

Evidence of New Immigrant Assimilation in Canada: An Update

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Abstract

This paper uses the public use 1991, 1996 and 2001 Canadian census microdata files to analyze the earnings performance of immigrants relative to the Canadian-born. My results show that recent immigrant cohorts fared better in the period of 1995-2000 relative to the period of 1990-1995, which is due to macro-economic conditions. My analysis of the immigrants' earnings yields a negative and increasing earnings gap between immigrants and the Canadian-born from 1990 through 2000, although relative entry earnings stopped falling and even improved between 1995 and 2000. Moreover, the growth of immigrants' earnings (an assimilation effect) cannot completely offset the deterioration of earnings at entry.

1. Introduction

According to the Canadian census, there were 6,186,950 foreign-born individuals in Canada in 2005, which accounted for one in five of the total population. This is the highest proportion in 75 years. Between 2000 and 2005, the growth rate of the foreign-born population in Canada was 13.6%. Over the same period, the Canadian-born population only increased by 3.3%. Canada is a traditional immigration country, and immigration was important for the founding and development of Canada. Immigration is a key component of population change in Canada. In addition, the economic outcome of immigrants is a major policy concern to Canada.

Assimilation is defined as “the process whereby individuals or groups of differing ethnic heritage are absorbed into the dominant culture of a society” (Webster’s Collegiate Dictionary).¹ According to immigration studies, immigrant economic assimilation refers to the convergence of earnings of immigrants and Canadian-born individuals; although immigrants have an initial earnings disadvantage relative to their Canadian-born counterparts (which is to be expected), immigrants obtain faster earnings growth subsequently; consequently, earnings of selected immigrant groups would catch up with those of the Canadian-born after a certain amount of time.

The purpose of this study is to update Grant’s (1999) study using the public use microdata files of the 1991, 1996 and 2001 censuses as well as adding evidence for women. In addition, this study provides an overall view of the earnings performance of immigrants relative to Canadian-born individuals in light of the two issues: whether

¹ Difference studies use different definitions of economic assimilation. Any definition of assimilation must define a base group that immigrants assimilate to. The base group in Chiswick’s (1978) study is the American-born, while the base group in Lalonde and Topel’s (1992, p.75) model is the immigrant himself.

immigrants experience rapid earnings growth over time and catch up with their Canadian-born counterparts, and whether recent immigrant cohorts experience a deterioration of their earnings at entry relative to the Canadian-born.

First, I do a literature review in order to lay out theoretical principles and academic evidence to answer my research questions. This literature review will first show the basic models of assimilation and the development of Canadian studies on economic assimilation of immigrants. I then do an analysis of the phenomena of declining entry earnings of immigrants, the deteriorating low-income position of recent immigrants, and the reasons for the deterioration in the economic outcomes of Canadian immigrants.

In addition to the literature review, I use the public use micro data from the 1991, 1996 and 2001 Canadian censuses to provide an overall view of economic assimilation of immigrants in Canada. Only one single cross-section of data will not suffice; at least two waves of data have to be used in order to isolate the cohort effects from the assimilation effects. Chiswick (1978) uses the 1970 public use sample of the U.S. census in his seminal study. However, Borjas (1985) uses pooled data from the 1970 and 1980 U.S. censuses to estimate the earnings growth for individual entry cohorts of immigrants in the intercensal period. Borjas (1985) argues that Chiswick's use of cross-sectional data have overestimated the degree of true assimilation, since it does not take into account the quality differences across immigrant cohorts. The size of cohorts of immigrants and the countries of origin for immigrants will change over time due to the immigration policy. If there are large differentials across cohorts of immigrants, the use of one single cross-section of data may cause bias in the estimated results. In addition, the estimation

bias would vary with the changes in quality of immigrants, since the immigrant performance in the Canadian labour market could be deteriorating or improving over time.

Also, the description and interpretation of the empirical results will provide readers with an understanding of convergence of earnings of immigrants and Canadian-born individuals from different perspectives. The summary statistics reveals that the economic outcomes of immigrants are correlated with the characteristics of recent immigrants. Preliminary results provide that there were positive rates of assimilation for most of the arrival cohorts, and recent immigrant cohorts experienced deterioration in their earnings at entry relative to the Canadian-born between 1990 and 2000. Cross-sectional estimates of assimilation suggest that both immigrant men and immigrant women do assimilate, and the rate of economic integration into the Canadian labour market has increased over time. However, the unstable assimilation profiles suggest that the cohort effects may be biasing the cross-sectional estimates of assimilation.

The paper is organized as follows. Section 2 synthesizes the economic literature of immigration. The empirical methodology which is used to analyze the convergence of earnings of immigrants and Canadian-born individuals is described in section 3. Section 4 presents the data used in this study. In Section 5, I provide the empirical results and their interpretation. Section 6 contains a brief conclusion.

2. Review of literature

Chiswick's (1978) study of the Americanization on the earnings of foreign-born

adult white men in the United States has provided the original cross-section evidence of economic assimilation.² From this, he develops the concept of economic assimilation which means eventual wage convergence between foreign-born and American-born white men. He suggests that earnings of selected immigrant groups would catch up with those of the American-born after a certain amount of time. In other words, the earnings gap between immigrants and the American-born tends to fall or even disappear with the time spent in the host country. The core empirical function of the model in Chiswick's (1978) study can be written as:

$$\log W_i = X_i\beta + \delta Age_i + \gamma_1 I_i + \gamma_2 YSM_i + \varepsilon_i \quad (1)$$

Where W_i is wage rate of individual i in the host country, X_i is a vector of socioeconomic characteristics, Age_i is an individual's age at the time of survey, I_i is an indicator for immigrant status, and YSM_i is a years-since-migration variable. Borjas (1985) points out that Chiswick's use of a single cross-section would cause problems in analyzing immigrant assimilation. The problem is that the assimilation effects, as measured by γ_2 , confuse entry effects with assimilation effects unless they are all of one cohort. Borjas (1985) provides a "synthetic" panel data economic assimilation model and introduces the "cohort" variable in the immigrant equation.³ This model contains an immigrant equation and an American-born equation. The immigrant equation takes the form:

$$\log W_i = X_i\beta_i + \delta_i Age_i + \alpha YSM_i + \phi Cohort_i + \gamma_1 PE + \varepsilon_i \quad (2)$$

while the American-born equation is:

² From the encyclopedia, Americanization denotes the process of immigrants to the United States becoming assimilated into American Society. In Chiswick's (1978) paper, Americanization means that, although immigrants initially have lower earnings than American-born individuals, immigrants' earnings increase with the U.S. labour market experience. Moreover, these immigrants' earnings would equal or even exceed those of the American-born after 10 to 15 years.

³ In Clark and Lindley (2006), the pooled cross-sectional data can be called the "synthetic" panel data.

$$\log W_i = X_i \beta_N + \delta_N Age_i + \gamma_N PE + \varepsilon_{Ni} \quad (3)$$

In Borjas's (1985) model, $Cohort_i$ is a year-of-arrival variable, and PE is the period effect (a dummy variable indicating whether individual i was drawn from cross-section t).

Following the work of Chiswick (1978), there has been a substantial increase in the number of Canadian studies about economic assimilation of immigrants. Some studies challenge the findings of Chiswick (1978), and indicate that this earnings gap does not fall as quickly as previously thought, and that there was a trend of declining entry earnings among successive waves of immigrants relative to Canadian-born individuals during the 1970s and 1980s (Bloom and Gunderson, 1991; Baker and Benjamin, 1994; Bloom, Grenier, and Gunderson, 1995). Subsequent studies argue that the increase in the earnings gap between immigrants and the Canadian-born has been larger at the bottom than at the top of the earnings distribution (Picot and Hou, 2003). More recent studies try to explain this deterioration in the economic outcomes of Canadian immigrants (Aydemir, 2003; Green and Worswick, 2003; Ferrer and Riddell, 2004; Aydemir and Skuterud, 2005).

2.1 The declining entry-level earnings

Many articles summarize the trends in earnings of immigrants in Canada. There is disagreement among researchers on how quickly immigrants catch up with the Canadian-born, and whether they can reach earnings parity with Canadian-born individuals. However, in general, researchers agree on the overall pattern of greater earnings growth among immigrants as well as declining entry earnings of immigrants.

Bloom and Gunderson (1991) adapt the model proposed by Chiswick (1978) and Borjas (1985) to Canadian data.⁴ They confirm that there is a small to moderate assimilation effect. This implies that immigrants are able to compensate their relatively low entry wages with the swift assimilation rate. According to Bloom and Gunderson's (1991) study, immigrant men's entry earnings in 1970 were about 7% less than that of their Canadian-born counterparts, and these immigrants were able to reduce the gap to zero after 13 years in Canada. In 1980, new arrivals of immigrant men earned 16.6% less than the Canadian-born, and they needed 21.6 years to catch up with the Canadian-born.

Baker and Benjamin (1994) and Bloom, Grenier and Gunderson (1995) use 1971, 1981 and 1986 public use census microdata files. Both of these studies suggest that recent cohorts of immigrants faced a deterioration of entry-level earnings relative to their Canadian-born counterparts between 1970 and 1985. But these two studies use different empirical models and slightly different samples to analyze differences in labour market outcomes between immigrants and Canadian-born individuals.⁵

Bloom, Grenier and Gunderson (1995) expand on Bloom and Gunderson (1991) by adding the 1986 census. They use the years-since-migration model and estimate pooled regressions which use several cross-sections in a single regression. This lets them model earnings as a function of the immigrant cohort and year-since-migration, and to disentangle these two effects empirically. The empirical model can be written as:

$$y = X\beta + \alpha I + \delta YSM(I) + \sum_j \phi_j COH_j(I) \quad (4)$$

⁴ These two articles (Chiswick, 1978; Borjas, 1985) have different methodologies.

⁵ Baker and Benjamin (1994) use men who are between the ages of 16 and 64, with positive earnings and forty or more weeks of work per year. Bloom, Grenier and Gunderson (1995) have a much broader sample, and they use men and women between 20 and 64 years old, with positive earnings and positive weeks worked.

In the model, y is the log of earnings, X is human capital and other control variables, I is the dummy variable for immigrant status, YSM is years since migration, and COH_j is the immigrant entry cohort. Assimilation is estimated by the YSM coefficient, which is denoted δ in a regression. Assimilation is thus modelled as a linear effect. Cohort effects (Φ_j) are interpreted as the average unobserved quality of specific immigrant cohorts relative to the omitted reference group, which is pre-1956 cohort. The entry effect (α) is estimated by the coefficient of dummy variable for immigrant status in a wage equation. It is simply the difference in earnings between immigrants and the Canadian-born when YSM is equal to zero. Bloom, Grenier and Gunderson (1995) confirm that there are positive assimilation effects and negative entry effects in each census. Those effects were larger in the 1981 and 1986 censuses. In the 1971 census, immigrant men's entry earnings were 5 percent lower than those of their Canadian-born counterparts, and their earnings grew by 0.35 percent faster per year. These immigrant men can reach earnings parity with the Canadian-born after 15 years.⁶ In the 1986 census, new arrivals of immigrant men earned 22% less than the Canadian-born. However, immigrants were able to reduce the gap to zero after 26.5 years in Canada, since their earnings growth was 0.84 percent faster per year. Assimilation takes much longer for post-1970 immigrants, and recent immigrants experience greater difficulties in the Canadian labor market.

Baker and Benjamin (1994) use a quasi-panel approach to examine the convergence of earnings of the immigrant and Canadian-born groups.⁷ They decompose cross-sectional estimates into within-cohort growth and between-cohort growth.

⁶ In the study of Bloom, Grenier and Gunderson (1995), the number of years that takes for immigrant men to reach earnings parity with the Canadian-born is calculated as: $-(\alpha + \Phi_j) / \delta$

⁷ Grant (1999) and Frenette and Morissette (2003) also use quasi-panel approach in their studies.

Within-cohort growth measures the rate at which the earnings of immigrants and the Canadian-born are converging or diverging. Between-cohort growth measures the difference in the relative earnings of immigrants who are at the same point in their Canadian life cycle across the two waves of the data set. This procedure is designed to remove the fixed-effect bias produced by cross-sectional estimates of assimilation. The positive between-cohort growth indicates that for the same number of years in Canada, immigrants (relative to the Canadian-born) in earlier cohorts do better than immigrants (relative to the Canadian-born) in recent cohorts.

