conclusion

The study utilized 2006 census data to estimate the earnings differential between Black and White workers in the Canadian labour market. Specifically, when the earnings gap was equated with the difference in intercepts between regressions, the earnings differential between Black and White workers in the Canadian labour market was estimated at 6.9 per cent for females, 20.3 per cent for males and 13.7 per cent for the combined sample. When the sample was restricted to Canadian-born individuals, the earnings differential fell to 11.9 per cent for the combined male and female sample and, when it was restricted to immigrants, the differential rose to 17.2 per cent. These findings suggest that social capital (e.g., social networks, knowledge of institutions, language proficiency and Canadian workplace culture and communication skills or "soft-skills") may play a role in determining wage outcomes so favouring Canadian over foreign born workers and, in turn, influencing the wage gap in the Canadian labour market. Nonetheless, the productive value of social capital to individual employer cannot be directly ascertained from the data. All else being equal, the larger earnings gap faced by immigrants as opposed to Canadian-born individuals suggests the combination of ethnicity and immigration status warrants further analysis.

When the conventional Oaxaca-Blinder decomposition technique was utilized, the upper-bound estimate of the discrimination component was calculated at 58.8 per cent, while this increased to 78.9 per cent when the Brown, Moon and

Zoloth technique was used. This illustrates the sensitivity of estimates of labour market discrimination to the econometric technique employed and the efficacy of broadening the notion of discrimination to include occupational segregation. Since previous research has concluded that, of any visible minority, Black men are "most profoundly affected by labour market discrimination" (Swidinsky and Swidinsky, 2002), the Brown, Moon and Zoloth method appears to provide useful complementary evidence to that derived from the Oaxaca-Blinder decomposition method (e.g., Hou and Coulombe, 2010).

Results from the Brown, Moon and Zoloth method applied in this study reveal that full-year, full-time Black workers lose up to an average of $9,800 annually due to wage discrimination and occupational segregation. Applying this upper-bound estimate on an aggregate basis implies that the total costs of occupational segregation and wage discrimination are $1.5 billion annually in the Canadian economy. Pendakur and Pendakur (2011) suggest that the earnings gap faced by visible minorities in Canada has not diminished over the past two decades. Hence, the economic losses to Black workers and others from occupational segregation and wage discrimination represent significant social losses across multiple generations of workers.

The policy implications of this study pertain to the actions on the part of governments and corporations in general, as well as individuals and organizations in the Black community to address the earnings gap issues identified. Specifically, the results suggest that government and organizations can investigate workplaces and implement ameliorating policies to address: (i) wage discrimination, by ensuring that workers are earning equal pay (or eliminating pay inequity) within the same occupations; (ii) occupational segregation, by ensuring that workers' occupational attainment is consistent with their educational attainment, work experience, and other productivity-enhancing attributes; and (iii) productive endowment gaps, by promoting educational attainment and emphasizing strategic occupational selection.

Canada has a wide range of policies aimed at achieving equity in the labour market, including the Canadian Human Rights Act and Equal Wages Guidelines, 1986, at the federal level and the Pay Equity Act at the provincial level (i.e., in Manitoba, New Brunswick, Nova Scotia, Ontario, Prince Edward Island, and Quebec).[25] Nonetheless, the amount of wage discrimination and occupational segregation identified in this study suggest that Canadian labour markets are failing to compensate all workers on the basis of their productive endowments. To the extent that lower rates of return to education and training are responsible for the earnings gaps between Black and White workers, distortionary incentives exist for the acquisition of human capital by Black workers, thereby causing the economy to perform below its potential output. It can therefore be anticipated that the Canadian economy would experience socio-economic gains through effective action addressing wage discrimination and occupational segregation in the labour market.

Labour market failure can be addressed through mechanisms that result in private and public sector employers taking corrective action to internalizing the distortion. Affirmative action and employment equity initiatives have often been utilized to attain these results. Organizations may also utilize training and professional development initiatives to support efforts to overcome labour market failure, including ensuring that there are fair and equitable opportunities and access to these initiative for all employees. Organizations have also established principles of workplace diversity and equity within their mission statements and strategic plans. However, the record of accomplishments of organizations in relation to these principles are generally not found in their public documents, such as annual reports. To support accountability and transparency, publicly-traded companies and government agencies could be required to report their performance in addressing wage discrimination and occupational segregation within their organizations. Furthermore, the consequences of labour market failure can be anticipated to be reflected in the distribution of income, wealth and social outcome translating into a growing sense of marginalization and social disconnectedness between those individuals facing wage discrimination and occupational segregation and the rest of society. The earning gaps identified in this study can also be anticipated to lead to under-investment in education and, correspondingly, costly programs and actions aimed at addressing socio-economic outcomes that are, in fact, rooted in issues of wage discrimination and occupation segregation.

