

The effects of a change in the point system on immigration: evidence from the 2001 Quebec reform

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Abstract In 2001, Quebec changed its point system, a system that selects immigrants based on specific observable characteristics. The explicit objective was to increase the number of French-speaking immigrants, with no deterioration in overall labor market performance. To achieve this, points for French and education (specifically bachelor’s degrees) were increased. In parallel, points for a subjective assessment of “adaptability” were decreased. In line with the initial objective, we find more French-speaking immigrants with bachelor’s degrees, and no worsening in labor market outcomes after the reform. These results hold in a difference-in-differences and triple differences analysis. This paper shows how point systems can be used to shape the immigrant workforce according to policy goals.

Keywords Immigration · Point system · Labor market integration

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Many developed countries have chosen or are actively considering, a point system that selects immigrants based on specific characteristics (education, language skills, age, experience, occupation, or motivation). This system has been implemented in

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Canada, Australia (already accounting for 67 and 63 % of immigrants to Canada and Australia¹), New Zealand, and the UK. Other countries choose some immigrants based on their skills (the USA with the H1B visa and the EU with the Blue Card program) and are actively considering adopting a more formal point system (Aydemir 2011). A major advantage of a point system over other immigration policies, such as family reunification or refugees, is that the points can be changed by governments to shape immigration depending on their economic, political, or cultural needs. A point system thus provides a useful policy lever to shape immigration.

Skeptics argue that tweaking the point system will not affect the composition of immigration: more fundamental forces, such as returns to skills and geographic proximity, dominate the nuances of selection systems (Jasso and Rosenzweig 2008). For example, if Canada and Australia had the same point system, it is unlikely that they will have the same immigration, considering the different neighboring countries. Skeptics further argue that changes in points for observables will not affect unobservables, such as motivation or ability, and the integration or economic performance of immigrants (Borjas 1991).

Considering the wide use of the point system despite these criticisms, it is vital to know whether changing the points can affect the immigrants' composition and performance. Yet, empirically, it is very difficult to answer this question. Comparing countries with different point systems is unlikely to deliver the causal impact of selection systems since countries differ on many levels, such as the returns to skills and geographic proximity of host and source countries. Immigrants to different countries might be systematically different for reasons other than a difference in the point system (Borjas 1991; Antecol et al. 2003). Within-country analyses hold more promise since factors such as geography and history are held constant (Green and Green 1995). However, when the points change, they often do so at a national level (Beach et al. 2011). The comparison of immigrants selected before and after changes may be confounded by business cycle or cohort effects: more recent immigrants may perform worse simply because of deteriorating macroeconomic conditions and fewer years to integrate, not because of a different point system. A "before/after" comparison is unlikely to deliver the causal impact of a change in the point system.

This paper is the first to answer these important questions using a large change in the point system that occurred in only one of the ten provinces of Canada, which allows us to use a difference-in-differences and triple difference analysis. In 2001, a new immigration policy was implemented in Quebec (subsequently QC): points for education (specifically to bachelor's degree) and the French language increased, while points for a subjective assessment of the immigrants' "adaptability", i.e., personal qualities and motivation to integrate in society, decreased.

Relative to the Rest of Canada (subsequently ROC), in which there was no change in the point system over the same period, we find that immigrants selected in QC after the reform are 6 percentage points more likely to hold a bachelor's degree than immigrants selected before, and 4 percentage points more likely to speak French only (as opposed to speaking both French and English). This indicates that immigrants'

¹Citizenship and Immigration Canada (CIC) 2013; Australian Bureau of Statistics 2013.

characteristics respond to changes in the point system. The point system thus represents an effective policy lever to shape immigration.

Despite being more educated and speaking more the local language, the new immigrants did not perform better on the labor market after the reform (in terms of employment and earnings). One explanation is that foreign bachelor's degree holders have difficulties integrating in the QC labor market: all else equal, we find that they were on average 12 percentage points less employed than those not holding a foreign bachelor's degree. Other studies have shown that they take twice as much time as high school graduates to find a job (Godin and Pinsonneault 2004; Renaud and Cayn 2006). Immigrants speaking only French also have difficulties integrating: we find that they were 8 percentage points less employed than bilingual immigrants. These difficulties to integrate may have been exacerbated by the policy shift. If immigrants with a foreign bachelor's degree and speaking French only are not highly substitutable for other workers and hence are in a very narrow labor market, we would expect an increase in their number to lead to worse labor market outcomes, all else equal. Finally, an alternative explanation for the poor performance of new immigrants is that the sharp drop in points for "adaptability" was detrimental to the selection process.

In any case, labor market performance was not the primary goal of the reform. The stated objective of the reform was to "increase the French-speaking immigration, while maintaining the socioeconomic requirements".² This new immigration policy was decided by the governing party, the Parti Québécois, whose two first priorities are independence from Canada and protection of the French language (programme du Parti Québécois 2001). The control of immigration was seen as a key issue to realize these goals. After the 1995 referendum of independence was lost by a narrow margin, but in which Francophones massively voted for independence, party officials stated that the next referendum would be successful with only a few percentage more of French speakers (Cardinal 2005). The underlying motivations for the 2001 reform were thus more political and cultural than economic. Relative to this goal of increasing the number of French-speaking immigrants with no deterioration in labor market outcomes, the reform was an unequivocal success. These results thus show that the points can be changed to shape immigration according to policy goals.

A common concern when comparing QC to ROC is that QC has very different cultural, political, and economic conditions from ROC. In other words, QC may be on different trends from ROC. To address this criticism, we employ a triple differences methodology. To find additional control groups within QC, we use other immigrants who would fall short of the passing grade based on their observable characteristics but who immigrated through other programs such as family-reunification or refugees. We also use natives as an additional control group. These control groups reside in QC, and are therefore influenced by the same cultural, political, and economic conditions as our treatment group. But they did not go through the point system and should thus be unaffected by the 2001 QC reform. Using these additional control groups, we find no support for differing trends between QC and ROC over the period, and our triple differences confirm our findings.

²Plan Stratégique 2001–2004, Ministère des Relations avec les Citoyens et de l'Immigration.

This paper is the first to use a change in points in a sub-unit of a country to analyze its impacts on immigrants in a difference-and-differences analysis. The existing literature on the point system has compared immigrants coming through this system, to immigrants entering through other systems, such as family-reunification immigrants and refugees, in Canada and Australia (Borjas 1993; Miller 1999; Cobb-Clark 2000, 2003; Abbott and Beach 2011; Aydemir 2011) or to immigrants coming before the implementation of the point system (Green and Green 1995). Despite the importance of this literature, it does not provide an answer to the question we ask, i.e., will a change in the point system affect the immigrants' composition. To answer this particular question, other papers more directly related to ours have looked at national changes in points (Beach et al. 2011), or cross country differences between Canada, Australia and the US (Borjas 1991; Antecol et al. 2003). Our paper is the first to use a within country difference-in-differences and triple differences methodology, which controls for cohort, business cycle, cultural, political, and economic effects. We show that more points on French attracted more French speaking immigrants. More points on bachelor's degrees attracted more bachelor's degrees' holders. In this particular case, this was not accompanied with better labor market outcomes since the return to foreign bachelors' degrees and speaking French only are negative on the QC job market. One implication is that assigning more points to characteristics that fetch a higher return (such as bilingualism, Master and Ph.D. in the case of QC) could be associated with better labor market outcomes.

The paper proceeds as follows: Section 1 provides background on the point system and on the related impact evaluation literature. Section 2 presents our identification strategy. Section 3 describes the data, and Section 4 presents the methodology used. Section 5 presents the results. Section 6 provides a discussion of these results, and Section 7 concludes.

1 The point system

1.1 Description

In 1967, Canada became the first country in the world to initiate a point system. Immigrants to Canada are classified into three categories: family class, humanitarian or refugee class, and the economic class. Only the last class is assessed through the point system. Figure 1 shows the number of Canadian immigrants by category from 1999 till 2003. Since 1999, more than 55 % of immigrants are admitted under the economic class each year³ (Citizenship and Immigration Canada 2007).

The point system is a color-blind system that allocates a number of points to some observable skills of immigrants. The main categories are education, training, experience, occupational sector in demand, arranged employment, regional and labor

³Note that the economic class comprises different subcategories such as skilled worker class, business class and investor class. In this paper, we study the skilled worker point system. 89 % of the economic class' principle applicants apply under the skilled workers program (Citizenship and Immigration Canada 2007).