In Baker and Benjamin's (1994) study, they examine the within- and between-cohort earnings growth using three different base groups. Each base group has a different definition of assimilation. The first is the fixed-cohort approach of Borjas (1985). The second uses immigrants with similar years in the country as a benchmark, which is comparable to the approach taken by Lalonde and Topel (1992, p.75). "Assimilation occurs if, between two observationally equivalent persons, the one with greater time in the United States typically earns more".⁸ The base group in Lalonde and Topel's model is the immigrant himself. The third is the earnings growth of the Canadian-born. This more popular definition of assimilation is similar to that in Chiswick's (1978) study. However, Baker and Benjamin (1994) point out that both the evaluation of cross-section inference and the size of the bias resulting from between-cohort growth were virtually unaffected by the choice of base group. More importantly, they confirm that there were declining fortunes of successive immigrant cohorts, as U.S. evidence has indicated. They

⁸ Source: Lalonde and Topel (1992, p.75). Two observationally equivalent persons mean two observationally equivalent foreign-born persons.

note that recent immigrants began with earnings up to 20% lower than their predecessors and have assimilated at a modest pace in their first years in Canada. If recent cohorts' future assimilation matched that of earlier cohorts, recent immigrants would not reach earnings parity with the Canadian-born.

Grant (1999) updates Baker and Benjamin's (1994) study adding 1991 census data and examines whether earnings of recent cohorts continued to decline. She reports that entry earnings of immigrants have stopped deteriorating because immigrants who arrived in the late 1980s had similar entry earnings to those who arrived in the early 1980s. Furthermore, immigrants who arrived between 1981 and 1985 had higher assimilation rates (17 percent, over five years, from 1985 to 1990) relative to immigrants who arrived earlier.

Frenette and Morissette (2003) use 1981-2001 censuses 20% sample data but drop all immigrants who entered the country in the reference year.⁹ They confirm Grant's (1999) finding that relative entry earnings stopped deteriorating between 1985 and 1990. However, Frenette and Morissette (2003) demonstrate that the deterioration resumed in 1995 and that relative earnings of recent immigrants did not improve between 1990 and 2000, even though the number of university graduates has grown at a faster rate among recent immigrants than among Canadian-born individuals.¹⁰ Although relative entry earnings stopped falling or even improved during the period of 1985-1990, the deterioration of relative entry earnings of recent immigrants still exists in the long term.

⁹ According to Frenette and Morissette's (2003) study, Immigrants who arrived during the reference year are almost excluded from the sample because of the forty weeks of work restriction. However, the few of these individuals still remain in the sample, and they may cause some estimation problems. After immigrants who arrived in Canada in the reference year are dropped in the sample, the cohort periods are: pre-1960, 1960-1964, 1965-1969, 1970-1974, 1975-1979, etc.

¹⁰ In Canada, immigrants are becoming better and better educated over time.

Moreover, the greater relative earnings growth experienced by recent immigrant cohorts has only partially compensated for the severe deterioration in their relative earnings at entry.

2.2 The deteriorating low-income position of recent immigrants

The economic outcomes of immigrants can be focused on many outcomes, such as earnings, employment, unemployment, and poverty. Earnings are the most common measurement in Canadian studies. According to Picot and Sweetman (2005), studies of employment earnings exclude not only individuals who are unemployed or even out of the labour force, but also changes in all sources of income other than earnings. There is an underestimation of the deterioration in labour market outcomes due to the exclusion of the effects of possibly rising unemployment or the discouraged worker effect. However, the measurement of low-income status can incorporate change in all sources of income. Some recent studies focus on low income status among immigrants, since the increase in the earnings gap between immigrants and the Canadian-born has been larger at the bottom than at the top of the earnings distribution. In addition, the rate of low income has been rising among immigrants, especially recent immigrants.

Picot and Hou (2003) use 1981-2001 censuses 20% micro data, the Survey of Consumer Finance (SCF) for 1980 to 1996, and the Survey of Labour and Income Dynamics (SLID) for 1996 to 2000. Their paper concentrates on the business cycle peaks (such as years 1980, 1990 and 2000) and identifies the deteriorating low-income position of recent immigrants. They use Statistics Canada's low-income cutoffs (LICOs, 1992

base, after government transfers, before income taxes) to define the low income status. Over the past two decades, low-income rates have been falling among the Canadian-born but rising among immigrants. There is an increase in the low-income rates in three major Canadian cities, Ontario, and British Columbia.¹¹ The rise in low-income rates in these areas is largely concentrated among the immigrant population. For example, in 1980, recent immigrants had low-income rate that was 1.4 times larger than that of Canadian-born individuals; it increased to 2.1 times in 1990 and 2.7 times in 1995; it declined to 2.5 times in 2000. Moreover, low-income rates were higher among immigrant cohorts of the late 1980s and early 1990s than among those of the 1970s. The low-income rate among recent immigrants was 24.6% in 1980, rose to 31.3% in 1990, and to 35.8% in 2000. This implies that there is an upward trend for the low-income rates of business cycle peaks. This deterioration in low-income rates over the past two decades was not only observed among recent immigrants, but also immigrants who had been in Canada for fewer than 20 years.

Picot and Hou (2003) argue that more recent entering cohorts have higher low-income rates at entry, but the rate of decline is faster. They suggest that there is a catch-up (to immigrants who arrived earlier or to the Canadian-born counterparts) among immigrants who arrived in Canada more recently. After 12 to 16 years in Canada, immigrants who arrived in the late 1980s and had higher low-income rates, had caught up with those who entered in the early 1980s. Similarly, immigrants who entered in the early 1990s and had much higher levels of low-income rates, had caught up with those who

¹¹ These three major Canadian cities are Toronto, Montreal, and Vancouver.

entered in the late 1980s after 7 to 11 years in Canada.

Among recent immigrants, less than one half of the rise in the aggregate low-income rate can be attributed to the compositional changes in the characteristics of immigrants such as source region, home language, and education level. The rise in low-income rates is notable among recent immigrants from Asia, Africa, and Southern Europe. The gap in low-income rates between the Canadian-born and recent immigrants is highest among degree holders, especially engineering and science degree holders. In addition, explanations of the declining entry earnings can also explain the deteriorating low-income position of recent immigrants.

2.3 Reason of deterioration in the economic outcomes of Canadian immigrants

Although there is an upward trend in the educational attainment of recent immigrants in Canada, these recent immigrants face greater challenges in the Canadian labour market than in previous times. A number of recent Canadian studies have examined the reason of deterioration in the economic outcomes of Canadian immigrants. However, these studies used different data sets, variables, and models. It is difficult to evaluate how much of the deterioration of economic outcomes of recent immigrants can be attributed to each explanation. Picot (2008) reviews Statistics Canada research and indicates that several factors contributed to the deterioration in economic outcomes of immigrants: changes in source regions and relative characteristics such as language and school quality; the credentials issue; declining returns to foreign experience; the deterioration in economic outcomes for all new labour market entrants; macro-economic conditions.

2.3.1 The changing source countries and related characteristics of immigrants

The proportion of immigrants from Eastern Europe, South Asia, East Asia, West Asia and Africa increased from 35% to 72% between 1981 and 2001.¹² A large share of recent immigrants from those areas may have experienced more difficulties when they adapt to the Canadian labour market because of some issues such as language, education quality and cultural differences.

Bloom, Grenier and Gunderson (1995) suggest that there were two notable developments of Canadian immigration after the mid-1960s. First, there were fewer immigrants in the independent and assisted relative categories, but more admitted under the refugee and family classes. Second, the country of origin shifted away from the developed to developing countries. Assimilation takes significantly more time for immigrants who arrived after 1970, and it is notably slow for immigrant men from Asia, Africa, and Latin America relative to those from Europe and the United States. These two developments can explain the decline in relative economic position of Canadian immigrants. Aydemir and Skuterud (2005) explore the reason for a deteriorating in entry earnings of Canadian immigrant cohorts. Declining wage returns to foreign labour market experience can explain about one-quarter to one-half of the deterioration. Compositional shifts in language ability and region of birth (from European source countries to non-traditional Asia source countries) can explain about another one-third of the deterioration.

¹² Source: Statistics Canada.

2.3.2 The credentials issue¹³

There is a trend of declining earnings among recent immigrants relative to the Canadian-born over time, even though for more recent immigrant cohorts, the immigrants are more highly educated than their Canadian-born counterparts. Some researchers question whether the “credentials” issue has worsened.

Ferrer and Riddell (2004) use data from the 1981-1996 censuses to compare the development of the returns to the human capital of immigrants with that of Canadian-born individuals.¹⁴ They follow Schaafsma and Sweetman (2001) in using the variable of age at immigration to differentiate between the returns to Canadian and foreign education. They confirm previous studies that the returns to education and experience of immigrants obtained in their countries of origin are lower on the Canadian job market. However, the discounting of immigrants’ human capital is not applicable to degrees and diplomas. With reference to high school diplomas and university bachelor’s degrees, the earnings gain is almost the same for immigrants and the Canadian-born. The earnings of both immigrants and Canadian-born individuals with high school diplomas are 6 percent higher than those of their counterparts with the same years of schooling but who did not complete secondary school. The earnings of both immigrants and Canadian-born individuals who have bachelor’s degrees are 15-22% higher than comparable people who do not have university degrees. For college diplomas, trade certificates, and university postgraduate degrees, the earnings of the Canadian-born are lower than those of immigrants.

¹³ According to Webster’s Collegiate Dictionary, credentials are “testimonials or certified documents showing that a person is entitled to credit or has a right to exercise official power”.

¹⁴ There is an earlier draft of this paper. Ferrer, A., and C. Riddell (2003) “Education, credentials and immigrant earnings.” paper presented at the CERF 2003 Conference, Ottawa.

Furthermore, the difference of returns to human capital between immigrants and the Canadian-born only applies to immigrants who arrived as adults, since the human capital of immigrants who complete their education in Canada is not discounted by the Canadian labour market.

Ferrer and Riddell (2004) estimate the “sheepskin” effects. “Sheepskin is the gain in earnings associated with receipt of a degree and diploma, controlling for years of schooling.” They point out that the estimated sheepskin effects for immigrants are generally higher than those for the Canadian-born. The difference in sheepskin effects is largest between immigrant and Canadian-born individuals who have postgraduate degrees. These results imply that completion of educational programs can narrow the gap in earnings between immigrants and the Canadian-born.

2.3.3 Declining returns to foreign labour market experience

It has been argued that part of the earnings disadvantage for immigrants is due to the lower value of foreign human capital. Some studies attempted to estimate returns to immigrants who have foreign human capital separately. Baker and Benjamin (1994), for example, use a subsample that only includes immigrants who were at least 16 years old when they arrived in Canada. This restricted sample is the foreign human capital sample. Their return to education is statistically insignificantly lower than that for all immigrants. However, the relative returns to labour market experience in this subsample have been deteriorating over time. This deterioration is significant for the most recent cohorts. Grant (1999) updates Baker and Benjamin’s study (1994) by adding the 1991 census data. She

finds that the results between all immigrants and immigrants who are in the restricted sample are similar to those in Baker and Benjamin's (1994) study.

Schaafsma and Sweetman (2001) use the public use 1986, 1991 and 1996 Canadian census microdata files and employ both one-stage and two-stage approaches in their model. They point out that the earnings of immigrants vary with age at immigration. The returns to education of immigrants who arrived young and are educated in Canada are comparable to or higher than their Canadian counterparts, while those of immigrants who arrived late tend to be lower relative to the Canadian-born. In other words, work experience in the source country yields nearly no return in the host country. For example, visible minority immigrants who arrived before their teen years do not have an earnings deficit relative to the comparable Canadian-born, while those who arrived at an older age earn less than their Canadian-born counterparts. This deficit rises with age at immigration. Moreover, immigrants who arrived around age at 15 to 19 have less education and lower earnings than those who came to Canada either earlier or later in life. Similarly, the returns for those who have English as their mother tongue are the same for immigrants who arrived before their teen years and the Canadian-born, and higher for immigrants who landed at an older age. But this is not the case for the returns for those who have French as their mother tongue.

Green and Worswick (2004) suggest that, since the foreign experience profile can account for 15% of the overall decline in entry earnings between the early 1980s and the mid 1990s, declines in entry earnings across immigrant cohorts are partially due to substantial declines in returns to foreign experience. Aydemir and Skuterud (2005) note

that the declining wage returns to foreign labour market experience account for about one-quarter to one-half of the overall deterioration in the entry earnings of immigrants. This decline is stronger for immigrant men who are from non-traditional source countries than those who are from traditional source countries.

2.3.4 Deteriorating labour market outcomes for new labour market entrants

Labour market outcomes for young labour market entrants have been deteriorating these two decades, regardless of their immigrant status. Many studies raise the question of whether recent immigrants obtained lower earnings because entering immigrants are new labour market entrants.

