

THE ECONOMIC PERFORMANCE OF IMMIGRANTS WITH CANADIAN EDUCATION

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Abstract: According to the literature on the economic situation of immigrants, non-recognition of human capital acquired outside of the host country is one of the greatest challenges that immigrants have to overcome when they arrive in Canada. This article exploits data from a Canadian survey conducted in 2005 involving postsecondary graduates from the Class of 2000 in order to determine whether obtaining a Canadian diploma or degree helps eliminate wage gaps between immigrants and native-born Canadians. The advantage of using these data is that they allow for a comparison of groups who were educated under the same education system and entered the labour market at the same time. Essentially, our results show that age at immigration is an important determinant of labour market integration even after obtaining a Canadian diploma or degree. Those who immigrated at a very young age obtained comparable -- and even, in the case of men, higher -- wages than Canadian-born graduates. For immigrants who arrived as adults (i.e., at age 18 or older), the results reveal, all things being equal, a negative wage gap of 17% for men and 5.2% for women, relative to Canadian-born men and women. Econometric analyses also confirm the important impact of source region on the wages of immigrants who arrived as adults. Immigrants coming from Asia, the principal source of immigration to Canada, have a substantial wage disadvantage, in the case of both men and women. To conclude, the fact of returning to school after immigration and obtaining a Canadian diploma or degree does not guarantee that wage gaps with native-born Canadians will be eliminated; however, immigrant women do relatively better than immigrant men.

Keywords : Immigrants, Canada

1. Introduction

Each year, Canada admits a great number of immigrants, that is, between 2005 and 2012, an average of 255,000 new permanent residents per year (CIC, 2012). In 2011, Canada had a foreign-born population of about 6,775,800 people, representing 20.6% of the total population (Statistics Canada, 2013). While some authors question the pertinence of admitting such a great number of immigrants every year despite labour market fluctuations (Green and Green, 2004), others have found that, in a context marked by population aging and skilled labour shortages, these levels of immigration will result in positive consequences in the long term for both the economy and the labour market (Fougère et al., 2005). Since the late 1960s, Canada has applied immigrant selection policies based on criteria that predict successful integration into the Canadian labour market (Green and Green, 1996). Previously, Canada had implemented a selective immigration policy based on country of origin. Changes were introduced in the early 1990s in order to raise the educational level of new immigrants and increase the focus on economic immigration (Picot, Hou and Coulombe, 2007). However, many studies have shown that labor market outcomes of immigrants has greatly deteriorated in recent years despite the increase in their skill level (Aydemir and Skuterud, 2005; Boudarbat and Boulet, 2007; Frenette & Morissette, 2003; Picot, 2008). There have been major changes over the past 40 years in terms of which countries immigrants are coming from and this has emerged as an important determinant of the deterioration in their labour market outcomes (Baker &

Benjamin, 1994; Green & Worswick, 2004; Aydemir and Skuterud; 2005). In 2011, the proportion of immigrants who came from Asia (including the Middle East) was 56.9% among immigrants who arrived to Canada between 2006 and 2011, compared to only 8.5% among those who settled in Canada before 1971. These proportions were 13.7% and 78.3% respectively for those coming from Europe (Statistics Canada, 2013).

This substantial change in the source regions of new immigrants has led to difficulties regarding the recognition of pre-migration education and work experience in the Canadian labour market (Aydemir & Skuterud, 2005; Ferrer & Riddell, 2008; Frenette & Morissette, 2003; Green & Worswick, 2004; Reitz, 2001; Schaafsma & Sweetman, 2001; Statistics Canada, 2006; Sweetman & McBride, 2004). In fact, competencies acquired in some regions of the world have become less valued than that acquired in Canada (Bonikowska, Green and Riddell, 2008). On this subject, Gilmore and Le Petit (2008) examined the relationship between the country in which a person's highest postsecondary diploma or degree was received and his/her situation in the Canadian labour market in 2007. They found that employment rates among immigrants who had been admitted into Canada more than five years earlier and who had obtained their highest university degree in Canada or Europe were comparable to those for native-born Canadians and higher than those for immigrants who had obtained their qualifications in Latin America, Asia or Africa.

The non-recognition of foreign qualifications could be explained by a combination of factors: some authors defend the idea that the value of human capital acquired outside of Canada sometimes really is of lower value, and other authors maintain that the problem has more to do with recognition of this human capital. According to authors in the first group, the great heterogeneity of the human capital of new immigrants and its specificity to the country in which it was acquired appear to be an explanatory factor for the lower value attached to it (Friedberg, 2000; Chiswick and Miller, 2007; Bonikowska, Green and Riddell, 2008). Moreover, Sweetman (2004) maintained that the quality of education systems is poorer in some new countries of origin, which justifies the lower value attributed to foreign diplomas or degrees. Similarly, Bonikowska et al. (2008) pointed out differences in cognitive skills between immigrants and native-born Canadians. According to these authors, these differences partly explain the wage gaps observed between the two groups. In the second group, where the lower value attributed to human capital acquired outside of Canada is called into question, Ferrer and Riddell (2008) suggested that Canadian employers might have limited information on foreign educational institutions, which restricts their capacity to adequately recognize the value of diplomas or degrees acquired outside of Canada. Grant (2005), for his part, maintained that Canadian employers tend to devalue foreign qualifications with which they are not familiar. Other authors (Anisef and al., 2003; Reitz, 2005, for instance) have underlined the inadequacy of the mechanisms used to evaluate the level of education and other employability criteria for a great number of immigrants, while other authors blame discriminatory behaviour towards certain groups of immigrants (Oreopoulos, 2009; Chicha and Charest, 2008).

