Working In a Regulated Occupation in Canada: An Immigrant–Native-Born Comparison

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This study compares the proportions of immigrants and of Canadian-born workers in regulated occupations. On average, immigrants to Canada are better educated than the native-born. In 2006, 47% had a postsecondary education, compared with 38% of the native-born (computed from Statistics Canada, 2007). Despite this apparent human capital advantage, there is strong evidence of continuing immigrant disadvantage in the labour market (Boudarbat & Boulet, 2007; Picot & Sweetman, 2005). A range of possible explanations has been proposed, many of them linked to the fact that the sources of immigrants have shifted from Europe to other parts of the world, particularly Asia.

Picot (2004) and Picot and Sweetman (2005) list the most common of these explanations:

1. Most new immigrants are members of visible minorities and they may be subject to discrimination.

2. While new immigrants have higher levels of education than the native-born population, the average quality of their education may be lower. Consistent with this, Sweetman (2004) found that immigrants from countries with lower scores on standardized tests in mathematics and science get lower returns on their schooling.

3. Reitz (2001) has raised the possibility that the return on immigrant education has fallen because their *relative* educational advantage has been declining. The educational

attainment of the native-born has risen rapidly, in particular among women (Statistics Canada, 2004).

4. There was a rise in the volume of immigration in the 1980s and 1990s. During much of this period, labour markets were relatively depressed. Immigrants, then, did poorly because they are, by definition, new entrants to the labour market, and the gap between the labour market outcomes of new entrants and the already employed tends to widen during periods of slow economic growth: "Macro conditions at the time of entry to the labour market have adverse impacts on both labour force participation and employment" (Aydemir, 2003, p. 17).

5. There is, finally, the problem of transferring credentials. It is this that interests us in this paper.

The average return on education is lower for immigrants who completed it outside rather than within Canada (Ferrer & Ridell, 2008; Li, 2001; Alboim, Finnie, & Meng, 2005; Anisef, Sweet, & Frempong, 2003). This might be a consequence of the poorer quality of education provided in some immigrants' home countries. But it also might be a consequence of difficulties in achieving recognition of the real value of an overseas education. Employers report that difficulties in the assessment of foreign credentials—along with similar problems in assessing language skills and the value of work experience—discourage them from hiring immigrants (Canadian Labour and Business Centre, 2001; see also Li, 2000; Reitz, 2001). Immigrants themselves see problems of foreign credential recognition, as well as lack of Canadian work experience, as two of the main problems they confront in securing employment that matches their skills (Statistics Canada, 2003).

Estimates of the loss to the Canadian economy from the underuse of immigrant skills vary between $2 billion and $5.9 billion each year (Reitz, 2001; Watt & Bloom, 2001). An ageing Canadian workforce and the challenge of global competitiveness increase the salience to the government of the issue of immigrant skill recognition (Watt & Bloom, 2001).

But the difficulty of dealing with this problem increases with the diversity of immigrant origins, which is much greater now than it was 30 years ago. Among Canada's recent immigrants (those arriving in 2004), the most common country of birth is China (16%), followed by India (12%), the Philippines (6%), and Pakistan (6%) (Citizenship and Immigration Canada, 2008). These countries have education systems that differ substantially from Canada's.

For our purposes, it is useful to distinguish between credential recognition relevant to regulated as opposed to unregulated occupations. Most occupations are unregulated. In these, credential recognition is at the discretion of the employer. An occupation is regulated if a licence from a professional association or a government agency is required to practise. In Canada, licensure is a provincial responsibility; it is provincial associations or agencies that grant licenses. Licensing is usually seen as a means of protecting public safety. Examples of regulated occupations are doctors, nurses, engineers, and some trades. According to the Canadian Information Centre for International Credentials (2009), about 20% of Canadians work in regulated occupations.

Many unregulated occupations (e.g., university faculty, government service) require significant amounts of education. Note that some unregulated occupations allow

for certification/registration with a professional body on a voluntary basis (Reitz, 2005). We know of no evidence on the pay effects of voluntary certification.

In general, however, regulated occupations are likely to be distinguished by the high level of education and/or training they require. This is one of the reasons why, on average, they might be expected to provide higher pay. The other reason is that the regulations governing access tend to restrict entrance into them (Adams, 2007). Clearly, difficulty in gaining access to these occupations would tend to lower the overall earnings of immigrants and, in particular, the return on their education.

Regulation and Immigrants

To enter a regulated occupation, immigrants must have their skills recognized by a licensing body. Frequently, they are required to repeat part of the occupation's training program in Canada because their "educational background may be relevant, but it may not contain all of the elements required in a Canadian context" (Reitz, 2005, p. 9). Sometimes they are required to redo all of it. Nonetheless, the situation is not entirely bleak. There have been attempts to facilitate immigrant transition into regulated occupations. In the past 10 years, these have included the Government of Canada's Foreign Credentials Referral Office, a Quebec-France agreement on the mutual recognition of professional qualifications, and the Pan-Canadian Framework for the Assessment and Recognition of Foreign Qualifications, as well as many bridging programs offered by universities, often in conjunction with regulatory bodies.

There is still widespread suspicion that poor enforcement of regulations not only limits immigrant access to a number of generally well-paid occupations, but consequently

deprives Canadians of the benefits of the immigrants' skills and contributes to the declining relative economic status of immigrants. There is evidence bearing on this issue. Some research has focused on specific regulated occupations, such as engineering (Boyd & Thomas, 2002; Girard & Bauder, 2007), or nursing and medicine (Hawthorne, 2006; Boyd & Schellenberg, 2007). Other studies have looked at the job-skills mismatch, that is, what is the proportion of immigrants with a university degree in jobs with low educational requirements (Galarneau & Morissette, 2008; Renaud & Cayn, 2006)? Still other studies have examined the extent and correlates of the match between the pre- and postmigration occupations held by immigrants (Girard, Smith, & Renaud, 2008; Statistics Canada, 2003). A recent Statistics Canada publication looked at the match between field of study and occupation in Canada by selecting 15 educational programs that usually lead to a regulated occupation (Zietsma, 2010). It shows that there are, relatively speaking, more immigrants than native-born Canadians trained for regulated occupations. However, the match rate, that is the proportion of individuals working in their trained professions, was 24% among foreign-trained immigrants, 53% among Canadian-educated immigrants, and 62% among the Canadian-born.