Frenette and Morissette (2003) suggest that the poor performance of recent immigrants in the 1990s could reflect downward shifts in age-earnings profile of new entrants who may or may not have been born in Canada. They focus on two groups: recent immigrants aged 16-64 and Canadian-born workers aged 25-29. Between 1980 and 2000, the earnings of recent immigrant men fell by 18 percent, while the earnings of young Canadian-born men decreased by 12 percent. The earnings gap between recent immigrant men and young Canadian-born men rose from 7 percent to 12 percent. The earnings gap between recent immigrant women and young Canadian-born women only rose from 17 percent to 18 percent. They confirm the finding of Green and Worswick (2003) that the poorer performance of recent male immigrants is partly due to the declining labor outcomes of new labor market entrants.¹⁵

¹⁵ This is earlier draft of Green, David A. and Christopher Worswick's study (2004) "Earnings of Immigrant Men in Canada: The Roles of Labour Market Entry Effects and Returns to Foreign Experience."

Green and Worswick (2004) use a unique administrative dataset (the Immigrant Database, or IMDB) that links immigrants landing and tax records for immigrants and the survey data (the Surveys of Consumer Finance, or SCFs) for the Canadian-born. They examine the experiences of a given cohort of immigrants in comparison to the Canadian-born who entered the Canadian labour market at the same time. They suggest that both immigrant and Canadian-born labour market entrants faced declines in entry earnings. They determine that, between the early 1980s and the mid 1990s, general new entrant effects account for 36% of the total decline in immigrant entry earnings.¹⁶ Moreover, these effects fully explain declines in entry earnings for high-school-educated immigrants in the 1980s. These effects were concentrated in the 1980s relative to 1990s.

2.3.5 Macro conditions

Canada experienced an economic recession that led to massive government deficits and high unemployment in both the early 1980s and early 1990s. The economic position of immigrants deteriorated significantly during these two recessions. Some studies explore the role of macro-economic conditions in determining the labour market outcomes of immigrants.

Aydemir (2003) uses 19 annual cross-sections of survey of Consumer Finances from 1979 to 1997 to address the effects of macro-economic conditions on labour market outcomes of immigrants. This study identifies the separate effects of three factors such as cohort effects, effects of macro conditions at arrival, and effects of macro conditions in

¹⁶ General new entrant effects are defined as earnings movements for these workers (immigrant and Canadian-born labour market entrants).

the survey year. Aydemir (2003) expands the previous studies by adding the effects of macro conditions on labour force participation and the employment outcome, because he suggests that the business cycle has an adverse impact on these two factors. In other words, the higher the unemployment rate at the survey year, the stronger the negative effects on labour force participation and employment are. He shows that the estimates of cohort effects are very sensitive to the inclusion of controls for macro-economic conditions. There are significant negative cohort effects for the latter immigrant cohorts when the controls for macro-economic conditions are excluded.¹⁷ Cohort effects become significantly smaller when controls for macro conditions are included. In addition to the sensitivity for the estimates of the cohort effects, the assimilation is also affected by the inclusion of controls for macro-economic conditions. Both the significance and the magnitude of the estimated coefficient for assimilation increase when the controls for macro conditions are included. These results indicate that the adverse economic conditions that immigrants face when they enter the labour market can partially account for the deterioration in the assimilation of recent immigrants. Although these adverse impacts of the entry macro conditions are permanent, their magnitudes are small.

3. Methodology

Following Baker and Benjamin (1995) and Grant (1999), I use the cross-sectional approach to measure immigrant assimilation.¹⁸ In this framework, the log of earnings in year t for an immigrant is expressed as:

¹⁷ This implies that the latter immigrant cohorts are doing worse than the earlier immigrant cohorts.

¹⁸ Baker and Benjamin (1995) and Grant (1999) measure economic assimilation using both the cross-sectional and the quasi-panel methods.

$$y_t = X_t' \beta_t + \sum_i \delta_{i,t} + \varepsilon_t \quad (5)$$

The log of earnings equation in year t for the Canadian-born (control group) is expressed as:

$$y_{n,t} = X_{n,t}' \lambda_t + \delta_{n,t} + \varepsilon_{n,t} \quad (6)$$

where X_t and $X_{n,t}$ are vectors of observable characteristics of immigrants and Canadian-born individuals. The estimated β_t and λ_t are vectors of parameters. The estimated $\delta_{i,t}$ are cohort-specific intercepts for immigrants (i.e. an intercept for immigrants who arrived in period i), while $\delta_{n,t}$ is the intercept for the Canadian-born (i.e. control group). These earnings equations are estimated separately for each census and for each gender. The predicted average level of log earnings of cohort i in period t, using the average levels of the covariates in year t, is

$$\hat{y}_{i,t} = \bar{X}_{i,t}' \hat{\beta}_t + \hat{\delta}_{i,t} \quad (7)$$

The predicted earnings of cohort i+k, using the average levels of cohort i's observables in period t, is

$$\hat{y}_{i+k,t} = \bar{X}_{i,t}' \hat{\beta}_t + \hat{\delta}_{i+k,t} \quad (8)$$

Combining equations (7) and (8), a cross-sectional estimate of the effect of k years of assimilation for cohort i is

$$\hat{y}_{i,t} - \hat{y}_{i+k,t} \quad (9)$$

This difference between the log earnings of the two cohorts in a single cross-section of data is equal to the difference between the following terms:

$$\hat{\delta}_{i,t} - \hat{\delta}_{i+k,t} \quad (10)$$

As in previous studies such as Borjas (1985), Baker and Benjamin (1995) and Grant

(1999), this cross-sectional estimate can be decomposed into the within-cohort and between-cohort components:

$$\hat{y}_{i,t} - \hat{y}_{i+k,t} = [(\hat{y}_{i,t} - \hat{y}_{i,t-k}) - (\hat{y}_{n,t} - \hat{y}_{n,t-k})] + [(\hat{y}_{i,t-k} - \hat{y}_{i+k,t}) - (\hat{y}_{n,t-k} - \hat{y}_{n,t})] \quad (11)$$

Within these components, all predicted earnings are evaluated at average level of cohort i 's observables in period t . The first component on the right hand side of (11) is the within-cohort growth of cohort i 's earnings across two data sets. It shows the net growth in earnings of immigrant cohort i relative to the corresponding rate for natives. It is indicative of the extent to which they are losing ground. The second component is the between-cohort growth. It shows the difference in net earnings levels between two cohorts of immigrants based on the same duration of time in Canada, again relative to their native counterparts. It is indicative of the extent to which the cohorts have different entry earnings.

The analysis in the previous section of this paper points out that the quality of successive immigrant cohorts is declining over time. In other words, cohort effects may exist in the immigrant population. The cross-sectional approach may overstate (or understate) the assimilation of a particular immigrant cohort. However, the quasi-panel approach, which decomposes the cross-sectional estimates into within-cohort and between-cohort growth, can ascertain a potential bias in the cross-sectional estimates. Unlike these previous studies, this paper does not use the quasi-panel approach by decomposing the cross-sectional estimates due to the complexity of the calculation for this method.

4. Data

Although several datasets can be used in immigrant assimilation analysis, Canadian census remains the most important data source for studying the convergence of earnings between immigrants and the Canadian-born. First of all, the census has a large sample size, 20% of all Canadians, and has detailed information on education, occupation, earnings, geographic mobility, and neighborhood of residence. Second, the census meets the requirement of focusing on successive entering immigrant cohorts.

The data are drawn from the public use 1991, 1996 and 2001 Canadian census microdata files. The public use 1991 and 1996 censuses are 3% and 2.8% samples of Canadians, while the public use 2000 census is a 2.7% sample. Each census provides information corresponding to the reference year. In each census, I use the whole sample of immigrants and Canadian-born individuals. Following Baker and Benjamin (1994) and Grant (1999), I focus on individuals between 16 and 64 years old who worked forty or more weeks in the reference year and had positive earnings.¹⁹ I exclude the immigrants who resided in Atlantic provinces and the Territories from the sample, since years of immigration are coded differently for them. According to the Canadian census, responses of individuals who are in the Atlantic provinces and the Territories cannot be coded to the same level of detail as those of Ontario, Quebec, and the Western provinces for reason of confidentiality. They are coded to aggregate values of the variable in the 1991 and 1996 censuses. In addition, they are coded to the “Not applicable” category in the 2001 census.

Missing values may occur due to non-reporting or non-availability of the data. Baker

¹⁹ This means essentially full time and full year workers.

and Benjamin (1994) and Grant (1999) do not mention how they deal with this issue. The strategies used in this paper are possibly different from those in Baker and Benjamin (1994) and Grant (1999). In this paper, observations with any missing information are dropped in the estimation procedures.

Early immigrant assimilation studies only included men. I include women in the analysis as well, because the labour market participation rate of immigrant women has increased over the last two decades. It is impossible to identify immigrant cohorts by each year of arrival, since immigrants are identified as multi-year arrival cohorts in the public use microdata files. Immigrants have to be partitioned into several cohorts, such as arrivals in 1945 and before, arrivals in 1946-1955, and arrivals in 1956-1960. Not all the regressors are measured consistently across these three censuses.²⁰ For example, the mark-in response “Black” was added to the ethnic origin question in the 1991 census questionnaire. In the 1996 census, “Black” was replaced by the responses “Haitian” and “Jamaican” in the ethnic origin question. Furthermore, “Black” was listed as a separate mark-in category in the population group question in the 1996 and 2001 censuses.

The dependent variable is the log of annual earnings (the sum of wage and self-employment earnings).²¹ Earnings from the 1996 and 2001 censuses are converted into 1990 constant Canadian dollars. I use the consumer price index for all goods to deflate earnings: 1995 dollars are divided by 1.118, and 2001 dollars are divided by 1.216.

The exogenous variables are: years of schooling, labour market experience, experience

²⁰ This is a very common problem with many data sets.

²¹ According to Picot and Sweetman (2005), studies of employment earnings exclude changes in all sources of income other than earnings, such as social transfer benefits. There is an underestimation of the deterioration in labour market outcomes due to the exclusion of the effects of possibly rising unemployment or the discouraged worker effect.

squared, marital status,²² black ethnic status, a binary variable for 40 to 48 weeks of work in the reference years, and a set of binary variables for ranges of weekly hours worked in the reference week.

5. Empirical Analysis

The labour market outcomes of immigrants can be addressed using different methods. First, I begin by describing the characteristics of immigrants relative to Canadian-born individuals. A comparison of these sample statistics provides the basic features of the immigrant and Canadian-born groups. Second, I provide the information on the real earnings of immigrants and Canadian-born individuals in three censuses. Third, I present the differences in the unadjusted log real earnings. These unadjusted differences are approximately equal to percentage differences in real earnings levels, and they are one indicator of the labour market outcomes of immigrants relative to Canadian-born individuals. Fourth, I estimate linear, multi-variate regressions of equation (5) and equation (6). Fifth, I report the cross-sectional estimates of immigrant assimilation from the 1991, 1996 and 2001 census. These results are derived estimates from equations (5) through (10).

5.1 Summary of descriptive statistics

Comparative descriptive statistics for Canadian-born individuals, all immigrants, and

²² This refers to legal marital status. Values categories are: Divorced; Legally married and not separated; Legally married and separated; Never married; Widowed; Not available.

three recent immigrant cohorts are summarized in Table B3 and Table B4.²³ In the first row of those tables, 8690E refers to the immigrant cohort arriving between 1986 and 1990; 8690 refers to the same cohort after five years in Canada. The same notation applies to 9195E, 9600E, 9195 and 9600. IMM denotes immigrants, while NAT denotes Canadian-born individuals.

The results in the 1991 census are quite similar to those reported by Grant (1999). In any given census, all immigrant workers are on average older than their Canadian-born counterparts, whereas recent immigrants are on average younger than Canadian-born individuals. Both recent immigrant men and all immigrant men obtain higher levels of education relative to Canadian-born men. Compared to Canadian-born women, recent immigrant women are generally more educated, but all immigrant women are less educated. However, the opposite pattern is observed for experience. Recent immigrant men and women have fewer years of work experience than Canadian-born individuals (i.e. 15.99 years of experience for male 8690E, compared to 19.85 years for male NAT1990; 16.77 years for male 9195E, compared to 20.40 years for male NAT1995; 16.21 years for male 9600E, compared to 20.75 years for male NAT2000).²⁴ A possibility is offered by Frenette and Morissette (2003). They point out that recent immigrants are younger and have spent more time in school than their Canadian-born counterparts.²⁵

Although there is little difference between immigrants and the Canadian-born in the number of hours worked in the reference week, both groups experienced an upward trend

²³ Recent immigrants are immigrants who arrived in Canada in the previous five years.

²⁴ I adopt the convention that is common in the literature: Experience=age-total years of schooling-5.