Furthermore, studies have shown that it is easier for immigrants who arrive early in life to integrate into the Canadian labour market than for those who arrive as adults (Anisef and al., 2003; Cousineau and Boudarbat, 2009). Immigrants who arrive before adulthood presumably pursue their studies in Canada and develop better language skills compared to immigrants who arrive later in life. The former thus do not experience difficulties having their diplomas or degrees recognized and they are knowledgeable about how the host

labour market operates. Under these circumstances, they should perform better in the labour market than immigrants who arrive as adults.

To better adjust to the reality of the Canadian labour market, many immigrants who are admitted into Canada as adults return to school to obtain a Canadian diploma or degree. In 2007, nearly one-fifth of recent immigrants (i.e., those who had arrived less than five years earlier) aged 25 to 54 attended schools in Canada although they already had a university degree (Gilmore and Le Petit, 2008). According to Banerjee and Verma (2009), new immigrants whose foreign work experience was not recognized by Canadian employers were most likely to return to school in Canada. Consequently, these studies suggest that returning to school in Canada appears to be a strategy used by many immigrants to make up for the low recognition of the education they acquired outside this country. This adjustment strategy seems to be effective since the acquisition of post-migration education appears to have a positive effect on the wages of immigrants in Canada (Banerjee and Verma, 2009).

At the international level, Hawthorne (2008) found that it was very advantageous for young immigrants in Australia to hold an Australian diploma or degree rather than a foreign one. In the United States, immigrants who return to school after arriving in the host country, earn higher wages than immigrants who hold only a foreign diploma or degree (Brastberg and Ragan, 2002). In the United States again, Zeng and Xie (2004) found that Asian immigrants who completed their studies outside the U.S. earned significantly less than native-born Asian-Americans or Asian immigrants who studied in the United States. Also, in Israel, education acquired outside the country is on the whole less valued than that acquired domestically, which results in income gaps between immigrants and native-born Israelis (Friedberg, 2000). The author also found that post-migration education was one of the factors which improve the economic situation of immigrants. In addition, Storen and Wiers-Jenssen's study (2010) on the Norwegian labour market indicates that immigrants who did not study in Norway were more likely to be unemployed or to hold low quality jobs. In the case of Sweden, Duvander (2001) arrived at the conclusion that acquiring skills that are specific to the host country improves immigrants' labour market outcomes, while not completely eliminating the disadvantages faced by immigrants compared to native-born Swedes.

To sum up, in Canada as elsewhere in the world, immigrants from some source regions find it difficult to have their pre-migration human capital recognized, which results in a downgrading of the value attached to their human capital, in particular in terms of wages and access to jobs. Whether the lower value attributed to qualifications acquired outside of Canada is justified by truly lower capacities or whether it is due to inadequate evaluation on the part of labour market actors, obtaining a diploma or degree in Canada should therefore help turn this situation around. Within the framework of this article, our study examines the effects of acquiring a Canadian education on the economic situation of immigrants in Canada. More specifically, the study involves determining whether immigrants who returned to school to obtain a Canadian diploma or degree integrate just as effectively into the labour market as do graduates who were born in Canada. To this end, the study will draw on data from the Follow-up Survey of Graduates, Class of 2000. This survey was conducted in 2005, and is the last follow-up survey conducted by Statistics Canada to date. Following numerous existing studies (for instance, Aydemir & Skuterud, 2005; Boudarbat and Boulet, 2007; Hum & Simpson, 2004; McDonald & Worswick, 1998;

Picot, 2004), we will focus on the wage gaps between immigrants and native-born Canadians.

The rest of this article is divided into two main sections. The first section presents the data used and the analyses to be conducted. The second section sets out the main results of the descriptive and multivariate analyses. Following the analysis, the conclusion will highlight the major findings that emerge from this study and suggest possible courses of action.

2. Data and empirical analyses

The data used to conduct this research were drawn from the Canadian National Graduates Survey (NGS), Class of 2000, and relate to 2005. The target population of this survey is made up of graduates from Canadian public postsecondary education institutions (universities, colleges, trade schools) who graduated or completed the requirements for degrees, diplomas or certificates during the reference calendar year (2000) (Statistics Canada, 2007). The NGS was administered twice: first, two years after graduation (in 2002 for the graduating class of 2000); and, second, three years after the first (in 2005, referred to as the follow-up survey). Graduates from trade schools and vocational schools were excluded from the follow-up survey conducted in 2005, whereas they were included in the 2002 survey.