In our view, progress in understanding this issue has been hindered by the complexity of occupational regulation in Canada. Before the mechanisms associated with access to regulated occupations can be studied, they must be identified. This is a challenge because the list of regulated occupations varies—significantly, as we shall see—by province. A major contribution of this study is that we use the 2006 Census of Canada to classify all occupations, across provinces, into regulated and unregulated categories and

then to examine the covariates of membership in a regulated occupation. We describe how we do this shortly.

Research Question and Hypotheses

What is the proportion of immigrants and nonimmigrants in regulated occupations? Are individuals with foreign education less likely to be employed in a regulated occupation than someone with domestic credentials? A general consideration of the literature and issues arising from it leads us to propose the following hypotheses:

1. Since credential recognition is identified as a major barrier to employment, it is probably easier for immigrants to gain access to unregulated than to regulated occupations. However, the existence of programs to assist new immigrants in getting their foreign training recognized may have substantially reduced or even eliminated this immigrant disadvantage.

2. The recognition of credentials often takes time, sometimes a long time. Consequently, we expect that the likelihood of entry into a regulated occupation increases with the length of time an immigrant has lived in Canada.

3. Recognition may be difficult to achieve because of a lack of knowledge about the quality of an immigrants' education or because of the poor quality of the education of some immigrants. Education in the U.S. or Europe is probably more familiar to most licensing bodies and employers, and may be of equal quality to that provided in Canada. In general, then, for either reason, we might expect immigrants who completed their education in the U.S. or Europe to be better represented in regulated occupations than other immigrants.

Our aim in this study is to contribute to an understanding of the immigrant credential recognition process by (a) determining how many immigrants and nonimmigrants work in regulated and unregulated occupations, and (b) looking at how education (level, field, and place) is associated with the likelihood of working in a regulated occupation. This second question is interesting, because the existing literature suggests that immigrants are disadvantaged by their inability to gain access to regulated occupations to the extent that their high level of education warrants. We try to assess the scope of this problem. As mentioned earlier, occupational regulation is within provincial jurisdiction, so it is possible that access to regulated occupations varies across provinces due to variation in both the number of regulated occupations and the rules determining access to them.

Data and Analysis

The task of categorizing all occupations in Canada as either regulated or unregulated may seem arduous, given that regulating bodies are provincially based and that there are about 520 four-digit occupation codes in the National Occupational Classification (NOC), but it is simpler to do than it might appear. We used a tool from the Government of Canada's "Working in Canada" Web site (2008) to categorize all four-digit NOC codes as either regulated or unregulated. The site is designed to help prospective and new immigrants decide where to live and how to find work. To this end, it provides a detailed report on each occupation, in each province and territory, which includes a job description, skill requirements, average salary, and job opportunities, and specifies whether or not the occupation is regulated. It also provides contact information for regulatory bodies and apprenticeship authorities in each province. We used the tool to

identify all regulated and unregulated occupations, by province and by NOC number. See the appendix for a complete list of regulated occupations in Canada, by province.

In all provinces, most occupations are unregulated. Table 1 shows, however, that the proportions vary considerably. Quebec and Alberta have the highest proportions (17.8% and 16.3% respectively), while Prince Edward Island and Newfoundland and Labrador have the lowest (9.0% and 8.5%).

Table 1

Number and Proportion of Regulated Occupations, by Province

	Number	%
British Columbia	61	11.82
Alberta	84	16.28
Saskatchewan	60	11.63
Manitoba	63	12.21
Ontario	71	13.76
Quebec	91	17.64
New Brunswick	61	11.82
Nova Scotia	62	12.02
Prince Edward Island	50	9.69
Newfoundland and Labrador	44	8.53

Note. Based on information from Government of Canada's "Working in Canada Tool".

To analyse the determinants of access to regulated occupations, we used data from the 2006 Canadian Census. The 2006 microdata file, available in Statistics Canada's Research and Data Centres, includes everyone who completed forms 2B, 2C, 2D, or 3B and does not include people living in institutions. It contains 6,470,472 observations.

We selected all labour force participants, both native-born Canadians and landed immigrants, aged 15 and over, who have postsecondary education. The labour force is the entire population who is either employed or unemployed (Statistics Canada, 2010). For unemployed respondents, occupation recorded (and its NOC number) corresponds to last

job held. We excluded individuals living in any of the territories, due to the low number of immigrants there.

Our analysis compares the occupational outcomes of the native-born and of landed immigrants. We excluded nonpermanent residents from the sample. These are neither landed immigrants nor native-born Canadians; they are "people from another country who live in Canada and have a Work or Study Permit, or are claiming refugee status, and family members living in Canada with them" (Statistics Canada, 2010, p. 30). From the initial sample, we selected all labour market participants aged 15 and over (N = 3,500,403). After excluding nonpermanent residents and people with no postsecondary education, we were left with a sample of 2,002,364. The final sample was further reduced to 1,984,673 after the exclusion of 17,691 people living in the territories.

Results

Our analysis is divided into two parts: (a) a series of descriptive analyses of landed immigrants and nonimmigrants in Canada in 2006 and of their distribution across regulated and unregulated occupations; and (b) a series of logistic regressions on the likelihood of working in a regulated occupation, including interaction terms between level and place of education.

