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Impact of Country of birth and Location of Study on Immigrants' Wages in Ontario and Quebec

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Abstract

This paper investigates the effects of country of birth and location of study on immigrants' wages in Canada. It compares immigrants from two different regions of birth (Africa and Asia), two main provinces (Ontario and Quebec) and two broad locations of study (Western and non-Western). It appears from the empirical results that the location of study is a significant discriminating factor for immigrants. Those with a Western highest degree fare better in both Quebec and Ontario for both genders. Also, immigrants fare better in Ontario than Quebec. Western-educated immigrants, particularly, men and also African-born women, do not have any significant wage disadvantages in Ontario when compared to natives. Immigrants of all genders, origins and locations of study are worse off than natives in Quebec (But this conclusion is not robust for Western-educated immigrants). Moreover, wages disadvantages tend to be higher for women then for men immigrants in both provinces. Wages disadvantages are particularly higher for immigrants with non-Western highest degree.

***Keywords**: Wage gaps, natives, immigrants, area of education, and provinces of residence*

***JEL Classification:** J15, J31, J61*

Résumé

Ce mémoire étudie les effets de pays de naissance et de lieu des études sur les salaires des immigrants au Canada. Il compare les immigrants provenant de deux régions différentes (Afrique et Asie), dans deux provinces principales (Ontario et Québec) et de deux lieux d'études (occidentaux et non-occidentaux). Il ressort des résultats empiriques que le lieu des études est un facteur important de discrimination pour les immigrés. Ceux qui ont reçu leur plus haut diplôme en occident s'en sortent mieux au Québec et en Ontario pour les deux sexes. En outre, les immigrants réussissent mieux en Ontario qu'au Québec. Les immigrants diplômés en occident, en particulier, les hommes et aussi les femmes d'origine africaine, n'ont pas de désavantages salariaux significatifs en Ontario par rapport aux natifs. Les immigrants des deux sexes, pour toutes origines et pour tous lieux d'études sont moins bien lotis que les natifs au Québec (Mais cette conclusion n'est pas robuste pour les immigrants formés en occident). Par ailleurs, les désavantages de salaires ont tendance à être plus élevés pour les femmes que pour les hommes immigrants dans les deux provinces. Les désavantages de salaires sont particulièrement élevés pour les immigrants ayant des diplômes non occidentaux.

Mots-clés**:** *Ecart salarial, natifs, immigrants, lieu d'études, et provinces de résidence*

***Classification JEL:** J15, J31, J61*

Dedication

With deep love and sincere appreciation this major paper is dedicated to my DAUGHTER ***EDEN KAJATU DIALLO***, my friend ***ROKIA BOIRO (***for her support and help, especially in winter and summer 2012***)*** and my parents ***KADIATOU*** AND ***IBRAHIMA*** for their love, support, and understanding during the course of my study.

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1 Introduction

The literature on immigrants' labour market during the last decades emphasizes the deterioration of the quality of immigrants for new cohorts. Wage gaps between natives and immigrants have been consistently proved to worsen for new cohorts. Many Canadian studies have explained this deterioration by a shift in immigrants' countries of birth. Western Europe and the U.S. used to be the principal source countries of Canadian immigrants; those countries are very close to Canada in term of culture (including language) and in term of level of development. Because of the similarities that those immigrants share with Canadians born, they face no significant barrier to integrate the Canadian labour market. For instance, the similarities of languages and education system make their skills easily transferable in the host country labour market.

However, the last decades have been characterised by significant changes in immigrants' countries of birth. Canada receives now the largest share of its immigrants from developing countries such Asia and Africa. Those immigrants are culturally very far from the Canadians born and the lack of language skills is more a concern for them than for their predecessors. Also, the education system of those immigrants' countries of birth may cause a problem because it is not recognized and valued in the Canadian labour market. In spite of that, Canada is among the developed countries the one which receives the most skilled immigrants, due in great part to the country’s immigration policies based on skilled immigrants' selection.

Even though new immigrants come mostly from developing countries, an important proportion of them are educated in Canada or selected after having received an education in

Western Europe or the U.S. Europe and the U.S. are less generous than Canada in giving permanent residency to foreigners who graduated in their countries, so some of them tend to migrate in Canada after their education. Elsewhere, many people from developing countries tend to choose Canadian universities for their education, not only because of the quality of Canadian education, but also because of the post education opportunities and the possibility of staying and working in Canada.

The purpose of this paper is to investigate whether location of study is linked to the wage gap between immigrants and Canadian-born workers. It also attempts to examine how the location of study effect differs depending on immigrants' region of birth. Specifically, the focus is put on African-born and Asian-born immigrants because those two groups represent the new trend of immigration in Canada. Instead of considering Canada nationwide, only two important destinations of immigrants, Quebec and Ontario, are considered, in order to investigate whether location of study discriminates differently in the two provinces. It is known that Quebec's immigration policies are implemented separately from those of the rest of Canada, because of the cultural exception of the province, particularly the French language protection issue.

The analytical approach is mainly based, on the one hand on comparing two groups of immigrants from two different regions of birth to examine whether the location of study's effects on wage gaps with natives differ from a region of birth to another, and on the other hand, on comparing two main provinces of destination to see whether the location of study's effect on wages gaps with natives differ from a host province to another. The analytical approach treats men and women separately and compares them to see whether the effect of the location study on wage gaps is different between the genders.

The empirical findings provide new evidence that the location of study is a discriminating factor among immigrants for both genders, and women immigrants are generally more discriminated against (Especially in Quebec). Immigrants who acquired a Western highest degree are likely to fare better in both the Quebec and Ontario labour market than those educated in their home country. In the category of those with a Western education, men of both origins do not reveal any significant wage disadvantages relative to natives in Ontario, but in Quebec it is not the case for all specifications. Also, West educated men immigrants, West educated African-born women immigrants, and unexpectedly, Non-west educated African-born men do not reveal any significant wages gaps in Ontario when accounting for census metropolitan area as fixed effects, but in Quebec, women immigrants of all categories reveal high and significant wage disadvantages of at least -20% for the lowest. When comparing among immigrants, it appears that Western educated Asian-born and African-born men immigrants are likely to face the same wage gaps in both Quebec and Ontario. Also, non-Western highest degree African-born men immigrants are likely to fare better than their Asian-born counterparts in both provinces. In the same fashion, African women with Western highest degree in Quebec have a smaller wage disadvantage than their Asians counterparts. Non-Western educated Asian-born men and women are likely to be the most penalized in term of wages disadvantages in both Quebec and Ontario. This paper gives new evidence that the location where immigrants acquired their education is what really matters for a good integration in the Canadian labour market; those findings confirm somewhat recent researches such as Coulombe, Grenier, and Nadeau (2012) and also Fortin, Lemieux and Torres (2012) in a recent presentation. This paper goes even further by giving evidence that what really matters is the location of study but not necessarily the country of birth as it was emphasized by previous papers in immigrants' labour market literature.

This paper is organized as follows. In section, 2 the literature review discusses the findings of some studies on immigrants' wages and unemployment issues in the Canadian and in other developed countries' labour markets. In section 3, the data source is described and is accompanied by a discussion of the summary statistics. In section 4, the econometric modelling framework is presented with details about the different specifications. In section 5, the results of the regressions are discussed. Finally, section 6 concludes by highlighting the relevant findings.

2 Literature Review

A significant amount of studies have been done on the economic impact of immigration in Canada and other developed countries, particularly the United States. Most of them attempted to explain the wage gap between immigrants and natives born.

Sixteen years ago, Pendakur and Pendakur (1998) were interested in the racial aspect and used data from the 1991 Census Public Use Microdata Files to investigate earnings gaps between both the white and visible-minority aggregate categories and within each category. They considered five categories: (1) Canadian-born white; (2) Canadian-born visible minority; (3) Aboriginal; (4) Immigrant white; and (5) Immigrant visible-minority. They analysed the earnings gaps among these categories and found for example that Canadian-born visible minority men have a differential earnings of 8% compared to a Canadian-born white, but they did not find any earnings gap between Canadian-born white women and Canadian-born visible minority women. Considering immigration status, they find that, compared to Canadian-born white men, immigrant white men encounter differential earnings of 2%, and immigrant visible-minority men encounter differential earnings of 16%; however among women, immigrant white women face at

1% earnings gaps compared to native white women while the gap is 9% for immigrant visible-minority women.

Similarly, in the United-States, Butcher and Dinardo (2002) use data from the 1960, 1970, 1980, and 1990 public use microdata samples of the US censuses to investigate immigrants and native-born wage distributions. The study focuses on both genders and uses series of estimated wages distributions for both immigrants and native-born. They find that large changes in the structure of wages (example of minimum wage) and in the immigrants' characteristics (race, ethnicity, region of origin, etc...) are the important sources of the increasing wage gap between immigrant and native born for both males and females. They find that, if immigrants in 1970 had faced the 1990 wage structure, then their wage distribution would be very similar to the 1990 immigrant's one.

Again in the U.S, Bratsberg and Terrell (2002) give evidence on the contribution of education quality on wages. The authors use data from the 1980 and 1990 censuses to estimate the relationship between school quality and return to education of U.S. immigrants. They measure school quality by using the expenditure per pupil and pupil-teacher ratios in the source country. They find that the wage of a high school educated immigrant increases significantly between 1.7% and 3.1% when expenditure per pupil increases by 10% and between 0.9% and 1.0% when the pupil-teacher increases by 10%. They conclude that there exists a substantial difference in the immigrant's return to education when it is received in different countries; they find the largest return for Japan at 8% per year of education, followed by the UK and Europe, and the lowest return for Haiti at 2%. They emphasize the quality of education as a source of the wage gap.

Also, Ferrer and Riddell (2004) use Canadian census data for the years 1981, 1986, 1991 and 1996, to examine the evolution of the returns to the human capital of immigrant and native-born workers. Using two dimensions of educational attainment (educational credential controlled by years of schooling) and a quasi- panel methodology approach, they find, like most studies, that immigrants have lower returns to years of schooling and experience than native-born. However, in term of educational credentials, they find that immigrants earn more than native-born for an equivalent degree, certificates or diplomas (particularly for postgraduates). For postgraduates, they find that immigrants from the US, the UK have returns to years of education that are larger than natives (although the result is not statistically significant for immigrants from Africa), and they find a similar (but not significant) trend for those from Africa. For the rest of immigrants (Europe, Asia, South America), the returns to years of education are lower than for natives. Their findings imply that the immigrants' country origin effect depends on the level of the highest diploma obtained.

Another interesting study is done by Vargas (2005) in the U.S. It uses data from the March 1999 U.S. Current Population Survey (CPS) to picture the profile of immigrants by examining the influence of the country of birth and others variables on their earnings. The author finds, among others things, that those who come from English-speaking, developed countries, like the UK, Canada, Ireland, Australia, and New-Zealand, start with higher earnings than others immigrants. This category of immigrant has human capital and cultural similarity with US natives, which make their skills more transferable in the US labour market. They are followed by immigrants from others European countries and from Asia; immigrants who come from others countries, including Latin America, come last. Even though immigrants who come from non-English-speaking or less developed countries face more difficulties to adapt to the American

labour market, Vargas finds that those immigrants catch up after some time and do even better in term of long run earnings because of the human capital they acquire in the US. He concludes also that other factors such as language, marital status, education, and potential experience have significant effect on immigrants' earnings. All those factors are accounted for in the present paper.

Aydemir and Skuterud (2005) use data from the 1981, 1986, 1991, 1996, and 2001 Canadian censuses to understand the causes of the deterioration of entry-earnings of recent cohorts of immigrant men and women. They conclude that about one-third of the entry-earnings deterioration is explained by the shift of immigrant composition in language ability and country of birth. They suggest no evidence of a decrease in the return to foreign education for either men or women. However they point to a significant decline in the returns to foreign experience for recent immigrant cohorts, the contribution of which is estimated at one-quarter to one-half of entry-earnings deterioration. When accounting for macroeconomics conditions, they find no evidence that immigrants' earnings are sensitive to entry macro conditions.

Some Canadian studies have specifically examined the effect of immigrants' foreign education on wages. Among them, Fong (2009) uses data collected in 2005 from a telephone survey in Toronto. His study includes 1,539 immigrants aged 18 years or more with an oversample of Chinese and Indian immigrants. He finds that immigrants who received their highest degree in a foreign institution have lower income than those who received their highest education in Canada. He finds that the earnings of immigrants who arrived in Canada younger and received their highest degree in Canada are similar to those of the Canadian-born.