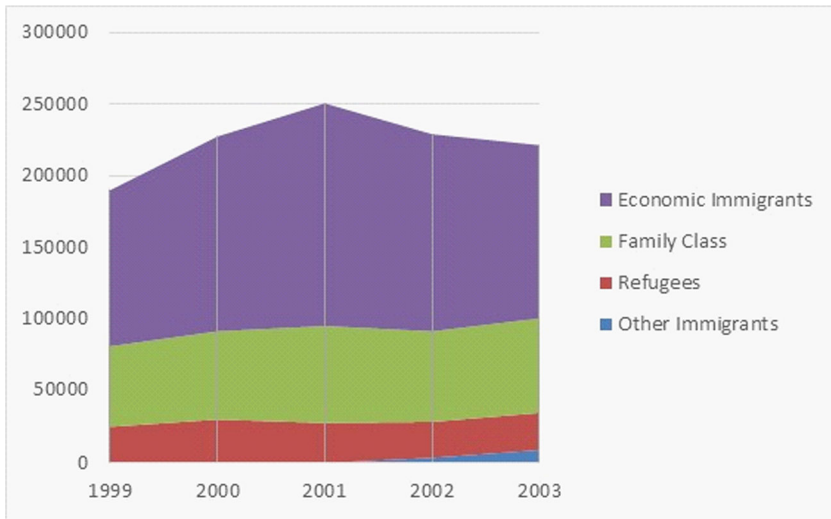


Fig. 1 Canadian permanent residents by category from 1998 to 2003 Source: CIC facts and figure 2007

markets needs, age, language abilities, adaptability, and characteristics of the spouse and children if applicable (McWhinney 1998, see Table 1 for the exact points on each category in ROC over the period 1999–2002). If the applicant garners more points than a specified threshold,⁴ he/she is admitted into the country.

1.2 Existing literature

To evaluate how a change in points affects immigrant composition, the existing literature has followed three strategies. First, some studies have used time variation in the point system (Beach et al. 2011). There is considerable time variation in the point system. The Canadian government alternated between “labor market specific” models, “human capital” models, and a combination of both (see O’Shea (2009) for a description of the changes that occurred in the Federal Skilled Workers grids from 1967 until 2008). The “labor market specific” models assign points based on current market needs and are short-term in nature. The “human capital” models are more long-term and assign points on characteristics thought to help immigrants integrate in Canada, such as education, age, language, and experience. These large and frequent changes all serve to illustrate that there is no consensus on how the points should be set, and how they affect the immigrants’ composition. On an econometric level, one issue with comparing individuals who immigrated before and after changes is that their performance on the labor market may be affected not only by changes in the points system, but also by cohort effects or coincidental macroeconomic shocks.

A second strand of the literature has used cross-country comparisons. There are wide differences between point systems implemented in different countries. For example, Australia assigns 46 % of the passing grade for applicants aged between

⁴The passing grade was 70 out of 100 between 1999 and 2002.

25 and 32 years, whereas Canada assigns only 15 % for 21–44 years old. Australia assigns 31 % of the passing grade for Ph.D. and 23 % for master and bachelor, whereas Canada assigns 37 % for Ph.D. and 34 % for master and bachelor's degrees. In the USA, there is no formal point system, but 16 % of total immigration goes through an employment-based program for skilled workers. This program selects holders of advanced degrees, people with exceptional skills, or immigrants with employers who demonstrate that no American could fill the job. There are no points for language skills, age, experience, or motivation. Understanding the impact of these wide differences is critical. Borjas (1993) finds that American immigrants to Canada (who went through the point system) perform worse than Canadian immigrants to the USA (who did not go through the point system). When comparing Canada, Australia, and the USA, Borjas (1991) and Antecol et al. (2003) find that immigrants to Australia perform better than immigrants to Canada or the USA. However, it is difficult to attribute these findings to the point system, since geographic, economic, and political conditions differ greatly across countries.

Finally, a third strand of the literature has compared immigrants who went through the point system to immigrants coming before the introduction of the point system (Green and Green 1995) or to immigrants who immigrated through other systems, e.g., family reunification and refugees, in Canada and Australia (Borjas 1993; De Silva 1997; Barrett 1998; Miller 1999; Cobb-Clark 2000, 2003; Wanner 2003; Sweetman and Warman 2012). Overall, a consensus emerged from this literature that immigrants selected through the point system are more educated than others. The effects on labor market outcomes are more ambiguous. One set of papers argues that the returns to education of the selected immigrants are positive (Beach et al. 2011), and that the difference in earnings with other immigrants persists over time (Abbott and Beach 2011; Sweetman and Warman 2012). Other papers find that the returns to education are very small (Aydemir 2011) and that the earnings of the different classes converge rapidly (De Silva 1997; Wanner 2003). These negative findings may not be evidence that the point system is inappropriate, rather that the points are set on the inappropriate categories. In any case, this important literature does not answer the particular question we ask, i.e., does a change in points affect the immigrants composition.

To answer our question of interest, the ideal experiment would assign different point systems to randomized group of immigrants and follow their labor market success. In the absence of such an experiment, we use the following identification strategy.

2 Identification strategy

2.1 The 2001 QC reform

In this paper, we exploit the fact that QC is the only province in Canada which can set its own point system.⁵ In 2001, QC dramatically changed its point system, while ROC

⁵In 1991, the Canada-Quebec agreement granted QC the exclusive right to select its immigrants and design its own point system based essentially on the same major characteristics as the ones used in ROC (Kostov 2008).

Table 1 Summary of the point system in QC and ROC from 1999–2002 (percentage of the passing grade)

	QC		ROC
	Before 2001	After 2001	1999–2002
Education	25	32	23
Language		21	
	French	34	
	English	11	
Adaptability		14	
	Personal Qualities	10	
	Motivation	3	
	Knowledge of QC	3	
	Visit to QC	10	
	Connection with a resident in QC	5	
Age	19	21	14
Training	8	8	26
Experience	17	19	11
Employment	23	25	14
Financial autonomy	1	2	
Occupational Demand		14	
Demographic		14	

did not. Our identification strategy is to compare the characteristics and labor market performance of immigrants who immigrated to QC before and after 2001, relative to those immigrating to ROC before and after 2001. The reform, which we describe in greater detail below, changed points for three categories: education, language, and “adaptability”.

Table 1 shows that the points for education increased from 25 to 32 % (as a proportion of the passing grade⁶) in QC in 2001. The reform specifically focused on bachelor’s degrees. Out of the six modifications to the points on education, five concerned bachelor’s degrees (or other degrees at the bachelor level, e.g., postsecondary 3 years, a second university specialty of 1 or 2 years, which can be a second bachelor). Only one modification awarded one more point (out of 60) to Master students. No changes were made to Ph.D. or Medical degree. Moreover, a new section on spouse’s education was added in the auxiliary Grille d’Employabilité et de Mobilité Professionnelle that granted extra points only to a bachelor education. No extra points

⁶We report the changes in the point system as a proportion of the passing grade to account for the changes in the passing grade. For single applicants in Quebec, the passing grade changed from 65 (out of 115 total points available) in 1996 to 60 (out of 106) in 2001. For married applicants, it changed from 70 (out of 132) to 68 (out of 123).

were granted to spouses with a Master, Ph.D., or MD. If the point system is effective, immigrants should be more educated, in particular have more bachelor's degrees after the implementation of this reform.

Points for French increased in 2001 in QC by 5 percentage points and did not change in ROC, as either a first or second language (ROC does not make a distinction between the two official languages, French and English).

Finally, Table 1 shows that the points for "adaptability" decreased in QC in 2001 by 17 percentage points, but stayed constant in ROC. The "adaptability" category consists in a subjective assessment of the ability of an immigrant to successfully integrate into the QC society following an interview with the applicant. Adaptability points are given based on personal qualities, motivation, knowledge of QC, visits to QC, and a connection with a resident in QC. In 2001, there was a decrease in the first two sub-categories only: personal qualities (23 to 10 %) and motivation (8 to 3 %). Appendix 1 details all the criteria used to evaluate the immigrants' personal qualities and motivation.

In summary, the 2001 QC reform made three changes: more points for education and French knowledge and fewer for adaptability. There were no significant changes in other categories, as shown in Table 1.

As explained above, there were no significant changes to the point system in ROC in 2001. In 2002, ROC implemented a reform, called the Immigration and Refugee Act (IRPA). For the purpose of this paper, we will ignore this change since only 8 % of the federal skilled workers immigrants who arrived to Canada in 2003 were evaluated under the IRPA (Citizenship and immigration Canada 2010).

If the point system works, the 2001 QC reform may attract more educated, French-speaking, less "adaptable" immigrants. This may have profound positive consequences for the labor market performance of these new immigrants. The existing literature on immigration usually finds that more educated immigrants perform better on the labor market (Beach et al. 2011). Speaking the local language may be beneficial and is posited by immigration officials as being beneficial.⁷

Yet, the existing literature from QC has found that foreign bachelor degree holders fared relatively poorly on the QC labor market (Godin and Pinsonneault 2004; Renaud and Cayn 2006). Using QC's administrative data on 1579 immigrants, they find that the time to first employment is higher for bachelor's degree holders (20 weeks) than for any other education category, including high school graduates (9 weeks). Explanations for their findings are that foreign bachelor's degrees are of worse quality or that Quebec employers discriminate against foreign bachelor's degree holders. By increasing points on the French language, the reform may attract cohorts of immigrants speaking French only. If bilingualism, not speaking French only, is required on the labor market, the new immigrants may be less employable. Moreover, a drop in points on "adaptability" may hurt integration if these subjective assessments were effectively screening for unobservables.