²⁵ Frenette and Morissette (2003) do not include the effect of age in their analysis. In their sample, they show that recent immigrants were on average 34.9 years old, while the Canadian-born were on average 37.9 years old in 1990. Recent immigrants were on average 37 years old, compared to 40 for the Canadian-born.

from 1990 to 2000. In these three censuses, more than 60 percent of the recent immigrants belong to visible minorities.²⁶ In addition, the percentage of immigrants who are visible minorities increases across censuses (for immigrant men, from 36.13% in 1990 to 42.93% in 1995 to 50.63% in 2000; for immigrant women, from 39.26% in 1990 to 45% in 1995 to 52.36% in 2000). Although the Canadian-born comprise a small fraction of visible minorities, there was a significant percentage increase in Canadian-born visible minorities between 1990 and 2000 (1.35% of all Canadian-born men in 1990 were visible minorities, 1.36% of them were visible minorities in 1995, and this percentage was 1.98% in 2000; for Canadian-born women, from 1.48% in 1990 to 1.50% in 1995 to 2.16% in 2000). Recent immigrants tend to settle in the provinces of Ontario and British Columbia. For example, in 2000, over 58.74% of recent immigrant men settled in Ontario, while over 18.35% of recent immigrant men chose British Columbia. Similarly, the percentage of recent immigrants who settled in Ontario and British Columbia were 57.53 percent and 20.91 percent respectively in 2000. Immigrants have higher marriage rates than Canadian-born individuals. In 2000, 72.10% of immigrant men were married, but only 53.12% of Canadian-born men were married. In the same year, the marriage rates for immigrant women and Canadian-born women were 65.46% and 50.46%. However, marriage rates for both immigrants and the Canadian-born are trending down.

5.2 Evidence from real earnings analysis

Figures A1-A4 display information on the real earnings of immigrants and

²⁶ According to Employment Equity Act, visible minorities refer to “persons, other than Aboriginal peoples, who are non-Caucasian in race or non-white in colour”.

Canadian-born individuals in the three censuses.²⁷ In Figure A1, all groups but three immigrant cohorts (IM46P, IM4655 and IM7175) experienced negative real earnings growth between 1990 and 1995. In Figure A2, all groups experienced positive real earnings growth between 1995 and 2000. This result for men's real earnings growth is partially due to the business cycle. The interval of 1990-1995 covers a steep recession, while the interval of 1995-2000 covers an expansion. As suggested in Aydemir's (2003) study, macro-economic conditions have an impact on the labour market outcomes of immigrants, and that is likely reflected in Figure A2. However, for women, all groups but immigrant cohort IM5560 experienced positive real earnings growth from 1990 to 1995 (Figure A3). All groups' real earnings increased from 1995 to 2000 (Figure A4). It is surprising that women realized steady increase in real earnings during either recessionary or expansionary times. This might be due to labour supply patterns: perhaps women withdrew from the labour market from 1990 to 1995. These figures also bear out the hypothesis that recent immigrants have lower earnings than immigrants of earlier cohorts.

Following Grant (1999), assimilation effects can be captured by using the difference in the levels of two bars representing two censuses for a given cohort minus the difference in the levels of two bars for Canadian-born individuals. The final two columns of Table B5 display these assimilation effects. Between 1990 and 1995, male immigrant cohort IM46P obtained the highest positive real earnings assimilation (it was \$6,519 for IM46P between the 1991 and 1996 censuses). However, between 1995 and 2000, the male immigrant cohort IM9195 experienced the highest positive assimilation (it was \$4,029 for

²⁷ The real earnings values for these figures are presented in appendix table B5 and B6.

IM9195 between the 1996 and 2001 censuses). Similar trends are observed for women from 1990 to 2000. The female immigrant cohorts which experienced the highest positive assimilation for the period 1990/1995 and the period 1995/2000 are cohort IM46P and IM9195 respectively (it was \$2,627 for IM46P between the 1991 and 1996 censuses, \$2,625 for IM9195 between the 1996 and 2001 censuses). All cohorts fared better in 1995/2000 relative to 1990/1995. This is consistent with the finding of Grant (1999) that these assimilation results may be attributable to the time periods themselves.²⁸

Similarly, cohort effects can be obtained by comparing the relative position of cohort i in the 1991 (1996) census to the relative position of cohort $i+5$ in the 1996 (2001) census. The last two columns of Table B6 display the cohort effects. For immigrant men, the relative position of the entry cohort fell by \$3,004 between 1990 and 1995. However, this relative position of the entry cohort increased by \$3,079 between 1995 and 2000. From 1995 to 2000, the magnitudes of across cohort earnings growth at 1-5 and 11-15 years in Canada were stable: the relative position at 1-5 years in Canada increased by only \$3; the relative position at 11-15 years declined by \$404. For immigrant women, the relative position of the entry cohort fell by \$2,059 between 1990 and 1995. This number increased by \$1,518 between 1995 and 2000. Most of the numbers in the last two columns of Table B6 for immigrant women are generally smaller than those for immigrant men. This implies that the relative position for immigrant women is more stable than those for immigrant men.

²⁸ As mentioned earlier, the interval of 1990-1995 covers a steep recession, while the interval of 1995-2000 covers an expansion.

5.3 Relative log earnings results

Following Grant (1999) and Frenette and Morissette (2003), Table B7 presents average log real earnings of immigrants relative to those of Canadian-born individuals.. Average log earnings differences are approximately equal to percentage differences. This analysis is performed without adjusting for differences in observable characteristics. It provides some preliminary evidence in regards to assimilation effects, cohort effects, and earnings gaps at entry, although these components are not separately identified.

The first row of the Table B7 represents the relative log earnings of all immigrants when the 1990, 1995 and 2000 censuses are separated. For example, immigrant men's relative log earnings decreased by 7.9 percent between 1990 and 2000 (from 0.060 in 1990 to -0.011 in 1995 to -0.019 in 2000); immigrant women's relative log earnings declined by 3.8 percent between 1990 and 2000 (from 0.047 in 1990 to 0.014 in 1995 to 0.009 in 2000). The following eleven rows represent the same estimates of each immigrant cohort in 1990, 1995 and 2000. A particular cohort's assimilation effect can be obtained by reading across the corresponding row. For immigrant men, all other cohorts (except those entering between 1956 and 1960) experienced positive assimilation between 1990 and 2000. For immigrant women, all cohorts experienced positive assimilation from 1990 to 2000. For both immigrant men and women, the markedly highest assimilation rates were experienced by cohort IM46P. However, immigrants of cohort IM46P are now retired.

The cohort effect is simply interpreted as the between-cohort earnings disparities. For example, changes in the relative position of immigrants after twenty years in Canada

can be assessed by comparing the relative log earnings of IM7175 in 1995 with the relative log earnings of IM7680 in 2000. Relative log earnings of IM7175 for immigrant men in 1995 was 0.137 (0.176 for immigrant women), while those of IM7680 in 2000 was 0.085 (0.129 for immigrant women). In other words, the relative position of both immigrant men and women with twenty years in Canada declined over this five-year period. The relative position of immigrant men with fifteen years in Canada declined over this five-year period as well (-0.035 for IM7680 in 1995 versus -0.053 for IM8185 in 2000). However, those of immigrant women with fifteen years in Canada improved over these five years (0.034 for IM7680 in 1995 versus 0.046 for IM8185 in 2000).

Relative log earnings at entry are shown for three cohorts: IM8690, IM9195 and IM9600. In 1990, immigrant men who had arrived in Canada within five years (IM8690) received 34% lower earnings than Canadian-born men. In 1995, the relative entry earnings gap increased to 47%. However, this gap decreased from 1995 to 2000. In 2000, entry earnings for immigrant men were 32% lower than those for Canadian-born men. I obtain similar results for immigrant women. Immigrant women experienced 22% lower entry earnings than their Canadian-born counterparts in 1990. Relative entry earnings deteriorated further between 1990 and 1995; the gap increased from 22% to 39%. Between 1995 and 2000, the gap decreased slightly (30% in 2000). This is consistent with the finding of Frenette and Morissette (2003): although the deterioration of relative entry earnings of recent immigrants over the last two decades has had long-term consequences for earnings convergence, relative entry earnings stopped falling and even improved according to the 2000 census.

Relative log earnings of male IM8690 increased between 1990 and 2000 (-0.341 for IM8690 in 1990 versus -0.159 for IM8690 in 2000). This quantity grew by 18.2 percent between five and fifteen years after arrival. Relative log earnings of female cohort IM8690 improved by 14 percent between five and fifteen years following arrival (-0.218 for IM8690 in 1990 versus -0.078 for IM9620 in 2000). Nevertheless, as in Frenette and Morissette's (2003) study, this source of growth of earnings (an assimilation effect) cannot completely offset the deterioration of earnings at entry.

5.4 Ordinary least squares (OLS regression) results

Table B8 and Table B9 present ordinary-least-squares estimates of the earnings equation in which the cross-sectional data from 1991, 1996 and 2001 are used separately. The cross-sectional estimates of assimilation which will be presented in the next section are based on Table B8 and Table B9. The second, fourth, and sixth columns of Table B8 and Table B9 report equation estimates for immigrants. The third, fifth and seventh columns of these two tables report estimates for similar equations for Canadian-born workers.

Regression results are similar across the three census years. The return to years of schooling is lower for immigrants than for the Canadian-born. In the 2001 census, for immigrant men, the return to years of schooling was 5.4%, slightly lower than for Canadian-born men of 7.4%. In that same census, the return to years of schooling for immigrant women was 5.9%, while that for Canadian-born women was 10.1% in the 2001 census. As in Bloom and Gunderson's (1991) study, the return to schooling is

slightly lower for immigrants relative to that of the Canadian-born, probably because schooling has an important country-specific component. However, the return to being married is less for immigrant men than for Canadian-born men, and it is higher for immigrant women than for their Canadian-born counterparts. For example, the returns to being married were 16% for immigrant men and 21.7% for Canadian-born men in the 2001 census; these returns to married status were 6.4% for immigrant women and 3% for Canadian-born women in the 2001 census. There is an increasing percentage of immigrants who belong to visible minority groups. Following Baker and Benjamin (1995), I control for some of the effects in this trend by including the dummy variable for blacks in the regressions. The reduction in earnings as a result of belonging to the black race is generally larger for the Canadian-born than for immigrants. In the 2001 census, the returns to black status were -16.4 percent for immigrant men and -17.9 percent for Canadian-born men. In the 1996 census, the returns to black ethnic for immigrant men and for Canadian-born men were -9.5% and -15.7%.

Table B8 and Table B9 show that, both the signs and the magnitude of the estimated coefficients in my regression results are similar to those obtained by Baker and Benjamin (1994) and Grant (1999). However, my results report a negative sign for the coefficient of the black ethnic variable in the immigrant regression, whereas Grant's (1999) reports a positive sign for that in the immigrant regression. Moreover, in my research, the estimated coefficient for the H50P variable, which denotes hours worked of 50 or more, is different in sign from that of Baker and Benjamin (1994). I obtain a positive sign for this estimated coefficient, whereas Baker and Benjamin (1994) report a negative coefficient. These

differences are possibly due to the difference methods of data treatment. For example, Baker and Benjamin (1994) and Grant (1999) did not document how they treated with those missing values for the explanatory variables. Moreover, samples sizes for immigrants and the Canadian-born in my research are different from those in Baker and Benjamin (1994) and Grant (1999)'s studies. Baker and Benjamin (1994) use one-sixth random sample of the Canadian-born, Grant (1999) uses about 20% random sample of the Canadian-born, and I use the whole sample of Canadian-born individuals.

As Table B10 indicates, the estimated coefficients for blacks are negative and significant in the regressions for Canadian-born men, but this is only the case when the 20 percent random sample of Canadian-born respondents in the public microdata files is selected. They are negative and insignificant when the whole sample of Canadian-born is used. This confirms the finding of Baker and Benjamin (1995) that the coefficient for blacks is at most marginally significant in the regressions for natives, when they used one-sixth random sample of the Canadian-born. However, the coefficients for blacks are significant in the Canadian-born women regressions whether I used the 20% random sample or the whole sample of Canadian-born individuals. The coefficients for blacks become positive in the Canadian-born women regressions using 20% random sample of the 1996 and 2001 censuses data. In my results, the value of the coefficient for blacks does not vary widely across three censuses.

It should be noted that only a small proportion of individuals are black. This might be one of the reasons why the results are somewhat unexpected. In 1991, 1996, and 2001 censuses, there are respectively, 215, 463, and 798 Canadian-born black men who satisfy

the weeks-worked and earnings criteria in this research. In addition, there are only 228 Canadian-born black women who satisfy these criteria in the 1991 census, and the sample sizes for those in the 1996 and 2001 census are 461 and 778. I excluded the control for blacks from the regression. Not surprisingly, this change does not have much of an effect on the estimated coefficients of the remaining exogenous variables. Furthermore, Table B11 and Table B12 show that the results are virtually unaffected when I use visible minority as a control variable instead of blacks.²⁹ I obtain negative signs for the coefficients of visible minority variable in the immigrant and Canadian-born regressions for men. Similarly, I obtain a negative signs in the immigrant and Canadian-born regressions for women except those in the Canadian-born regression of the 1996 and 2001 censuses. The estimated coefficients for visible minority in Canadian-born female regressions of the 1996 and 2001 censuses are 0.011 and 0.029. In the male regressions (both for immigrant men and Canadian-born men), estimated coefficients for visible minority have higher absolute value than those in the female regressions (both for immigrant women and Canadian-born women). This implies that the status of being a visible minority has much more impact on men's earnings than women's earnings.