In a similar perspective, Seckin and Nadeau (2010) show indirectly the effect of the quality of immigrant skills on wages. They use Public Use Microdata Files on Individuals from

Canadian Censuses from the 1981, 1991, and 2001 to examine the immigrant wage gap in Canada and then compare Quebec to the rest of Canada (ROC). They conclude that there is a lower wage differential between immigrants and native in the ROC than in Quebec. They explain this fact by the lower transferability of skills of immigrants in Quebec compared to those in the ROC; they also mention the Quebec's cultural exception as one of the possible reasons; for example the language issue may constitutes a big barrier to attract more skilled immigrant in the province.

Furthermore, Boudarbat (2011) considers the underemployment aspect. He uses data from the Labour Force Survey (LFS) to examine the labour market integration of immigrants in Quebec, Ontario and British Columbia. He finds that the unemployment rate of the Canadian-born is similar across provinces; and immigrants who completed their postsecondary education in Canada have the same unemployment rate than natives. He finds that lack of Canadian experience and language skills are the main obstacles to labour market integration during the first year. He finds that immigrant women are more likely to participate in labour market than native women. One of his main findings is that the unemployment rate of Quebec immigrants does not depend significantly on immigrants' characteristics, such the region of origin or the level of education. That means that, if Quebec had selected the same kind of immigrant as Ontario or British Columbia, this would change very little its unemployment rate. He concludes that the differential unemployment between immigrants in Quebec and the two others provinces has more to do with others factors like employers reluctance to hire immigrants (job demand side) or immigrants unwillingness to accept a job below their skills.

The immigration literature has emphasized country origin and knowledge of official languages as factors of the wage discount for immigrants. Grenier and Nadeau (2011) use the

Canadian 2006 Census data to examine immigrant access to work in Montreal and Toronto. They find that, compared to native born, the immigrant employment gap is lower in Toronto than in Montreal. Immigrants are more discriminated against in Montreal, but they find this discrimination is linked to language skills, as opposed to link to ethnicity. For instance, Montreal immigrants' French knowledge is weaker than its Toronto counterparts' English knowledge. However, compared to native-born individuals, immigrants' French knowledge is less rewarded in Montreal than their counterparts' English knowledge is in Toronto. They find that immigrants from some countries integrate better than others in both cities and that the difference in immigrants' countries origin between the two cities is a reason why immigrants have better labour market performance in Toronto than Montreal.

Human capital theory has shown that the return to education has a significant contribution to wages, but this contribution may depend on the quality of education. Coulombe, Grenier and Nadeau (2012) attempt to examine the issue of human capital quality for Canadian immigrants. They use 2006 census data to examine the impact of human capital quality on the wage gap between immigrant and natives-born in Canada. They proxy the quality of the human capital using the level of GDP per capita in the immigrant's country of birth. They find, among other things, that a lower quality of human capital negates the effect of immigrants' higher level of human capital; for instance they find that the return to year of education and experience is respectively 1.6% and 0.7% higher when schooling and work experience have been acquired in a country with a GDP per capita similar to that of Canada, compared to when it has been acquired in a country with a GDP per capita one-tenth that of Canada.

In a recent study, Fortin, Lemieux, and Torres (2012) use Canadian 2006 census data to examine the role of foreign education on the earnings gap between immigrants and Canadian-

born workers. Similarly to this paper, they use the location of study for the highest degree. They use an OLS regression of weekly wage on the location of study controlled by factors like education, work experience, gender, and language skills. They find that the location study explains between 30 % and 80% of the wage gap between immigrants and Canadian-born, and that those immigrants who studied in Canada or in comparable Western countries fare better than others immigrants. They also find that the effect is more significant for women who come to Canada after 25 years of age. However, they conclude that foreign education is less valued than Canadian education in Canadian labour market. The present paper goes further and combines region origin and the location of study to examine how the location of study effect may differ from a region of birth to another.

It is obvious from the literature that there are important correlations between human capital and earnings. These include both the significance of immigrants' level of human capital in the host country's labour market and the quality of the education system where credentials were obtained. It is also obvious that immigrants' performance in the host country's labour market depends on the level of skills transferability. The skills transferability can be facilitated by the knowledge of the language used in the labour market and others factors. This paper discusses this issue. It uses the 2006 census and attempts to explain how both immigrants' location of study and country of origin can affect their wages in the Canadian labour market.

3 Data and Restrictions

This section presents the dataset used in the paper, the restrictions and some summary statistics. It provides also some sample statistics to describe how individuals are characterised in the sample with respect to the relevant variables of analysis.

3.1 Data source

The present study uses the public use data file of individuals from the 2006 census of Canada. This is the most recent census available and the only census which gives information on location of study. The census provides a large amount of socio-economics information and demographic characteristics: household, immigration, language, schooling, labour force activity, income, and so on. Those data are used by analysts and researchers in the purpose of helping public decision's makers for their socio-economics policies. The original file contains 844,476 observations, which include 7,154 non-permanent residents (1%), 670,441 non-immigrants (79%), and 166,881 immigrants (20%). Some restrictions are applied to have a clean and appropriate file in order to respond to the question of interest.

3.2 Restrictions

Given the purpose of the study, the sample is restricted to the residents of Quebec and Ontario, including immigrants and natives born, which represents 62% of the Canadian census population for 525,948 individuals. Non permanent-residents (4,537 out 525,948) and immigrants that are not from Asia or Africa are excluded as well (63,182 are deleted) because we are

interested specifically in those two groups of immigrants. Among the native born, only those with a Western highest degree are included in the study, the native individuals with non-Western highest degree being excluded (267 out of 457,223). A small number of individuals among natives also declared an immigrant status and they are dropped from the sample (102 out of 456,966). In a similar fashion, foreign born with non-immigrant status are dropped from the sample (238 out of 456,864). In term of age, only individuals aged 25 to 64 are considered in the study (206,199 out of 456,626 are dropped from the sample) because most of those individuals might have finished their education. As wage is the factor to explain in this paper, only 2005 labour market participants are taken into account (205,545 out of 250,427). Self-employed individuals are deleted from the sample (15,685 out of 205,545) because those individuals do not receive wage from a third. Also, individuals with no degree are dropped from the sample (21,648 out of 189,860 are deleted). The last restriction drops individuals with very lower annual wage (less than 500 dollars) and very high wages (greater than 200,000 dollars) to avoid extreme values (12,221 out of 168,212 are deleted from the sample). The final sample of study has 155,845 individuals with about 41% of Quebec residents and about 59% of Ontario residents. In tem of gender, the sample has about 50% of both men and women. In term of status, the sample has 87% of Canadian native-born and 13% of immigrants from Asia and Africa.

3.3 Definitions of variables

As the data source is the public file, some information is recoded by Statistics Canada for the purposes of confidentiality. When it is required to use such data in the paper, a rule is established to best approximate the original information. The aim of this part is to present all data approximation and derivation used in the paper.

Age of individual: It represents the age of individuals at their last birthday. The variable is coded into categories in the original public file, so only five-year intervals of ages appear. The established rule in this paper is to choose the median age of the interval of ages for each individual.

Weekly wage: The original data file provides only the annual wage. The weekly wage is derived using the annual wage divided by the number of worked weeks in 2005.

Age at immigration: It represents the age when an individual acquired the immigrant status. The variable is also coded into intervals. The median age is also used.

Number of years of schooling: This variable is derived from the highest degree obtained by individuals based on Appendix Table A10. For example, individuals with a PhD are assumed to have done 22 years of schooling, those with a master degree are supposed to do 18 years of schooling, and 12 years high school graduation certificate

Experience: Experience represents the potential experience. This variable is derived from the age of last birth minus the number of years of schooling minus 6.

Location of study for individuals with high school certificates or less: The location of study is available in the census only for individuals with a post-secondary degree. The variable is derived for individuals with high school certificates or less using the country of birth and the age of immigration. The established rules to derive the location of study for those with no postsecondary education in this paper allow considering as Canadian educated those with age at immigration of 14 years or less; otherwise they are supposed to be educated in their country of birth. In this category, the Canadians-born are assumed to be Canadian educated. Also, individuals with a

location of study in either one of the Canadian provinces or Europe or the U.S. are classified as Western-educated and otherwise as Non-Western educated.

3.4 Summary statistics

Given that some tables are long, the summary statistics are presented in Appendix A. Table A1 shows means and standard deviations. The average weekly wage is larger for men than for women in both provinces. It shows also that the average weekly wage in Ontario is larger than in Quebec when comparing the same gender ($1,010. for men in Quebec versus $1,152 in Ontario, and $768 for women in Quebec versus $864 for women in Ontario). However; standard deviations of variables in table A1 indicate that weekly wage is more volatile in Ontario than Quebec.

Table A2 to Table A5 present separately sample distributions by gender of individuals, with respect to their countries of birth and location of study. Table A2 shows that 68.6% of African men immigrants in Quebec are North Africans born ("Arab Africa") versus 31.4% of Sub-Saharan Africans born ("Black Africa"). For women in Table A3, it is 64.7% North African born in Quebec versus 35.3% Sub-Saharan Africans born. However, the situation is reversed in Ontario as Table A2 shows that 77.4% of African men immigrants are Sub-Saharan African born versus 22.6% of North-African born. For women in Ontario as shown in Table A3, it is 81.3% Sub-Saharan Africans born versus 18.7% North-Africans born.

Also, Table A2 reveals that 2.55% of men residents in Quebec are African-born (which include 1.39% with Western highest degree and 1.16% with non-Western highest degree) versus 2.29% in Ontario (which include also 1.21% with Western highest degree and 1.08% with non-Western highest degree). In Table A3, 1.79% of women residents in Quebec are African-born

(including 0.92% with Western highest degree and 0.87% with non-Western highest degree) versus 1.98% in Ontario (including 1.11% with Western highest degree and 0.87% with non-Western highest degree). Similarly in Table A4, 3.51% of Quebec men residents are Asian-born (including 1.70% with Western highest degree and 1.81% with non-Western highest degree) versus 17.09% in Ontario (including 6.43% with Western highest degree and 10.66% with non-Western highest degree). In Table A5, 3.03% of Quebec women residents are Asians (including 1.35% with Western highest degree and 1.68% with non-Western highest degree) versus 15.30% in Ontario (including 5.37% with Western highest degree and 10.66% with non-Western highest degree).

Moreover, Table A4 shows that, on average, 35.6 % of Asian men immigrants in Quebec come from West and Central Asia and Middle East; they are followed by those coming from Other South-East-Asia, with a percentage of 17.2%, and from China, with a percentage of 15%. In Ontario, most Asian men immigrants come from India for 21%, followed by China for 13.9% and those coming from West-and-Central-Asia and Middle-East for 12.5%. Similarly in Table A5, 26.1% of Asian-born women immigrants in Quebec come from West-and-Central-Asia, followed by those from Philippines for 24.2% and those from China for 18.2%. In Ontario, 20.1% of Asian-born women immigrants are born in India, followed by those coming from the Philippines for 19% and China for 15.5%.

Table A6 and Table A7 indicates that on average, Ontario residents are more educated than those of Quebec for both genders. For example, the proportion of men with university degree is 0.337 in Ontario versus 0.281 in Quebec and it is 0.367 versus 0.338 for women. Furthermore, average age at immigration is lower in Quebec; this is supposed to favour Quebec immigrants in term of wage compared to their counterparts in Ontario because according to the literature, other

things equal, immigrating in a younger age are likely to reduce wage disadvantages with native born individuals.

Both Quebec and Ontario, African-born immigrants are more likely to have obtained their highest degree from a Western country than Asian born immigrants. For instance in Quebec, as indicated in Table A2, African-born individuals represent 42% of men immigrants in the sample and 45% of men immigrants with Western highest degree. For Asian-born immigrants in Table A3, they represent 58% of men immigrants and 55% of men immigrants with Western highest degree. The same scenario appears in Ontario, Africans represent 12% of men immigrants and 16% of those with Western highest degree. For their Asian counterparts, they represent 88% of men immigrants and 84% of those with Western education. Similarly, for women in both provinces, African-born immigrants are more likely to have obtained their highest degree from a Western country than Asian immigrants. In Quebec, 37% of women immigrants in the sample are Africans born and 41% of those with Western education are Africans born. However, 63% of women immigrants in Quebec come from Asia and 59% of those women immigrants with Western education come from Asia. Similarly for women in Ontario, African-born immigrants are overrepresented among Western educated immigrants (11% of women immigrants in the sample and 17% of those with Western education). Asians are underrepresented among Western educated women immigrants in Ontario (89% of women immigrants in the sample versus 83% among those with Western education).