Table 2 summarizes the socioeconomic characteristics of the landed immigrants and native-born Canadians in the sample. The variables in the table are included in the regression analysis described shortly. Over 75% of labour force participants are native-born. Most landed immigrants (66%) have been in the country a long time. Given that most of those coming to Canada are economic immigrants selected partly for their high human capital, it is not surprising that 60% of them have a university degree, as compared

with about 41% of the native-born population. Both landed immigrants and native-born Canadians were disproportionately trained in the fields of business and management; architecture, engineering, and related occupations; and health, parks, recreation, and fitness. About 50% of landed immigrants earned their certificate, diploma, or degree in Canada.

There are slightly more male labour market participants among landed immigrants than among the native-born. We know that gender is a determinant of labour market outcomes, especially for immigrants. Previous research has found that female immigrants earn less than both male immigrants and native-born Canadians of either sex (Li, 2000; Alboim, Finnie, & Meng, 2005) and are more likely to work part time (Noreau, 2000) or have a temporary position (Cranford, Vosko, & Zukewich, 2003). The average age of landed immigrant labour force participants is higher than that of the native-born. Evidence shows that recent immigrants are younger than native-born Canadians but, overall, immigrants in the labour force are older than nonimmigrants (Palameta, 2004). Immigrants are disproportionately concentrated in Ontario (mainly in Toronto), British Columbia (mainly in Vancouver), and Quebec (mainly in Montreal), and underrepresented in all other provinces. Not surprisingly, the visible minority proportion is very high compared to the native-born. The main immigrant source countries have shifted from Europe to other parts of the world such as Asia and Africa.

The differences in the occupational distributions of landed immigrants and the native-born are rather modest. The proportions in the highly regulated health sector are almost identical, but landed immigrants are less active in social sciences, education, and government. The one striking difference is in natural and applied sciences. Significantly

more landed immigrants are employed in this sector, possibly reflecting the special recruitment of information technology professionals and engineers during the IT boom of the late 1990s (Picot & Hou, 2009). Finally, landed immigrants earn less than the native-born. This is further evidence of the earnings gap between immigrants and the native-born.

Table 2

Proportions of Landed Immigrants and Native-Born, by Socioeconomic Characteristics, Canadian Labour Force Participants With Postsecondary Education Aged 15 and Over, 2006

	Landed immigrants	Native-born	Total
Years since landed immigrant status granted			
Less than 5	14.50	—	3.50
5–10	19.23	—	4.64
Over 10	66.27	—	15.99
Born in Canada	—	100	75.87
Highest level of education			
Registered apprenticeship or other trades certificate or diploma	13.95	22.26	20.25
College, CEGEP or other non-university certificate or diploma	26.18	37.35	34.65
University degree, undergraduate	39.23	29.80	32.08
University degree, graduate	20.65	10.59	13.02
Major field of study			
Education	4.82	7.18	6.61
Visual and performing arts, and comms.	3.36	3.94	3.80
Humanities	5.76	5.21	5.34
Social and behavioural science and law	9.65	10.31	10.15
Business, management and public admin.	21.68	21.70	21.70
Physical and life sciences and tech.	4.93	3.02	3.48
Math, computer, and information sciences	6.95	4.10	4.79
Architecture, engineering, and related tech.	25.46	22.04	22.86
Agriculture, natural resources and conservation	1.72	2.58	2.37
Health, parks, recreation and fitness	11.73	13.25	12.89
Personal, protective and transp. Services	3.94	6.69	6.02
Region where highest certificate, diploma, or degree completed			
Canada	49.82	98.05	86.41
U.S.A.	3.81	1.39	1.97
Latin America and Caribbean	3.49	0.02	0.86
Europe	16.77	0.41	4.36
North Africa and Middle East	3.82	0.02	0.94
Sub-Saharan Africa	1.53	0.01	0.38

	Landed immigrants	Native-born	Total
Asia	20.18	0.02	4.89
Oceania	0.58	0.08	0.20
Sex			
Female	46.64	49.41	48.74
Male	53.36	50.59	51.26
Average age	44	41	41
Province or region of residence			
Atlantic Canada	1.44	8.34	6.67
Quebec	14.17	28.95	25.38
Ontario	54.73	33.45	38.59
Manitoba	2.20	3.37	3.09
Saskatchewan	0.73	3.17	2.58
Alberta	9.10	11.21	10.70
British Columbia	17.63	11.51	12.99
Speaks main language of province of residence	96.84	99.39	98.77
Visible minority	59.23	6.28	19.06
Occupational groups			
Management	11.26	11.17	11.19
Business, finance and admin.	18.86	18.59	18.66
Natural and applied sciences	12.94	8.56	9.60
Health	8.20	8.75	8.62
Social sci., education, government.	9.86	13.49	12.62
Art, culture, recreation, sport	3.11	3.74	3.59
Sales and service	18.28	16.49	16.92
Trades, transport, manufacturing	10.93	13.83	13.14
Primary industry	6.56	5.37	5.65
Annual earnings from employment and self-employment	40,266	45,412	44,170
Total	100%	100%	100%

Notes. N = 1,984,673. Results weighted. Source: Census of Canada, 2006 (Statistics Canada, 2006).

Table 3 illustrates the proportions of immigrants and nonimmigrants in regulated and unregulated occupations. Almost 78% of the population under study was employed in an unregulated occupation. Our first surprising result, given concern about immigrant access to regulated occupations, is that the proportion of immigrants in such occupations is only moderately lower than that of the native-born (19.5% versus 23.5%). However, a larger immigrant presence might have been expected in regulated occupations because of their higher level of education and because many have training in a field that leads to

highly regulated occupations such as engineering and health. Education is a minimal requirement for licensing, so these results may indicate a problem of access to regulated occupations. They support the findings of Zietsma (2010), who found lower match rates between field of study and occupations among immigrants than among the native-born population. Multivariate analysis will allow us to distinguish the effect of level and field of education, as well as immigrant status, on the likelihood of access to regulated occupations.