Finally, immigrants with a foreign bachelor's degree and speaking French may not be highly substitutable for other workers and hence may be in a very narrow

⁷Plan Stratégique 2001–2004, Ministère des Relations avec les Citoyens et de l'Immigration.

labor market. An increase in their number will inevitably lead to worse labor market outcomes, all else equal. Overall, it is unclear whether this reform will improve labor market outcomes. Our empirical analysis below will look at the impact of the reform on immigrants' education and language skills, as well as their labor market outcomes.

2.2 Exogeneity of the reform

A concern for our analysis is that the reform may have been endogenous to labor market conditions of the time. For example, it could be that QC's labor market was on a worse trend than in ROC and that this prompted the QC government to enact this reform. If immigrants entering QC after 2001 are found to do worse than earlier immigrants, it might be due to these changing labor market conditions, not to the point system. In this case, one would be tempted to conclude that changing points in this manner was detrimental to immigrants, when in fact, the reform may have been beneficial.

In this particular case, the 2001 QC reform was not designed to counter a worsening economic trend. This reform was designed to achieve the primary objective of the new immigration policy decided in 2001: "increase the French-speaking immigration, while maintaining the socioeconomic requirements (which favor a rapid integration to the job market)".⁸ This new immigration policy was decided by the governing party, the Parti Québécois, whose two first priorities are independence from Canada and protection of the French language (programme du Parti Québécois 2001). The control of immigration was seen as a key issue to realize these goals. Statistical analysis of the results from the 1995 QC independence referendum (50.6 % said no to independence) revealed that 60 % of French speakers voted for independence, while only 5 % of non Francophones did (Drouilly 1996). In 1995, Jacques Parizeau, the Premier of Quebec, stated that the next referendum would be successful with only a few percentage more of French speakers (Cardinal 2005). The underlying motivations for the 2001 reform were thus more political and cultural than economic. In this sense, we consider this reform as exogenous from labor market conditions of the time.

3 Data

We use the confidential microdata files of the 2006 Canadian Census to identify individuals who immigrated to Canada between 1999 and 2003.⁹ The reform was

⁸In French: "hausser l'immigration francophone, tout en maintenant les exigences socio-économiques (qui favorisent l'intégration rapide au marché du travail)", Plan Stratégique 2001–2004, Ministère des Relations avec les Citoyens et de l'Immigration.

⁹We focus on the period 1999–2003 since there were no changes to point system in ROC over this period. In 1997–1998, ROC shifted from using the Canadian Classification Dictionary of Occupations (CCDO) to National Occupation Classification (NOC) in order to describe the different occupations. In 2002, ROC introduced the Immigration and Refugee Act (IRPA) which altered the point system. However, only 8 % of the federal skilled workers who immigrated to ROC in 2003 were assessed under the IRPA (Citizenship and Immigration Canada 2010).

implemented in September 2001. Immigrants who landed in QC after 2001 went through the new point system and form our treatment group. Immigrants who landed in QC in 2000 (or in ROC) did not go through this new point system.¹⁰

The Census does not provide information on whether the immigrant went through the point system or immigrated through the family reunion or refugee programs. As noted above, most of the immigrants to Canada are selected through the point system (more than 55 % each year, CIC 2007). To further ensure that the majority of our sample immigrated through the point system, we restrict the sample in three ways. First, we restrict our sample to those with at least a high school degree, since the QC point system excludes others.¹¹ Second, we keep only those who can conduct a conversation in at least one of the official languages, since those who cannot are unlikely to go through the point system. Third, we restrict the sample to household heads,¹² since non-household heads are likely to immigrate as a dependent, or through family reunification. In our triple differences (as will be explained in greater detail below), we will relax these three restrictions one by one to create control groups of immigrants who have not gone through the point system.

The 2006 census reports education and language abilities in 2006, not at the time of immigration. It is possible that education in 2006 differs from education at the time of immigration, if immigrants acquired additional education in Canada. Since we are interested in the effect of a change in the point system on immigrants' characteristics at the time of immigration, we further restrict our sample to those who earned their highest degree outside Canada and those aged between 25 and 45 years at the time of immigration since individuals are most likely to have completed their formal schooling at that age. We present results with and without this restriction.

The Census does not specify the province of landing. It is possible that the province of residence observed in the 2006 census differs from the province of landing at immigration. However, in our sample, the proportion of immigrants who migrated in and out of QC is small. Only 3.2 % of immigrants to QC migrated in or out of the province in the last year and 13.7 % in the last 5 years. In addition, Okonny-Myers (2010) uses the longitudinal Immigration Database (IMDB) to show that 90 % of the skilled workers immigrating to QC in 2000 were still in QC in 2006.

After applying these restrictions, the sample consists of 35,327 observations. Table 2 reports descriptive statistics for our sample, in QC and ROC, before the reform (the years 1999 and 2000) and after the reform (the years 2002 and 2003). We exclude the year 2001 since the reform was only partially implemented in 2001. The proportion of immigrants with a high school degree dropped from 18 to 11 % in QC.

¹⁰It is unclear whether immigrants who landed in 2001 went through the new point system, and we will thus analyze them separately.

¹¹In ROC, the point system does not automatically exclude applicants with less than a high school degree. It merely gives them zero points on the education category. However, getting zero points on education, and knowing at most one official language (only 2 % of immigrants to ROC with less than a high school degree speak the two official languages of Canada, 70 % speak only one language and the rest do not speak any of the official languages) leads to a grade less than the minimum passing grade in all possible scenarios. Thus, the restriction of the sample to individuals with less than a high school degree is valid for ROC.

¹²In the data, we use the concept of "main household maintainer", defined in the census as the person that contributes the most towards shelter expenses.

Table 2 Descriptive statistics 1999–2003

	(1)	(2)	(3)	(4)	(5)
	QC		ROC		DID
	1999–2000	2002–2003	1999–2000	2002–2003	
High school	0.18 (0.39)	0.11 (0.31)	0.13 (0.31)	0.11 (0.32)	−0.05 [−4.00]***
Diplomas & certificates	0.28 (0.45)	0.28 (0.45)	0.20 (0.40)	0.20 (0.40)	0.001 [0.04]
Bachelor	0.28 (0.45)	0.36 (0.48)	0.35 (0.48)	0.39 (0.49)	0.04 [2.40]**
Master	0.13 (0.33)	0.14 (0.35)	0.19 (0.40)	0.19 (0.39)	0.01 [1.08]
Ph.D.	0.05 (0.21)	0.03 (0.28)	0.04 (0.19)	0.03 (0.17)	−0.01 [−1.25]
Medical degree (MD)	0.01 (0.11)	0.01 (0.11)	0.02 (0.13)	0.02 (0.13)	0.001 [0.11]
French only	0.23 (0.42)	0.26 (0.44)	0.001 (0.03)	0.001 (0.03)	0.03 [2.40]**
English only	0.25 (0.43)	0.20 (0.40)	0.95 (0.22)	0.94 (0.24)	−0.04 [−2.60]***
French & english	0.52 (0.50)	0.72 (0.45)	0.05 (0.22)	0.06 (0.24)	0.004 [0.22]
Employment	0.83 (0.37)	0.72 (0.45)	0.88 (0.32)	0.85 (0.36)	−0.09 [−6.01]***
Log earnings	10.07 (1.05)	9.86 (1.04)	10.38 (0.96)	10.16 (0.98)	0.01 [0.24]
Observations	1755	3033	11,361	11,034	27,183

Mean (standard deviation in parentheses). The first two columns report the mean and standard deviation in QC for the periods 1999–2000 and 2002–2003, respectively. Columns 3 and 4 report the statistics for ROC. Column 5 reports the difference-in-differences estimates; t values are reported in brackets. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. High school, Dipl & Cert, Bachelor, Master, Ph.D., and MD are dichotomous variables equal to 1 if the highest degree earned is a high school, a diploma, or certificate below bachelor, a Bachelor's degree, a Master's degree, a Ph.D. degree, and a medical degree, respectively. French only is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in French but not in English. English only is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in English but not in French. French & English is a dichotomous variable equal to 1 if the immigrant can conduct conversations in both French and English. Employment is a dichotomous variable equal to 1 if the immigrant is employed. Log Earnings is the logarithmic transformation of the earnings of employed immigrants

In ROC, the drop was from 13 to 11 % over the same period. Thus, the difference-in-differences estimate is a 5 percentage point decrease. A naive t test of this estimate, i.e., not accounting for serial correlation within provinces, provided in the last column of Table 2, shows a statistically significant difference. The rest of Table 2 shows

the same analysis for other characteristics. After the reform, immigrants to QC are 4 percentage points more likely to hold a bachelor degree, 3 percentage points to speak French only,¹³ 4 percentage points less likely to speak English only, and 9 percentage points less likely to be employed.