Table A11 presents the average wage within each CMA for each the provinces and genders. One can easily remark that in Quebec wages in Montreal and Gatineau are higher than other CMAs. In those CMAs, immigrants are more represented, especially in Montreal. However, in Ontario the average wage are more homogenous, the highest are in Oshawa and Ottawa with non

significant gaps with the rest of the CMAs. Ontario's immigrants are more represented in Toronto and Ottawa.

3.5 Sample distributions of individuals

This part presents cross-distributions between both country of birth/ location of study and some relevant wage discriminating socio-economic factors in the literature. Most of those factors are used in the model. The distributions are done by gender for Quebec and Ontario. Table A6 and Table A7 present, respectively, distributions for men in Quebec and Ontario. Table A8 and Table A9 present, respectively, the same distributions for women in Quebec and Ontario.

3.5.1 Marital status

The variable marital status is generally presented in the literature as having significant impact on the probability of working full-time. Married men have generally more motivation to work a lot and this can raise their wage, but it is not generally the case for women. For women, being married means generally more time spent at home and less incentive to work full time depending on the husband income.

For men, Table A6 shows that, in Quebec, Asian-born immigrants with non-Western highest degree are relatively more likely to be married (83.6% versus 70.4% overall) and followed by African-born immigrants for both locations of study west and non-west. The same phenomenon appears for men in Ontario: as shown in Table A7, Asian immigrants with non-Western highest degree are relatively more likely to be married (88.5% versus 73.0% overall) followed by African-born immigrants with non-Western highest degree.

For women, Table A8 shows for Quebec that, only immigrants with non-Western highest degree are more likely to be married (respectively 75% and 80% versus 68% for Africans with non-Western highest degree and Asians with non-Western highest degree), and immigrants with Western highest degree are least likely to be married. Table A9 shows for Ontario that only Asian immigrants with non-Western highest degree are likely to be married (83% versus 70% in average). Those immigrants educated in the west are rather least likely to be married (Respectively, 38% and 34% for Africans and Asians versus 30% in average). Also, natives are very are least likely to be married in both provinces.

The general trend indicates that non-Western educated immigrants are more likely to be married in both Quebec and Ontario. However, Western educated African-born immigrants in Quebec are relatively likely to be married.

3.5.2 Highest degree

Education is known in the literature as one of the most relevant factors for explaining wages differential between individuals. The wage is determined by the value of worker's productivity, and the higher the level of education the more the individual is expected to be productive. This variable is an important element of the wage equation from Mincer (1958), which equation is the most used wage regression in the literature.

For men in the sample, the distribution with respect to this factor in Table A6 shows that, in Quebec, all categories of immigrants examined in this paper are more likely to have university degrees than Canadian-born individuals. Among immigrants, Africans born with Western highest degree are the most likely (73% versus 28% on average) while Asians born with non-Western highest degree are the least likely. Native-born men are overall the least likely to hold a

university degree. The opposite phenomena appears for men immigrants in Ontario; Asians born with Western highest degree are the most overrepresented among the most educated individual with university degree (63% versus 34% on average) while African with non-Western highest degree are the least likely. Native-born men in Ontario are overall the least likely to hold a university degree.

For women in the sample, Table A8 shows that, in Quebec, like for men, all immigrants for both regions and locations of study are overrepresented among the most educated people with university degree, and native-born are only overrepresented among those with high school and among those with college/CEGEP degree. The most overrepresented are Africans with Western highest degree (64% versus 34% in average) and the less overrepresented are Asians with non-Western highest degree (49% versus 34% in average). In the province of Ontario, the same scenario appears as indicated in Table A9; immigrants are overrepresented among the most educated individuals with university degree and only native-born are overrepresented among college and secondary or less. However, the most overrepresented among university degree in Ontario are Asians immigrants, particularly those with Western highest degree (61% versus 37% in average) and the less overrepresented are Africans with non-Western highest degree.

To summarize, the general trend shows that immigrants for both genders are more educated than natives for both provinces, and also men are more educated than women for immigrants but not for native-born.

3.5.3 Knowledge of official language

The knowledge of an official language is described in the literature as a key variable in immigrants' successful integration in the host country's labour market. The better an immigrant

knows the host country's official language the most his or her skills are transferable to the labour market. In Canada, English and French are the two official languages, knowing at least one of those languages facilitate labour market integration (Bilingual or French in Quebec and bilingual or English in Ontario).

For men in the sample, the distribution according to the knowledge of official language is presented in Table A6. Table A6 indicates that, for men in Quebec, African immigrants (both Western and non-Western highest degree) and Asian with Western highest degree are the most overrepresented among bilingual individuals (respectively 79%, 64%, and 72% versus 55% overall). Asian immigrants with non-Western highest degree are the most overrepresented among those who speak only English (51% versus 3% overall), and only the native-born are overrepresented among those who speak only French (44% versus 41% overall). For men in Ontario, Table A7 shows that, only Asian immigrants (both west and non-Western highest degree) are overrepresented among those who speak only English (95% versus 87% overall). African men immigrants (both west and non-Western highest degree) and native-born are overrepresented among bilingual but Africans with Western highest degree are the most overrepresented (24% versus 13% overall). There are very few people who speak only French in Ontario (0.2%). It is also obvious from Tables A6 and A7 that the average of bilingual men is much higher in Quebec than in Ontario (55% versus 12%).

For women in the sample, Table A8 shows that, in Quebec, all categories of immigrants are overrepresented among bilingual individuals except non-Western highest degree Asians immigrants. This category rather is overrepresented among those with English only (20% versus 2% overall) and among those who do not know any official language (7% versus 0.1% overall). Immigrants with Western highest degree are the most represented among bilingual individuals

(74% for Africans and 71% for Asians versus 45% overall). In Ontario, Table A9 indicates that only African immigrants (both locations of study) and native-born are overrepresented among bilingual individuals (23%, 16%, and 17% for respectively Africans with Western education, those with non-Western highest degree, and native-born versus 15% overall). Elsewhere, only Asian immigrants (both Western and non-Western location of study) are overrepresented among those who know English only (92% and 94% respectively for those with Western highest degree and those with non-Western highest degree versus 84%). It is also obvious from Tables 3A and 4A that the proportion of bilingual women is higher in Quebec than in Ontario (48% versus 15%).

The general trend shows that in Quebec, immigrants are more likely to be bilingual (except for the non-Western educated Asian-born) and natives are more likely to speak French only. In Ontario, only African-born and natives are more represented among bilingual individuals, and the other categories speak rather English only.

3.5.4 Age at immigration

The variable Age at immigration is known in the immigrants' labour market literature as one of the most important factor in explaining successful integration in the host country's labour market. The literature finds generally that individuals who come at a young age and acquire local education fare better in the labour market. The younger an immigrant comes in the host country, the lower the expected wage gap with native-born.

For men in the sample, the distribution of individual with respect to the age at immigration is presented in Table A6. It indicates that, in Quebec, African immigrants with both Western and non-Western highest degrees are overrepresented among those who immigrated in

Canada when they were between 25 and 39 years of age (respectively 57% and 76% versus 56%). Africans with Western highest degree are represented as the same as the average immigrants at ages 0-24 years (36%). Asian immigrants with Western highest degree are only overrepresented among those immigrate at ages 0-24 years (65% versus 36% in average) and those Asian with non-Western highest degree are overrepresented among those who immigrated at ages 25-39 years (64% versus 56% in average). Only those immigrants with non-Western education are overrepresented among those who immigrated at age 40 or more. One can also see that, on average, men immigrants are slightly more likely to have immigrated at a younger age (that is, between 0-25 years of age) in Quebec than in Ontario (36% versus 33%).

For women in the sample, Table A8 shows for Quebec that immigrants with Western highest degree (both Africans and Asians) are overrepresented only among those with immigration ages 0-24 years (51% and 69% respectively for Africans and Asians versus 42%); they have generally completed their education in Canada. Immigrants with non-Western highest degree are rather overrepresented among those with late immigration ages 25-39 years (68% and 64% respectively for Africans and Asians versus 51% in average) and 40 years or more (11% and 12% respectively for Africans and Asians versus 8%). For women in Ontario, there is the same conclusion, Western highest degree immigrants are overrepresented among immigrants at youngest ages 0-24 years and non-Western highest degree immigrants are rather overrepresented among immigrants at late ages 25-39 years (58% and 66% respectively for Africans and Asians versus 38% in average) and 40 years or more (63% for both Africans and Asians versus 51% in average). As for men, women immigrants are also more likely to have immigrated at a younger age in Quebec than Ontario (42% versus 38%).

In this part, the general trend shows that immigrants with Western highest degree are more likely to have immigrated to Canada when they were young (that is, between 0-25 years of age) and those with non-Western highest degree are more likely to have immigrated to Canada at a later age.

3.5.5 Census Metropolitan Area

The census metropolitan area (CMA) indicates the metropolitan region where an individual is actually a resident. It encompasses one or more adjacent municipalities which are highly integrated with a large central urban area.

For men in the sample, the distribution of individual with respect to CMA presented in Table A6 shows that both African-born and Asian-born immigrants in Quebec are very highly overrepresented in Montreal (80% and 90% respectively for Africans with west and non west education, versus 46% on average; 93% and 95% respectively for Asians with west and non-Western highest degree versus 46% on average). Native-born are underrepresented in Montreal, but more represented in Quebec City and in the other CMAs. African immigrants with Western highest degree are also slightly overrepresented in Ottawa/Gatineau. In Ontario, Table A6 shows that all categories of immigrants are strongly overrepresented in Toronto (70% and 74% respectively for Africans with Western and non Western education versus 40% on average; 79% and 85% respectively for Asians with Western and non-Western highest degree versus 40% on average). Native Canadians are underrepresented in Toronto but overrepresented in others CMA, they are also with Africans immigrants (especially those with Western education) slightly overrepresented in Ottawa/Gatineau.

For women in the sample, it appears for Quebec in Table A8 that all categories of immigrants are over-concentrated in Montreal (81%, 90%, 93%, and 94% respectively for Western highest degree Africans, non-Western highest degree Africans, Western-highest degree Asians and non-Western highest degree Asians versus 45% in average). Native-born Canadians in Quebec are underrepresented in Montreal and overrepresented in the other smaller CMA. Table A9 shows for Ontario an over-concentration of immigrants of both origins in Toronto (70%, 74%, 78%, and 85% respectively for Western highest degree Africans, non-Western highest degree Africans, Western-highest degree Asians and non-Western highest degree Asians versus 40% in average). African immigrants are also slightly overrepresented in Ottawa/Gatineau, especially Western highest degree Africans (12% versus 8%). Native-born Canadians in Ontario are underrepresented in Toronto and only overrepresented in smaller CMA.

This part confirms that immigrants in general tend to live in large metropolitan areas and those educated in the west are slightly more likely to live in smaller areas.

3.5.6 Industry

The industry defines the general nature of the business in the company or establishment where an individual works. The industry where an individual works is correlated with his or her wage. This factor is not used in the regression because it might be endogenous, but knowing its distribution helps to understand how individuals are characterised in the sample.

Table A6 indicates that in Quebec, men immigrants with Western highest degree are all more represented in industries with high return to education such as Finances, health and Education. However, Asian-born men are also overrepresented in Commerce and underrepresented in Public Administration, while African-born men are overrepresented in Public administration and

underrepresented in Commerce. But those with Non-Western education are overrepresented in Commerce and in the Manufacturing. However African-born immigrants with Non-Western highest-degree are also slightly overrepresented in the Information industry which includes Computer science. A similar trend is seen in Table A7 for Ontario, where men immigrants with Western education are overrepresented in Finances, Health and Education, and Information. Those with non-Western education are rather overrepresented in Commerce and particularly in Manufacturing, and slightly in Finances (among this category there is more African-born in Finances and in Quebec this category is underrepresented in Finances).