Table 3

Proportions of Landed Immigrants and Native-Born Canadians Working in Regulated and Unregulated Occupations, Canadian Labour Force Participants Aged 15 and Over, 2006

	Landed immigrants	Native-born	Total
Unregulated occupations	80.49	76.54	77.49
Regulated occupations	19.51	23.46	22.51
Total	100	100	100

Notes. N = 1,984,673. Results weighted. Source: Census of Canada, 2006 (Statistics Canada, 2006).

In Table 4, we re-examine the same sociodemographic characteristics summarized in Table 2, this time controlling for both immigrant/native-born status and presence in a regulated or unregulated occupation. Hypothesis 2, it will be recalled, proposed that licensure delays mean that the proportion of immigrants in regulated occupations should increase with time since arrival in Canada. Table 4 provides support for this conjecture. In the first 5 years after gaining their status, 14% of landed immigrants are in regulated occupations; in the next 5 years, the proportion rises to 17%. Despite the increase,

immigrants who have been in Canada over 10 years are not as likely as the native-born to work in regulated occupations. The difference is slight, however (21% versus 24%).

Education is a minimal requirement for licensing. Table 4 shows that the proportions of both landed immigrants and the native-born licensed rises with education. We assume that trade certificates, undergraduate university degrees, and graduate university degrees are the standard entry requirement into regulated occupations; if that is correct, Table 4 also reveals a striking difference within each category between landed immigrants and the native-born in their access to regulated occupations. The native-born are between 3 and 10 percentage points more likely to be in a regulated occupation. This provides crude support for Hypothesis 1, which suggested that landed immigrants with similar levels of education would be less successful in gaining access to regulated occupations than their native-born counterparts. The field of study and occupational data provide further support for Hypothesis 1. Despite, on average, better education, landed immigrants trained in and working in health and social sciences and education are less likely to be employed in a regulated occupation. There is, however, no such disadvantage for landed immigrants working in natural and applied sciences, perhaps because of the IT recruitment of immigrants discussed above.

Hypothesis 3 suggested that immigrants educated in the United States or Europe would be more likely to enter a regulated occupation than those educated in other parts of the world outside Canada. Table 4 provides some evidence for this: 21% of immigrants from the United States and 24% of immigrants from Oceania were in regulated occupations, 7 and 8 percentage points more than the proportions from Latin America, the Caribbean, and Asia.

In addition to the sections of it that bear directly on our hypotheses, we would draw attention to two other parts of the table. There are differences by province or region. Alberta has the largest percentage of both the native-born and landed immigrants in regulated occupations, perhaps related to the fact that it has more such occupations than any province other than Quebec (cf. Table 1). Quebec, however, has even more regulated occupations than Alberta. Given this, it is surprising that it has fewer members of the labour force in these occupations than Alberta. The differences are even bigger when the comparisons are made between landed immigrants and the native-born. In any case, there are differences in the proportions of respondents in regulated occupations by province or region that may influence the results of our regression analysis, given that differences in industrial structure by province are likely to cause differences in the demand for licensed employees. One of the interesting features of the relevant section of Table 4 is the high proportion of landed immigrants in regulated occupations in Atlantic Canada and Saskatchewan. A possibility is that this reflects a difficulty in recruiting professionals through internal migration and, consequently, a substitution of external for internal recruitment.

Table 4 also confirms that the average annual earnings for those in regulated occupations are considerably higher than those in unregulated occupations—about 30% more, in fact. Furthermore, in the regulated-occupation category, the earnings differences between landed immigrants and the native-born are modest.

Table 4

Proportions of Landed Immigrants and Native-Born Working in Regulated and Unregulated Occupations, by Socioeconomic Characteristics, Canadian Labour Force Participants Aged 15 and Over, 2006

	Landed immigrants		Native-born		Total	
	Unregulated	Regulated	Unregulated	Regulated	Unregulated	Regulated
Years since landed immigrant status granted						
Less than 5	86.02	13.98	—	—	86.02	13.98
5–10	82.98	17.02	—	—	82.98	17.02
Over 10	78.56	21.44	—	—	78.56	21.44
Born in Canada	—	—	76.54	23.46	76.54	23.46
Highest level of education						
Registered apprenticeship or other trades certificate or diploma	84.46	15.54	81.09	18.91	81.65	18.35
College, CEGEP or other nonuniversity certificate or diploma	85.98	14.02	84.23	15.77	84.55	15.45
University degree, undergraduate	80.25	19.75	69.84	30.16	72.91	27.09
University degree, graduate	71.32	28.68	58.70	41.30	63.53	36.47
Major field of study						
Education	67.57	32.43	45.38	54.62	49.28	50.72
Visual and performing arts, and comms.	94.59	5.41	94.48	5.52	94.51	5.49
Humanities	89.05	10.95	88.12	11.88	88.36	11.64
Social and behavioural science and law	87.23	12.77	82.66	17.34	83.71	16.29
Business, management and public admin.	86.76	13.24	86.84	13.16	86.82	13.18
Physical and life sciences and tech.	85.08	14.92	82.07	17.93	83.10	16.90
Math, computer, and information sciences	93.27	6.73	93.59	6.41	93.47	6.53
Architecture, engineering, and related tech.	75.89	24.11	72.25	27.75	73.23	26.77
Agriculture, natural resources and conservation	92.05	7.95	90.32	9.68	90.62	9.38
Health, parks, recreation and fitness	58.25	41.75	53.81	46.19	54.79	45.21
Personal, protective and transp. services	83.50	16.50	88.41	11.59	87.63	12.37
Region where highest certificate, diploma, or degree completed						
Canada	77.94	22.06	n.a.	n.a.	76.82	23.18
USA	78.81	21.19	n.a.	n.a.	73.98	26.02
Latin America and Caribbean	86.71	13.29	n.a.	n.a.	86.67	13.33
Europe	80.68	19.32	n.a.	n.a.	80.51	19.49
North Africa and Middle East	82.04	17.96	n.a.	n.a.	81.95	18.05
Sub-Saharan Africa	79.79	20.21	n.a.	n.a.	79.89	20.11
Asia	85.78	14.22	n.a.	n.a.	85.77	14.23
Oceania	75.82	24.18	n.a.	n.a.	70.84	29.16