Figures 2 to 6 in Appendix 2 show the same data by year in graphs. Figure 2 shows the percentage of people with a university degree who immigrated to QC between 1999 and 2003. While there were no significant changes to Master, Ph.D., and medical degrees, the proportion of immigrants with a bachelor's degree increased in 2001 and even more so in 2002. Figure 3 shows the share of immigrants to QC and ROC holding a bachelor's degree. In 1999, 27 % of QC immigrants held a bachelor's degree, compared to 34 % in ROC. The gap widened in 2000, before closing down after 2001. In other words, QC was strongly catching up to ROC after 2001. Figure 4 shows that the proportion of QC immigrants speaking only French increased in 2001 and even more so in 2002. Figure 5 shows employment rates of immigrants across time. Despite immigrants being more educated and speaking more French, the official language of QC, there is no improvement in the employment rate of immigrants who landed after 2002. In fact, the employment rate seems to decrease. Figure 6 shows no discernible effect on earnings after 2001 in QC, since the gap between QC and ROC remains the same over time.

In the next section, we present our formal difference-in-differences methodology that allows us to control for potential confounding factors and address the issue of serial correlation within provinces.

4 Methodology

Our empirical analysis exploits the fact that the selection process changed in QC in 2001, while that of ROC did not. To determine the effects of the change in points on immigrants' skills and labor market outcomes, we perform the following difference-in-differences analysis:

$$y_i = PROV_i + YEAR_i + \gamma_0 QC * 1999_i + \gamma_1 QC * 2001_i + \gamma_2 QC * 2002_i + \gamma_3 QC * 2003_i + \theta X_i + u_i \quad (1)$$

where i corresponds to individual i . y_i is the variable of interest (education, language, employment, or earnings), measured in 2006. $PROV_i$ are a set of provincial fixed effects. For example, it includes QC_i , a dichotomous variable equal to 1 if individual i resides in QC, 0 otherwise. $YEAR_i$ are a set of dichotomous variables for the year of immigration of immigrant i between 1999 and 2003. For example, 1999_i is a dichotomous variable equal to 1 for an individual immigrating in 1999, 0 otherwise.

We further include all interactions of QC_i and year of immigration dummies, except for $QC * 2000_i$, the reference period before the reform. $QC * 2001_i$ is an interaction term between QC_i and 2001_i and isolates in the data those immigrants who reside in QC and immigrated in 2001. The coefficient γ_1 of $QC * 2001_i$ thus

¹³French only is a dichotomous variable equal to 1 if the immigrant is able to conduct a conversation in French but not in English.

looks at the impact of the reform in 2001 when the reform was partially implemented (i.e., after September of that year).

The coefficients of interest are γ_2 and γ_3 . They measure the changes in characteristics of immigrants to QC after the reform, relative to the same changes in ROC. The strength of this difference-in-differences methodology is that it controls for any provincial and time fixed effects. In other words, the analysis controls for the fact that QC is systematically different from ROC (by comparing immigrants within QC before and after the reform) and for the fact that later cohorts have less time to integrate or face different macroeconomic conditions (by comparing the same cohort of immigrants in different places).

The remaining identification assumption is the common time effects assumption: for our results to be valid, QC and ROC must be on similar trends. In other words, in the absence of the reform, QC would have evolved the same way as ROC. We address this concern in three ways. First, we look at pre-reform trends visible in $QC * 1999_i$. No changes were made to the point system in QC and ROC in 1999. We thus expect γ_0 to be not significantly different from zero. Second, we include as control variables, X_i , provincial macroeconomic variables (provincial unemployment rate and provincial average earnings) to directly control for the fact that QC may have been on a different time trend than ROC. Third, we provide triple differences estimates, described in greater detail below.

In all the regressions, we cluster the standard errors by province, the level at which the reform took place (Moulton 1990), to deal with the within cluster serial correlation problem that might occur in the difference-in-differences estimation (Bertrand et al. 2004). However, Cameron et al. (2008) show that using clustering of that sort leads to over-rejection when the number of clusters is small. Using Monte Carlo simulations with 10 clusters (equal to the number of provinces used in our analysis) and different error structures and cluster sizes, they show that the OLS standard errors reject the null at a rate of 10.6 to 77 %. Even after correcting for clustering, the cluster-robust standard errors reject the null 8.2 to 18.3 %. We follow Cameron et al. (2008) and use the wild cluster bootstrap. With 10 clusters, they show that this technique rejects the null at a rate of 4.5 to 6.4 %, not significantly different from 5 %. In our analysis, we use the 6-point weight distribution proposed by Webb (2014).

5 Results

5.1 Immigrants' characteristics

We start by considering the effect of the reform on education and French language. In Column (1) of Table 3, the dependent variable is a dichotomous variable equal to 1 if the highest degree attained is high school, 0 otherwise. We only report the coefficients of the interaction between QC_i and the year of immigration dummies. γ_0 , the coefficient of $QC * 1999_i$, shows that QC and ROC were on a similar trend before the reform. γ_1 , the coefficient of $QC * 2001_i$, shows no significant effect after a partial implementation of the reform in 2001. γ_2 and γ_3 , the coefficients of $QC * 2002_i$ and $QC * 2003_i$, show a negative and significant effect of the reform:

Table 3 Effect of the 2001 QC reform on immigrants' education and language

Dependent Variable	(1) High school	(2) Bachelor	(3) French only	(4) English only	(5) Fr & Eng
QC*1999	-0.04 (0.29)	0.01 (0.36)	0.004 (0.29)	0.01 (0.24)	-0.02 (0.26)
QC*2001	-0.05 (0.23)	0.03 (0.47)	0.03 (0.04)**	-0.04 (0.5)	0.01 (0.59)
QC*2002	-0.06 (0.03)**	0.06 (0.02)**	0.04 (0.001)***	-0.05 (0.02)**	0.01 (0.16)
QC*2003	-0.07 (0.05)*	0.03 (0.05)*	0.03 (0.03)**	-0.03 (0.04)**	-0.003 (0.46)
Observations	35,327	35,327	35,327	35,327	35,327

Wild cluster bootstrap p values at the province level are reported in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All regressions include province fixed effects, year fixed effects, provincial unemployment rate, and provincial average earnings. High School and Bachelor are dichotomous variables equal to 1 if the highest degree earned is a high school or a Bachelor's degree, respectively. French only is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in French but not in English. English only is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in English but not in French. Fr & Eng is a dichotomous variable equal to 1 if the immigrant can conduct conversations in both French and English. QC*1999 isolates immigrants to QC who landed in 1999. It provides a falsification exercise by looking at pre-reform trends. QC*2001, QC*2002, and QC*2003 provide the impact of the reform in 2001, 2002, and 2003. QC*2000 is the reference category

compared to immigrants who landed in 2000, the reference period, immigrants who landed in QC in 2002 are 6 percentage points less likely to be high school graduates. In 2003, the coefficient is smaller and still significant. This is expected considering the partial¹⁴ implementation in ROC of the IRPA reform in 2003, which increased points for education from 23 to 33 %.

Column (2) shows the results for immigrants with a bachelor's degree. Immigrants who landed in QC in 2002 are 6 percentage points more likely to hold a bachelor's degree.¹⁵

Concerning language skills, Column (3) of Table 3 shows that immigrants who landed in 2002 were 4 percentage points more likely to speak only French, and 5 percentage points less likely to speak only English. There is no change for immigrants who speak both French and English.

Throughout Table 3, all coefficients pertaining to the 1999 period are not significantly different from zero, confirming that QC and ROC were on similar trends before the reform. All coefficients pertaining to the 2001 period are either not significantly different from zero or smaller than those for 2002. This is expected since the reform was implemented only after September 2001.

¹⁴Only 8 % of immigrants in 2003 came under the IRPA.

¹⁵The full set of variables as well as the results for the other educational categories (diplomas and certificates below university, Master, Ph.D. and medical degrees) are presented in Table 7.

Table 4 Effect of the 2001 QC reform on immigrants' labor market outcomes

Dependent variable	(1) Employment	(2) Log earnings
QC*1999	0.02 (0.58)	-0.06 (0.59)
QC*2001	-0.04 (0.54)	-0.01 (0.45)
QC*2002	-0.06 (0.07)*	-0.06 (0.16)
QC*2003	-0.07 (0.17)	-0.02 (0.48)
Observations	35,327	28,386

Wild cluster bootstrap p values at the province level are reported in parentheses, *** $p < 0.01$, ** $p < 0.10$, * $p < 0.1$. All regressions include province fixed effects, year fixed effects, provincial unemployment rate, and provincial average earnings. Employment is a dichotomous variable equal to 1 if the immigrant is employed. Log Earnings is the logarithmic transformation of the earnings of employed immigrants. QC*1999 isolates immigrants to QC who landed in 1999. It provides a falsification exercise by looking at pre-reform trends. QC*2001, QC*2002, and QC*2003 provide the impact of the reform in 2001, 2002 and 2003. QC*2000 is the reference category

Overall, these results show that the point system significantly affected the composition of immigrants: immigrants were more educated and spoke more French following an increase in points for education and French. We next ask whether this translated into better labor market outcomes for immigrants.