Since it was first inaugurated, the NGS has dealt with postsecondary graduates from the classes of 1982, 1986, 1990, 1995 and 2000. However, it was only starting with the Class of 2000 survey, used in this study, that immigrants could be identified. Previously, information on immigrant status was not collected. Using data from the NGS provides two important advantages. First, all individuals in the sample, native-born or immigrant, have a Canadian diploma or degree. Second, the data relate to the same cohort of graduates, immigrant or native-born, who were educated under the same system and completed their studies at the same time.

Since the sample used comes from the follow-up survey (2nd administration in 2005), it is possible to examine the situation of graduates in the Canadian labour market five years after graduation. As mentioned above, there was no follow up of graduates from trade schools. Consequently, the sample includes only respondents with a college diploma or a university degree. For the purposes of this study, graduates living outside the ten Canadian provinces as well as those who returned to school and received a new diploma or degree after the one obtained in 2000 were excluded. Thus, only graduates who had been devoting their efforts to integrating into the labour market since 2000 were selected. In this respect, the data reveal that nearly 90% of graduates who had not obtained a new diploma or degree were already employed, less than a year after graduation in 2000.

Moreover, only graduates who were in paid employment during the survey reference week and aged under 65 were selected. In total, the final sample was made up of 13,365 postsecondary graduates, 11,982 of whom were born in Canada and 1,383 of whom were immigrants.¹ Among the immigrants, 40% arrived in Canada before the age of 18.² Considerable importance was attributed to age at immigration because, as stated above,

¹ An immigrant is a person who was born outside of Canada and to whom immigration authorities have granted the right to reside in Canada permanently.

² NGS data indicate that 18 years old is the youngest age at which young people begin to receive a postsecondary diploma or degree in Canada. Consequently, we can presume that even immigrants who arrived slightly before age 18 do not hold a foreign postsecondary diploma or degree.

this factor has emerged in the literature as a determinant of immigrants' labour market integration. Those who immigrate at a very young age have better labour market outcomes than those who immigrate as adults.

As earnings are an indicator that is frequently used in the literature when studying the economic situation of immigrants, this variable was targeted in the empirical analyses. Our goal was to evaluate the earnings gap between native-born Canadians and immigrants who studied in Canada after controlling for various characteristics associated with earnings. As regards the measurement of earnings, the hourly wages earned for the job held during the reference week was the indicator used, because this makes it possible to control for differences in work intensity. To make the analysis of differences between groups easier, the logarithm of hourly wages was used as a dependent variable in the regressions, so that differentials could be expressed in terms of percentages.

In accordance with our goal, immigration status is the main independent variable. The latter is made up of two dichotomous subvariables: the first takes the value 1 if the graduate is an immigrant who landed before the age of 18, and 0 otherwise; the second takes the value 1 if the graduate is an immigrant who landed at age 18 or older, and 0 otherwise. Coefficients of these two variables should be interpreted as an approximation of the mean wage gap expressed as a percentage, as compared to Canadian-born graduates.

As for the other explanatory variables for wages, those which usually have a determining influence on earnings, such as level of study, field of study and years of work experience were considered. The match between the job found and the study program completed is also taken into account since some studies (Robst, 2007; and Boudarbat and Montmarquette, 2009) have found a positive relationship between this variable and wage level. Moreover, based on the literature cited above which underlined the major role played by the source region of immigrants, this variable was also included in the econometric model. Thus, the following regions are created for the purposes of analysis: (1) Western Europe – United States, (2) Eastern Europe, (3) Africa, (4) Asia, (5) Central and Southern America, and (6) Other.

As regards level of study, four categories are considered: (1) college diploma, (2) Bachelor's degree, (3) Master's, and (4) Doctorate. As regards work experience, the NGS collects data on the number of years of full-time work experience before graduation. This number is thus taken into account in the regressions. However, we make no distinction between foreign work experience and that acquired in Canada, for two reasons. First, such a distinction could not be made based on the NGS. Second, and contrary to what might be thought, a great proportion of immigrant graduates who arrived as adults (37%) had no previous full-time work experience. This compares to 30% for native-born Canadians and 44% for immigrants who arrived before the age of 18. Moreover, the gaps between immigrants and native-born Canadians were quite small in terms of number of years of full-time work experience. In fact, the average number of years of full-time work experience for immigrants (who arrived as adults) before graduation is approximately 5, representing less than a year (0.9) more than the average for native-born Canadians. Although foreign and domestic work experience could not be differentiated, additional tests were conducted, leading us to conclude that our results and the conclusions flowing from them were robust regarding work experience.³

³ Following a number of existing studies (for example, Aydemir and Skuterud, 2005; Boudarbat and Boulet, 2007), potential experience was calculated based on age and level of highest diploma or degree. In the case of immigrants who arrived as adults, additional tests were conducted to distinguish between potential foreign

Province of residence also figures among the covariates taken into account in the study, given the differences that exist between provincial labour markets. Three provinces with high levels of immigration (Quebec, Ontario and British Columbia) are each considered separately and the remaining provinces are grouped together into two large regions: Atlantic Canada (New Brunswick, Nova Scotia, Prince Edward Island and Newfoundland and Labrador) and the Prairies (Saskatchewan, Manitoba and Alberta). Lastly, wage equations are estimated by ordinary least squares (OLS) separately for each gender so that the differentiated socio-economic realities between men and women are taken into account.