	Landed immigrants		Native-born		Total	
	Unregulated	Regulated	Unregulated	Regulated	Unregulated	Regulated
Sex						
Male	79.91	20.09	77.47	22.53	78.09	21.91
Female	81.16	18.84	75.58	24.42	76.87	23.13
Average age	43	45	40	42	41	42
Province or region of Canada						
Atlantic Canada	78.85	21.15	80.02	19.98	79.96	20.04
Quebec	81.76	18.24	75.63	24.37	76.46	23.54
Ontario	80.51	19.49	76.73	23.27	78.03	21.97
Manitoba	82.03	17.97	77.60	22.40	78.36	21.64
Saskatchewan	77.17	22.83	78.68	21.32	78.57	21.43
Alberta	73.58	26.42	71.09	28.91	71.60	28.40
British Columbia	83.07	16.93	80.15	19.85	81.11	18.89
Speaks main language of province of residence	80.30	19.70	76.53	23.47	77.42	22.58
Visible minority	82.06	17.94	80.61	19.39	81.70	18.30
Occupational groups						
Management	99.19	0.81	97.63	2.37	98.00	2.00
Business, finance, and admin.	88.52	11.48	90.46	9.54	89.99	10.01
Natural and applied sciences	62.15	37.85	65.02	34.98	64.10	35.90
Health	32.44	67.56	26.28	73.72	27.67	72.33
Social sci., education, government.	66.47	33.53	50.88	49.12	53.78	46.22
Art, culture, recreation, sport	94.43	5.57	96.94	3.06	96.42	3.58
Sales and service	90.84	9.16	92.67	7.33	92.20	7.80
Trades, transport, manufacturing	80.23	19.77	69.87	30.13	71.92	28.08
Primary industry	99.67	0.33	98.77	1.23	99.02	0.98
Annual earnings from employment and self-employment	36,538	55,653	42,034	56,432	40,656	56,269
Total	80.49	19.51	76.54	23.46	77.49	22.51

Notes. N = 1,984,673. Results weighted. n.a.: Not available due to low cell counts. Source: Census of Canada, 2006 (Statistics Canada, 2006).

In Table 5 we report the results of a logistic regression analysis of the predictors of employment in a regulated occupation. The predictors are entered in consecutive blocks: Model 1, immigrant status; Model 2, immigrant status and education (level and field); Model 3, immigrant status, education, region where highest education was received, knowledge of official language, and visible minority status. This sequence was chosen

because we are primarily concerned with the role of immigrant status and length of time since landing in determining access to regulated occupations. Finally, sex, province of residence, and age are added as controls in Model 4.

Model 1 shows that being native-born increases the likelihood of employment in a regulated occupation. Model 2 still contains evidence of immigrant disadvantage. Controlling for the level and field of education, very recent immigrants are less likely than long-term immigrants to work in a regulated occupation. Education is very strongly related to access to a regulated occupation; the likelihood increases with each additional level of education. Individuals trained in education, engineering, and health are more likely to work in regulated occupations than those trained in humanities.

Adding region where the highest certificate, diploma, or degree was completed, official language proficiency, and minority status removes the immigrant disadvantage. These results suggest that region of education, language proficiency and visible minority status mediates the relationship between native-born Canadians and long-term immigrants. However, holding these control variables constant, the significant differences between groups of immigrants (very recent, recent and long-term immigrants) remain. The likelihood that an immigrant will enter a regulated occupation increases with time spent in Canada. Fluency in the main language of the province of residence significantly increases the likelihood of working in a regulated occupation, whereas being a visible minority member reduces it. The coefficients for place of education indicate, in our view, the differences in the recognition and/or quality of education from different regions of the world. Credentials earned in Oceania rather than Canada do not significantly reduce the

likelihood of access to a regulated occupation, whereas those from anywhere else do reduce that likelihood.

People with a degree from the US, sub-Saharan Africa and Asia are less likely to work in regulated occupations than those with a diploma from Canada. Immigrants educated in these regions remain disadvantaged after controls for gender, region of residence, and age. The odds ratios are larger for those from the US than for those from Asia, which may give the impression that race is at play. However, the odds ratios are larger for those from sub-Saharan Africa than for those from the US. Precisely what produces this result is unclear. A possibility is that there may be a good proportion of Sub-Saharan Africans who comes from South Africa and who are white. This is a question for further research

Table 5

Odds Ratio from Logistic Regressions: Likelihood of Working in Regulated Occupation, Canadian Labour Force Participants Aged 15 and Over, 2006

	Model 1	Model 2	Model 3	Model 4
Years since landed immigrant status granted (ref. Over 10 years)				
Less than 5	0.5955***	0.4380***	0.5927***	0.5953***
	(0.0079)	(0.0063)	(0.0091)	(0.0093)
5–10	0.7518***	0.5983***	0.7558***	0.7646***
	(0.0082)	(0.0072)	(0.0096)	(0.0098)
Born in Canada	1.1235***	1.2898***	1.0011	1.0087
	(0.0059)	(0.0076)	(0.0072)	(0.0075)
Highest level of education (ref. Registered apprenticeship or other trades cert. or dip.)				
College, CEGEP or other nonuniversity certificate or diploma		1.0055	1.0122	1.0334***
		(0.0064)	(0.0064)	(0.0067)
University degree, undergraduate		2.6713***	2.7826***	2.8300***
		(0.0177)	(0.0186)	(0.0192)
University degree, graduate		3.9189***	4.0976***	4.1649***
		(0.0303)	(0.0321)	(0.0332)