For women, Table A8 indicates that, for Quebec, there are some disparities; African-born women are more represented in Finances, in Information industry and Public Administration. Their Asian counterparts are also overrepresented in Finances and Public Administration but also in Manufacturing. For those women with non-Western education in Quebec, they are all overrepresented in Commerce and Manufacturing, but African-born are also overrepresented in Health/Education industry, and their Asians counterparts are overrepresented in Public Administration. For Ontario in Table A9, it appears that, African-born women with Western education are only overrepresented in Finances, Public Administration, and in Health/Education. Their Asian counterparts are rather overrepresented only in Finances, Manufacturing industry, and Public Administration. Women immigrants with non-Western education in Ontario are generally more represented in Commerce and Finances, but unlike their African-born counterparts, Asians are also overrepresented in Manufacturing industry and Public Administration.

Natives born men in Quebec are only slightly overrepresented in construction and Public Administration, and their counterparts in Ontario are also only overrepresented in Construction,

Health/Education, and Public Administration. Natives born women in Quebec are slightly overrepresented in all industry except Commerce, but in Ontario, they are only overrepresented in Health/Education and Information industry.

In this part, the sample distribution by industry shows that, in general, Western-educated immigrants are more likely to work in industries with high return to education such as Health/Education, Public Administration, and Finances, and those with non-Western education are more likely to work in lower return to education industries such as Manufacturing and Commerce.

4 Econometric Investigation

This section presents the econometric modelling framework. The econometric technique implemented in the paper is based on ordinary least square regression (OLS). In this paper, the dependent variable is the weekly wage and the independent variables of interest are interactions between the country of birth and the location of study; the others controlling variables are added to the regression to get estimates of the partial effects of the interactions.

If the independent variables are assumed to be exogenous, then OLS is as estimating method because it is unbiased and consistent. Given the assumption of absence of endogeneity, there is no need of using neither the method of instrumental variables regression nor the Heckman's regression in this paper. Also, panel data techniques do not matter since there is only one observation per individual in the dataset.

The regression can be summarized as follows:

$$Y_i = \beta X_{1i} + \gamma X_{2i} + \varepsilon_i$$

where Y_i is the weekly wage of the individual i ,

X_{1i} is the interaction between country of birth and the location of study of individual i,

X_{2i} is a vector of control variables of individual i (including a constant term),

ε_i is the error term and is supposed to be normally distributed,

β is a vector of partial effect of interactions between country of birth and location of study,

γ is a vector partial effect of control variables

In fact, five specifications are considered and presented in two groups; the first three which are basic specifications do not account for census metropolitan area (CMA) and the other two accounts for CMA in different ways.

4.1 Regressions without CMA accounted for

In a more precise and practical way, the model takes the form below, and as it commonly done in the literature, I estimate robust standard errors for the coefficients.

$$lWAGE_i = \beta_0 + \beta_1 AfWHD_i + \beta_2 AfNWHD_i + \beta_3 As_i WHD_i + \beta_4 AsNWHD_i + \beta_5 CanWHD_i + \gamma X_{2i} + \varepsilon_i \quad (1)$$

where:

$lWAGE_i$: is the log of weekly wage of each individual i

AfWHDi: is a dummy variable indicating that an individual is an African immigrant with Western highest degree,

$AfNWHD_i$: is a dummy variable indicating that a individual is an African immigrant with non-Western highest degree or not,

AsWHD$_i$: Is a dummy variable indicating that an the individual is an Asian immigrant with Western highest degree or not,

AsNWHD$_i$: Is a dummy variable indicating that an individual is an Asian immigrant with non-Western highest degree or not,

CanWHD$_i$: Is a dummy variable indicating that an individual is a Canadian native born with Western highest degree. This category is omitted and used as reference for others categories.

X_{2i}: Is a Vector of socio-economics characteristics of individual i which include education, experience, experience squared, marital status, knowledge of official language, Age at immigration. They account for controlling factors in the regression. The number of socio-economic factors accounted for vary respect into specifications.

The $\hat{\beta}$ s denote the OLS estimated coefficients for an immigrant with a given type of education relative to the Canadian-born (with a Western highest degree). The larger this coefficient in absolute value, the higher the impact on wage compared to a Canadian native born. The coefficient is expected to be small or non-significant for Western educated immigrants and large, negative and significant for non-Western educated immigrants.

$\hat{\gamma}$ denotes a vector of OLS estimated coefficients for the socio-economic control factors.

There are three specifications without controlling for CMA. The first specification is the basic one with no control variables. The second specification controls for education, experience and experience squared to fit the standard Mincer's wage regression. The third specification controls for a set of socio-economic characteristics that include experience, experience squared, marital status, knowledge of official language, and Age at immigration

Here, it is assumed that experience in host country and origin country has the same effect on wage for individuals which are very strong hypothesis. The paper does not consider whether the experience is acquired in or outside the host country.

4.2 Regression controlling for CMA

In this category of regressions, two forms of specification are considered. The first specification uses the third specification and accounts for CMA by clustering the error terms. The second one uses the third specification and adds CMA fixed effects.

4.2.1 Regression controlling for CMA by clustering the error terms

This specification uses the same approach as the following authors: Fortin, Lemieux, and Torres (2012), Acemoglu and Pischke (2003), and also others such Alesina. and La Ferrarab (2002), Dustman, Frattini, and Preston (2008) and Dube, William Lester, and Reich (2007). The reason of using this approach is the fact that the OLS assumption which states that errors terms are independently and identically distributed (i.i.d) fails within each CMA area. In fact, Census data are collected and organized per CMA. Each CMA is characterized by its proper work market environment. For instance, Toronto and Ottawa/Gatineau have somewhat different work market characteristics which can depend on the core urban city policies or on Provincial or Federal government specific policies toward a special city (More government jobs in Ottawa/Gatineau and more private jobs in Toronto or Montreal). Individuals within the same CMA, let's say the CMA of Ottawa/Gatineau, tend to have a certain CMA-level characteristics which tend to be similar for all individuals within the CMA of Ottawa/Gatineau. Therefore, those individuals are

not uncorrelated when one consider characteristics in CMA-level (attributes of CMA does not changes across individuals). Therefore, means, unobserved or error term of individuals within the considered CMA, are no more i.i.d, this is very close to the issue of heteroskedasticity. The violation of the i.i.d condition leads to biased standard errors of OLS estimators). In order to fix the problem, standard errors are corrected by clustering error term to account for the non-independence of observations within each cluster of CMA. This approach gives the same estimated coefficients as the previous one with the right standard errors, but it allows correlation of individuals within a CMA and makes the assumption that observations across clusters of CMA are uncorrelated. According to this approach, the model takes the following form:

$$lwage_{ij} = \beta_0 + \beta_1 AfWHD_i + \beta_2 AfNWHD_i + \beta_3 As_iWHD_i + \beta_4 AsNWHD_i + \beta_5 CanWHD_i + \gamma X_{2i} + \varepsilon_{ij} \quad (2)$$

where the variables have the same meaning as equation (1) except that the dependent variable now represents the log of wage of individual i in the CMA j, and ε_{ij} represent the unobserved factors for individual i in the CMA j.

4.2.2 Regression controlling for CMA through Fixed effects

This specification is performed by adding CMA as a dummy variable to the set of control variables. Resulting estimates allow comparison with previous specifications in order to check the robustness of coefficients' estimates. Normally, the less the estimates change between specifications the more they are considered robust and consistent.

5 Empirical results

This section reports the estimates of regression models (1) and (2) for the five specifications discussed previously. Estimates are reported separately for men and women. It is common in the literature to do separate estimations for both genders men and women because of differences in their wage determination process in the labour market.

Results for the place of birth and place of study interactions for both Quebec and Ontario are reported in Table 1 for men and in Table 2 for women. They are organized from the simplest specifications to the most sophisticated specification. The detailed regression results with all the control variables are in Table B1and Table B2 in Appendix B.

Table 1: Place of Birth and Place of Study Interactions, Regressions for men

Variables	Specification (1)		Specification (2)		Specification (3)		Specification (4)		Specification (5)	
	QC	**ON**	**QC**	**ON**	**QC**	**ON**	**QC**	**ON**	**QC**	**ON**
Africans West Highest Degree	-0.146***	-0.020	-0.277***	-0.128***	-0.132	0.049	-0.132**	0.049*	-0.145	0.039
	(0.039)	(0.033)	(0.039)	(0.033)	(0.089)	(0.047)	(0.042)	(0.025)	(0.089)	(0.047)
Africans Non-West Highest Degree	-0.476***	-0.301***	-0.555***	-0.374***	-0.318***	-0.057	-0.318***	-0.057**	-0.338***	-0.073
	(0.043)	(0.039)	(0.043)	(0.038	(0.095)	(0.053)	(0.045)	(0.023)	(0.095)	(0.053)
Asians West Highest Degree	-0.120***	-0.098***	-0.187***	-0.176***	-0.130	-0.037	-0.130*	-0.037	-0.145**	-0.051
	(0.034)	(0.015)	(0.033	(0.015)	(0.080)	(0.037)	(0.053)	(0.048)	(0.080)	(0.037)
Asians Non-West Highest Degree	-0.566***	-0.349***	-0.615***	-0.460***	-0.401***	-0.170***	-0.401***	-0.170***	-0.415***	-0.188***
	(0.034)	(0.011)	(0.033))	(0.012)	(0.094)	(0.040)	(0.054)	(0.031)	(0.094)	(0.040)
Control factors	No control		Controlled for human capital		Controlled for human capital + socio-economic factors		Controlled for human capital + socio-economic factors + cluster by CMA		Controlled for human capital + socio-economic factors + CMA Fixed Effects	
Notes	(***): Significant at 1%, (**): Significant at 5%, (*): Significant at 10% The detailed regressions are in Table B1									

Table 2: Place of Birth and Place of Study Interactions, Regressions for women

Variables	Specification (1)		Specification (2)		Specification (3)		Specification (4)		Specification (5)	
	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON
Africans West Highest Degree	-0.051	0.076**	-0.204***	-0.028	-0.203**	-0.034	-0.203*	-0.034	-0.236**	-0.080
	(0.046)	(0.036)	(0.045)	(0.034)	(0.095)	(0.051)	(0.082)	(0.039)	(0.095)	(0.051)
Africans Non-West Highest Degree	-0.255***	-0.247***	-0.333***	-0.297***	-0.251**	-0.162***	-0.251**	-0.162***	-0.288***	-0.215***
	(0.048)	(0.041)	(0.048)	(0.040)	(0.103)	(0.055	(0.091)	(0.037	(0.103)	(0.055)
Asians West Highest Degree	-0.042***	0.027*	-0.142***	-0.076***	-0.236***	-0.133***	-0.236**	-0.133***	-0.265***	-0.184***
	(0.038)	(0.016)	(0.038)	(0.016)	(0.080)	(0.038)	(0.059)	(0.034)	(0.080)	(0.038)
Asians Non-West Highest Degree	-0.441	-0.300***	-0.516***	-0.406***	-0.473**	-0.302***	-0.473***	-0.302***	-0.501***	-0.355***
	(0.035)	(0.012)	(0.035)	(0.012)	(0.105)	(0.042)	(0.077)	(0.023)	(0.105)	(0.042)
Control factors	No control		Controlled for human capital		Controlled for human capital + socio-economic factors		Controlled for human capital + socio-economic factors + cluster by CMA		Controlled for human capital + socio-economic factors + CMA Fixed Effects	
Notes	(***): Significant at 1%, (**): Significant at 5%, (*): Significant at 10% The detailed regressions are in Table B1									

5.1 Specification 1: Basic regression with no control variables

The regressions without any control variables give gross wage differentials that do not account for other explanatory factors. Table 1 indicates for men in both Quebec and Ontario that all coefficients are negative and statistically significant, with the exception of the one for Western educated Africans in Ontario. In both provinces, immigrants are penalized in term of wage compared to Canadian- born. However, in both provinces those with a Western highest degree do better (In Quebec: -0.12 and -0.15 for respectively Asian and African with Western degree versus -0.57 and -0.48 and for Asians and Africans with non-Western degree). But in Ontario, the wage gap with native is significantly lower (-0.02 (non-significant) and -0.09 for respectively Western educated Africans and Asians versus -0.30 and 0.35 for respectively non-Western educated Africans and Asians).