3. Empirical Results

3.1 Descriptive Analyses: A summary of the main characteristics of the sample is presented in Table 1. This table highlights differences between native-born Canadians and immigrants, in several respects. For example, the percentage of women is relatively higher among graduates born in Canada (59.9%) than among graduates who arrived as adult immigrants (52.7%). In interpreting the data for immigrants who arrived as adults, the reader should keep in mind that only immigrants who obtained a diploma or degree after immigration were included. When all immigrants in Canada are considered, statistics from Citizenship and Immigration Canada show that the proportion of women among newly arrived immigrants holding a postsecondary diploma or degree is continually rising. This proportion rose from 46% in 2000 to 53% in 2008 (CIC, 2009). Another important fact to consider relates to age at graduation. Immigrants who landed as adults obtained their Canadian diploma or degree at a much older age than native-born Canadians or immigrants who landed at a younger age (34 versus 27 years of age, on average). Nevertheless, although immigrants who arrived as adults were, on average, much older than native-born Canadians at the time of graduation, the former only had 0.9 more years of full-time work experience at this time than native-born Canadians. This small difference in years of work experience despite the age gap could be explained by the fact that immigrants who landed as adults spent part of their lives doing their studies over again or that they were less likely to work full-time while studying. Also, the three groups differ with regard to the field of study they chose as well as the level of education completed in 2000. In fact, a higher percentage of immigrants who arrived as adults completed post-graduate studies. Indeed, 57.9% of immigrants who arrived before the age of 18 obtained a Bachelor's degree compared to 44.3% of native-born Canadians and 37.4% of immigrants who arrived as adults. However, 29.3% of the latter obtained a post-graduate degree (Master's or Doctorate) compared to 10.3% of immigrants who arrived before the age of 18 and 13.9% of native-born Canadians. It could be postulated that immigrants who arrived as adults were more likely to have obtained a postsecondary diploma or degree before arriving in Canada. The field of study chosen also varied widely for the three groups under study. Native-born Canadians were twice as likely to pursue studies in the field of education (14.5%) than were immigrants who arrived before the age of 18 (7.6%) or those who arrived at age 18 or older (6%). Immigrants who arrived before adulthood were more likely to pursue studies in the humanities or social sciences (29.5%) than were native-born Canadians (18.5%) or immigrants who arrived as adults (11.6%). The latter were more inclined to study architecture, engineering, math, or computer and information sciences

experience and potential experience in Canada based on age at immigration. This distinction had very little effect on our conclusions.

(34.1%) than were immigrants who arrived before the age of 18 (20.5%) or native-born Canadians (18.4%). It would be useful to further study what motivates immigrants who arrive as adults to pursue studies in the applied sciences and immigrants who arrive before the age of 18 to choose behavioural sciences. Given that job prospects are not the same for all fields of study, understanding the decision-making processes of immigrants with regard to their work-related choices could make it possible to orient them towards more promising fields of study. Immigrants are generally more concentrated geographically than native-born Canadians. In 2006, 73% of all immigrants in Canada lived in two provinces, namely Ontario (55%) and British Columbia (18%), whereas only 46% of the non-immigrant population in Canada lived in these two provinces (Statistics Canada, 2007a). Quebec had the third largest immigrant population; 14% of immigrants had settled in this province in 2006 compared to slightly more than 26% of the non-immigrant population (Ibid). Table 1 demonstrates that our sample reflects this characteristic since the percentages of immigrants who arrived as adults and had settled in Ontario, British Columbia or Quebec were comparable to those observed at the national level in 2006. However, in our sample, as shown in this table, immigrants who were admitted into Canada at a very young age were relatively less numerous in Quebec than in Ontario. In fact, 61.7% of this group lived in Ontario compared to only 8.8% in Quebec. Concerning the distribution of immigrants in our sample by source region, a very high percentage came from Asia (45% of immigrants who arrived before the age of 18 and 46% of those who arrived as adults). These percentages are highly comparable to those observed for the overall recent migration flow. For example, 47.5% of immigrants who were admitted into Canada in 2008 came from Asia or the Pacific region (CIC, 2009). Regarding the characteristics of the jobs found, Table 1 reveals differences in education-job match by immigrant status. In this regard, it can be noted that the education-job match was highest for native-born Canadians (63.8%), followed closely by immigrants who arrived as adults (61.9%) but well above that for immigrants who arrived before the age of 18 (48.6%). According to these results, it appears that immigrants who arrived before the age of 18 have the most difficulty finding a job that matched their studies. As regards hourly wages, the results of the descriptive analyses show that immigrant men who arrived as adults were slightly disadvantaged compared to native-born Canadian men, with an average wage gap of 1.4%, even though the former are relatively more educated. On the other hand, immigrant men who arrived before the age of 18 earned, on average, 2.9% more than male graduates who were born in Canada. However, neither of these two wage gaps is statistically significant. By gender, it can be noted that, in all three groups of graduates under study, women, on average, earned less than men. Nevertheless, compared to men, immigrant women who arrived as adults have a slight wage advantage, on average, over native-born Canadian women (+1.2%) while, again, those who arrived before the age of 18 earned the highest average wages. As was the case for men, these wage gaps between immigrant women and native-born Canadian women are not statistically significant. In conclusion, the mean immigrant-Canadian born (log) wage gap is not significant for both men and women. Lastly, it should be noted that, for both men and women, wages are relatively more dispersed among immigrants who arrived as adults than among members of the two other groups. This result is in line with Gray et al.'s observation (2003) that earnings dispersion was greater among recent immigrants than among native-born Canadians. According to these authors, this is a new development since earnings dispersion among former cohorts of immigrants is comparable to that among native-born Canadians.