	Model 1	Model 2	Model 3	Model 4
Major field of study (ref. Humanities)				
Education		6.9235***	6.8922***	6.9285***
		(0.0859)	(0.0857)	(0.0868)
Visual and performing arts, and comms.		0.6123***	0.6124***	0.6072***
		(0.0129)	(0.0129)	(0.0128)
Social and behavioural science and law		1.5127***	1.4973***	1.4945***
		(0.0192)	(0.0191)	(0.0190)
Business, management and public admin.		1.5539***	1.5521***	1.5291***
		(0.0186)	(0.0187)	(0.0184)
Physical and life sciences and tech.		1.4891***	1.4878***	1.4765***
		(0.0235)	(0.0236)	(0.0234)
Math, computer, and information sciences		0.7321***	0.7224***	0.7158***
		(0.0135)	(0.0133)	(0.0132)
Architecture, engineering, and related tech.		5.0706***	5.1575***	5.0912***
		(0.0601)	(0.0614)	(0.0619)
Agriculture, natural resources, and conservation		1.0871***	1.0880***	1.0922***
		(0.0229)	(0.0230)	(0.0231)
Health, parks, recreation, and fitness		9.3315***	9.4061***	9.4870***
		(0.1110)	(0.1124)	(0.1138)
Personal, protective, and transp. services		2.3435***	2.3698***	2.3839***
		(0.0356)	(0.0361)	(0.0365)
Region where highest certificate, diploma or degree was completed (ref. Canada)				
U.S.A.			0.7315***	0.7417***
			(0.0107)	(0.0109)
Latin America and Caribbean			0.5606***	0.5355***
			(0.0161)	(0.0155)
Europe			0.6498***	0.6463***
			(0.0081)	(0.0081)
North Africa and Middle East			0.6749***	0.6443***
			(0.0167)	(0.0160)
Sub-Saharan Africa			0.8988***	0.8891***
			(0.0326)	(0.0324)
Asia			0.5265***	0.5262***
			(0.0074)	(0.0074)
Oceania			0.9700	1.0288
			(0.0433)	(0.0462)
Speaks main language of province of residence			1.1577***	1.2201***
			(0.0246)	(0.0262)
Visible minority			0.8147***	0.8415***
			(0.0059)	(0.0062)
Male				1.0025
				(0.0050)
Province or region of residence (ref. Ontario)				
Atlantic Canada				0.7714***
				(0.0068)
Quebec				1.1412***
				(0.0062)

	Model 1	Model 2	Model 3	Model 4
Manitoba				0.8368*** (0.0100)
Saskatchewan				0.7816*** (0.0103)
Alberta				1.3283*** (0.0091)
British Columbia				0.7793*** (0.0055)
Age (continuous var.)				1.0023*** (0.0002)
N	1,984,673	1,984,311	1,984,276	1,984,276
Wald chi^2	4,270.46	187,817.85	189,356.93	192,854.75

Notes. N = 1,984,673. Results weighted. Source: Census of Canada, 2006 (Statistics Canada, 2006).
*$p < .05$. **$p < .01$. ***$p < .001$.

Finally, the control variables in Model 4 do not eliminate the disadvantage of being recent immigrants. Because Alberta and Quebec have the highest proportions of regulated occupations, it was expected that respondents in these two provinces would be more likely than those living in Ontario to work in a regulated occupation. More importantly, adding these variables has no effect on the already significant level of education coefficients.

Table 6.

Likelihood of Working in Regulated Occupation, Canadian Labour Market Participants Aged 15 and Over, by Level and Region of Education

	Region where highest certificate, diploma, or degree completed		
Highest level of education	Canada	Asia, Latin America, and Caribbean	Elsewhere[a]
Registered apprenticeship or other trade certificate or diploma	1	0.7392***	0.7031***
College, CEGEP or other nonuniversity certificate or diploma	0.9933	0.7090***	0.8396***
University degree, undergraduate	2.8156***	1.3876***	1.8767***
University degree, graduate	4.2211***	2.0871***	2.7509***

Notes. N = 1,984,673. Results weighted. The odds ratios represent the likelihood of working in a regulated occupation after controlling for the effect of immigration status, field of study, gender, province or region of

residence, age, official language proficiency, and visible minority status. Region of education has been recoded into three categories: Canada; Asia, Latin America, and Caribbean; and elsewhere. Source: Census of Canada, 2006 (Statistics Canada, 2006).
[a]Elsewhere = U.S.A., Europe, North Africa and Middle East, sSub-Saharan Africa, and Oceania.
*$p < .05$. **$p < .01$, ***$p < .001$.

Table 5 shows that the likelihood of access to a regulated occupation rises with education, but falls considerably if that education was completed in Asia, Latin America, or the Caribbean. In Table 6 we examine more closely the combined effects of level and location of education by introducing an interaction between the two factors into the estimating equation. The results are quite striking. The probability of access to a regulated occupation increases with level of education, no matter where the education was completed. However, as compared to the reference category—a registered apprenticeship or other trade certificate, diploma, or degree earned in Canada—the improvement in the likelihood of getting access varies considerably depending on the region of education. A graduate degree awarded in Canada increases the likelihood more than four times, but a degree awarded in Asia, Latin America, or the Caribbean only approximately doubles it. Moreover, in contrast to either Canada or any other part of the world, a trade certificate from anywhere outside Canada significantly decreases the likelihood of gaining access to a regulated occupation.

Discussion

We began this paper with three hypotheses:

1. All other things being equal, immigrants are less likely to enter a regulated occupation than the native-born.

2. The likelihood of entering a regulated occupation increases with length of time in the country.

3. Immigrants educated outside Canada, the United States and Europe are less likely to enter regulated occupations.

Tables 2 and 4 provided some support for the first three hypotheses, but contained no controls. Controlling for level and field of study did not eliminate the immigrant disadvantage. Controlling for level of education, field of study, and place of education, as well as official language proficiency, visible minority status, sex, age, and province, eliminated the immigrant access disadvantage, but not the fact that, while immigrants finally get access to regulated occupations, they only do so after a substantial delay.