5.5 Cross-sectional estimates of assimilation

The analysis of cross-sectional estimates in this section differs from relative log earnings results which are presented in section 5.3 of this paper. The unadjusted relative log earnings differences in section 5.3 are calculated without controlling for differences in

²⁹ In Table B8 and Table B9, I use blacks as a control variable. However, in Table B11 and Table B12, I use visible minority as a control variable. This is the only difference between them.

observable characteristics. As Grant (1999) indicates in her paper, any significant differences in assimilation or cohort effects may disappear once these characteristics are accounted for.

Several insights of assimilation emerge from the cross-sectional estimates in Table B13. The cross-sectional estimates are constructed from the difference between the estimated dummy variable coefficients for two adjacent cohorts. The control variables are: experience, experience squared, years of schooling, black race status, marital status, and indicators for hours and weeks worked. Table B13 is based on Table B8 and Table B9. The first panel contains the results for immigrant men, and the second panel presents the results for immigrant women. The third, fifth and seventh columns are cross-sectional estimates of the effects of five years of assimilation for each cohort.³⁰

In the 1991 results for men, the difference in cohort coefficients which is IM8185-IM8690 represents the economic return (17.3%) to the first five years after arrived in Canada. This is the difference between the dummy variables for the cohorts that arrived between 1981 and 1985 (IM8185) and 1986 and 1990 (IM8690). In the 1996 results for men, the estimate of IM8690-IM9195 represents the economic return (16.1%) to the first five years following entry to Canada. The estimate for IM9195-IM9600 shows that the returns to the first five years in Canada fell to 6.8% in 2001. A different trend is observed in the second five years periods. Economic returns to the second five years for immigrant men were 6% in the 1991 census, 11.4% in the 1996 census and 9.2% in the 2001 census. For immigrant women, the return to the first five years period was about 9.1

³⁰ Standard errors are in parentheses of the third, fifth and seventh columns of Table B13.

percent in the 1991 census. Moreover, recent immigrant women enjoyed 16.9% earnings return to their first five years in the 1996 census, while those experienced a lower economic return to the first five years of 9.1% in the 2001 census. Similar variations are observed in the returns to the second five-year periods for immigrant women. However, this is not always the case. The returns to the third five-year period for immigrant women was 9.4% in the 1991 census, fell to 4.7% in the 1996 census, and then increased to 9.7% in the 2001 census. These results are consistent with the findings reported in the literature of Baker and Benjamin (1994) that the assimilation profile is quite unstable across the census data sets. Moreover, the lack of consistency of the estimates across censuses suggests that the cross-sectional estimates may be biased due to the cohort effects. The cross-sectional estimates of assimilation potentially confuse the cohort effects and the assimilation effects. The quasi-panel approach, which decomposes the cross-sectional estimates into within-cohort and between-cohort growth, can eliminate the bias in the cross-sectional estimates.

6. Conclusion

The analysis of earnings performance in this paper provides a picture of immigrant assimilation in Canada between 1990 and 2000. Immigrant cohorts fared better in the period of 1995-2000 relative to the period of 1990-1995, since there were higher average education attainment for immigrants and better labour market conditions for new labour market entrants between 1995 and 2000. This suggests that macro-economic conditions have an impact on the labour market outcomes of immigrants. In 2000, recent immigrant

men exhibited an earnings disadvantage of 32.1 percent, while recent immigrant women earned 30.3 percent less than the Canadian-born. Moreover, my analysis of immigrants yields a negative and increasing earnings gap between immigrants and the Canadian-born from 1990 through 2000, although relative entry earnings stopped falling and even improved between 1995 and 2000. This is consistent with the finding of several Canadian studies that the deterioration of relative entry earnings of recent immigrants over the last two decades has had long-term consequences for earnings convergence. The cross-sectional estimates of assimilation suggest that both immigrant men and women do assimilate to some degree, and the rate of economic integration into the Canadian labour market has increased over time. However, this source of growth of earnings (an assimilation effect) cannot completely offset the deterioration of earnings at entry, and recent immigrants cannot fully catch up the Canadian-born because of high entry earnings gap.

What should be done to reduce the earnings gap between immigrants and the Canadian-born? One possibility is to improve recent immigrants' knowledge of an official language, since there is a large share of recent immigrants whose first language is neither English nor French. In addition, the recognition of foreign educational credentials and foreign experience appear to be of substantial importance. Great emphasis should be also placed on the new market entrants, since entering immigrants are new labour market entrants. There may be a need for training programs to help the new market entrants. However, there is still a debate over the possible solutions for the earnings gap between immigrants and the Canadian-born.

There are two limitations that need to be acknowledged and addressed regarding this study. First, there is a limitation in using cross-sectional approach, since the cross-sectional approach may overstate (or understate) the assimilation of a particular immigrant cohort. The quasi-panel approach can ascertain a potential bias in the cross-sectional estimates. Second, there is a data limitation that needs to be considered. I use the public use 1991, 1996 and 2001 Canadian census microdata files. The Canadian census microdata files are maintained by Statistics Canada, and each of these confidential data files represents a 20 percent sample of the Canadian population, except for the 1971 census. However, the public use samples represent a much smaller proportion of the Canadian population. The public use 1991 and 1996 censuses are 3% and 2.8% samples of Canadians, while the public use 2000 census is a 2.7% sample. Using the Canadian census microdata files, which represent a 20 percent sample of the Canadian population, the signs and magnitude of the estimated coefficients in the regressions, may change. Also, having this much broader sample, more reliable and representative results will be provided

As a traditional immigration country, Canada has had explicit immigration policies throughout the century. Immigration policy is important for economic assimilation or labour market success for immigrants. In 2009, Canada's immigration program will continue to meet the diverse skill requirement of the economy and maintain the Government's commitments to support family reunification and humanitarian objectives. The upper range of economic admission in 2009 levels plan is higher than that in 2008, because there is a growth in several economic streams, such as federal skilled workers,

Quebec-selected skilled workers, and provincial nominees. The distribution of admissions across categories in the Economic class has changed. For example, the demand for provincial nominees increases, and the plan also contains a number of admissions through the CEC (Canadian Experience Class).³¹ When newcomers arrive in Canada, they face great challenges such as lack of proficiency in English and/or French, and recognition of education and work experience obtained abroad. In Canada, entry earnings of immigrants and low-income position of recent immigrants are deteriorating. The more we understand performance of immigrants in the Canadian labour market, the better we can make the policy more responsive for the development of the economy.

³¹ According to the Annual Report to Parliament on Immigration 2008, CEC (Canadian Experience Class), is a new avenue for immigration for certain skilled temporary workers and international students with Canadian degrees and Canadian work experience.

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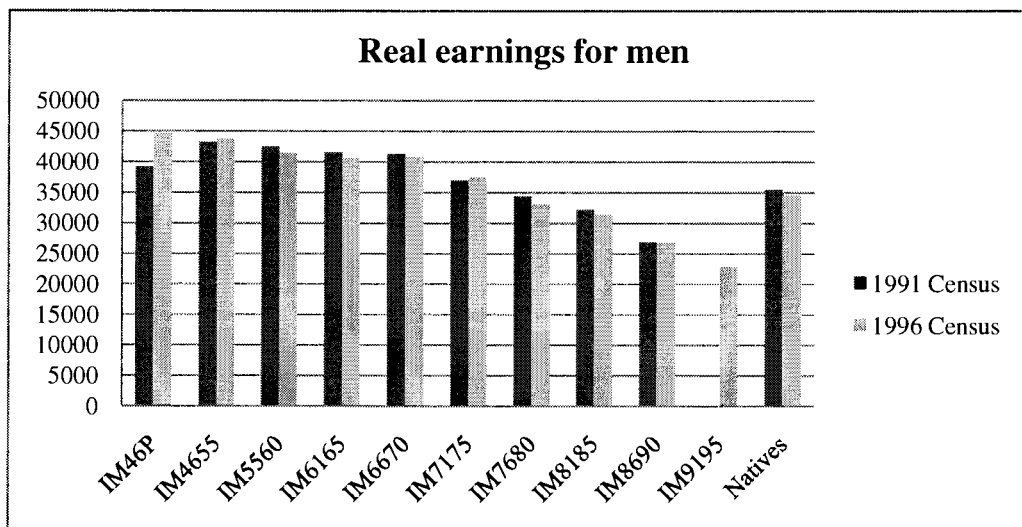
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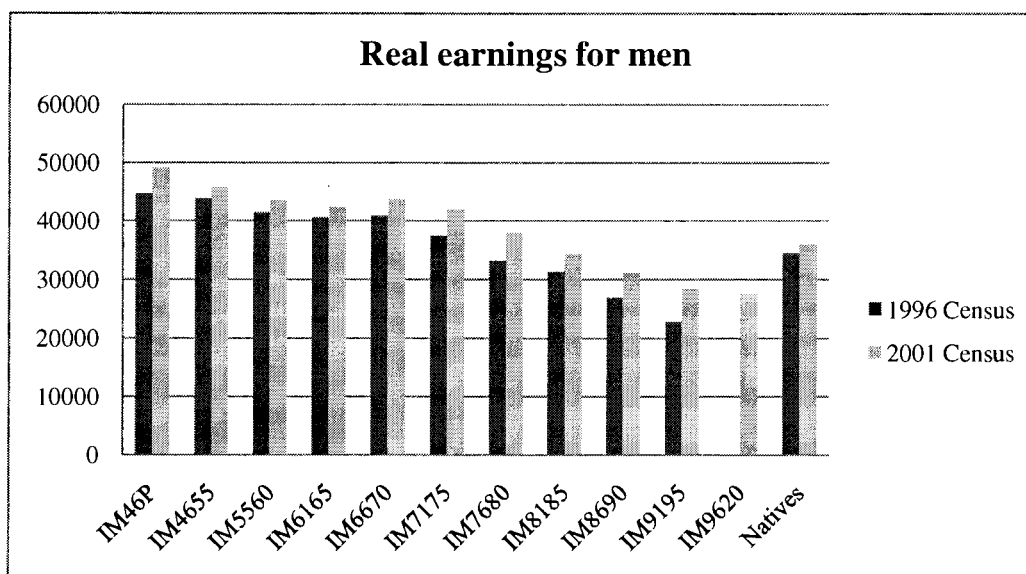
APPENDIX A: LIST OF ILLUSTRATIONS

FIGURE A1 Real earnings for full-year, full-time men, 1990 and 1995



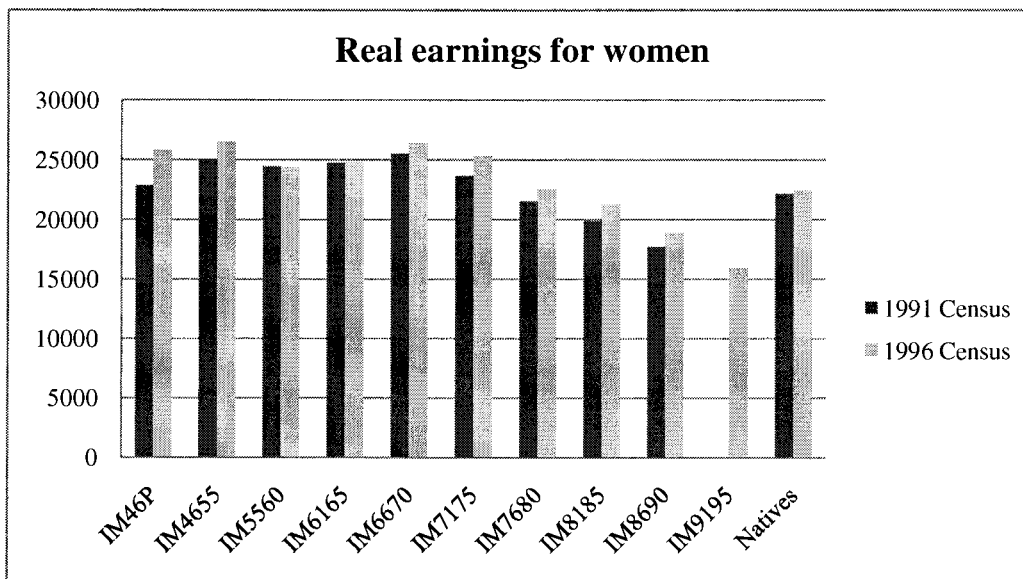
NOTES: 'IM' indicates an immigrant arrival cohort. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian-born workers. The sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings.