Table 2 shows that Western-educated immigrant women are also better off in both provinces and that they even do better than natives in Ontario (0.08 and 0.03 for respectively Western-educated Africans and Asians immigrants versus -0.25 and -0.30 for respectively non-Western-educated Africans and Asians immigrants). In Quebec, the wage gap is -4.2% for Western-educated Asian women immigrants and non significant (-5.1%) for Western-educated African women immigrants; the most penalized in Quebec are non-Western-educated Asians with -0.44, while the coefficient is -0.25 for non-Western-educated Africans. The French language issue might contribute to that result for non-Western-educated Asian immigrants because they are the most underrepresented among the French only and bilingual categories in Quebec.

This basic regression points out the relevance of the location of study for immigrants in both Quebec and Ontario.

5.2 Specification 2: Regression controlling for human capital

This regression allows differences in human capital among individuals. When human capital, education and experience, are accounted for in the regression, then compared to the model with no controls, gaps are higher. This indicates that immigrants have more human capital than natives (as was noted in the descriptive statistics section). The regression for men in Table 1 provides economically and statistically significant estimates. It appears that, compared to natives, Western-educated immigrants are better-off than other immigrants for both provinces (In Quebec: -0.28 and -0.19 for respectively Western-educated African and Asian immigrants versus -0.56 and -0.62 for respectively Western-educated African and Asian immigrants). The gap with natives is smaller in Ontario (-0.13 and -0.18 for respectively Western-educated African and Asian immigrants versus -0.37 and -0.46 for respectively non-Western-educated African and Asian immigrants).

The results for women in Table 2 indicate economically and statistically significant estimates, except for Ontario's Western-educated African Immigrants with a non-significant -2.8% gap. The wage gap with natives remains still larger in Quebec and not as bad for Western-educated Asian immigrants than for the rest of immigrants (-0.20 and -0.14 for respectively Western-educated African and Asian immigrants versus -0.33 and -0.52 for respectively non-Western-educated African and Asian immigrants). In Ontario, Table 2 shows the wage gap of -0.08 for Western-educated Asian immigrants versus -0.30 and -0.41 for respectively non-Western educated African and Asian immigrants.

This regression confirms again the importance of where education is acquired for both categories of immigrants and in both provinces. With one exception, controlled differences are higher, indicating more human capital for immigrants.

5.3 Specification 3: Regression controlling for human capital and socio-economics characteristics

This regression controls for the above human capital variables as well as for marital status, knowledge of official language, number of years since immigration in Canada, and the age at immigration. Both the age at immigration and the number of years since immigration are found to be statistically significant. In this regression, the estimates change again relative to the previous regression. But they change in the other direction, indicating that the socio-economic factors are not in their favour. Table 1 shows, for men, estimates that are statistically non-significant for Western-educated immigrants in both Quebec and Ontario. The estimate for Ontario's non-Western educated African immigrants is negative (-5.7%) and also non-significant. In Quebec, the wage gap estimates are -0.32 and -0.40 for respectively non-Western-educated

African and Asian immigrants. The gap is -0.17 for Ontario's non-Western-educated Asian immigrants.

Table 2 shows for women that estimates are all economically and statistically significant except the one for Western-educated African immigrants in Ontario. Compared to Canadian-born, Western-educated are not as bad off as other immigrants (In Quebec: the coefficients are -0.20 and -0.24 for respectively Western-educated African and Asian immigrants, versus -0.25 and -0.47 for respectively non-Western-educated African and Asian immigrants). The estimated wage gaps remain smaller in Ontario (Non-significant -0.03 and -0.13 for respectively Western-educated African and Asian immigrants, versus -0.16 and -0.30 for respectively non-Western-educated African and Asian immigrants).

This regression does not point out any statistically significant wage gap for Western-educated men immigrants in both provinces of Quebec and Ontario. However, for women, there are significant gaps between the wage of immigrants and natives for all locations of study, which are larger than that of men (an exception to that is the case of non-Western educated African-born immigrant women in Quebec who do better than men in their category). But the wage disadvantage with natives is significantly lower for all categories of immigrants in Ontario compared to Quebec indicating that, as for men immigrants, women immigrants are possibly less discriminated against in Ontario. The wage disadvantage is even non-significant for Western-educated African women in Ontario.

5.4 Specification 4: Regression controlling for human capital and socio-economic characteristics + Error clustering by CMA

This regression differs from the previous specification by the use of CMA to cluster the error term. It considers that unobserved factors are correlated within a CMA but uncorrelated

across CMAs. Regression coefficients do not change from Specification 3, but their significance can vary.

Table 1 presents estimated coefficients for men, and shows that they are economically and statistically significant except for the one for Ontarian Western-educated Asian immigrants. In other terms, Table 1 shows significant wages disadvantages for all immigrants in Quebec but smaller for those with Western education. However in Ontario there are no wages disadvantages for Western-educated men immigrants.

Table 2 for women indicates that the estimates remain economically and statistically significant except the one for Western-educated African immigrants in Ontario which is negative and non-significant. There is no change for women compared to Specification 3.

The change in significances for Western educated immigrants in Quebec, from non-significant estimates to significant estimates, can be explained economically by the fact that averages wages are heterogeneous in CMAs with the highest averages wages gaps for where immigrants are the most represented such as Montreal and Gatineau compared to the rest of the CMAs (see Table A11). Clustering error term by CMA means that one considers that on average individuals' wages do not vary identically within each CMA, that means taking into account in the error term the individual specific effect. Therefore, the high average wages observed in Montreal and Gatineau are not accounted for all individuals identically. In the same way, no change in significance appears in Ontario because in Ontario the average wages are not higher where immigrants are the most represented, they are likely similar over CMAs (see Table A11). Economic structures over CMAs are more different in Quebec than in Ontario where they look like more similar.

Elsewhere, the decrease of the corrected standard errors in the clustered regression compared to OLS standard errors can be explained by a presence of substantial negative correlations within a cluster or by a presence of weak correlations within clusters.

5.5 Specification 5: Regression controlling for human capital, socio-economic characteristics, and CMA Fixed Effects

This regression uses fixed effects to account for CMA instead of clustering unobserved factors by CMA. Estimates do not show any dramatic changes from previous regressions but the significance of the estimates changes for men. Table 1 shows that in Ontario the estimated coefficients are not significant for the two categories of African Immigrants and for Asian immigrants with a Western highest degree. For women, the significance of the estimates does not change in both provinces but estimates become slightly larger than the previous regression.

It can be concluded that estimates do not generally show dramatic changes between controlled specifications, they are even likely consistent between specifications that include the socio-economics characteristics. Even controlling for CMA as dummies do not shows significant changes in estimates.

6 Conclusion

This paper attempts to explain the impact of the interaction of the region of birth and the location of study on immigrants' wages by comparing wage gaps between them and the native born individuals. Two regions of origin are considered, Africa and Asia, so that it can be investigated whether the location of study effect on wage gap with natives differs from one region of birth to another. Also two main provinces are considered, Quebec and Ontario, so that it can be investigated whether the location of study effect on the wage gap differs from one province to another.

The paper bases its methodological approach on the Mincer's wage equation framework which is by far the wage regression equation that has been the most often used in the labour economic literature of the last decades. The region of birth and the location of study interaction effects are analysed using ordinary least square regressions with different specifications.

The results reveal that the location of study is a significant discriminating factor among immigrants, in term of wages. They reveal also that location of study is valued differently depending on immigrant gender, the province of residence, and the country origin. Having a Western highest degree eliminates the wage disadvantage for men immigrants in Ontario for both African and Asian-born immigrants, but for women immigrants with Western highest degree in Ontario, only African-born do not show up any wage disadvantage compared to Canadian-born women. The situation is different in Quebec. Men immigrants with a Western highest degree do not show any wage disadvantage for the third specification (controlling for socio-economic characteristics but not accounting for CMA) but when CMA is accounted for, an identical but significant wage disadvantage between -13% and 14.5% appears for both African-born and

Asian-born men immigrants with Western highest degree in Quebec. In Quebec, the shift of significance for Western educated immigrants' estimates can be explained by the average wages gaps between CMAs where immigrants are concentrated (Gatineau and especially Montreal) and the rest of the CMAs; in other words, CMAs appear to be economically different in Quebec, which is not the case in Ontario. Women immigrants with a Western highest degree in Quebec for both regions of birth are systematically discriminated against compared to natives with a wage gap disadvantage of -20% to -23% for Africans born and -14.2% to -26.5% for Asians born. Otherwise, for both genders and both provinces of residence, immigrants with a non-Western highest degree are the most discriminated against compared to the Canadian-born; but African-born men immigrants in Ontario appear to have a non-significant wage disadvantages for two of the specifications (when CMA is not accounted for and when CMA are accounted for as fixed effects).

Regarding those findings, when accounting for the location of study, there is no evidence that the large wage gap between native born individuals and immigrants depends primarily on the shift of immigrants' country of birth as suggested by some studies in the literature; rather it appears to be depending more on where immigrants have received their education. Coulombe, Grenier, and Nadeau (2012) find similar conclusions by proxying the quality of education with the per capita GDP in the country of study. A good immigration policy in Canada should take into account the location where immigrants have obtained their highest degree, or give incentives to landed immigrants without Western education to acquire a Canadian degree. The latter proposition is maybe more rational, in term of a competitive immigration policy.

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APPENDICES

APPENDIX A: Descriptive statistics

Table A1: Sample Summary Statistics				
VARIABLES	**Quebec**		**Ontario**	
	Men	**Women**	**Men**	**Women**
Weekly Wage	1010.226 (790.6)	768.435 (755.5)	1152.805 (1179.6)	864.713 (969.2)
Africans with Western Highest Degree	0.014	0.009	0.012	0.011
Africans with Non-Western Highest Degree	0.012	0.009	0.011	0.009
Asians Western Highest Degree	0.017	0.013	0.064	0.054
Asians Non- Western Highest Degree	0.018	0.017	0.107	0.099
Canadians Born	9	0.952	0.806	0.827
Apprentice /High School	0.515	0.413	0.419	0.334
	(0.5)	(0.5)	(0.5) 0.93	(0.5)
College/CEGEP	0.205	0.249	0.243	0.299
	(0.4)	(0.4)	(0.4)	(0.5)
University	0.281	0.338	0.337	0.367
	(0.4)	(0.5)	(0.5)	(0.5)
Experience	23.401	22.443	21.560	21.224
	(11.0)	(10.9)	(10.6)	(10.7)
Experience Square	668.345	623.239	577.984	565.487
	(533.0)	(506.4)	(492.6)	(482.7)
Full-time	0.941	0.821	0.949	0.806
	(0.2)	(0.4)	(0.2)	(0.4)
Married	0.704	0.684	0.730	0.704
	(0.6)	(0.5)	(0.4)	(0.5)
Non Married	0.296	0.316	0.270	0.296
	(0.6)	(0.5)	(0.4)	(0.5)
English	0.028	0.024	0.869	0.844
	(0.2)	(0.2)	(0.3)	(0.4)
French	0.421	0.488	0.002	0.002
	(0.5)	(0.5)	(0.0)	(0.0)
Both French and English	0.550	0.487	0.125	0.149
	(0.5)	(0.5)	(0.3)	(0.4)
Neither French nor English	0.001	0.001	0.004	0.005
	(0.0)	(0.0)	(0.1)	(0.1)
Years Since Immigration for immigrants only	14.345 10.8	14.851 11.0	13.961 10.1	14.272 10.0
Age at Immigration for immigrants only	27.056 10.3	25.566 10.4	28.238 11.1	26.960 10.3

Notes: Standard deviations are in brackets
Source: Canadian Census of 2006, Public Use Microdata