5.2 Labor market outcomes

After studying the effect of the 2001 change in the point system on immigrants' education and language skills, we now turn to their labor market performance. Column (1) of Table 4 does not show a positive impact of the reform on employment. If anything, the effect is negative in 2002, although the coefficient is not significant for the year 2003. There is no effect on earnings, as can be seen by the insignificant coefficients in Column (2) of Table 4.¹⁶

As noted above, our sample only includes immigrants who earned their highest degree outside Canada, since one of our main questions of interest was whether a change in the point system attracted more educated immigrants. This restriction might conceal effects of the point system change if the reform attracted immigrants who decide to pursue their education in Canada. Getting more education in Canada may be associated with better labor market outcomes, if Canadian education is of greater quality, or if Canadian employers discriminate less against immigrants with Canadian degrees. By selecting these immigrants out of our sample, we might underestimate the true effects of the reform.

¹⁶The full set of variables is reported in Table 8.

To address this issue, we replicate our methodology after including in our sample the immigrants who decided to study in Canada (see in Appendix 4, Tables 9 and 10). As was the case in the restricted sample, this unrestricted sample shows that immigrants after 2002 were more educated, spoke more French, and did not have better labor market outcomes. Therefore, our results are not sensitive to our focus on individuals who studied outside of Canada.

Throughout Table 4, the coefficients pertaining to $QC * 1999_i$ are not significant, indicating that QC and ROC were on similar trends before the reform. Nonetheless, it is possible that QC experienced a negative shock precisely in 2001, which would explain all the results. To address this issue, we provide in the next section evidence from a triple differences analysis.

5.3 Triple differences

An issue with the difference-in-differences methodology is that QC may have been on a declining trend relative to ROC. This may explain the stagnating economic performance of immigrants and mask beneficial effects of the change in points. To address this concern, we consider additional control groups of immigrants to QC who did not go through the point system, as well as natives. In a sense, these groups provide a falsification exercise for our theory, because immigrants not assessed in the point system, or natives, should not be affected by the QC 2001 reform. If their labor market performance is affected, it must mean that other factors are at play and confound the estimates of the reform.

We first consider immigrants with no secondary education (aged between 20 and 64 years at time of immigration). Those individuals cannot immigrate through the point system since the point system excludes such individuals. We thus define $Assessed_i$, a dichotomous variable equal to 0 for those immigrants without a secondary education, 1 for our sample identified above. We then perform the following triple difference analysis:

$$\begin{aligned}
 y_i = & PROV_i + YEAR_i + \gamma_0 QC * 1999_i + \gamma_1 QC * 2001_i + \gamma_2 QC * 2002_i + \gamma_3 QC * 2003_i \\
 & + \gamma_4 Assessed_i + \gamma_5 QC * Assessed_i \\
 & + \gamma_6 1999 * Assessed_i + \gamma_7 QC * 1999 * Assessed_i \\
 & + \gamma_8 2001 * Assessed_i + \gamma_9 QC * 2001 * Assessed_i \\
 & + \gamma_{10} 2002 * Assessed_i + \gamma_{11} QC * 2002 * Assessed_i \\
 & + \gamma_{12} 2003 * Assessed_i + \gamma_{13} QC * 2003 * Assessed_i \\
 & + \theta X_i + u_i
 \end{aligned} \tag{2}$$

y_i are labor market outcomes. We cannot look at education as an outcome since the control group of immigrants has no education, by definition. Moreover, the point of the triple difference analysis is to address the issue of a potentially deteriorating labor market in QC, thus we focus on labor market outcomes.

The main coefficients of interest are γ_{11} and γ_{13} , the triple differences estimates. For the common time effects assumption to hold, and the validity of the falsification exercise, we need γ_2 and γ_3 , i.e., the impact of the reform on the immigrants not exposed to the reform, to be not significantly different from zero. In Table 5, we

Table 5 Triple differences estimation

Additional control group for the triple differences estimation (Assessed=0):							
Dependent variable	Immigrants aged between 20 and 64 at time of immigration with no secondary education		Immigrants aged between 45 and 64 at time of immigration with at most a high school degree no knowledge of Fr or Eng		Spouses aged between 20 and 64 at time of immigration who immigrated at least one year after the household head entered the labor market between 1999 and 2003		Log earnings
	(1) Employment	(2) Log earnings	(3) Employment	(4) Log earnings	(5) Employment	(6) Log earnings	
QC*2002	0.004 (0.88)	-0.31 (0.13)	-0.004 (0.79)	0.81 (0.53)	0.03 (0.47)	-0.26 (0.24)	-0.01 (0.78)
QC*2003	-0.06 (0.5)	0.09 (0.46)	-0.01 (0.83)	0.15 (0.71)	-0.04 (0.16)	-0.20 (0.25)	0.06 (0.46)
QC*1999*Assessed	0.05 (0.52)	0.01 (0.89)	-0.16 (0.73)	-0.44 (0.15)	0.06 (0.55)	-0.04 (0.72)	-0.03 (0.66)
QC*2001*Assessed	-0.09 (0.63)	0.07 (0.50)	-0.09 (0.47)	-0.67 (0.67)	-0.05 (0.49)	0.25 (0.27)	-0.03 (0.28)
QC*2002*Assessed	-0.07 (0.62)	0.26 (0.2)	-0.07 (0.34)	-0.87 (0.68)	-0.09 (0.6)	0.22 (0.19)	-0.07 (0.47)
QC*2003*Assessed	-0.01 (0.67)	-0.11 (0.35)	-0.07 (0.5)	-0.17 (0.7)	-0.03 (0.23)	0.19 (0.32)	-0.09 (0.43)
Observations	48272	34187	41067	29596	45101	33286	114289

Wild cluster bootstrap p-values at the province level are reported in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All regressions include province fixed effects, year fixed effects, provincial unemployment rate and provincial average earnings. Employment is a dichotomous variable equal to 1 if the immigrant is employed. Log Earnings is the logarithmic transformation of the earnings of employed immigrants. QC*2002 and QC*2003 provide the impact of the reform on the control group in the years 2002 and 2003, respectively. QC*1999*Assessed, QC*2001*Assessed, QC*2002*Assessed and QC*2003*Assessed are the triple difference estimates. The omitted category is QC*2000*Assessed

report these four coefficients, along with γ_7 and γ_9 to verify that the trends between the treatment and control groups were not different before the reform. X_i includes the provincial macroeconomic variables used above (provincial unemployment rate and the provincial average earnings).

Columns (1) and (2) of Table 5 present the findings for employment and earnings: γ_2 and γ_3 , the coefficients of $QC * 2002_i$ and $QC * 2003_i$, are not significantly different from zero. This indicates that immigrants not going through the point system are not doing worse in QC after 2001. This falsification exercise confirms that it is reasonable to assume that QC and ROC would have been on similar trends had the reform not been implemented. The triple differences coefficients γ_{11} and γ_{13} of $QC * 2002 * Assessed_i$ and $QC * 2003 * Assessed_i$ are not significantly positive, as found above, confirming that the reform had no positive impact on labor market outcomes of immigrants.

In columns (3) and (4), we consider another falsification exercise by looking at another group of immigrants that did not go through the point system: immigrants aged between 45 and 64 years at the time of immigration, who have at most a high school degree, and are not able to conduct a conversation in either French or English. This group cannot get the passing grade of the point system. We replicate our triple differences methodology and find that this group was not affected by the reform, as expected.

In columns (5) and (6), we look at spouses of immigrants who immigrated to Canada at least 1 year after the household head (20 to 64 years old at immigration). These spouses are most likely sponsored by the household head to immigrate under the family class. As they immigrated 1 year after the household head, they did not contribute to the points under the skilled worker program. These spouses are unlikely to have gone through the point system and thus provide another falsification test. Their performance on the labor market should be unaffected by the 2001 QC reform. Columns (5) and (6) show that this is the case.

Lastly, we consider a control group consisting of natives. A major obstacle in using this control group is the unavailability of a year of immigration. Instead, we use their year of entry to the labor market as an equivalent¹⁷ and compare natives who entered the labor market before and after 2001 in QC and ROC. Since natives did not immigrate, the changes in the point system should not affect their labor market outcomes. This is confirmed in columns (7) and (8) of Table 5.

Additionally, in all four control groups, γ_7 and γ_9 , the coefficients for $QC * 1999 * Assessed_i$ and $QC * 2001 * Assessed_i$ are not significant, confirming that the treated and control groups were not on different trends before or during the implementation of the reform.

Overall, these triple differences results show that QC and ROC were on similar time paths for non-assessed immigrants, and the same is probably true for assessed immigrants. Moreover, these results confirm that the reform had no positive impacts on employment and earnings, despite immigrants being more educated and speaking more French.

¹⁷Proxied by age – years of education – 6.