3.2. Econometric Results: In this section, we will run standard OLS regressions to see how the mean immigrant-Canadian born wage gap evolves as controls are added. A total of six models are estimated, with the following explanatory variables being gradually added: province of residence, level of study, field of study, work experience, job-education match, and region of birth. The results for men are presented in Table 2 and those for women are presented in Table 3.⁴ Model 1 measures the average hourly wage gap between immigrants and native-born Canadians when only province of residence is controlled for. As mentioned above, the immigrant population is highly concentrated in two Canadian provinces, namely Ontario and British Columbia. Hourly wages in these two provinces are among the highest in Canada (Statistics Canada, 2004). The estimates in Model 1, however, show that this factor does not have a significant effect on the wage gaps between immigrants and native-born Canadians observed above, for either men or women.

Level of study: In Model 2, level of education was added as an explanatory variable for wages. As indicated earlier, immigrants who arrived as adults were more educated than members of the other two groups under study, which may have had an impact on the wage gaps observed. For men, adding the level of study changes the result for immigrants who arrived as adults compared to native-born Canadians. A considerable 12.7% wage disadvantage could now be observed for these immigrants compared to native-born Canadian men, a gap which is statistically significant at 1%. The fact that the gap between this group and native-born Canadian men became negative and highly significant whereas it was not significant in the previous model indicates that, for the same level of education, immigrant men who arrived as adults earn hourly wages that are 12.7% lower, on average, than those earned by native-born men. In other words, the non significant wage gap observed on the surface is due to the fact that immigrants who landed as adults are more educated rather than to an equal treatment on the labour market. The wage advantage of immigrant men who arrived before the age of 18 over native-born Canadian men decreased, but remains non significant. In the case of women, when level of study was controlled for, the wage gap between immigrant women who landed as adults and native-born Canadian women widened to 4.3% and becomes statistically significant at 5%, but this gap can be considered a modest compared to the one observed for men. The situation for women who immigrated before the age of 18 was comparable to that of their male counterparts since their wage advantage over native-born Canadian women decreased while remaining non significant.

Field of Stud: In addition to differences with regard to level of education, descriptive statistics indicate that immigrants who landed as adults select different fields of study than do native-born Canadians. To evaluate the impact of these different choices, field of study was added to the set of covariates (Model 3). This addition increases the wage gap between immigrant men who arrived as adults and native-born Canadian men, bringing it up to 14.7%. This gap is significant at 1%. The increase in the wage gap between this group and native-born Canadian men, compared to the previous model, suggests that immigrant men who arrived at age 18 or older were more likely to have studied in a high-paying field. As for immigrant men who arrived before the age of 18, this group now exhibits a 3.9% wage advantage over native-born Canadian men, a gap which is statistically significant at 10%. As for women, when level of study and field of study are taken into account, the wage gap between immigrant women who arrived as adults and native-born Canadian women widens

⁴ The complete results from these regressions are available from the authors upon request.

from 4.3% (significant at 5%) to 7.0% (significant at 1%). The average hourly wages earned by immigrant women who arrived before the age of 18 is still not significantly different from those earned by native-born Canadian women.

Work Experience: In Model 4, the other dimension of human capital, that is, the number of years of full-time work experience before graduation, was added to the set of covariates already included in the previous model. This addition further increases the wage gap between immigrant men who arrived as adults and native-born Canadian men, from 14.7% to 17.2%. This indicates that for the same wage level, these immigrants appeared to have more work experience than native-born Canadian men or that, for the same number of years of experience, immigrant men who arrived as adults earned 2.5% less. For these immigrants, if work experience obtained before graduation in Canada is considered to have been essentially foreign work experience, this would mean that the return on foreign work experience is lower than that of Canadian experience, as has been concluded in previous studies on this subject (Alboim et al. 2005; Aydemir & Skuterud, 2005; Green & Worswick, 2004). On the other hand, once again, immigrant men who arrived before the age of 18 do better than native-born Canadian men. Their wage advantage now is 4.4% and statistically significant at 5%. As for women, taking account of pre-graduation work experience leads to a very slight decrease in the wage gap between immigrant women who arrived as adults and native-born Canadian women. This gap drops to 6.6% and remains statistically significant at 1%. The average hourly wage earned by immigrant women who arrived before the age of 18 is still not significantly different from that earned by native-born Canadian women.