Table A2: Sample Distribution of African Men immigrant by Region of birth and Location of study												
Country of Birth	**Quebec**						**Ontario**					
	Afr. with West Degree		Afr. Non-West Degree		Total		Afr. with West Degree		Afr. Non-West Degree		Total	
	Freq	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***
Eastern Africa	62	*13.9*	30	*8.1*	92	*11.3*	258	*46.5*	200	*40.5*	458	*43.7*
North Africa	278	*62.5*	282	*76.0*	560	*68.6*	103	*18.6*	134	*27.1*	237	*22.6*
Others Africa	105	*23.6*	59	*15.9*	164	*20.1*	194	*35.0*	160	*32.4*	354	*33.8*
African-born Men (1)	445	*100*	371	*100*	816	*100*	555	*100*	494	*100*	1049	*100*
Distributions (2)	1.39%		1.16%		2.55%		1.21%		1.08%		2.29%	
Men immigrants in the Sample (3)	991	*45%*	950	*39%*	1,941	*42%*	3,506	*16%*	5,386	*9%*	8,892	*12%*
Men from all countries of birth including natives (4)	32,028						45,881					
Notes: Percent in (2)= Freq in (1) over (4); Percent in (3)=Freq in (1) over (3) Source: Canadian Census of 2006, Public Use Microdata												

Table A3: Sample Distribution of African Women immigrant by Region of birth and Location of study												
Country of Birth	**Quebec**						**Ontario**					
	Afr. with West Degree		Afr. Non-West Degree		Total		Afr. with West Degree		Afr. Non-West Degree		Total	
	Freq	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***
Eastern Africa	43	*14.9*	29	*10.6*	72	*12.8*	259	*50.1*	174	*43.2*	433	*47.1*
North Africa	171	*59.2*	193	*70.4*	364	*64.7*	75	*14.5*	97	*24.1*	172	*18.7*
Others Africa	75	*26.0*	52	*19.0*	127	*22.6*	183	*35.4*	132	*32.8*	315	*34.2*
African-born Women (1)	289	*100*	274	*100*	563	*100*	517	*100*	403	*100*	920	*100*
Distributions (2)	0.92%		0.87%		1.79%		1.11%		0.87%		1.98%	
Women immigrants in the Sample (3)	713	*41%*	802	*34%*	1,515	*37%*	3015	*17%*	5,018	*8%*	8,033	*11%*
Men from all countries of birth including natives (4)	31,445						46,491					
Notes: Percent in (2)= Freq in (1) over (4); Percent in (3)=Freq in (1) over (3) Source: Canadian Census of 2006, Public Use Microdata												

Table A4: Sample Distribution of Asian Men immigrant by Region of birth and Location of study												
Country of Birth	**Quebec**						**Ontario**					
	Asia with West Degree		Asia with Non-West Degree		Total		Asia with West Degree		Asia with Non-West Degree		Total	
	Freq	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***
West and Central Asia and Middle East	219	*40.1*	181	*31.3*	400	*35.6*	476	*16.1*	502	*10.3*	978	*12.5*
China	63	*11.5*	106	*18.3*	169	*15.0*	329	*11.2*	764	*15.6*	1,093	*13.9*
Hong Kong	25	*4.6*	13	*2.3*	38	*3.4*	495	*16.8*	230	*4.7*	725	*9.2*
Other East Asian	17	*3*	17	*3*	34	*3*	153	*5*	157	*3.2*	310	*4*
Philippines	20	*3.7*	71	*12.3*	91	*8.1*	237	*8.0*	750	*15.3*	987	*12.6*
Other South-East Asia	146	*26.7*	47	*8.1*	193	*17.2*	400	*13.6*	291	*6.0*	691	*8.8*
India	28	*5.1*	51	*8.8*	79	*7.0*	403	*13.7*	1,246	*25.5*	1,649	*21.0*
Pakistan	13	*2.4*	28	*4.8*	41	*3.6*	198	*6.7*	424	*8.7*	622	*7.9*
Other Southern Asia	15	*2.8*	65	*11.2*	80	*7.1*	260	*8.8*	528	*10.8*	788	*10.1*
Asian-born Men (1)	546	*100*	579	*100*	1125	*100*	2,951	*100*	4,892	*100*	7,843	*100*
Distributions (2)	1.70%		1.81%		3.51%		6.43%		10.66%		17.09%	
Men immigrants in the Sample (3)	991	*55%*	950	*61%*	1,941	*58%*	3,506	*84%*	5,386	*91%*	8,892	*88%*
Men from all countries of birth including natives (4)	32,028						45,881					

Notes: Percent in (2)= Freq in (1) over (4); Percent in (3)=Freq in (1) over (3)
Source: Canadian Census of 2006, Public Use Microdata

Table A5: Sample Distribution of Asian Women immigrant by Region of birth and Location of study												
Country of Birth	**Quebec**						**Ontario**					
	Asia with West Degree		Asia with Non-West Degree		Total		Asia with West Degree		Asia with Non-West Degree		Total	
	Freq	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***
West and Central Asia and Middle East	157	*37.0*	138	*26.1*	295	*31.0*	361	*14.5*	448	*9.7*	809	*11.4*
China	47	*11.1*	96	*18.2*	143	*15.0*	313	*12.5*	787	*17.1*	1,100	*15.5*
Hong Kong	12	*2.8*	11	*2.1*	23	*2.4*	439	*17.6*	267	*5.8*	706	*9.9*
Other East Asian	18	*4*	25	*5*	43	*5*	150	*6*	173	*3.8*	323	*5*
Philippines	37	*8.7*	128	*24.2*	165	*17.3*	340	*13.6*	1,008	*21.8*	1,348	*19.0*
Other South-East Asia	118	*27.8*	54	*10.2*	172	*18.1*	315	*12.6*	266	*5.8*	581	*8.2*
India	20	*4.7*	35	*6.6*	55	*5.8*	305	*12.2*	1,123	*24.3*	1,428	*20.1*

Pakistan	7	*1.7*	9	*1.7*	16	*1.7*	81	*3.2*	212	*4.6*	293	*4.1*
Other Southern Asia	8	*1.9*	32	*6.1*	40	*4.2*	194	*7.8*	331	*7.2*	525	*7.4*
Asian-born Women (1)	424	*100*	528	*100*	952	*100*	2,498	*100*	4,615	*100*	7,113	*100*
Distributions (2)	1.35%		1.68%		3.03%		5.37%		9.93%		15.30%	
Women immigrants in the Sample (3)	713	*59%*	802	*66%*	1,515	*63%*	3,015	*83%*	5,018	*92%*	8,033	*89%*
Women from all countries of birth including natives (4)	31,445						46,491					

Notes: Percent in (2)= Freq in (1) over (4); Percent in (3)=Freq in (1) over (3)
Source: Canadian Census of 2006, Public Use Microdata

Table A6: Sample Distribution of characteristics for Men immigrants in Quebec

Variables	Afr. with West Degree		Afr. with Non-west Degree		Asia with West Degree		Asia with Non-west Degree		Canadians born		Total	
	Freq	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***
Highest Degree												
Secondary or less	52	*11.7*	106	*28.6*	121	*22.2*	287	*49.6*	15,916	*52.9*	16,482	*51.5*
College/CEGEP	68	*15.3*	52	*14.0*	103	*18.9*	50	*8.6*	6,280	*20.9*	6,553	*20.5*
University	325	*73.0*	213	*57.4*	322	*59.0*	242	*41.8*	7,891	*26.2*	8,993	*28.1*
Marital Status												
Married/Com. law	322	*72.4*	277	*74.7*	371	*68.0*	484	*83.6*	21,091	*70.1*	22,545	*70.4*
Non married	123	*27.6*	94	*25.3*	175	*32.1*	95	*16.4*	8,996	*29.9*	9,483	*29.6*
Knowledge of Official Language												
English	14	*3.2*	26	*7.0*	117	*21.4*	294	*50.8*	441	*1.5*	892	*2.8*
French	79	*17.8*	107	*28.8*	32	*5.9*	44	*7.6*	13,225	*44.0*	13487	*42.1*
Both English and French	352	*79.1*	237	*63.9*	395	*72.3*	218	*37.7*	16,418	*54.6*	17620	*55.0*
Foreign language	0	*0.0*	1	*0.3*	2	*0.4*	23	*4.0*	3	*0.0*	29	*0.1*
Age at Immigration												
0-24	162	*36.4*	45	*12.1*	354	*64.8*	134	*23.1*			695	*35.8*
25-39	254	*57.1*	282	*76.0*	172	*31.5*	370	*63.9*			1078	*55.5*
40 and more	29	*6.5*	44	*11.9*	20	*3.7*	75	*13.0*			168	*8.7*
Industry												
Commerce	51	*11.5*	57	*15.4*	82	*15.0*	118	*20.4*	4,199	*14.0*	4,507	*14.1*
Construction	7	*1.6*	16	*4.3*	19	*3.5*	12	*2.1*	2,621	*8.7*	2,675	*8.4*
Finances	24	*5.4*	10	*2.7*	26	*4.8*	8	*1.4*	883	*2.9*	951	*3.0*
health/Education	86	*19.3*	29	*7.8*	75	*13.7*	30	*5.2*	3,304	*11.0*	3,524	*11.0*
Information	22	*4.9*	15	*4.0*	21	*3.9*	8	*1.4*	933	*3.1*	999	*3.1*
Manufacturing	65	*14.6*	91	*24.5*	97	*17.8*	177	*30.6*	6,358	*21.1*	6,788	*21.2*
Public Administration	48	*10.8*	12	*3.2*	29	*5.3*	8	*1.4*	2,778	*9.2*	2,875	*9.0*
Others	142	*31.9*	141	*38.0*	197	*36.1*	218	*37.7*	9,011	*30.0*	9,709	*30.3*
CMA												

Quebec	38	*8.5*	7	*1.9*	13	*2.4*	7	*1.2*	3,568	*11.9*	3,633	*11.3*
Montreal	360	*80.9*	335	*90.3*	505	*92.5*	544	*94.0*	12,946	*43.0*	14,690	*45.9*
Sherbrooke/Trois-Rivieres	12	*2.7*	4	*1.1*	5	*0.9*	4	*0.7*	1,434	*4.8*	1,459	*4.6*
Ottawa/Gatineau	22	*4.9*	11	*3.0*	17	*3.1*	12	*2.1*	1,235	*4.1*	1,297	*4.1*
Others metro. Area	13	*2.9*	14	*3.8*	6	*1.1*	12	*2.1*	10,904	*36.2*	10,949	*34.2*
Total	445	*100*	371	*100*	546	*100*	579	*100*	30,087	*100*	32,028	*100*

Source: Canadian Census of 2006, Public Use Microdata

Table A7: Sample Distribution of characteristics for Men immigrants in Ontario

Variables	Afr. West		Afr. Non-west		Asia West		Asia Non-west		Native-born		Total	
	Freq	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***
Highest Degree												
High School	96	*17.3*	200	*40.5*	446	*15.1*	1,609	*32.9*	16,892	*45.7*	19,243	*41.9*
College/CEGEP	139	*25.1*	76	*15.4*	648	*22.0*	422	*8.6*	9,870	*26.7*	11,155	*24.3*
University	320	*57.7*	218	*44.1*	1,857	*62.9*	2,861	*58.5*	10,227	*27.7*	15,483	*33.8*
Marital Status												
Married/Com. law	371	*66.9*	364	*73.7*	2,110	*71.5*	4,330	*88.5*	26,331	*71.2*	33,506	*73.0*
Non married	184	*33.2*	130	*26.3*	841	*28.5*	562	*11.5*	10,658	*28.8*	12,375	*27.0*
Knowledge of Official Language												
English	419	*75.5*	413	*83.6*	2,789	*94.5*	4,646	*95.0*	31,621	*85.5*	39,888	*86.9*
French	5	*0.9*	1	*0.2*	1	*0.0*	1	*0.0*	73	*0.2*	81	*0.2*
Both English and French	131	*23.6*	78	*15.8*	150	*5.1*	77	*1.6*	5,282	*14.3*	5,718	*12.5*
Foreign language	0	*0.0*	2	*0.4*	11	*0.4*	168	*3.4*	13	*0.0*	194	*0.4*
Age at Immigration												
0-24	302	*54.4*	88	*17.8*	1,737	*58.9*	835	*17.1*			2,962	*33.3*
25-39	215	*38.7*	308	*62.4*	1,055	*35.8*	3,029	*61.9*			4,607	*51.8*
40 and more	38	*6.9*	98	*19.8*	159	*5.4*	1,028	*21.0*			1,323	*14.9*
Industry												
Commerce	77	*13.9*	79	*16.0*	382	*12.9*	834	*17.1*	5,288	*14.3*	6,660	*14.5*
Construction	9	*1.6*	16	*3.2*	69	*2.3*	139	*2.8*	3,211	*8.7*	3,444	*7.5*
Finances	35	*6.3*	26	*5.3*	266	*9.0*	221	*4.5*	1,428	*3.9*	1,976	*4.3*
health/Education	76	*13.7*	31	*6.3*	277	*9.4*	222	*4.5*	3,433	*9.3*	4,039	*8.8*
Information	28	*5.1*	15	*3.0*	138	*4.7*	128	*2.6*	1,195	*3.2*	1,504	*3.3*
Manufacturing	86	*15.5*	123	*24.9*	615	*20.8*	1,482	*30.3*	7,472	*20.2*	9,778	*21.3*
Public Administration	44	*7.9*	11	*2.2*	172	*5.8*	77	*1.6*	3,481	*9.4*	3,785	*8.3*
Others	200	*36.0*	193	*39.1*	1,032	*35.0*	1,789	*36.6*	11,481	*31.0*	14,695	*32.0*