FIGURE A2 Real earnings for full-year, full-time men, 1995 and 2001



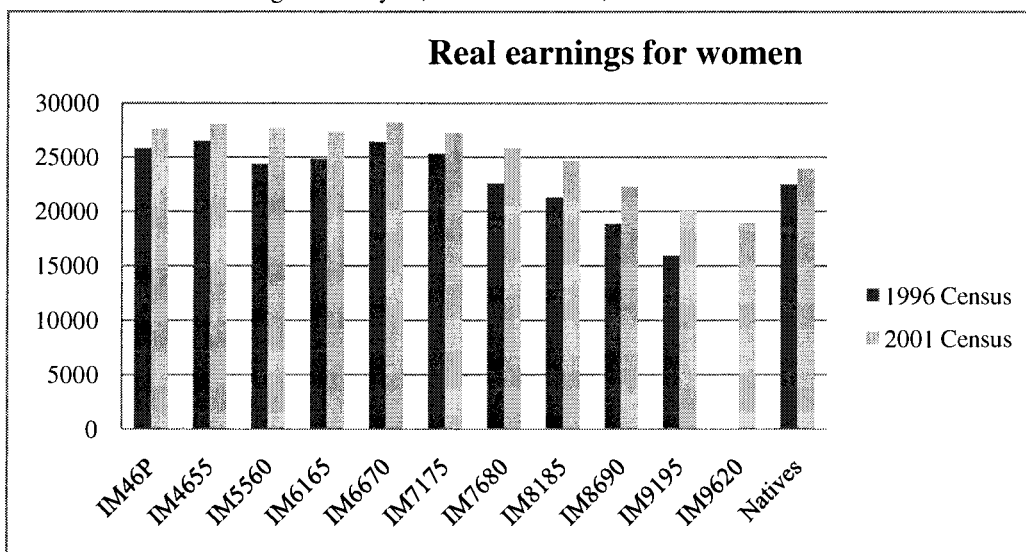
NOTES: 'IM' indicates an immigrant arrival cohort. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian-born workers. The sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings.

FIGURE A3 Real earnings for full-year, full-time women, 1990 and 1995



NOTES: 'IM' indicates an immigrant arrival cohort. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian-born workers. The sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings.

FIGURE A4 Real earnings for full-year, full-time women, 1995 and 2000



NOTES: 'IM' indicates an immigrant arrival cohort. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian-born workers. The sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings.

APPENDIX B: LIST OF TABLES

TABLE B1 Cohort sample sizes for men			
Cohort	1991 Census	1996 Census	2001 Census
IM46P	214	50	26
IM4655	3862	2222	1551
IM5660	3748	2457	1725
IM6165	2761	2036	1581
IM6670	5691	4473	3802
IM7175	5716	4737	4506
IM7680	3959	3699	3701
IM8185	3001	2800	3106
IM8690	3800	4437	5103
IM9195		4039	5567
IM9600			4300
Total		30950	
immigrants			
Natives	139148	126982	139254

NOTES: 'IM' indicates an immigrant arrival cohort. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian-born workers. The sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings.

TABLE B2 Cohort sample sizes for women			
Cohort	1991 Census	1996 Census	2001 Census
IM46P	146	31	25
IM4655	2430	1587	1179
IM5660	2536	1709	1307
IM6165	2152	1629	1307
IM6670	4433	3636	3077
IM7175	4666	4046	3916
IM7680	3272	3058	3244
IM8185	2456	2448	2774
IM8690	3069	3467	4407
IM9195		3202	4915
IM9600			3214
Total			
immigrants			
Natives	110541	107226	120657

NOTES: 'IM' indicates an immigrant arrival cohort. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian-born workers. The sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings.

TABLE B3 Sample means for men, the Canadian-born and immigrants

	8690E	8690	9195E	9195	9600E	IMM1990	IMM1995	IMM2000	NAT1990	NAT1995	NAT2000
Log earnings	9.87	9.87	9.67	9.91	9.86	10.27	10.13	10.16	10.21	10.14	10.18
Education	13.75	13.90	14.00	14.23	15.15	13.42	13.83	14.25	13.00	13.41	13.70
Experience	15.99	18.13	16.77	18.74	16.21	24.27	24.05	24.07	19.85	20.40	20.75
Age	34.73	37.03	35.76	37.96	36.35	42.68	42.88	43.31	37.84	38.80	39.44
Hour/week	35.44	38.30	37.02	38.34	37.01	38.32	39.80	39.71	39.02	40.10	40.29
Hour1-19	3.63	4.06	4.95	3.45	3.74	2.41	3.02	2.60	2.98	3.49	2.99
Hour20-29	2.63	3.22	3.49	3.05	3.12	2.12	2.73	2.52	2.51	3.11	3.03
Hours30-34	2.45	3.13	3.24	3.02	2.53	2.45	2.84	2.55	2.86	3.01	2.83
Hours35-39	10.24	7.57	6.81	6.93	7.30	12.31	9.17	8.15	12.47	10.26	9.34
Hours40-44	43.97	40.39	39.49	44.57	45.37	43.82	39.58	43.18	41.66	37.93	40.21
Hours45-49	6.74	8.41	8.67	7.85	7.44	7.59	8.94	8.05	7.76	8.88	8.28
Hours50+	15.11	22.02	20.60	20.71	18.05	18.88	24.47	23.78	20.29	25.01	25.09
Weeks	50.01	50.12	49.73	50.06	49.58	50.53	50.42	50.33	50.58	50.54	50.49
Weeks40-48	22.11	20.82	25.87	22.35	27.67	16.48	17.77	19.15	15.38	15.75	16.39
Weeks49-52	75.68	76.56	71.18	75.86	70.14	82.39	80.30	79.43	83.45	82.60	82.50
Married	69.68	70.61	68.88	69.01	72.23	76.36	74.02	72.10	61.95	59.02	53.12
V. minority	69.26	66.42	69.47	71.51	70.44	36.13	42.93	50.63	1.35	1.36	1.98
Quebec	13.13	11.52	12.73	12.11	12.79	12.92	12.55	12.41	27.53	26.67	26.48
Ontario	62.37	61.10	56.45	58.65	58.74	57.84	56.82	58.36	34.94	34.64	34.91
Manitoba	2.92	2.66	2.38	2.01	1.98	3.10	2.90	2.63	4.12	4.19	4.07
Saskatchewan	0.61	0.86	0.59	0.43	0.74	1.05	1.00	0.81	3.85	3.87	3.57
Alberta	7.74	8.16	7.72	8.21	7.40	9.29	9.05	9.07	10.13	10.62	11.66
B. Columbia	13.24	15.71	20.13	18.59	18.35	15.80	17.69	16.72	11.03	11.90	11.48

NOTES: V. minority is visible minority, B. Columbia is British Columbia. In any given year, the sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings.

TABLE B4 Sample means for women, the Canadian-born and immigrants													
	8690E	8690	9195E	9195	9600E	IMM1990	IMM1995	IMM2000	NAT1990	NAT1995	NAT2000		
Log earnings	9.50	9.52	9.31	9.56	9.45	9.76	9.71	9.76	9.71	9.69	9.75		
Education	13.31	13.67	13.63	14.20	14.68	12.99	13.50	14.01	13.19	13.64	14.03		
Experience	15.54	18.04	16.49	18.14	15.78	23.26	23.54	23.56	18.67	19.53	20.00		
Age	33.84	36.69	35.11	37.32	35.43	41.24	42.03	42.56	36.85	38.15	39.01		
Hour/week	29.51	31.16	29.44	32.30	29.43	31.42	32.00	32.71	30.83	31.47	32.37		
Hour1-19	6.00	7.85	7.84	5.55	7.65	6.55	7.63	6.19	8.28	9.55	7.47		
Hour20-29	6.39	7.82	7.28	6.73	6.25	7.70	8.50	7.74	9.62	10.91	9.98		
Hours30-34	4.92	5.83	5.37	5.15	4.79	5.62	6.30	5.85	6.99	7.61	7.77		
Hours35-39	16.78	14.94	10.34	12.47	11.08	21.45	17.38	15.92	24.58	21.38	19.81		
Hours40-44	36.88	33.92	33.32	40.10	36.75	33.38	32.23	36.50	26.89	26.20	29.62		
Hours45-49	3.19	5.02	4.65	5.11	4.48	3.78	4.70	4.98	3.65	4.73	4.93		
Hours50+	5.87	8.91	10.06	9.36	8.28	7.05	9.83	9.67	6.80	8.60	9.36		
Weeks	49.74	50.01	49.42	49.90	49.49	50.23	50.13	50.18	50.41	50.33	50.32		
Weeks40-48	24.73	21.83	28.11	24.37	27.47	19.65	20.57	20.61	16.98	17.77	18.11		
Weeks49-52	71.20	73.87	65.55	72.39	67.61	77.56	75.97	76.64	80.72	79.72	79.97		
Married	62.63	65.27	61.71	61.95	68.26	69.07	67.34	65.46	55.93	54.53	50.46		
V. minority	70.48	66.77	73.08	72.04	70.60	39.26	45.00	52.36	1.48	1.50	2.16		
Quebec	11.08	9.84	10.06	10.93	10.61	11.14	10.68	10.83	26.94	26.08	26.21		
Ontario	63.70	61.00	56.34	58.62	57.53	60.64	58.01	58.51	36.46	35.45	35.31		
Manitoba	2.48	2.68	2.19	1.89	2.24	3.06	3.11	2.66	4.22	4.18	4.13		
Saskatchewan	0.55	0.49	0.72	0.73	0.75	1.00	0.88	0.91	3.80	3.90	3.70		
Alberta	8.11	9.20	8.84	9.16	7.97	8.97	9.24	8.95	9.82	10.31	10.94		
B. Columbia	14.08	16.79	21.86	18.68	20.91	15.18	18.09	18.15	10.72	11.92	11.50		

NOTES: V. minority is visible minority, B. Columbia is British Columbia. In any given year, the sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings.

TABLE B5 Real earnings (for within-cohort earnings growth)

Men				No controls		Native Control	
	1991 Census	1996 Census	2001 Census	91/96 Censuses	96/2000 Censuses	91/96 Censuses	96/2000 Censuses
IM46P	39183	44674	49163	5491	4489	6519	2932
IM4655	43244	43830	45702	586	1872	1614	315
IM5660	42485	41494	43423	-991	1929	37	372
IM6165	41572	40609	42306	-963	1697	65	140
IM6670	41315	40849	43689	-466	2840	562	1283
IM7175	37010	37485	42036	475	4551	1503	2994
IM7680	34399	33194	37990	-1205	4796	-177	3239
IM8185	32198	31360	34347	-838	2987	190	1430
IM8690	26869	26863	31031	-6	4168	1022	2611
IM9195		22837	28423		5586		4029
IM9620			27473				
Natives	35510	34482	36039	-1028	1557	0	0

Women				No control		Native Control	
	1991 Census	1996 Census	2001 Census	91/96 Censuses	96/2000 Censuses	91/96 Censuses	96/2000 Censuses
IM46P	22902	25827	27620	2925	1793	2627	335
IM4655	25110	26537	28039	1427	1502	1129	44
IM5660	24469	24401	27720	-68	3319	-366	1861
IM6165	24778	24824	27324	46	2500	-252	1042
IM6670	25550	26439	28174	889	1735	591	277
IM7175	23705	25345	27274	1640	1929	1342	471
IM7680	21551	22579	25825	1028	3246	730	1788
IM8185	19886	21294	24634	1408	3340	1110	1882
IM8690	17727	18894	22308	1167	3414	869	1956
IM9195		15966	20049		4083		2625
IM9620			18942				
Natives	22201	22499	23957	298	1458	0	0

NOTES: 'IM' indicates an immigrant arrival cohort. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian born workers. 'Native control' refers to the Canadian-born control group. The sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings. Earnings from the 1996 and 2001 censuses are converted into 1990 constant Canadian dollars.