Tables 4, 5, and 6 all show that the likelihood of access to a regulated occupation varies considerably depending on immigrants' region of origin. Immigrants educated in Asia, Latin America, and the Caribbean prove to be *much* less likely to enter a regulated occupation than either the native-born or other immigrants. Hypothesis 3, that the likelihood of entry varies according to the place of education, is strongly supported. Clearly, the barrier to immigrant entry varies depending on the immigrant's origin.

Conclusion

What our results suggest most strikingly is that it is not whether or not someone is an immigrant that limits access to regulated occupations. With time spent in Canada, immigrants are as likely as the native-born to work in a regulated occupation. Rather, it is where the immigrant was educated. This is not really surprising. Still, since most previous research using national samples has not directly measured whether or not an occupation is regulated, we think that providing evidence of the existence and considerable magnitude of this effect is valuable. Our results raise two questions: Why, *in aggregate*, are immigrants no less likely to secure access to regulated occupation? And, why are those with

educations from Asia, Latin America, and the Caribbean so much less likely to enter such an occupation? Consider these questions in turn.

There are several possible explanations for the absence of an aggregate difference in access to regulated occupations.

1. The programs established by governments, educational institutions, and professions to facilitate credential recognition no doubt help in some, perhaps many, cases. Our results, however, are not consistent with this explanation. The target immigrant population for these programs is recent immigrants who arrive with foreign credentials. Our results show that recent arrivals have the lowest probability of access to a regulated occupation. This analysis should be repeated in future years to better evaluate the effect of these programs and governmental investments, most of which are fairly recent.

2. Some new immigrants fail to get their foreign training recognized and, in response, secure a Canadian qualification. This increases their likelihood of working in a regulated occupation. This explanation is consistent with our results: after controls, those who have been in Canada for 10 years are as likely as the native-born to enter a regulated occupation. Those 10 years will have allowed them to complete a Canadian program.

3. It is possible that the immigration screening process means that a larger proportion of immigrants than of the native-born have an education that would qualify them for a regulated occupation, were those qualifications recognized by a licensing body or employer. Consequently, while many fail to get their qualifications recognized, the larger number of them seeking recognition generates similar proportions of immigrants and of the native-born in regulated occupations. This explanation is supported by the findings of Zietsma (2010), who looked at the number of Canadians trained for 15

different regulated occupations. She showed that there are proportionally more immigrants trained for regulated occupations than native-born Canadians.

4. It is also possible that the occupational options available to native-born Canadians who would qualify for a regulated occupation are broader than those available to immigrants. Some of the native-born with law or engineering degrees may find it to their advantage to work in unregulated occupations. Our data do not allow us to fully assess the relative plausibility of these accounts. But the absence of an aggregate access difference does, we think, suggest that these are worthwhile questions to be answered in future research.

Nor does our analysis allow us to answer the second question raised above. Immigrants educated in Asia, Latin America, and the Caribbean may have less access to regulated occupations either because employers and licensing bodies fail to recognize the real value of their certificates, diplomas, or degrees or because many of those credentials signal, on average, poorer quality education. Or it may be some combination of the two. However, the main source countries for new immigrants to Canada are China and India (Citizenship and Immigration Canada, 2008). It is, therefore, worrying that Asian degree holders are significantly less likely to work in a regulated occupation. This finding suggests that initiatives to assist Asian, Latin American and Caribbean immigrants in finding employment, such as the Canadian Immigration Integration Project funded by the Government of Canada's Foreign Credential Recognition Program, may prove valuable and important.

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Appendix: *List of Regulated Occupations in Canada, By Province*

	Alberta	British Columbia	Manitoba	New Brunswick	Newfoundland & Lab.	Nova Scotia	Ontario	Prince Edward Island	Quebec	Saskatchewan
1111 Financial auditors and accountants	x	x	x	x	x	x	x	x	x	x
1121 Specialists in human resources									x	
1122 Professional occupations in business services to management	x									
1235 Assessors, valuators, and appraisers	x								x	
2112 Chemists	x								x	
2113 Geologists, geochemists, and geophysicists	x	x	x	x	x	x	x		x	x
2121 Biologists and related scientists	x									
2122 Forestry professionals	x	x		x		x	x		x	
2123 Agricultural representatives, consultants, and specialists	x	x	x	x	x	x	x	x	x	x
2131 Civil engineers	x	x	x	x	x	x	x	x	x	x
2132 Mechanical engineers	x	x	x	x	x	x	x	x	x	x
2133 Electrical and electronics engineers	x	x	x	x	x	x	x	x	x	x
2134 Chemical engineers	x	x	x	x	x	x	x	x	x	x
2141 Industrial and manufacturing engineers	x	x	x	x	x	x	x	x	x	x
2142 Metallurgical and materials engineers	x	x	x	x	x	x	x	x	x	x
2143 Mining engineers	x	x	x	x	x	x	x	x	x	x
2145 Petroleum engineers	x	x	x	x	x	x	x	x	x	x
2146 Aerospace engineers	x	x	x	x	x	x	x	x	x	x
2147 Computer engineers (except software engineers and designers)	x	x	x	x	x	x	x	x	x	x
2148 Other professional engineers, not elsewhere classified	x	x	x	x	x	x	x	x	x	x
2151 Architects	x	x	x	x	x	x	x	x	x	x
2152 Landscape architects		x	x				x			
2153 Urban and land use planners	x					x	x		x	x
2154 Land surveyors	x	x	x	x	x	x	x	x	x	x
2231 Civil engineering technologists and technicians	x	x	x	x		x	x	x	x	x
2232 Mechanical engineering technologists and technicians	x	x	x	x		x	x	x	x	x
2233 Industrial engineering and manufacturing technologists and technicians	x	x	x	x		x	x	x	x	x
2234 Construction estimators	x	x	x	x		x	x	x	x	x
2241 Electrical and electronics engineering technologists and technicians	x	x	x	x		x	x	x	x	x
2242 Electronic service technicians (household and business equipment)	x						x			
2243 Industrial instrument technicians and mechanics							x			
2244 Aircraft instrument, electrical, and avionics mechanics, technicians and inspectors	x	x	x	x		x	x	x	x	x
3111 Specialist physicians	x	x	x	x	x	x	x	x	x	x
3112 General practitioners and family physicians	x	x	x	x	x	x	x	x	x	x
3113 Dentists	x	x	x	x	x	x	x	x	x	x
3114 Veterinarians	x	x	x	x	x	x	x	x	x	x
3121 Optometrists	x	x	x	x	x	x	x	x	x	x
3122 Chiropractors	x	x	x	x	x	x	x	x	x	x