6 Discussion

Our results show that immigrants held more bachelor's degrees and spoke more French after the reform, but that this did not translate into better labor market outcomes. Our triple difference estimates show that these results are not driven by a

Table 6 Returns to education for immigrants in QC

Dependent variable	(1) Employment	(2) Log earnings
High School	-0.11 (0.06)*	0.01 (0.17)
Bachelor	-0.12 (0.04)***	-0.14 (0.13)
Master	0.01 (0.05)	0.15 (0.16)
Ph.D.	0.15 (0.08)*	0.42 (0.33)
Medical degree	0.01 (0.07)	0.08 (0.19)
YSM	0.03 (0.01)***	0.07 (0.02)***
High School x YSM	0.004 (0.02)	-0.06 (0.04)
Bachelor x YSM	0.03 (0.01)**	0.05 (0.03)
Master x YSM	0.004 (0.01)	0.03 (0.04)
Ph.D. x YSM	-0.03 (0.02)	0.05 (0.07)
MD x YSM	-0.03 (0.02)	0.05 (0.07)
French Only	-0.01 (0.02)	0.0004 (0.05)
French & english	0.08 (0.02)***	0.20 (0.05)***
Observations	6092	4286

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All regressions include age, age squared, gender marital status, and presence of kids. High school, Bachelor, Master, Ph.D., and MD are dichotomous variables equal to 1 if the highest degree earned is a high school, a Bachelor's degree, a Master's degree, a Ph.D. degree, and a medical degree, respectively. The omitted category is dipl & cert a dichotomous variable equal to 1 if the highest degree is a diploma or certificate below bachelor. French only is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in French but not in English. French & English is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in both French and English. The omitted category is English only: a dichotomous variable equal to 1 if the immigrant can conduct a conversation in English but not in French

differential trend in QC after the reform, since other categories of immigrants not assessed through the point system, as well as natives did not fare differently in QC after the reform.

An explanation for these findings is that the reform specifically focused on bachelor's degrees, and the returns to holding a foreign bachelor's degree are low. In Table 6, we show the results of a simple OLS regression of labor market outcomes on basic characteristics of immigrants to QC. When they land, employment rates for bachelor's degree holders are 12 percentage points less than for holders of diplomas and certificates below university, the omitted category.¹⁸ This is in line with the existing literature which documents the difficulties of foreign bachelor degree holders to find a job (Godin and Pinsonneault 2004; Renaud and Cayn 2006).

Moreover, the returns to speaking French only are low. Table 6 shows that those speaking French only are 8 percentage points less employed than bilingual immigrants, all else equal. Immigrants with a foreign bachelor degree and speaking French only thus have difficulties integrating in the QC labor market. Their issues may have been compounded by the increase in their number after the reform: if those particular immigrants are not highly substitutable for other workers and hence are in a very narrow labor market, an increase in their number will lead to worse labor market outcomes, all else equal.

A final explanation may be that the drop in points for "adaptability" had negative labor market consequences. If these qualitative interviews were screening accurately for unobservables, then we would expect a drop in points for that category to be associated with worse labor market outcomes.

In any case, despite the absence of better labor market outcomes, these results are exactly in line with the intended goal of the reform. As explained above, the primary objective of the reform was to "increase the French-speaking immigration, while maintaining the socioeconomic requirements".¹⁹ We find more French-speaking immigrants and comparable labor market outcomes.

7 Conclusion

Following a reform in QC in 2001 giving more points for education and French language, we find that immigrants held more bachelor's degrees and spoke more French. Despite low returns to foreign bachelor's degrees and the French language on the QC job market, and an additional decrease in points for adaptability, we find no deterioration in labor market outcomes of immigrants. Our paper is the first to use an intra-national change in points, which allows us to use a difference-in-differences analysis to study the effects of a change in the point system on immigrants' characteristics and labor market outcomes. Moreover, to address the fact that QC and ROC may be culturally and politically different, and thus on different trends, we use a triple differences analysis. This methodology uses additional control groups within

¹⁸The worse performance of bachelor's degree holders is specific to immigrants. Bachelor's degree holders who were born in QC fare better than high school or certificate holders (as can be seen in Table 11 in the Appendix).

¹⁹Plan Stratégique 2001-2004, Ministère des Relations avec les Citoyens et de l'Immigration.

QC, i.e., natives and categories of immigrants who could not pass the point system, but who immigrated through other programs.

From the point of view of the government, whose goal was to increase French-speaking immigrants with no worsening in labor market outcomes, the reform was an unambiguous success. One may wonder what the labor market effects would have been if more points had been assigned to characteristics fetching higher returns in the job market. For example, in the case of QC, advanced university degrees (Master, Ph.D., MD), and bilingual immigrants perform better than other immigrants. However, in 2001, a Master or Ph.D. holder earned only 3 % more of the passing grade than a bachelor's degree holder. Speaking English only earned 10 %, while speaking French earned 30 %. An interesting avenue of future research would be to study the labor market effects of reforms assigning more points to these categories.

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Appendix 1: Adaptability

The “Ministère d’immigration et communautés culturelles” (MICC) specifies, in the “Guide des procédures d’immigration” rules upon which points should be granted to each category of the point system. The following is a detailed explanation of the adaptability criterion which is assessed through an interview.

- Personal Qualities: assessment of the candidate's:
 - Ability to prove his/her achievements and accomplishments during an interview
 - Knowledge of the difficulties of immigration project (financial, family, or professional)
 - Understanding of the values of QC society
 - Signing the “Déclaration sur les valeurs communes de la société québécoise”
 - Intention to learn French if he/she does not already know it.
- Motivation: The steps taken by the applicant to facilitate socioeconomic integration:
 - His/Her efforts to get a job in QC (e.g., applying for jobs)
 - His/Her efforts to improve language proficiency in English or French

- His/Her efforts to obtain a license to practice if he/she intends to exercise a regulated profession in QC
- Other personal approaches showing efforts for integration (searching for a place to live, a school for children, etc..).
- Knowledge of QC:
 - Knowledge of the labor market
 - Knowledge of the economic sector
 - Knowledge of the living conditions.
- Visit to QC
 - Visit to QC before applying to immigration. Points are awarded depending on the duration and purpose of the visit.
- Connection with a resident in QC:
 - The presence of a close family member holding the Canadian citizenship or permanent residency and residing in QC

Appendix 2: Immigrants' characteristics and labor market outcomes from 1999 until 2003

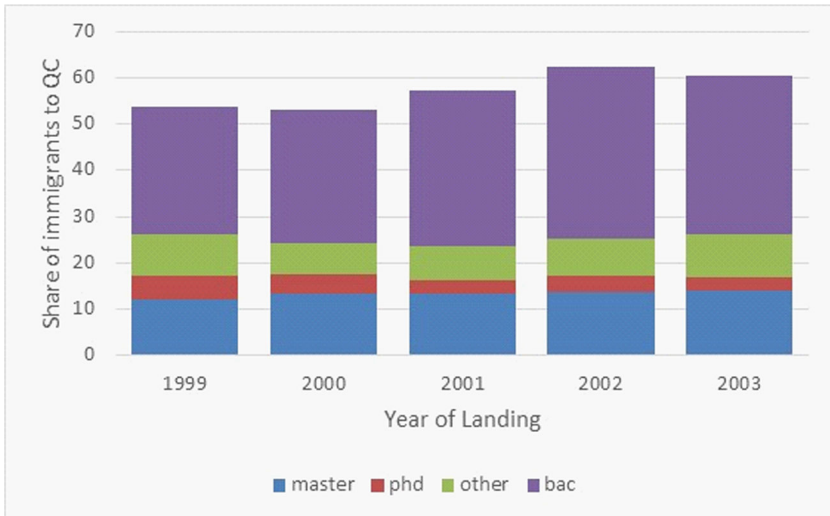


Fig. 2 Immigrants to QC from 1999 to 2003 by education level

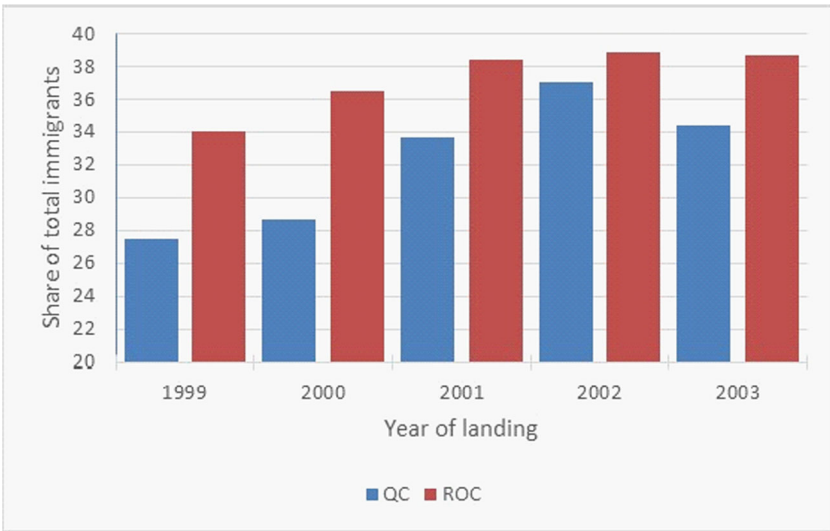


Fig. 3 Percentage of immigrants with a bachelor's degree in QC and ROC from 1999 to 2003