TABLE B6 real earnings (for between-cohort earnings growth)

Men	1991 Census	1996 Census	2001 Census	No controls		Native Control	
				91/96 Censuses	96/2000 Censuses	91/96 Censuses	96/2000 Censuses
Entry cohort	IM8690	IM9195	IM9620				
Entry earnings	26869	22837	27473	-4032	4636	-3004	3079
1-5 years cohort	IM8185	IM8690	IM9195				
1-5 years earnings	32198	26863	28423	-5335	1560	-4307	3
6-10 years cohort	IM7680	IM8185	IM8690				
6-10 years earnings	34399	31360	31031	-3039	-329	-2011	-1886
11-15 years cohort	IM7175	IM7680	IM8185				
11-15 years earnings	37010	33194	34347	-3816	1153	-2788	-404
16-20 years cohort	IM6670	IM7175	IM7680				
16-20 years earnings	41315	37485	37990	-3830	505	-2802	-1052
Natives	35510	34482	36039	-1028	1557	0	0
Women	1991 Census	1996 Census	2001 Census	No controls		Native Control	
				91/96 Censuses	96/2000 Censuses	91/96 Censuses	96/2000 Censuses
Entry cohort	IM8690	IM9195	IM9620				
Entry earnings	17727	15966	18942	-1761	2976	-2059	1518
1-5 years cohort	IM8185	IM8690	IM9195				
1-5 years earnings	19886	18894	20049	-992	1155	-1290	-303
6-10 years cohort	IM7680	IM8185	IM8690				
6-10 years earnings	21551	21294	22308	-257	1014	-555	-444
11-15 years cohort	IM7175	IM7680	IM8185				
11-15 years earnings	23705	22579	24634	-1126	2055	-1424	597
16-20 years cohort	IM6670	IM7175	IM7680				
16-20 years earnings	25550	25345	25825	-205	480	-503	-978
Natives	22201	22499	23957	298	1458	0	0

NOTES: 'IM' indicates an immigrant arrival cohort. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian born workers. 'Native control' refers to the Canadian-born control group. The sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings. Earnings from the 1996 and 2001 censuses are converted into 1990 constant Canadian dollars.

TABLE B7 Log earnings differences between immigrants and Canadian-born workers							
Men				Women			
Age cohort	1990	1995	2000	Age cohort	1990	1995	2000
<i>all immigrants</i>	0.060 (0.006)	-0.011 (0.006)	-0.019 (0.006)	<i>all immigrants</i>	0.047 (0.006)	0.014 (0.077)	0.009 (0.007)
<i>IM46p</i>	0.030 (0.071)	0.164 (0.148)	0.330 (0.177)	<i>IM46p</i>	-0.077 (0.093)	0.343 (0.091)	0.099 (0.187)
<i>IM4655</i>	0.240 (0.014)	0.268 (0.020)	0.288 (0.022)	<i>IM4655</i>	0.125 (0.020)	0.171 (0.026)	0.177 (0.028)
<i>IM5660</i>	0.235 (0.013)	0.220 (0.019)	0.179 (0.026)	<i>IM5660</i>	0.126 (0.018)	0.096 (0.024)	0.175 (0.027)
<i>IM6165</i>	0.188 (0.016)	0.231 (0.019)	0.218 (0.023)	<i>IM6165</i>	0.125 (0.020)	0.117 (0.025)	0.179 (0.025)
<i>IM6670</i>	0.201 (0.011)	0.224 (0.013)	0.224 (0.016)	<i>IM6670</i>	0.183 (0.014)	0.222 (0.015)	0.196 (0.018)
<i>IM7175</i>	0.047 (0.012)	0.137 (0.013)	0.209 (0.014)	<i>IM7175</i>	0.101 (0.013)	0.176 (0.015)	0.188 (0.015)
<i>IM7680</i>	-0.031 (0.014)	-0.035 (0.016)	0.085 (0.016)	<i>IM7680</i>	-0.029 (0.017)	0.034 (0.018)	0.129 (0.017)
<i>IM8185</i>	-0.118 (0.017)	-0.125 (0.020)	-0.053 (0.018)	<i>IM8185</i>	-0.092 (0.018)	-0.038 (0.020)	0.046 (0.019)
<i>IM8690</i>	-0.341 (0.016)	-0.273 (0.015)	-0.159 (0.015)	<i>IM8690</i>	-0.218 (0.017)	-0.171 (0.018)	-0.078 (0.017)
<i>IM9195</i>		-0.473 (0.017)	-0.271 (0.015)	<i>IM9195</i>		-0.385 (0.019)	-0.196 (0.016)
<i>IM9600</i>			-0.321 (0.017)	<i>IM9600</i>			-0.303 (0.021)

NOTES: These log earnings differences are unadjusted results. 'IM' indicates an immigrant arrival cohort. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. The sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings. Standard errors are in parentheses.

TABLE B8 Estimates of earnings functions for men, dependent variables: log earnings in previous year (1990 dollars)- OLS analysis including black ethnicity variable

	1991 Census Immigrants	Native	1996 Census Immigrants	Natives	2001 Census Immigrants	Natives
Intercept		8.380 (0.012)		8.189 (0.014)		8.348 (0.013)
Education	.051 (0.001)	0.075 (0.001)	0.055 (0.001)	0.078 (0.001)	0.054 (0.001)	0.074 (0.001)
Experience	0.045 (0.002)	0.067 (0.001)	0.042 (0.002)	0.071 (0.001)	0.033 (0.002)	0.065 (0.001)
Experience ²	-0.0007 (0.000)	-0.001 (0.000)	-0.0007 (0.000)	-0.001 (0.000)	-0.0006 (0.000)	-0.001 (0.000)
H119	-0.453 (0.297)	-0.675 (0.013)	-0.545 (0.030)	-0.779 (0.014)	-0.711 (0.032)	-0.845 (0.014)
H2029	-0.409 (0.032)	-0.477 (0.013)	-0.544 (0.031)	-0.521 (0.014)	-0.554 (0.033)	-0.589 (0.014)
H3034	-0.207 (0.029)	-0.201 (0.013)	-0.295 (0.031)	-0.295 (0.014)	-0.324 (0.033)	-0.326 (0.014)
H3539	0.067 (0.014)	0.068 (0.007)	0.080 (0.018)	0.055 (0.008)	0.061 (0.019)	0.028 (0.008)
H4549	0.117 (0.017)	0.134 (0.008)	0.165 (0.018)	0.159 (0.008)	0.189 (0.019)	0.168 (0.009)
H50P	0.089 (0.012)	0.019 (0.005)	0.089 (0.013)	0.068 (0.006)	0.126 (0.013)	0.128 (0.006)
W4048	-0.118 (0.012)	-0.103 (0.006)	-0.145 (0.013)	-0.097 (0.007)	-0.142 (0.013)	-0.066 (0.006)
Married	0.221 (0.012)	0.237 (0.005)	0.161 (0.013)	0.224 (0.005)	0.160 (0.013)	0.217 (0.005)
Black	-0.112 (0.022)	-0.210 (0.053)	-0.095 (0.022)	-0.157 (0.039)	-0.164 (0.021)	-0.179 (0.031)
IM46P	8.917 (0.063)		8.936 (0.130)		9.180 (0.189)	
IM4655	9.043 (0.031)		8.960 (0.038)		9.196 (0.041)	
IM5660	9.035 (0.031)		8.943 (0.036)		9.115 (0.040)	
IM6165	9.000 (0.032)		8.967 (0.037)		9.169 (0.040)	
IM6670	8.983 (0.028)		8.916 (0.034)		9.126 (0.035)	
IM7175	8.879 (0.027)		8.862 (0.033)		9.097 (0.034)	
IM7680	8.836		8.745		9.004	

	(0.027)	(0.320)	(0.034)
IM8185	8.776	8.677	8.902
	(0.028)	(0.326)	(0.034)
IM8690	8.603	8.563	8.820
	(0.026)	(0.030)	(0.031)
IM9195		8.402	8.728
		(0.030)	(0.030)
IM9600			8.660
			(0.031)
R ²	0.263	0.259	0.239
Sample Size	32752	139148	30950
		126982	34968
			139254

NOTES: 100% sample of immigrants and Canadian-born individuals are used. 'Immigrants' refers to immigrant only regression. 'Natives' refers to native Canadian only regression. The sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian-born workers. 'H119' denotes hours worked between 1 and 19, and 'H50P' denotes hours worked of 50 or more (weekly). Similar definitions apply to 'H2029', 'H3034', 'H3539', and 'H4549'. 'W4048' refers weeks worked between 40 and 48 (annually). The immigrant regressions do not have an intercept, so the R² is not defined. Standard errors are in parentheses. All available records for immigrants and Canadian-born individuals are used.

TABLE B9 Estimates of earnings functions for women, dependent variables: log earnings in previous year (1990 dollars) - OLS analysis including black ethnicity variable

	1991 Census Immigrants	Native	1996 Census Immigrants	Native	2001 Census Immigrants	Native
Intercept		7.848 (0.015)		7.601 (0.017)		7.726 (0.016)
Education	0.056 (0.002)	0.101 (0.001)	0.061 (0.002)	0.106 (0.001)	0.059 (0.002)	0.101 (0.001)
Experience	0.035 (0.002)	0.060 (0.001)	0.038 (0.002)	0.066 (0.001)	0.036 (0.002)	0.064 (0.001)
Experience ²	-0.0006 (0.000)	-0.001 (0.000)	-0.0006 (0.000)	-0.001 (0.000)	-0.0007 (0.000)	-0.001 (0.000)
H119	-0.608 (0.022)	-0.672 (0.010)	-0.676 (0.023)	-0.697 (0.010)	-0.675 (0.024)	-0.737 (0.010)
H2029	-0.372 (0.021)	-0.342 (0.009)	-0.397 (0.022)	-0.351 (0.010)	-0.389 (0.022)	-0.413 (0.009)
H3034	-0.126 (0.024)	-0.122 (0.010)	-0.134 (0.025)	-0.163 (0.011)	-0.180 (0.025)	-0.207 (0.010)
H3539	0.214 (0.014)	0.218 (0.006)	0.175 (0.017)	0.201 (0.007)	0.157 (0.016)	0.145 (0.007)
H4549	0.199 (0.029)	0.207 (0.014)	0.213 (0.028)	0.229 (0.013)	0.194 (0.026)	0.241 (0.012)
H50P	0.119 (0.022)	0.074 (0.010)	0.099 (0.021)	0.120 (0.010)	0.127 (0.020)	0.143 (0.009)
W4048	-0.166 (0.013)	-0.194 (0.007)	-0.123 (0.015)	-0.175 (0.007)	-0.136 (0.014)	-0.160 (0.007)
Married	0.010 (0.012)	-0.021 (0.005)	0.033 (0.013)	0.022 (0.006)	0.064 (0.012)	0.030 (0.006)
Black	0.005 (0.023)	-0.121 (0.055)	-0.027 (0.023)	-0.057 (0.041)	-0.080 (0.021)	-0.050 (0.032)
IM46P	8.689 (0.079)		8.785 (0.170)		8.804 (0.196)	
IM4655	8.760 (0.038)		8.639 (0.046)		8.780 (0.048)	
IM5660	8.766 (0.037)		8.596 (0.045)		8.777 (0.046)	
IM6165	8.737 (0.037)		8.583 (0.044)		8.780 (0.045)	
IM6670	8.762 (0.034)		8.638 (0.041)		8.747 (0.041)	
IM7175	8.700 (0.033)		8.595 (0.039)		8.722 (0.039)	
IM7680	8.606		8.502		8.666	

	(0.033)	(0.039)	(0.039)	
IM8185	8.554	8.455	8.600	
	(0.034)	(0.039)	(0.038)	
IM8690	8.463	8.338	8.503	
	(0.032)	(0.037)	(0.036)	
IM9195		8.169	8.394	
		(0.036)	(0.035)	
IM9600			8.303	
			(0.036)	
R ²	0.239	0.250	0.240	
Sample Size	25160	110541	24813	107226
			29365	120657

NOTES: 100% sample of immigrants and Canadian-born individuals are used. 'Immigrants' refers to immigrant only regression. 'Natives' refers to native Canadian only regression. The sample consists of individuals age 16-24, who worked at least 40 weeks and with positive earnings. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian-born workers. 'H119' denotes hours worked between 1 and 19, and 'H50P' denotes hours worked of 50 or more (weekly). Similar definitions apply to 'H2029', 'H3034', 'H3539', and 'H4549'. 'W4048' refers weeks worked between 40 and 48 (annually). The immigrant regressions do not have an intercept, so the R² is not defined. Standard errors are in parentheses.