Education-Job Match: In Model 5, a dichotomous variable indicating whether the job obtained is closely related to the study program completed in 2000 is added to the set of covariates. It should be noted, first of all, that for men, a good match between the job and the studies pursued increases wages by 14.3%, whereas for women, this advantage is as high as 17.2%. These two results are significant at 1%. Adding the education-job match variable slightly decreases the wage gap between immigrant men who arrived as adults and native-born Canadians observed in the previous model. Indeed, in Model 4, immigrant men who arrived as adults have a wage disadvantage of 17.2%, whereas this figure drops to 16.9% when education-job match was taken into account. As for immigrant men who arrived before the age of 18, the wage advantage that they had over native-born Canadian men increases to 4.9%, while remaining statistically significant at 5%. As indicated by the descriptive statistics, native-born Canadian men were relatively more likely to hold a job that matched the studies they pursued. Once this advantage was neutralized, their wages drops, though a very little, compared to male members of the other two groups. With regard to women, the wage advantage of native-born Canadian women over immigrant women who arrived as adults drops from 6.6% to 5.2%. As for immigrant women who arrived before the age of 18, while their wage advantage rises slightly, the gap is still not significant, meaning that their wages do not differ from those of native-born Canadian women.

At this stage, what emerges in particular is the relatively positive situation of immigrant women who arrived as adults compared to their male counterparts, which is in line with the results of some studies showing that the immigrant earnings deterioration has been more pronounced for men than for women (Aydemir and Skuterud, 2005; Boudarbat and Boulet, 2007).

Source Region: In the last model (Model 6), region of origin is added to the set of covariates. The reference group which serves as the basis for comparison is represented by immigrants coming from traditional source regions, namely, Western Europe and the United States. This group of immigrants generally does better on the labour market in Canada and elsewhere even with their foreign skills (Ferrer & Riddell, 2008; Brastberg and Ragan, 2002; Friedberg, 2000). The wage gaps should be interpreted based on this characteristic. Results clearly indicate that Asian immigrants who landed as adults are at a considerable disadvantage in the Canadian labour market compared to other groups, even when they had obtained a Canadian diploma or degree. This is true for both men and women. This result is very important given that almost half of the immigrants who landed as adults are from Asia. As for the other regions, immigrant men from the Central and Southern America are also at a disadvantage in terms of wages (-9%) compared to immigrants from Western Europe and the United States, but this wage gap is significant at 10% only. Overall, immigrant men who landed as adults earn lower wages compared to native-born Canadians regardless of their region of origin. With regard to immigrant men who landed before the age of 18, the wage gap between those coming from Asia or Central and Southern America (the most disadvantaged regions) and the native-born Canadians is not statistically significant. This fact suggests that the return on Canadian schooling greatly depends upon age at immigration. As for immigrant women, we notice the positive situation of women from Eastern Europe, given that their wages were 12.4% higher than those of immigrant women from Western Europe or the United States, a gap which is statistically significant at 1%. Overall, only immigrant women coming from Asia earn lower wages compared to native-born Canadian women regardless of their age at immigration. However, the wage gap is much lower for those who landed before the age of 18. When we differentiate the effect of region of origin by age at immigration in the regression (results not shown), we reach exactly the same conclusions. Finally, we accounted for the method used to obtain employment in the wage equations, since Goel and Lang (2009) find that this variable has an impact on immigrants' labour outcomes. In our sample, graduates obtained their jobs using a variety of methods. However, and interestingly, the distribution of graduates across the used methods is almost the same for immigrants and native-born Canadians. When the method used to find employment is included in the regressions, we obtain almost the same results as those of Model 6.

4. Conclusion

This study aims at determining whether immigrants who obtain a Canadian diploma or degree earn wages which are comparable to those earned by Canadian-born workers. The literature on the economic situation of recent immigrant cohorts in Canada points to a drop in their entry earnings (Green & Worswick, 2004; Aydemir and Skuterud, 2005; Boudarbat and Boulet, 2007; Picot, 2008) compared to the previous cohorts. One important determinant of this situation appears to be the devaluation in the Canadian labour market of skills acquired outside of Canada, in particular, those acquired in non-European countries (Ferrer & Riddell, 2008). We used data from a sample of 13,365 Canadian postsecondary graduates drawn from the Follow-up Survey of Graduates, Class of 2000. This survey was conducted in 2005. The sample includes 1,383 immigrant graduates, 40% of whom arrived in Canada before the age of 18.