	Alberta	British Columbia	Manitoba	New Brunswick	Newfoundland & Lab.	Nova Scotia	Ontario	Prince Edward Island	Quebec	Saskatchewan
3123 Other professional occupations in health diagnosing and treating	x	x	x	x			x		x	x
3131 Pharmacists	x	x	x	x	x	x	x	x	x	x
3132 Dieticians and nutritionists	x	x	x	x	x	x	x	x	x	x
3141 Audiologists and speech-language pathologists	x		x	x			x		x	x
3142 Physiotherapists	x	x	x	x	x	x	x	x	x	x
3143 Occupational therapists	x	x	x	x	x	x	x	x	x	x
3152 Registered nurses	x	x	x	x	x	x	x	x	x	x
3211 Medical laboratory technologists and pathologists' assistants	x		x	x		x	x		x	x
3212 Medical laboratory technicians	x									
3214 Respiratory therapists, clinical perfusionists, and cardiopulmonary technologists	x		x				x		x	
3215 Medical radiation technologists	x		x	x		x	x		x	x
3221 Denturists	x	x	x	x	x	x	x		x	x
3222 Dental hygienists and dental therapists	x	x	x	x	x	x	x	x	x	x
3223 Dental technologists, technicians, and laboratory bench workers	x	x		x		x	x		x	x
3231 Opticians	x	x	x	x	x	x	x	x	x	x
3232 Midwives and practitioners of natural healing	x	x	x				x		x	
3233 Licensed practical nurses	x	x	x	x	x	x	x	x	x	x
3234 Ambulance attendants and other paramedical occupations	x	x	x	x		x	x	x	x	x
3235 Other technical occupations in therapy and assessment	x	x	x		x	x	x		x	
3411 Dental assistants	x	x	x	x	x	x		x		x
4112 Lawyers and Quebec notaries	x	x	x	x	x	x	x	x	x	x
4141 Secondary school teachers	x	x	x	x	x	x	x	x	x	x
4142 Elementary school and kindergarten teachers	x	x	x	x	x	x	x	x	x	x
4143 Educational counsellors									x	
4151 Psychologists	x	x	x	x	x	x	x	x	x	x
4152 Social workers	x	x	x	x	x	x	x	x	x	x
4153 Family, marriage, and other related counsellors									x	
4164 Social policy researchers, consultants, and program officers	x		x	x			x			
4214 Early childhood educators and assistants					x					
5125 Translators, terminologists and interpreters				x			x		x	
6231 Insurance agents and brokers							x			
6232 Real estate agents and salespersons	x	x	x	x	x	x	x	x	x	x
6242 Cooks										x
6271 Hairstylists and barbers	x	x	x				x	x		x
6272 Funeral directors and embalmers	x	x	x	x	x	x	x	x	x	x
6442 Outdoor sport and recreational guides		x	x	x	x	x				x
6461 Sheriffs and bailiffs									x	
6482 Estheticians, electrologists and related occupations			x							
6621 Service station attendants						x				
7212 Contractors and supervisors, electrical trades, and telecommunications occupations	x									

	Alberta	British Columbia	Manitoba	New Brunswick	Newfoundland & Lab.	Nova Scotia	Ontario	Prince Edward Island	Quebec	Saskatchewan
7241 Electricians (except industrial and power system)	x	x	x	x	x	x	x	x	x	x
7242 Industrial electricians			x					x	x	
7244 Electrical power line and cable workers		x						x	x	
7251 Plumbers	x			x	x	x	x	x	x	x
7252 Steamfitters, pipefitters, and sprinkler system installers	x	x	x	x		x	x		x	
7253 Gas fitters	x									x
7261 Sheet metal workers	x						x		x	x
7262 Boilermakers	x								x	
7264 Ironworkers	x					x			x	
7265 Welders and related machine operators	x								x	
7271 Carpenters									x	
7281 Bricklayers				x		x			x	
7282 Concrete finishers									x	
7283 Tilesetters									x	
7284 Plasterers, drywall installers and finishers, and lathers									x	
7291 Roofers and shinglers									x	
7292 Glaziers									x	
7293 Insulators									x	
7294 Painters and decorators									x	
7295 Floor covering installers									x	
7311 Construction millwrights and industrial mechanics (except textile)									x	
7312 Heavy-duty equipment mechanics	x								x	
7313 Refrigeration and air conditioning mechanics	x	x	x	x		x	x		x	x
7318 Elevator constructors and mechanics	x								x	
7321 Automotive service technicians, truck and bus mechanics and mechanical repairers	x	x		x		x	x	x		
7322 Motor vehicle body repairers	x	x					x			
7331 Oil and solid fuel heating mechanics						x			x	
7332 Electric appliance servicers and repairers	x									
7334 Motorcycle and other related mechanics	x						x			
7351 Stationary engineers and auxiliary equipment operators									x	
7371 Crane operators	x	x	x				x		x	
7372 Drillers and blasters—surface mining, quarrying, and construction									x	
7382 Commercial divers									x	
7383 Other trades and related occupations	x									
7421 Heavy equipment operators (except crane)									x	
8232 Oil and gas well drillers, servicers, testers, and related workers	x									
8421 Chain saw and skidder operators	x									
Total	84	61	63	61	44	62	71	50	91	60

Note. Based on information from Government of Canada's "Working in Canada Tool" .