TABLE B10 Summary table: estimated coefficients for black ethnicity variable in Canadian-born regressions							
Men				Women			
<u>1991 census- 100% sample</u>				<u>1991 census- 100% sample</u>			
coefficients	Standard error	P value	Total sample size	coefficients	Standard error	P value	Total sample size
-0.210	0.053	0.000	139148	-0.121	0.055	0.027	110541
<u>1996 census- 100% sample</u>				<u>1996 census- 100% sample</u>			
coefficients	Standard error	P value	Total sample size	coefficients	Standard error	P value	Total sample size
-0.157	0.039	0.000	126982	-0.057	0.041	0.168	107226
<u>2001 census- 100% sample</u>				<u>2001 census- 100% sample</u>			
coefficients	Standard error	P value	Total sample size	coefficients	Standard error	P value	Total sample size
-0.179	0.031	0.000	139254	-0.050	0.032	0.120	120657
<u>1991 census- 20% sample</u>				<u>1991 census- 20% sample</u>			
coefficients	Standard error	P value	Total sample size	coefficients	Standard error	P value	Total sample size
-0.184	0.110	0.093	30072	-0.253	0.123	0.040	23856
<u>1996 census- 20% sample</u>				<u>1996 census- 20% sample</u>			
coefficients	Standard error	P value	Total sample size	coefficients	Standard error	P value	Total sample size
-0.075	0.086	0.388	27534	0.009	0.094	0.922	23261
<u>2001 census- 20% sample</u>				<u>2001 census- 20% sample</u>			
coefficients	Standard error	P value	Total sample size	coefficients	Standard error	P value	Total sample size
-0.095	0.066	0.150	30144	0.042	0.065	0.524	25954

NOTES: Results for 100% sample are based on appendix table B8 and B9. Statistically significant at the 5% level.

TABLE B11 Estimates of earnings functions for men, dependent variables: log earnings in previous year (1990 dollars)- OLS analysis including visible minority variable

	1991 Census Immigrants	Native	1996 Census Immigrants	Natives	2001 Census Immigrants	Natives
Intercept		8.380 (0.012)		8.189 (0.014)		8.349 (0.013)
Education	0.052 (0.001)	0.075 (0.001)	0.056 (0.001)	0.078 (0.001)	0.054 (0.001)	0.074 (0.001)
Experience	0.044 (0.002)	0.067 (0.001)	0.042 (0.002)	0.071 (0.001)	0.033 (0.002)	0.065 (0.001)
Experience ²	-0.0007 (0.000)	-0.001 (0.000)	-0.0007 (0.000)	-0.001 (0.000)	-0.0006 (0.000)	-0.001 (0.000)
H119	-0.449 (0.030)	-0.675 (0.013)	-0.544 (0.030)	-0.779 (0.014)	-0.704 (0.032)	-0.844 (0.014)
H2029	-0.415 (0.031)	-0.477 (0.013)	-0.546 (0.031)	-0.521 (0.014)	-0.554 (0.033)	-0.589 (0.014)
H3034	-0.209 (0.029)	-0.200 (0.013)	-0.298 (0.031)	-0.295 (0.014)	-0.326 (0.032)	-0.326 (0.014)
H3539	0.069 (0.014)	0.068 (0.007)	0.082 (0.018)	0.055 (0.008)	0.063 (0.019)	0.028 (0.008)
H4549	0.109 (0.017)	0.134 (0.008)	0.152 (0.018)	0.159 (0.009)	0.176 (0.019)	0.168 (0.009)
H50P	0.080 (0.012)	0.019 (0.005)	0.074 (0.013)	0.068 (0.006)	0.111 (0.013)	0.128 (0.006)
W4048	-0.118 (0.012)	-0.103 (0.006)	-0.142 (0.013)	-0.097 (0.007)	-0.137 (0.013)	-0.066 (0.006)
Married	0.225 (0.012)	0.237 (0.005)	0.167 (0.013)	0.223 (0.005)	0.173 (0.012)	0.217 (0.005)
V. minority	-0.153 (0.011)	-0.077 (0.018)	-0.192 (0.012)	-0.081 (0.021)	-0.198 (0.011)	-0.079 (0.017)
IM46P	8.912 (0.063)		8.933 (0.129)		9.176 (0.188)	
IM4655	9.042 (0.031)		8.957 (0.038)		9.196 (0.041)	
IM5660	9.033 (0.030)		8.942 (0.036)		9.118 (0.039)	
IM6165	9.007 (0.030)		8.979 (0.036)		9.180 (0.039)	
IM6670	9.008 (0.028)		8.951 (0.034)		9.159 (0.035)	
IM7175	8.936 (0.028)		8.941 (0.033)		9.176 (0.034)	
IM7680	8.906		8.838		9.098	

	(0.028)	(0.032)	(0.034)
IM8185	8.854	8.774	9.007
	(0.028)	(0.033)	(0.034)
IM8690	8.691	8.675	8.932
	(0.027)	(0.031)	(0.032)
IM9195		8.518	8.850
		(0.031)	(0.031)
IM9600			8.781
			(0.032)
R ²	0.263	0.259	0.239
Sample Size	32752	30950	34968
	139148	126982	139254

NOTES: 100% sample of immigrants and Canadian-born individuals are used. 'Immigrants' refers to immigrant only regression. 'Natives' refers to native Canadian only regression. V. minority denotes visible minority. The sample consists of individuals age 16-24, who worked at least 40 weeks and with positive earnings. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian-born workers. 'H119' denotes hours worked between 1 and 19, and 'H50P' denotes hours worked of 50 or more. Similar definitions apply to 'H2029', 'H3034', 'H3539', and 'H4549'. 'W4048' refers weeks worked between 40 and 48. The immigrant regressions do not have an intercept, so the R² is not defined. Standard errors are in parentheses.

TABLE B12 Estimates of earnings functions for women, dependent variables: log earnings in previous year (1990 dollars) - OLS analysis including visible minority variable

	1991 Census Immigrants	Native	1996 Census Immigrants	Native	2001 Census Immigrants	Native
Intercept		7.847 (0.015)		7.600 (0.017)		7.723 (0.016)
Education	0.056 (0.002)	0.101 (0.001)	0.061 (0.002)	0.106 (0.001)	0.059 (0.002)	0.101 (0.001)
Experience	0.035 (0.002)	0.060 (0.001)	0.038 (0.002)	0.066 (0.001)	0.035 (0.002)	0.064 (0.001)
Experience ²	-0.0006 (0.000)	-0.001 (0.000)	-0.0006 (0.000)	-0.001 (0.000)	-0.0007 (0.000)	-0.001 (0.000)
H119	-0.608 (0.022)	-0.672 (0.010)	-0.678 (0.023)	-0.697 (0.010)	-0.682 (0.024)	-0.737 (0.010)
H2029	-0.372 (0.021)	-0.342 (0.009)	-0.340 (0.022)	-0.351 (0.009)	-0.396 (0.022)	-0.413 (0.009)
H3034	-0.127 (0.024)	-0.121 (0.010)	-0.135 (0.025)	-0.163 (0.011)	-0.187 (0.025)	-0.207 (0.010)
H3539	0.214 (0.014)	0.218 (0.006)	0.175 (0.017)	0.201 (0.007)	0.153 (0.016)	0.145 (0.007)
H4549	0.198 (0.029)	0.207 (0.014)	0.213 (0.028)	0.229 (0.013)	0.191 (0.026)	0.242 (0.012)
H50P	0.119 (0.022)	0.075 (0.010)	0.098 (0.021)	0.121 (0.010)	0.125 (0.020)	0.143 (0.009)
W4048	-0.166 (0.013)	-0.194 (0.007)	-0.122 (0.015)	-0.175 (0.007)	-0.134 (0.014)	-0.160 (0.007)
Married	0.010 (0.012)	-0.021 (0.005)	0.035 (0.013)	0.022 (0.006)	0.068 (0.012)	0.030 (0.006)
V. minority	-0.001 (0.012)	-0.005 (0.021)	-0.025 (0.013)	0.011 (0.022)	-0.081 (0.013)	0.029 (0.018)
IM46P	8.689 (0.079)		8.785 (0.170)		8.809 (0.196)	
IM4655	8.760 (0.038)		8.638 (0.046)		8.786 (0.048)	
IM5660	8.767 (0.037)		8.596 (0.045)		8.785 (0.046)	
IM6165	8.737 (0.037)		8.584 (0.044)		8.809 (0.045)	
IM6670	8.762 (0.034)		8.642 (0.041)		8.766 (0.041)	
IM7175	8.701 (0.033)		8.603 (0.039)		8.759 (0.040)	
IM7680	8.607		8.512		8.710	

	(0.034)	(0.039)	(0.039)
IM8185	8.555	8.466	8.646
	(0.034)	(0.040)	(0.039)
IM8690	8.464	8.351	8.556
	(0.033)	(0.038)	(0.037)
IM9195		8.184	8.450
		(0.038)	(0.037)
IM9600			8.359
			(0.038)
R ²	0.239	0.250	0.240
Sample Size	25160	110541	24813
		107226	29365
			120657

NOTES: 100% sample of immigrants and Canadian-born individuals are used. 'Immigrants' refers to immigrant only regression. 'Natives' refers to native Canadian only regression. V. minority denotes visible minority. The sample consists of individuals age 16-24, who worked at least 40 weeks and with positive earnings. The cohort years of arrival are: before 1946, 1946-1955, 1956-1960, 1961-1965, 1966-1970, 1971-1975, 1976-1980, 1981-1985, 1986-1990, 1991-1995, 1996-2000. 'Natives' indicates Canadian-born workers. 'H119' denotes hours worked between 1 and 19, and 'H50P' denotes hours worked of 50 or more. Similar definitions apply to 'H2029', 'H3034', 'H3539', and 'H4549'. 'W4048' refers weeks worked between 40 and 48. The immigrant regressions do not have an intercept, so the R² is not defined. Standard errors are in parentheses.

TABLE B13 Summary table: cross-sectional estimates of assimilation (returns to five years in Canada)

For men		1991 census			1996 census			2001 census		
Time in Canada	Difference in cohort coefficients	Assimilation	Difference in cohort coefficients	Assimilation	Difference in cohort coefficients	Assimilation	Difference in cohort coefficients	Assimilation		
36-40 years	...	...	...	...	IM5660- IM6165	...	IM5660- IM6165	-0.054 (0.033)		
31-35 years	...	...	IM5660- IM6165	-0.024 (0.027)	IM6165- IM6670	...	IM6165- IM6670	0.043 (0.028)		
26-30 years	IM5660- IM6165	0.035 (0.020)	IM6165- IM6670	0.051 (0.024)	IM6670- IM7175	...	IM6670- IM7175	0.029 (0.021)		
21-25 years	IM6165- IM6670	0.017 (0.019)	IM6670- IM7175	0.054 (0.019)	IM7175- IM7680	...	IM7175- IM7680	0.093 (0.021)		
16-20 years	IM6670- IM7175	0.104 (0.015)	IM7175- IM7680	0.117 (0.020)	IM7680- IM8185	...	IM7680- IM8185	0.102 (0.023)		
11-15 years	IM7175- IM7680	0.043 (0.017)	IM7680- IM8185	0.068 (0.022)	IM8185- IM8690	...	IM8185- IM8690	0.082 (0.022)		
6-10 years	IM7680- IM8185	0.060 (0.020)	IM8185- IM8690	0.114 (0.022)	IM8690- IM9195	...	IM8690- IM9195	0.092 (0.018)		
First 5 years	IM8185- IM8690	0.173 (0.020)	IM8690- IM9195	0.161 (0.020)			IM9195-IM9600	0.068 (0.019)		
For women										
36-40 years	...	...	...	...	IM5660- IM6165	...	IM5660- IM6165	-0.003 (0.038)		
31-35 years	...	...	IM5660- IM6165	0.013 (0.032)	IM6165- IM6670	...	IM6165- IM6670	0.003 (0.032)		
26-30 years	IM5660- IM6165	0.029 (0.025)	IM6165- IM6670	-0.055 (0.027)	IM6670- IM7175	...	IM6670- IM7175	0.025 (0.023)		
21-25 years	IM6165- IM6670	-0.025 (0.022)	IM6670- IM7175	0.043 (0.021)	IM7175- IM7680	...	IM7175- IM7680	0.056 (0.023)		
16-20 years	IM6670- IM7175	0.062 (0.018)	IM7175- IM7680	0.093 (0.022)	IM7680- IM8185	...	IM7680- IM8185	0.066 (0.025)		
11-15 years	IM7175- IM7680	0.094 (0.019)	IM7680- IM8185	0.047 (0.025)	IM8185- IM8690	...	IM8185- IM8690	0.097 (0.023)		
6-10 years	IM7680- IM8185	0.052 (0.023)	IM8185- IM8690	0.117 (0.024)	IM8690- IM9195	...	IM8690- IM9195	0.109 (0.020)		
First 5 years	IM8185- IM8690	0.091 (0.023)	IM8690- IM9195	0.169 (0.023)			IM9195-IM9600	0.091 (0.022)		

Notes: 'IM' indicates an immigrant arrival cohort. Cross-sectional estimates are measured as the difference between the estimated dummy variable coefficients for two adjacent cohorts. The cross-sectional estimates are based on the Table B8 and Table B9. In any given year, the sample consists of individuals aged 16-24 years, who worked at least 40 weeks and with positive earnings. Control variables are experience, experience square, years of schooling, black race indicator, marital status, and indicators for hours and weeks works. Standard errors are in parentheses.