Multivariate analyses suggest that age at immigration is a very important determinant of immigrants' wages. Immigrant men and women who landed at age 18 or

older suffer a significant wage disadvantage compared to native-born Canadians, when level of education, field of study, work experience, education-job match, and province of residence are controlled for. However, this disadvantage is more pronounced among immigrant men (-16.9%) than among immigrant women (-5.2%). In contrast, immigrants who arrive at a very young age do just as well, if not better, than Canadian-born graduates. In the case of women, the wage gaps with native-born Canadians are very small and statistically non significant. In the case of men, immigrants who arrive at a very young age earn approximately 5% more than native-born Canadians. Age at immigration thus produces a differentiated effect based on gender. Future studies on the economic situation of immigrants should take this fact into account and determine whether these results also apply to immigrant men and women who do not return to school in Canada.

Moreover, this research confirms the important effect of source region on wage gaps between immigrants and native-born Canadians. It also demonstrates that this disadvantage persists for immigrants even after they have obtained a Canadian diploma. Asian immigrants have previously emerged as the most disadvantaged group in the Canadian labour market (Ferrer & Riddell, 2008). Our results further confirm that this situation does not change for immigrants who landed as adults even with a Canadian diploma or degree. The net disadvantage of Asian immigrants who graduate in Canada compared to immigrants from other regions is difficult to explain given that the variables which generally have an impact on wages were controlled for. Since knowledge of Canada's official languages was not considered in the analyses, it could be presumed that this factor counts for part of the disadvantage. However, the fact of obtaining a diploma or degree from a Canadian postsecondary educational institution attests to a degree of knowledge of at least one of the two official languages in Canada. It should be emphasized that the migration flow to Canada in recent years has been largely dominated by immigrants coming from Asia, which makes their disadvantaged situation all the more worrying. Nevertheless, it should be noted that Asian immigrants make up a highly heterogeneous group and some subgroups may find it more difficult than others to integrate into the labour market. The governments would be well advised to offer settlement and integration services adapted to this clientele. Obviously, further research is needed to discover the particular needs of these immigrants.

To sum up, Canadian schooling is not as advantageous for immigrants who arrive as adults as for those who arrive before the age of 18 or for native-born Canadians. The relatively poorer wage outcomes of these immigrants appear to rule out the explanations which refer to the lower value of their diploma or degree or to problems related to the transfer and recognition of human capital acquired outside of Canada, since their investment in a Canadian education does not guarantee that wage gaps with native-born Canadians will be eliminated. A likely explanation for these results would be discrimination in the labour market. Thus, the intersectionality of ethnic origin and age appears to lead to a wage disadvantage. Further research should be pursued along these lines to gain a better understanding of this undesirable phenomenon, from both an individual perspective, i.e., the immigrants themselves, and a societal perspective.

In the end, there are some limitations that need to be acknowledged regarding the present study. Since this study only examined the situation of immigrants who decided to invest in a Canadian education, we don't know whether these immigrants have an advantage over immigrants with foreign education only. A Canadian education might have higher return compared to foreign education even if it does not completely eliminate the

disadvantages faced by immigrants compared to native-born. Also, if the decision to invest in a Canadian education is correlated with the immigrant's previous situation on the labour market, then the possibility of selection bias should be considered. For example, if immigrants who arrive as adults return to school because they have had difficulty integrating into the Canadian labour market, then it could be presumed that these immigrants have characteristics which will continue to penalize them even once they have obtained a Canadian education. On the other hand, it should be emphasized that the immigrants in our sample met the same requirements as those imposed on native-born Canadians regarding admission to Canadian colleges or universities and graduation. This is an asset which would distinguish them from other immigrants and could in return positively affect their situation in the labour market. Thus, it would be important to conduct an in-depth analysis which takes into account the potential endogeneity of return to school among immigrants. This would require having data which include immigrants who did not return to school and appropriate instruments to model the decision to investment in education.

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Table 1: Descriptive Statistics

	Canadian born	Immigrants who arrived before the age of 18	Immigrants who arrived as adults	Total
Female (%)	59.9	55.7	52.7	59.1
Age at graduation (years):	27.1 (7.7)	27.1 (7.6)	33.7 (8.4)	27.5 (7.9)
Level of study (%)				
College	41.84	31.79	33.35	40.52
Bachelor	44.25	57.87	37.38	44.73
Master	12.51	8.52	21.95	12.90
Doctorate	1.40	1.82	7.31	1.85
Field of study (%)				
Education	14.47	7.63	5.96	13.38
Arts	4.05	3.02	2.93	3.89
Humanities	5.04	7.40	2.78	5.05
Social Sciences & Law	13.50	22.12	8.84	13.78
Business	22.58	22.30	22.94	22.58
Physical and Life sciences	3.80	3.41	6.06	3.93