The present study points to scope for further research. First, the estimate of economic magnitude of earnings differentials faced by Black and other visible minority workers in the Canadian labour market could be extended to investigate the effectiveness of different programs and policies in private and public sectors aimed at addressing wage discrimination and occupational segregation. Second, the trend over a number of decades in the earnings gap due to wage discrimination, occupational segregation and productive endowment differences would be helpful in determining how Canada is progressing as a society in promoting inclusion and equity within the labour market. Third, the analysis conducted in this paper could be extended to the investigation of earning gaps within other ethno-cultural groups.

Notes

1 Data from Statistics Canada, 2006 Census Table, 97-563-XCB2006060.

2 In 2005 dollars, earnings of Black workers rose from $39,371 to $40,179 between 2000 and 2005, while for all workers, earnings rose from $48,563 to $51,221.

3 They found that Black females faced an earnings disadvantage of 22 per cent (relative to Whites of British origin) while Black males faced an earnings disadvantage of 36 per cent after controlling for numerous wage determining characteristics.

4 It is useful to note that Cassin, Krawchenko and Vander Plaat (2007) provide the following definition of racial discrimination as pertaining to: "any distinction, exclusion, restriction or preference based on race, colour, descent, or national or ethnic origin which has the

purpose or effect of nullifying or impairing the recognition, enjoyment or exercise, on an equal footing, of human rights and fundamental freedoms in the political, economic, social, cultural or any other field of public life" (Article 1, United Nations' *International Convention on the Elimination of All Forms of Racial Discrimination*, 1966)."

5 Swidinsky and Swidinsky (2002) also derived estimates of wage discrimination and occupational segregation but did not report detailed results from the estimation methodology.

6 For example, Pendakur and Pendakur (2002) exclude the fairly standard wage determining characteristics of occupation and industry on the grounds that access to the most profitable industries and best jobs is also affected by ethnic discrimination. In other words, they reasoned that if these variables were included as control variables in an earnings regression, they would understate the earnings gap experienced by ethnic minorities.

7 Restricting the sample to workers who are paid employees may under-estimate the degree of wage discrimination faced by Blacks since those who are not in paid employment (e.g., self-employment) may include some individuals who face particularly low wage offers relative to their productivity (see Christofides and Swidinsky, 1994).

8 Observations are also removed from the analysis if they have missing information on important variables such as educational attainment or occupation.

9 Critical race theory suggests that race extends beyond the bounds of physical characteristics to include the sociological, political and power relationships experienced by individuals within society on the basis of characteristics generally classified as race. In this respect, race is a social construct that is experiential as much as it is physical. For these reasons, we have utilized the term "ethnicity" as opposed to "race" throughout the study. This usage is consistent with those of other authors, such as Tremblay *et al.* (2005).

10 We convert the 14 occupational categories in the National Occupation Classification (NOC) -based variable (NOCHRDP) into 9 categories by collapsing: "senior managers" and "middle and other managers" into managers, "supervisors" and "supervisors: crafts and trades" into supervisor, "administrative and senior clerical personnel" and "clerical personnel" into clerical, "Skilled sales and service personnel" and "Intermediate sales and service personnel" into sales, and "Semi-skilled manual workers" and "Other manual workers" into semi-skilled.

11 Therefore, we assume that the occupational categories represent jobs that are of substantially similar value (i.e., not significantly different) in terms of the marginal value product (MVP) or contribution to the organizations of employment within occupations conducting similar work. In this respect, the analysis of earning gaps conducted in the study is consistent with the literature pertaining to "pay equity" meaning pay pertaining to employment for "equal or comparable value" (or not significantly different value) as well as "equal pay" pertaining to "same or substantially similar work". Under the Canadian Human Rights Act, Section 11(2), value pertains to the skill, effort and responsibility required in the performance of the work. In economic terms, this implies that the work is conducted under the same or similar technology (e.g., skill, effort, and responsibility) so yielding the same or similar value (MVP). Human Resources and Skills Development Canada provides an overview of pay equity and equal pay at <http://www.hrsdc.gc.ca/eng/labour/equality/pay_equity/index.shtml>.

12 Tables corresponding to Table 2 and 3 but restricted to Canadian-born workers only are available upon request from the authors.

13 The mean of the dependent variable is equal to the mean of the attributes times the estimated coefficients. The summation is just summing all the variables in the regression. Equation (2) represents the expression used by Gunderson (1979) of the well-used Blinder-Oaxaca decomposition technique.

14 This can be seen since the same occupational distribution results in $p_j^w - p_j^b = 0$

15 In this case, $\ln\overline{e}_j^w - \ln\overline{e}_j^b$ indicates the earnings difference of Blacks and Whites in the same occupation.