Census Metropolitan Area												
Ottawa/Gatineau	66	*11.9*	45	*9.1*	246	*8.3*	179	*3.7*	3,214	*8.7*	3,750	*8.2*
Oshawa	5	*0.9*	4	*0.8*	28	*1.0*	32	*0.7*	1,268	*3.4*	1,337	*2.9*
Toronto	390	*70.3*	363	*73.5*	2,295	*77.8*	4,166	*85.2*	10,954	*29.6*	18,168	*39.6*
Hamilton	16	*2.9*	14	*2.8*	92	*3.1*	124	*2.5*	2,367	*6.4*	2,613	*5.7*
St. Catharines/Niagara	10	*1.8*	10	*2.0*	16	*0.5*	36	*0.7*	1,481	*4.0*	1,553	*3.4*
Kitchener	15	*2.7*	21	*4.3*	77	*2.6*	90	*1.8*	1,593	*4.3*	1,796	*3.9*
London	14	*2.5*	7	*1.4*	51	*1.7*	53	*1.1*	1,653	*4.5*	1,778	*3.9*
Windsor	9	*1.6*	11	*2.2*	55	*1.9*	73	*1.5*	1,162	*3.1*	1,310	*2.9*
Brantford/Guelph	8	*1.4*	6	*1.2*	27	*0.9*	65	*1.3*	1,703	*4.6*	1,809	*3.9*
Kingston/ Peterbor	4	*0.7*	2	*0.4*	11	*0.4*	21	*0.4*	1,019	*2.8*	1,057	*2.3*
Greater Sudbury	5	*0.9*	0	*0.0*	9	*0.3*	6	*0.1*	1,206	*3.3*	1,226	*2.7*
Others Metro. Area	13	*2.3*	11	*2.2*	44	*1.5*	47	*1.0*	9,369	*25.3*	9,484	*20.7*
Total	555	*100*	494	*100*	2,951	*100*	4,892	*100*	36,989	*100*	45,881	*100*

Source: Canadian Census of 2006, Public Use Microdata

Table A8: Sample Distribution of characteristics for Women immigrants in Quebec												
Variables	Afr. West		Afr. Non-west		Asia West		Asia Non-west		Native-born		Total	
	Freq	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***	**Freq**	***%***
Highest Degree												
Secondary or less	42	*14.5*	97	*35.4*	77	*18.2*	212	*40.2*	12,566	*42.0*	12,994	*41.3*
College/CEGEP	62	*21.5*	29	*10.6*	103	*24.3*	60	*11.4*	7,575	*25.3*	7,829	*24.9*
University	185	*64.0*	148	*54.0*	244	*57.6*	256	*48.5*	9,789	*32.7*	10,622	*33.8*
Marital Status												
Married/Com. law	194	*67.1*	206	*75.2*	285	*67.2*	420	*79.6*	20,399	*68.2*	21,504	*68.4*
Non married	95	*32.9*	68	*24.8*	139	*32.8*	108	*20.5*	9,531	*31.8*	9,941	*31.6*
Knowledge of Official Language												
English only	5	*1.7*	21	*7.7*	85	*20.1*	248	*47.0*	384	*1.3*	743	*2.4*
French only	68	*23.5*	107	*39.1*	33	*7.8*	51	*9.7*	15,097	*50.4*	15,356	*48.8*
Both English and French	216	*74.7*	144	*52.6*	305	*71.9*	193	*36.6*	14,444	*48.3*	15,302	*48.7*
Neither English nor French	0	*0.0*	2	*0.7*	1	*0.2*	36	*6.8*	5	*0.0*	44	*0.1*
Age at Immigration												
0-24	147	*50.9*	58	*21.2*	294	*69.3*	130	*24.6*			629	*41.5*
25-39	129	*44.6*	185	*67.5*	119	*28.1*	337	*63.8*			770	*50.8*
40 and more	13	*4.5*	31	*11.3*	11	*2.6*	61	*11.6*			116	*7.7*
Industry												
Commerce	33	*11.4*	50	*18.3*	66	*15.6*	105	*19.9*	4,019	*13.4*	4,273	*13.6*
Construction	0	*0.0*	2	*0.7*	7	*1.7*	1	*0.2*	439	*1.5*	449	*1.4*
Finances	28	*9.7*	17	*6.2*	35	*8.3*	7	*1.3*	2,183	*7.3*	2,270	*7.2*
health/Education	96	*33.2*	102	*37.2*	100	*23.6*	114	*21.6*	10,145	*33.9*	10,557	*33.6*
Information	8	*2.8*	4	*1.5*	10	*2.4*	6	*1.1*	895	*3.0*	923	*2.9*
Manufacturing	16	*5.5*	29	*10.6*	50	*11.8*	130	*24.6*	2,482	*8.3*	2,707	*8.6*
Public Administration	84	*29.1*	60	*21.9*	135	*31.8*	158	*29.9*	7,071	*23.6*	7,508	*23.9*
Others	24	*8.3*	10	*3.7*	21	*5.0*	7	*1.3*	2,696	*9.0*	2,758	*8.8*
Census Metropolitan Area												
Quebec	17	*5.9*	7	*2.6*	5	*1.2*	2	*0.4*	3,613	*12.1*	3,644	*11.6*
Montreal	247	*85.5*	248	*90.5*	393	*92.7*	509	*96.4*	13,602	*45.5*	14,999	*47.7*
Sherbrooke/Trois-Rivieres	4	*1.4*	3	*1.1*	1	*0.2*	2	*0.4*	1,373	*4.6*	1,383	*4.4*
Ottawa/Gatineau	16	*5.5*	8	*2.9*	18	*4.3*	12	*2.3*	1,354	*4.5*	1,408	*4.5*
Others metro. Area	5	*1.7*	8	*2.9*	7	*1.7*	3	*0.6*	9,988	*33.4*	10,011	*31.8*
Total	289	*100*	274	*100*	424	*100*	528	*100*	29,930	*100*	31,445	*100*

Source: Canadian Census of 2006, Public Use Microdata

Table A9: Sample Distribution of characteristics for Women immigrants in Ontario												
Variables	Afr. West		Afr. Non-west		Asia West		Asia Non-west		Native-born		Average	
	Freq	*%*	**Freq**	*%*	**Freq**	*%*	**Freq**	*%*	**Freq**	*%*	**Freq**	*%*
Highest Degree												
High School	87	*16.8*	167	*41.4*	309	*12.4*	1,501	*32.5*	13,466	*35.0*	15,530	*33.4*
College/CEGEP	156	*30.2*	61	*15.1*	678	*27.1*	425	*9.2*	12,561	*32.7*	13,881	*29.9*
University	274	*53.0*	175	*43.4*	1,511	*60.5*	2,689	*58.3*	12,431	*32.3*	17,080	*36.7*
Marital Status												
Married/Com. law	320	*61.9*	281	*69.7*	1,643	*65.8*	3,829	*83.0*	26,645	*69.3*	32,718	*70.4*
Non married	197	*38.1*	122	*30.3*	855	*34.2*	786	*17.0*	11,813	*30.7*	13,773	*29.6*
Knowledge of Official Language												
English only	396	*76.6*	336	*83.4*	2,298	*92.0*	4,330	*93.8*	31,864	*82.9*	39,224	*84.4*
French only	0	*0.0*	2	*0.5*	1	*0.0*	3	*0.1*	103	*0.3*	109	*0.2*
Both English and French	120	*23.2*	64	*15.9*	187	*7.5*	93	*2.0*	6,478	*16.8*	6,942	*14.9*
Neither English nor French	1	*0.2*	1	*0.3*	12	*0.5*	189	*4.1*	13	*0.0*	216	*0.5*
Age at Immigration												
0-24	297	*57.5*	102	*25.3*	1,643	*65.8*	1,024	*22.2*			3,066	*38.2*
25-39	197	*38.1*	255	*63.3*	758	*30.3*	2,890	*62.6*			4,100	*51.0*
40 and more	23	*4.5*	46	*11.4*	97	*3.9*	701	*15.2*			867	*10.8*
Industry												
Commerce	57	*11.0*	57	*14.1*	343	*13.7*	780	*16.9*	5,147	*13.4*	6,384	*13.7*
Construction	4	*0.8*	5	*1.2*	22	*0.9*	47	*1.0*	555	*1.4*	633	*1.4*
Finances	47	*9.1*	42	*10.4*	342	*13.7*	396	*8.6*	2,627	*6.8*	3,454	*7.4*
health/Education	178	*34.4*	101	*25.1*	615	*24.6*	830	*18.0*	12,967	*33.7*	14,691	*31.6*
Information	12	*2.3*	11	*2.7*	78	*3.1*	78	*1.7*	1,120	*2.9*	1,299	*2.8*
Manufacturing	30	*5.8*	35	*8.7*	244	*9.8*	920	*19.9*	2,935	*7.6*	4,164	*9.0*
Public Administration	148	*28.6*	137	*34.0*	706	*28.3*	1,467	*31.8*	9,980	*26.0*	12,438	*26.8*
Others	41	*7.9*	15	*3.7*	148	*5.9*	97	*2.1*	3,127	*8.1*	3,428	*7.4*

CMA												
Ottawa/Gatineau	60	*11.6*	34	*8.4*	171	*6.9*	210	*4.6*	3,273	*8.5*	3,748	*8.1*
Oshawa	2	*0.4*	4	*1.0*	21	*0.8*	23	*0.5*	1,305	*3.4*	1,355	*2.9*
Toronto	387	*74.9*	313	*77.7*	2,051	*82.1*	3,925	*85.1*	11,650	*30.3*	18,326	*39.4*
Hamilton	13	*2.5*	13	*3.2*	44	*1.8*	105	*2.3*	2,436	*6.3*	2,611	*5.6*
St. Catharines/Niagara	3	*0.6*	6	*1.5*	16	*0.6*	37	*0.8*	1,450	*3.8*	1,512	*3.3*
Kitchener	8	*1.6*	12	*3.0*	46	*1.8*	82	*1.8*	1,557	*4.1*	1,705	*3.7*
London	8	*1.6*	7	*1.7*	35	*1.4*	52	*1.1*	1,731	*4.5*	1,833	*3.9*
Windsor	9	*1.7*	8	*2.0*	36	*1.4*	52	*1.1*	1,161	*3.0*	1,266	*2.7*
Brantford/Guelph	5	*1.0*	3	*0.7*	29	*1.2*	49	*1.1*	1,731	*4.5*	1,817	*3.9*
Kingston/ Peterbor	6	*1.2*	0	*0.0*	11	*0.4*	18	*0.4*	1,137	*3.0*	1,172	*2.5*
Greater Sudbury	1	*0.2*	1	*0.3*	7	*0.3*	7	*0.2*	1,243	*3.2*	1,259	*2.7*
Others Metro. Area	15	*2.9*	2	*0.5*	31	*1.2*	55	*1.2*	9,784	*25.4*	9,887	*21.3*
Total	517	100	403	100	2498	100	4615	100	38458	100	46,491	*100*