Mathematics/Computer/Information sciences	6.00	8.00	12.80	6.63
Engineering	12.37	12.51	21.32	13.02
Health sciences	13.04	8.91	13.45	12.78
Other	5.15	4.70	2.93	4.96
Province of residence (%)				
Atlantic Canada	8.27	1.54	1.20	7.30
Quebec	24.08	8.78	15.87	22.41
Ontario	41.25	61.73	54.71	43.65
Prairies	15.43	8.67	8.75	14.48
British-Colombia	10.97	19.28	19.46	12.16
Place of birth (%)				
Western Europe, USA	-	26.83	15.59	2.99
Eastern Europe	-	12.53	11.47	1.69
Africa	-	4.95	7.24	0.86
Asia	-	44.86	45.96	6.39
Central and Southern America	-	10.37	18.50	2.03
Other	-	0.45	1.24	0.12
Job closely related to education %	63.81	48.60	61.89	62.60
Log hourly wage (\$):				
Males	3.226 (0.47)	3.255 (0.46)	3.212 (0.52)	3.227 (0.47)
Females	3.112 (0.46)	3.146 (0.40)	3.124 (0.51)	3.115 (0.46)
Both genders	3.157 (0.46)	3.195 (0.43)	3.165 (0.52)	3.160 (0.47)
Full-time work experience before graduation (years)	3.9	3.4	4.8	4.0
# Observations	11 982	551	832	13 365

Notes: Data is drawn from the Follow-up Survey of Graduates, Class of 2000, conducted in 2005. The sample includes respondents with a college diploma or a university degree, who were living in one of the ten Canadian provinces, did not receive a new diploma or degree since graduation in 2000, were in paid employment during the survey reference week, and were aged under 65 in 2005. Figures in parentheses are standard-deviations.

Table 2: Estimated Earnings Equations of males. (Dependent variable = log hourly wage)

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Immigrated before the age of 18	0.029 (0.024)	0.010 (0.022)	0.039* (0.022)	0.044** (0.021)	0.049** (0.021)	0.112*** (0.032)
Immigrated at age 18 or older	-0.023 (0.023)	-0.127*** (0.022)	-0.147*** (0.021)	-0.172*** (0.021)	-0.169*** (0.021)	-0.069* (0.038)
Level of study (ref.=College):						
Bachelor		0.217*** (0.012)	0.258*** (0.013)	0.281*** (0.013)	0.269*** (0.013)	0.270*** (0.013)
Master		0.542*** (0.018)	0.558*** (0.018)	0.534*** (0.018)	0.512*** (0.018)	0.508*** (0.018)
Doctorate		0.542*** (0.037)	0.615*** (0.037)	0.605*** (0.036)	0.563*** (0.036)	0.561*** (0.036)
Full-time work experience before graduation (Exp)				0.023*** (0.002)	0.024*** (0.002)	0.023*** (0.002)
Exp^2				-0.001*** (0.000)	-0.001*** (0.000)	-0.000*** (0.000)
Job is closely related to education					0.143*** (0.011)	0.145*** (0.011)
Place of birth (ref.= Western Europe, USA):						
Eastern Europe						-0.025 (0.052)
Africa						0.005 (0.064)
Asia						-0.133*** (0.038)
Central and Southern America						-0.090*

						(0.050)
Other						-0.260 (0.171)
Field of study	No	No	Yes	Yes	Yes	Yes
Province	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	5,677					
R-squared	0.02	0.18	0.23	0.25	0.27	0.28

Note: In parentheses are standard-errors. (*), (**) and (***): significant at the level 10, 5 and 1 percent

Table 3: Estimated Earnings Equations of **females**. (Dependent variable = log hourly wage)

	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)
Immigrated before the age of 18	0.015 (0.022)	0.006 (0.019)	0.010 (0.019)	0.006 (0.018)	0.017 (0.018)	0.072*** (0.027)
Immigrated at age 18 or older	-0.008 (0.022)	-0.043** (0.019)	- (0.019)	- (0.018)	- (0.018)	0.000 (0.030)
Level of study (ref.=College):						
Bachelor		0.338*** (0.010)	0.376*** (0.010)	0.381*** (0.010)	0.379*** (0.010)	0.383*** (0.010)
Master		0.608*** (0.015)	0.635*** (0.015)	0.591*** (0.015)	0.580*** (0.014)	0.585*** (0.014)
Doctorate		0.658*** (0.041)	0.735*** (0.040)	0.695*** (0.040)	0.647*** (0.039)	0.648*** (0.039)
Full-time work experience before graduation (Exp)				0.023*** (0.002)	0.024*** (0.002)	0.023*** (0.002)
Exp^2				- (0.000)	- (0.000)	- (0.000)
Job is closely related to education					0.172*** (0.010)	0.168*** (0.010)
Place of birth (ref.= Western Europe, USA):						
Eastern Europe						0.124*** (0.043)
Africa						0.044 (0.058)
Asia						- 0.148*** (0.032)
Central and Southern America						-0.058 (0.039)
Other						-0.177 (0.113)
Field of study	No	No	Yes	Yes	Yes	Yes
Province	Yes	Yes	Yes	Yes	Yes	Yes
# Observations	7,688					
R-squared	0.02	0.24	0.28	0.32	0.35	0.35

Note: In parentheses are standard-errors. (*), (**) and (***): significant at the level 10, 5 and 1 percent