16 In Brown, Moon and Zoloth (1980) and Plassman and Sissoko (2004), Equation 2 is presented with five components. We present four following Howland and Sakellariou (1993). The difference is that the third component of Equation 2 above contains differences in intercepts. Regardless of whether differences in constants are separated from this third component, this term (or these terms) represents the unjustifiable component of the intra-occupational wage gap and are labeled as such in Table 7.

17 A formal statement of the multinomial logit model can be found on page 193, Long and Freese (2001).

18 Regression results are presented in Appendix Tables A.4 and A.5. These data are available upon request to the authors.

19 The main differences are that these regressions are done separately for White and Black workers. Full regression results corresponding to these decompositions are available from the authors upon request.

20 Estimation results corresponding to the multinomial logit model presented in Equation 5 are shown in Appendix Table 1. These data are available upon request to the authors.

21 Hence, the Brown, Moon and Zoloth technique suggest that 78.9 percent of the earnings gap is explained by wage discrimination and occupational segregation while the Oaxaca-Blinder technique (which does not take into account inter and intra-occupational differences) estimates the earnings gap that is not-attributable to endowment differences at 58.8 percent.

22 The more complete estimation of segregation and discrimination is $189.80 as seen in Table 7.

23 This estimate is based on average per worker weekly impact of occupational segregation and wage discrimination ($189.80) multiplied by an average of 51.6 weeks worked per full-time worker, multiplied by an estimated population of 156,080. Indeed, this value can be referred to as the "economic discrimination burden" faced by a population or ethnic group.

24 Results are available from the authors upon request. It should be noted that the Brown, Moon and Zoloth technique could not be restricted to Canadian-born workers because earnings regressions are estimated separately for nine occupations and thus require the sample size corresponding to all Black workers.

25 The provincial legislation generally reflects Section 11(2) of the Canadian Human Rights Act in the definition of "value" (e.g., value pertaining to skill, effort and responsibility). On the other hand, the Quebec legislation refers to the required qualification, responsibilities, effort and working condition in defining value.

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SUMMARY

The Earnings Gap between Black and White Workers in Canada: Evidence from the 2006 Census

This paper investigates the earnings gap between Black and White workers in the Canadian economy using 2006 Canadian Census data. Several studies have examined visible minority earnings in Canada (e.g., Hou and Coulombe, 2010; Pendakur and Pendakur, 2011; Yap and Konrad, 2009). Recent research consistently finds that Black workers face one of the largest earnings gaps amongst ethnic groups in Canada (Pendakur and Pendakur, 2002, 2007; Hou and Coulombe, 2010). Nonetheless, the literature lacks an investigation of the combined impact of wage discrimination and occupational segregation on the earnings gap faced by Black workers in the Canadian labour market.

Howland and Sakellariou (1993) as well as Hou and Coulombe (2010) highlighted the importance of occupational attainment differences in labour market outcomes. Consequently, this research suggests the need for occupational attainment to be incorporated into models investigating earnings gaps. We address the gap in the literature by utilizing the decomposition method developed by Brown, Moon and Zoloth (1980). This BMZ method extends the traditional earnings decomposition methods advanced by Blinder (1973) and Oaxaca (1973) by also identifying the role played by occupational differences. Specifically, the BMZ method estimates the portion of the earnings gap attributable to differences in productive endowments and to unexplained factors (i.e., the traditional decomposition approach) as well as extending the traditional approach by providing a calculation of the portion of the earnings gap explained by occupational attainment differences.

The study finds that approximately one-fifth of the Black-White earnings gap (equaling $2,600) can be attributed to productivity-related endowment differences. Furthermore, the remaining four-fifths of the earnings gap (equaling $9,800) is attributable at the upper-bound level to occupational segregation and wage discrimination. In aggregate, the estimates of occupational segregation and wage discrimination translate into annual earnings losses of approximately $1.5 billion for full-time full-year Black workers in the Canadian workforce.

KEYWORDS: wage differentials, inequality, occupational attainment, visible minorities, Canada

RÉSUMÉ

Les écarts de revenus entre les travailleurs blancs et noirs au Canada : résultats selon les données du recensement de 2006

Cet article examine les écarts de revenus entre travailleuses et travailleurs de race blanche et noire dans l'économie canadienne selon les données du recensement de 2006. Plusieurs études se sont intéressées aux revenus des minorités visibles au Canada (e.g. Hou et Coulombe, 2010; Pendakur et Pendakur, 2011; Yap et Konrad, 2009). La recherche récente rapporte de façon constante que les travailleuses et travailleurs de race noire affichent le plus grand écart de revenus parmi les groupes ethniques au Canada (Pendakur et Pendkur, 2002, 2007; Hou et Coulombe, 2010). Toutefois il manque à la littérature empirique l'étude de l'effet combiné de la discrimination salariale et de la ségrégation professionnelle sur les écarts de revenus des travailleurs de race noire sur le marché du travail canadien.