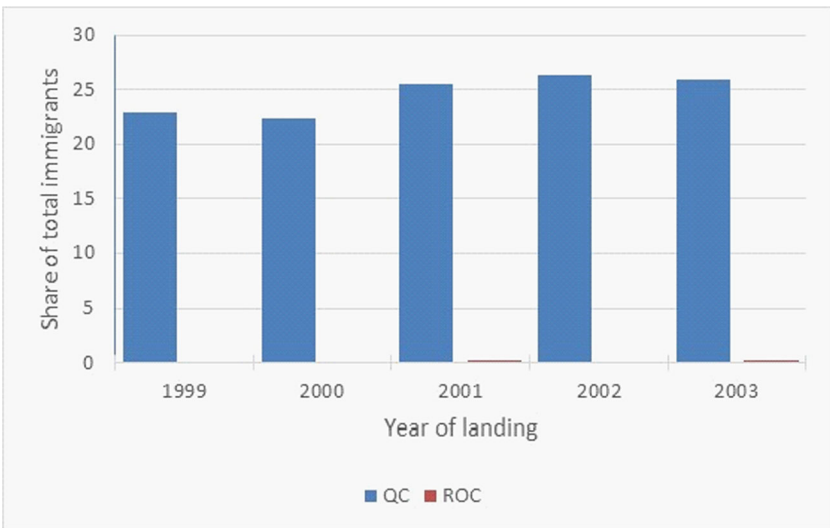


Fig. 4 Percentage of immigrants with only French knowledge in QC and ROC from 1999 to 2003

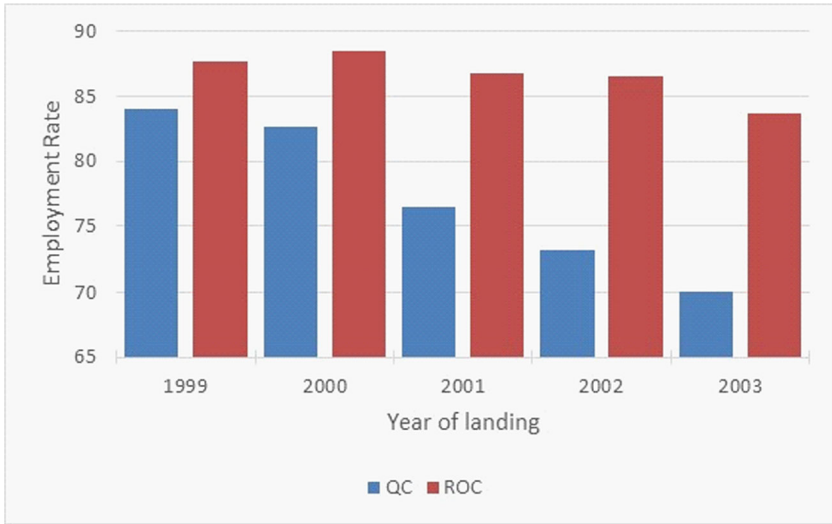


Fig. 5 Employment of immigrants to QC and ROC from 1999 to 2003

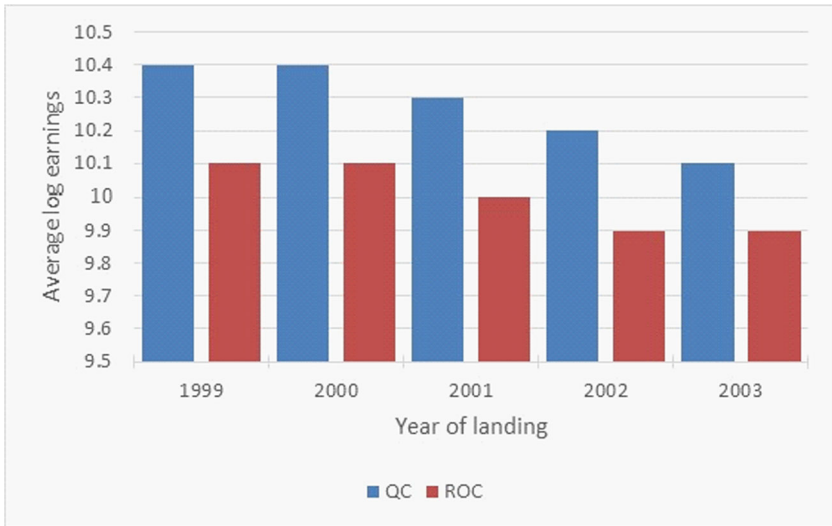


Fig. 6 Log Earnings of immigrants to QC and ROC from 1999 to 2003

Appendix 3: Detailed results of the effects of the 2001 QC reform

Table 7 Effect of the 2001 QC reform on immigrants' education and language

Dependent Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	High School	Dipl & Cert	Bachelor	Master	Ph.D.	MD	French only	English only	Fr & Eng
QC	0.10 (0.01)**	0.05 (0.16)	-0.07 (0.29)	-0.08 (0.20)	-0.02 (0.16)	0.02 (0.11)	0.22 (0.000)***	-0.67 (0.000)***	0.45 (0.002)***
1999	0.03 (0.06)*	0.01 (0.21)	-0.02 (0.18)	-0.03 (0.12)	-0.004 (0.02)**	0.01 (0.03)**	-0.0001 (0.67)	0.01 (0.08)*	-0.01 (0.08)*
2001	-0.01 (0.41)	-0.02 (0.26)	0.02 (0.06)*	0.01 (0.79)	-0.003 (0.14)	0.01 (0.06)*	0.001 (0.17)	0.004 (0.69)	-0.01 (0.49)
2002	-0.01 (0.14)	-0.01 (0.62)	0.02 (0.04)**	0.004 (0.95)	0.0004 (0.92)	-0.0004 (0.93)	-0.002 (0.13)	0.01 (0.11)	-0.01 (0.15)
2003	-0.01 (0.03)**	-0.003 (0.93)	0.03 (0.08)*	-0.004 (0.75)	-0.01 (0.20)	-0.0001 (0.78)	-0.001 (0.44)	-0.01 (0.17)	0.01 (0.17)
QC*1999	-0.04 (0.29)	-0.02 (0.57)	0.01 (0.36)	0.02 (0.2)	0.01 (0.37)	0.02 (0.48)	0.004 (0.29)	0.01 (0.24)	-0.02 (0.26)
QC*2001	-0.05 (0.23)	0.03 (0.29)	0.03 (0.47)	-0.002 (0.82)	-0.01 (0.41)	-0.003 (0.3)	0.03 (0.04)**	-0.04 (0.5)	0.01 (0.59)
QC*2002	-0.06 (0.03)**	-0.003 (0.84)	0.06 (0.02)**	0.004 (0.8)	-0.01 (0.21)	0.01 (0.25)	0.04 (0.001)***	-0.05 (0.02)**	0.01 (0.16)
QC*2003	-0.07 (0.05)*	-0.002 (0.85)	0.03 (0.05)*	0.02 (0.6)	-0.01 (0.52)	0.02 (0.54)	0.03 (0.03)**	-0.03 (0.04)**	-0.003 (0.46)
Unemployment Rate	0.01 (0.19)	0.01 (0.79)	0.001 (0.92)	-0.01 (0.52)	-0.01 (0.05)*	0.01 (0.02)**	0.002 (0.048)**	-0.01 (0.07)*	0.01 (0.08)*
Average Earnings	5.72e-06 (0.06)*	-5.03e-06 (0.64)	0.32e-06 (0.82)	-3.59e-06 (0.74)	-4.75e-06 (0.11)	6.25e-06 (0.17)	4.57e-07 (0.17)	-6.73e-07 (0.66)	2.16e-07 (0.89)

Table 7 (continued)