Source: Canadian Census of 2006, Public Use Microdata

Table A10: Table of correspondence between Highest Degree and Years of Schooling

Highest Degree	Estimated Years of schooling
No degree Certificate or Diploma (*)	0
High School or Graduation Certificate	12
Other Certificate or Diploma (craft schools)	8
Apprentice Certificate	13
College: Certificate/diploma/ CEGEP or other Establishment with a programme of 3 months to 1 year	13
College: Certificate/diploma/ CEGEP or other Establishment with a programme of 1 an to 2 years	14
College: Certificate/diploma/CEGEP or other Establishment with a programme of more than 2 years	15
Certificate/Diploma less than Bachelor	15
Bachelor	17
Certificate/Diploma more than Bachelor	18
Medicine/Dentist	22
Master	18
PhD acquired	22

Notes: (*) Those has been dropped from the sample

Table A11: Average wages within Census Metropolitan Area (CMA)				
CMA	Men		Women	
	QC	ON	QC	ON
Quebec	989.4		759.0	
	(840.3)		(771.8)	
Montreal	1040.3		825.8	
	(815.7)		(825.4)	
Sherbrooke/Trois-Rivieres	951.6		702.1	
	(590.6)		(610.8)	
Gatineau	1073.7		971.5	
	(634.0)		(1018.8)	
Other CMA in QC	977.1		666.5	
	(777.2)		(579.9)	
Ottawa		1246.2		1003.6
		(844.9)		(1236.0)
Oshawa		1256.3		913.2
		(719.8)		(1488.4)
Toronto		1161.7		920.9
		(1404.3)		(1046.8)
Hamilton		1235.6		891.2
		(1658.8)		(1146.6)
St. Catharines/Niagara		1052.0		735.7
		(672.9)		(794.4)
Kitchener		1127.8		840.1
		(615.7)		(808.9)
London		1082.2		805.7
		(1114.1)		(591.1)
Windsor		1281.4		873.8
		(1170.6)		(1165.1)
Brantford/Guelph		1180.0		820.4
		(1207.5)		(687.2)
Kingston/ Peterbor		1089.0		771.6
		(950.2)		(507.5)
Greater Sudbury		1154.2		768.0
		(1215.4)		(492.1)
Others Metro. Area		1079.9		759.6
		(828.7)		(728.5)

Notes: Standard errors are in brackets
Source: Canadian Census of 2006, Public Use Microdata

APPENDIX B: Detailed Regression Results

Table B1: Regressions for men in the sample										
Variables	**Specification (1)**		**Specification (2)**		**Specification (3)**		**Specification (4)**		**Specification (5)**	
	QC	**ON**	**QC**	**ON**	**QC**	**ON**	**QC**	**ON**	**QC**	**ON**
Africans with Western Highest Degree (ref: Natives)	-0.146***	-0.020	-0.277***	-0.128***	-0.132	0.049	-0.132**	0.049*	-0.145	0.039
	(0.039)	(0.033)	(0.039)	(0.033)	(0.089)	(0.047)	(0.042)	(0.025)	(0.089)	(0.047)
Africans with Non-Western Highest Degree	-0.476***	-0.301***	-0.555***	-0.374***	-0.318***	-0.057	-0.318***	-0.057**	-0.338***	-0.073
	(0.043)	(0.039)	(0.043)	(0.038	(0.095)	(0.053)	(0.045)	(0.023	(0.095)	(0.053)
Asians Western Highest Degree	-0.120***	-0.098***	-0.187***	-0.176***	-0.130	-0.037	-0.130*	-0.037	-0.145**	-0.051
	(0.034)	(0.015)	(0.033)	(0.015)	(0.080)	(0.037)	(0.053)	(0.048)	(0.080	(0.037)
Asians Non-Western Highest Degree	-0.566***	-0.349***	-0.615***	-0.460***	-0.401***	-0.170***	-0.401***	-0.170***	-0.415***	-0.188***
	(0.034)	(0.011)	(0.033)	(0.012)	(0.094)	(0.040)	(0.054)	(0.031)	(0.094)	(0.040)
Apprentice / High School			-0.381****	-0.366***	-0.364***	-0.362***	-0.364***	-0.362***	-0.361***	-0.346***
			(0.010)	(0.008)	(0.009)	(0.008)	(0.009)	(0.018)	(0.009)	(0.008)
College/CEGEP			-0.196***	-0.227***	-0.196***	-0.232***	-0.196***	-0.232***	-0.193***	-0.219***
			(0.011)	(0.009)	(0.011)	(0.008)	(0.010)	(0.018)	(0.011)	(0.008)
Experience			0.048***	0.051***	0.036***	0.036***	0.036***	0.036**	0.036***	0.036***
			(0.002)	(0.001)	(0.001)	(0.001)	(0.003)	(0.002)	(0.001)	(0.001)
Experience Square			-0.001***	-0.001***	-0.001***	-0.001***	-0.001***	-0.001**	-0.001***	-0.001***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Full-time					0.769***	0.930***	0.769***	0.930***	0.770***	0.927***
					(0.022)	(0.020)	(0.026)	(0.038)	(0.022)	(0.020)
Non Married (ref: Married)					-0.181***	-0.212***	-0.181***	-0.212***	-0.183***	-0.220***
					(0.008)	(0.007)	(0.018)	(0.009)	(0.008)	(0.007)
French (ref: English)					-0.006	0.009	-0.006	0.009	0.021	0.035
					(0.026)	(0.069)	(0.037)	(0.061)	(0.026)	(0.069)
Both French and English					0.064**	0.030***	0.064	0.030**	0.073***	0.029***
					(0.026)	(0.009)	(0.037)	(0.013)	(0.026)	(0.010)
Neither French nor English					-0.180	-0.222***	-0.180**	-0.222***	-0.170	-0.230***
					(0.168)	(0.061)	(0.065)	(0.040)	(0.169)	(0.061)
Years Since Imm.					0.006***	0.005***	0.006**	0.005***	0.006***	0.005***
					(0.002)	(0.001)	(0.002)	(0.001)	(0.002)	(0.001)
Age at imm.					-0.008***	-0.011***	-0.008***	-0.011***	-0.008***	-0.011***
					(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Quebec (Ref: Montreal)									-0.071***	
									(0.012)	
Sherbrooke/Trois-Rivieres									-0.058***	
									(0.016)	
Others metro. Area									-0.056**	
									(0.008)	
Ottawa/Gatineau									0.035***	-0.002
									(0.017)	(0.012)
Oshawa (ref: Toronto)										0.070***
										(0.016)

Hamilton										-0.018
										(0.014)
St. Catharines / Niagara										-0.119***
										(0.017)
Kitchener										-0.012
										(0.015)
London										-0.109***
										(0.016)
Windsor										0.042
										(0.021)
Brantford/Guelph										-0.028**
										(0.015)
Kingston/ Peterbor										-0.127***
										(0.021)
Greater Sudbury										-0.082***
										(0.020)
Other Metro. Area										-0.107***
										(0.009)
Intercept	6.730***	6.872***	6.375***	6.514***	5.794***	5.839***	5.794***	5.839***	5.804***	5.870***
	(0.004)	(0.004)	(0.017)	(0.014)	(0.036)	(0.023)	(0.074)	(0.070)	(0.036)	(0.024)
Observations	32028	45881	31940	45690	31940	45690	31940	45690	31940	45690
R-square	0.018	0.024	0.098	0.096	0.187	0.205	0.187	0.205	0.189	0.210

Notes: - (***): Significant at 1%, (**): Significant at 5%, (*): Significant at 10%
- Standard errors are in brackets. - Specification (4): Errors terms are clustered by CMA

Table B2: Regressions for women in the sample

Variables	Specification (1)		Specification (2)		Specification (3)		Specification (4)		Specification (5)	
	QC	ON	QC	ON	QC	ON	QC	ON	QC	ON
Africans with Western Highest Degree (ref: Natives)	-0.051	0.076**	-0.204***	-0.028	-0.203**	-0.034	-0.203*	-0.034	-0.236**	-0.080
	(0.046)	(0.036)	(0.045)	(0.034)	(0.095)	(0.051)	(0.082)	(0.039)	(0.095)	(0.051)
Africans with Non-Western Highest Degree	-0.255***	-0.247***	-0.333***	-0.297***	-0.251**	-0.162***	-0.251**	-0.162***	-0.288***	-0.215***
	(0.048)	(0.041)	(0.048)	(0.040)	(0.103)	(0.055)	(0.091)	(0.037	(0.103)	(0.055)
Asians Western Highest Degree	-0.042***	0.027*	-0.142***	-0.076***	-0.236***	-0.133***	-0.236**	-0.133***	-0.265***	-0.184***
	(0.038)	(0.016)	(0.038)	(0.016)	(0.080)	(0.038)	(0.059)	(0.034)	(0.080)	(0.038)
Asians Non-Western Highest Degree	-0.441	-0.300***	-0.516***	-0.406***	-0.473**	-0.302***	-0.473***	-0.302***	-0.501***	-0.355***
	(0.035)	(0.012)	(0.035)	(0.012)	(0.105)	(0.042)	(0.077)	(0.023)	(0.105)	(0.042)
Apprtice/High School			-0.619***	-0.557***	-0.578	-0.535***	-0.578***	-0.535***	-0.570***	-0.513***
			(0.010)	(0.009)	(0.009)	(0.008)	(0.039)	(0.036)	(0.009)	(0.008)
College/CEGEP			-0.363***	-0.342***	-0.337***	-0.321***	-0.337***	-0.321***	-0.329***	-0.296***
			(0.010)	(0.009)	(0.009)	(0.008)	(0.015)	(0.018)	(0.009)	(0.008)
Experience			0.039***	0.034***	0.033***	0.030	0.033***	0.030***	0.034***	0.031***
			(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)	(0.001)	(0.001)
Experience Square			-0.001***	-0.001***	-0.001***	0.000***	-0.001***	0.000***	-0.001***	0.000***
			(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Full-time					0.631***	0.766***	0.631***	0.766***	0.625***	0.753***

					(0.011)	(0.010)	(0.025)	(0.017)	(0.011)	(0.010)
Non-Married (ref: Married)					-0.021***	-0.043***	-0.021**	-0.043***	-0.028***	-0.057***
					(0.008)	(0.007)	(0.006)	(0.013)	(0.008)	(0.007)
French (ref: English)					-0.058*	0.071	-0.058***	0.071	-0.013	0.092
					(0.031)	(0.059)	(0.014)	(0.053)	(0.032)	(0.058)
Both French and English					0.063**	0.063***	0.063**	0.063*	0.068**	0.054***
					(0.031)	(0.009)	(0.016)	(0.032)	(0.031)	(0.009)
Neither French nor English					-0.203*	-0.156***	-0.203	-0.156***	-0.189	-0.168***
					(0.122)	(0.047)	(0.101)	(0.032)	(0.121)	(0.047)
Years Since Immigration					0.008***	0.009***	0.008***	0.009***	0.008***	0.009***
					(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Age at Immigration					-0.004*	-0.007***	-0.004**	-0.007***	-0.005**	-0.007***
					(0.002)	(0.001)	(0.001)	(0.001)	(0.002)	(0.001)
Quebec (Ref: Montreal)									-0.061***	
									(0.011)	
Sherbrooke/Trois-Rivieres									-0.118***	
									(0.017)	
Other CMA in QC									-0.121***	
									(0.008)	
Ottawa/Gatineau									0.136***	-0.018
									(0.017)	0.012
Oshawa (ref: Toronto)										-0.078***
										0.020
Hamilton										-0.083***
										0.015
St. Catharines/ Niagara										-0.221***
										0.019
Kitchener										-0.076***
										0.016
London										-0.135***
										0.016
Windsor										-0.098***
										0.019
Brantford/Guelph										-0.111***
										0.016
Kingston/ Peterbor										-0.199***
										0.020
Greater Sudbury										-0.178***
										0.020
Other CMA in ON										-0.192***
										0.009
Intercept	6.418***	6.527***	6.334***	6.427***	5.824***	5.818***	5.824***	5.818***	5.847***	5.897***
	0.004	0.004	0.015	0.013	0.036	0.016	0.044	0.030	0.036	0.016
Observations	31445	46491	31380	46323	31380	46323	31380	46323	31380	46323
R-square	0.007	0.015	0.140	0.101	0.264	0.262	0.264	0.262	0.271	0.271

Notes: - (***): Significant at 1%, (**): Significant at 5%, (*): Significant at 10%.
- Standard errors are in brackets. - Specification (4): Errors terms are clustered by CMA