Howland et Sakellariou (1993) tout comme Hou et Coulombe (2010) ont montré l'importance des différences dans les niveaux d'atteinte professionnelle sur le marché du travail. En conséquence la présente recherche retient le besoin d'incorporer le niveau d'atteinte professionnelle dans les modèles d'études des écarts de revenus. Nous retenons comme mesure de l'écart la méthode de décomposition développées par Brown et Zoloth (1980). Cette méthode que nous appellerons BMZ est une extension des méthodes de décomposition proposées par Blinder (1973) et par Oaxaca (1973) en y ajoutant explicitement le rôle joué par les différences d'atteinte professionnelle. Spécifiquement, la méthode BMZ mesure la part de l'écart de revenus attribuable à des différences de caractéristiques en lien avec la productivité des individus et à des facteurs inexpliqués (i.e., l'approche traditionnelle de décomposition) tout en étendant l'approche traditionnelle pour permettre le calcul de la part de l'écart de revenus expliquée par les différences d'atteinte professionnelle.

L'étude établit qu'environ le cinquième de l'écart de revenus entre Blancs et Noirs (soit un montant de 2 600 $) peut être attribué aux différences de caractéristiques en lien avec la productivité des individus. Ensuite, les quatre cinquièmes restants de l'écart de revenus (soit un montant de 9 800 $) serait attribuable au niveau de leur limite supérieure à la ségrégation professionnelle et à la discrimination salariale. Au niveau agrégé, les estimations de l'effet de la ségrégation professionnelle et de la discrimination salariale se traduisent par un manque à gagner d'environ 1,5 milliard

de dollars pour l'ensemble des travailleuses et travailleurs noirs travaillant toute l'année et à temps complet dans la main-d'œuvre canadienne.

MOTS CLÉS : écarts salariaux, inégalité, niveau d'atteinte professionnelle, minorités visibles, Canada

RESUMEN

Las diferencias de ingreso entre los trabajadores blancos y negros en Canadá: resultados según los datos del censo de 2006

Este artículo examina las diferencias de ingreso entre los trabajadores y trabajadoras de raza blanca y negra en la economía canadiense según los datos del censo de 2006. Varios estudios se han interesado a los ingresos de las minorías visibles en Canadá (Hou y Coulombe, 2010; Pendakur y Pendakur, 2011; Yap y Konrad, 2009). La investigación reciente reporta de manera constante que los trabajadores y trabajadoras de raza negra muestran la mayor diferencia de ingreso entre los grupos étnicos en Canadá (Pendakur y Pendakur, 2002, 2007); Hou y Coulombe, 2010). Falta sin embargo en la literatura empírica el estudio del efecto combinado de la discriminación salarial y de la segregación profesional sobre las diferencias de ingreso de los trabajadores de raza negra en el mercado de trabajo canadiense.

Howland y Sakellariou (1993), así como Hou y Coulombe (2010), han mostrado la importancia de las diferencias en los niveles de logro profesional en el mercado de trabajo. Por consecuencia, la presente investigación retiene la necesidad de incorporar el nivel de logro profesional en los modelos de estudios de las diferencias de ingresos. Se retiene como medida de la diferencia el método de descomposición desarrollado por Brown y Zoloth (1980). Este método que nosotros llamaremos BMZ es una extensión de los métodos de descomposición propuestos por Blinder (1973) y por Oaxaca (1973) al cual agregamos explícitamente el rol jugado por las diferencias en el logro profesional. Específicamente, el método BMZ mide la parte de la diferencia de ingresos atribuible a las diferencias de características en vinculo con la productividad de los individuos y a los factores inexplicados (el enfoque tradicional de la descomposición) al mismo tiempo que se amplía el enfoque tradicional para permitir el cálculo de la parte de la diferencia de ingresos explicada por las diferencias de logro profesional.

El estudio establece que aproximadamente la quinta parte de la diferencia de ingresos entre blancos y negros (o sea un monto de 2600$) puede ser atribuido a las diferencias de características en vinculo con la productividad de los individuos. Los otros cuatro quintos de la diferencia d ingresos (o sea un monto de 9800$) sería atribuible al nivel de su límite superior a la segregación profesional y a la discriminación salarial. A nivel agregado, las estimaciones del efecto de la segregación profesional y de la discriminación salarial se traducen por una pérdida de ingreso de cerca de 1.5 billones de dólares para el conjunto de trabajadores y trabajadoras negros que trabajan todo el ano y a tiempo completo que hacen parte de la mano de obra canadiense.

PALABRAS CLAVES: diferencias salariales, desigualdad, nivel de logro profesional, minorías visibles, Canadá