Dependent Variable	(1) High School	(2) Dipl & Cert	(3) Bachelor	(4) Master	(5) Ph.D.	(6) MD	(7) French only	(8) English only	(9) Fr & Eng
Newfoundland	-0.04 (0.01)**	-0.11 (0.60)	-0.29 (0.07)*	0.07 (0.49)	0.14 (0.11)	0.24 (0.02)**	-0.02 (0.03)**	0.01 (0.77)	0.01 (0.87)
Prince Edward	0.01 (0.49)	0.30 (0.45)	-0.20 (0.51)	-0.08 (0.25)	-0.02 (0.63)	-0.01 (0.53)	-0.01 (0.24)	0.13 (0.09)*	-0.13 (0.12)
Nova Scotia	0.03 (0.13)	-0.03 (0.82)	-0.11 (0.22)	-0.01 (0.72)	0.07 (0.35)	0.04 (0.11)	-0.004 (0.43)	-0.004 (0.76)	0.01 (0.73)
New Brunswick	0.03 (0.10)	-0.03 (0.80)	-0.17 (0.22)	-0.01 (0.67)	0.09 (0.30)	0.08 (0.12)	0.03 (0.04)**	-0.06 (0.15)	0.03 (0.34)
Manitoba	0.13 (0.05)*	0.14 (0.64)	-0.12 (0.45)	-0.16 (0.42)	-0.04 (0.07)*	0.04 (0.11)	0.01 (0.16)	-0.01 (0.68)	0.001 (0.93)
Saskatchewan	0.09 (0.08)*	0.001 (0.96)	-0.16 (0.32)	-0.08 (0.59)	0.05 (0.39)	0.09 (0.11)	0.01 (0.14)	-0.03 (0.27)	0.02 (0.49)
Alberta	0.03 (0.21)	0.03 (0.83)	0.02 (0.40)	-0.07 (0.39)	-0.02 (0.03)**	0.01 (0.08)*	0.004 (0.20)	-0.02 (0.19)	0.01 (0.27)
British Columbia	0.03 (0.16)	-0.02 (0.84)	0.02 (0.84)	-0.03 (0.34)	-0.02 (0.23)	0.01 (0.12)	-0.001 (0.55)	0.03 (0.11)	-0.03 (0.12)
Observations	35327	35327	35327	35327	35327	35327	35327	35327	35327

Wild cluster bootstrap *p* values at the province level are reported in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. High school, Dipl & Cert, Bachelor, Master, Ph.D., and MD are dichotomous variables equal to 1 if the highest degree earned is a high school, a diploma or certificate below bachelor, a Bachelor's degree, a Master's degree, a Ph.D. degree, and a medical degree, respectively. French only is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in French but not in English. English only is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in English but not in French. Fr & Eng is a dichotomous variable equal to 1 if the immigrant can conduct conversations in both French and English

Table 8 Effect of the 2001 QC reform on immigrants' labor market outcomes

Dependent variable	(1) Employment	(2) Log earnings
QC	-0.08 (0.27)	-0.13 (0.11)
1999	-0.02 (0.19)	0.06 (0.25)
2001	-0.02 (0.02)**	-0.04 (0.08)*
2002	-0.04 (0.02)**	-0.12 (0.07)*
2003	-0.06 (0.01)**	-0.22 (0.02)*
QC*1999	0.02 (0.58)	-0.06 (0.59)
QC*2001	-0.04 (0.54)	-0.01 (0.45)
QC*2002	-0.06 (0.07)*	-0.06 (0.16)
QC*2003	-0.07 (0.17)	-0.02 (0.48)
Unemployment rate	0.01 (0.12)	-0.04 (0.39)
Average earnings	1.68e-06 (0.70)	5.53e-06 (0.82)
Newfoundland	-0.03 (0.37)	0.72 (0.20)
Prince Edward	-0.12 (0.21)	-0.15 (0.51)
Nova Scotia	-0.03 (0.36)	0.07 (0.75)
New Brunswick	-0.06 (0.23)	0.51 (0.37)
Manitoba	0.06 (0.33)	-0.14 (0.72)
Saskatchewan	0.07 (0.30)	0.04 (0.83)
Alberta	0.06 (0.05)*	0.06 (0.59)
British Columbia	-0.04 (0.47)	-0.04 (0.71)
Observations	35327	28386

Wild cluster bootstrap p values at the province level are reported in parentheses, *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. All regressions include province fixed effects, year fixed effects, provincial unemployment rate, and provincial average earnings. Employment is a dichotomous variable equal to 1 if the immigrant is employed. Log Earnings is the logarithmic transformation of the earnings of employed immigrants. QC*1999 isolates immigrants to Quebec who landed in 1999. It provides a falsification exercise by looking at pre-reform trends. QC*2001, QC*2002, and QC*2003 provide the impact of the reform in 2001, 2002, and 2003. QC*2000 is the reference category

Appendix 4: Estimation without restricting the sample to immigrants who studied outside Canada

Table 9 Effect of the 2001 QC reform on immigrants' education and language

Dependent variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	High school	Dipl & Cert	Bachelor	Master	Ph.D.	MD	French only	English only	Fr & Eng
QC*1999	-0.03 (0.28)	-0.04 (0.63)	0.03 (0.22)	0.03 (0.19)	0.001 (0.28)	0.02 (0.57)	-0.01 (0.15)	-0.01 (0.15)	0.02 (0.11)
QC*2001	-0.03 (0.28)	-0.0004 (0.93)	0.03 (0.36)	0.01 (0.31)	-0.003 (0.51)	0.004 (0.21)	0.01 (0.29)	-0.03 (0.29)	0.02 (0.5)
QC*2002	-0.04 (0.02)**	-0.02 (0.33)	0.05 (0.03)**	-0.01 (0.64)	0.01 (0.16)	0.01 (0.31)	0.03 (0.02)**	-0.06 (0.02)**	0.03 (0.08)*
QC*2003	-0.04 (0.04)**	-0.04 (0.6)	0.03 (0.08)*	0.02 (0.51)	0.002 (0.56)	0.02 (0.6)	0.01 (0.05)*	-0.03 (0.05)*	0.01 (0.15)
Observations	41637	41637	41637	41637	41637	41637	41637	41637	41637

Wild cluster bootstrap *p* values at the province level are reported in parentheses, *** *p* < 0.01, ** *p* < 0.05, * *p* < 0.1. All regressions include province fixed effects, year fixed effects, provincial unemployment rate, and provincial average earnings. High school, Dipl & Cert, Bachelor, Master, Ph.D., and MD are dichotomous variables equal to 1 if the highest degree earned is a high school, a diploma or certificate below bachelor, a Bachelor's degree, a Master's degree, a Ph.D. degree, and a medical degree, respectively. French only is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in French but not in English. English only is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in English but not in French. Fr & Eng is a dichotomous variable equal to 1 if the immigrant can conduct conversations in both French and English. QC*1999 isolates immigrants to QC who landed in 1999. It provides a falsification exercise by looking at pre-reform trends. QC*2001, QC*2002, and QC*2003 provide the of the reform in 2001, 2002, and 2003. QC*2000 is the reference category

Table 10 Effect of the 2001 QC reform on immigrants' labor market outcomes

Dependent variable	(1) Employment	(2) Log earnings
QC*1999	0.01 (0.6)	-0.03 (0.53)
QC*2001	-0.05 (0.45)	-0.01 (0.47)
QC*2002	-0.06 (0.06)**	-0.01 (0.61)
QC*2003	-0.07 (0.21)	0.001 (0.94)
Observations	41,637	33,337

Wild cluster bootstrap *p* values at the province level are reported in parentheses, *** *p* < 0.01, ** *p* < 0.05, * *p* < 0.1. All regressions include province fixed effects, year fixed effects, provincial unemployment rate, and provincial average earnings. Employment is a dichotomous variable equal to 1 if the immigrant is employed. Log Earnings is the logarithmic transformation of the earnings of employed immigrants. QC*1999 isolates immigrants to Quebec who landed in 1999. It provides a falsification exercise by looking at pre-reform trends QC*2001, QC*2002, and QC*2003 provide the impact of the reform in 2001, 2002, and 2003. QC*2000 is the reference category

Appendix 5: Returns to education of natives in QC

Table 11 Returns to education for natives in QC

Dependent variable	(1) Employment	(2) Log earnings
Below high school	-0.22 (0.00)***	-0.39 (0.00)***
High school	-0.05 (0.00)***	-0.14 (0.00)***
Bachelor	0.03 (0.00)***	0.36 (0.00)***
Master	0.05 (0.00)***	0.45 (0.00)***
Ph.D.	0.08 (0.00)***	0.65 (0.00)***
Medical Degree	0.05 (0.00)***	0.67 (0.00)***
Allophones	-0.08 (0.02)***	0.04 (0.07)
French only	0.11 (0.00)***	0.05 (0.01)***
Fr & Eng	0.13 (0.00)***	0.15 (0.01)***
Observations	77,498	61,454

Robust standard errors in parentheses, *** *p* < 0.01, ** *p* < 0.05, * *p* < 0.1. All regressions include age, age squared, gender, marital status, and presence of kids. High school, Bachelor, Master, Ph.D., and MD are dichotomous variables equal to 1 if the highest degree earned is a high school, a Bachelor's degree, a Master's degree, a Ph.D. degree, and a medical degree, respectively. The omitted category is dipl & cert, a dichotomous variable equal to 1 if the highest degree is a diploma or below bachelor. French only is a dichotomous variable equal to 1 if the immigrant can conduct a conversation in French but not in English. Fr&Eng is a dichotomous variable equal to 1 if the immigrant can conduct conversations in both French and English. The omitted category is English only: a dichotomous variable equal to 1 if the immigrant can conduct a conversation in English but not French

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