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Employee Training in Canada

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Abstract

In this paper we first analyze the determinants of training using data from the 2003 International Adult Literacy and Skills Survey (IALSS). We find that education plays a key role in the receipt of all forms of training except in the case of employer-sponsored training. We also find substantial differences across demographic groups in the relationship between literacy skills and training. In the second part of the paper we merge the 1994 IALS to the 2003 IALSS and perform an analysis of the impact of the Quebec policy introduced in 1995 by which employers are required to devote at least 1% of the payroll to training activities. In the case of males we find no effect of the policy on the incidence of employer-sponsored training. On the other hand, Quebec females did experience a very large relative increase in training incidence between 1994 and 2003. However, the magnitude of the estimates is much too large to be plausibly caused by the policy given its modest scale. We show evidence of a significant relative increase in female employment rates in Quebec that could explain part -but probably not all-of the large increase in female employer-sponsored training.

Executive Summary

In an earlier study[1] we used the International Adult Literacy Survey (IALS) 1994 to study the relationship between various types of literacy measures and employee-training, and showed that they were indeed closely linked. Our aim there was to investigate the determinants of the differences in the incidence and intensity of employee training in Canada and in the United States. Like others, we found an unadjusted employee-training divide between Canada and the United States ranging from 4 to 9 percent depending on the type of training. However, when we corrected for standard covariates such as age, gender, education levels and firm size, and also for immigrant and ESL status, we generally did not find a significant negative effect of being Canadian vs. American in terms of the incidence and intensity of training.

In this paper we first want to pursue the study of the links between the levels and types of literacy (document, prose and quantitative) and employer-sponsored training using the 2003 International Adult Literacy and Life Skills Survey (IALSS) in order to address broadly the same set of questions addressed in Fortin and Parent (2006) with an eye to comparing the results across the two survey years which are nearly ten years apart. For example, has the role of literacy proficiency on the provision of training changed? In our earlier study, we had found two major differences between the U.S and Canada in the way the various literacy skills interact with the provision of training terms. The first one was that the U.S. employees, males in particular, who exhibit more deficiencies in terms of quantitative literacy, were actually more likely to be trained, whereas it was the opposite in Canada. The second major difference between Canada and the United States was the fact that document literacy was never found to really matter for employee training in the United States, for either males or females. In Canada, it is found to be a very important correlate of all forms of training for females. Focusing on Canada only, in this paper we want to further investigate the issue of literacy and how it relates to training across demographic groups. One of the main findings of the analysis done using the 2003 IALLS is that we still see persistent differences in training intensity and incidence across demographic groups in Canada, with French-speaking Canadians still trailing much like they did ten years ago. Even within Quebec, Francophones trail in terms of general as well as job-related training, so the deficit in training does not appear to be merely a Quebec-wide phenomenon. However, our other key result is that there is actually little evidence of a discrepancy in training incidence for Francophones in Quebec in the case of employer-sponsored training. This is in contrast to what we measured in our earlier paper.

Given the significant deficit of Francophones for all other types of training except the employer-sponsored category, this last result is at least suggestive that the "1% of payroll" training policy in Quebec has proved to be binding for many employers. To formally investigate this hypothesis, in the second part of the paper we exploit the relative consistency in the questions pertaining to training to merge both the 1994 IALS and the 2003 IALSS so as to perform an evaluation of the ``1% of payroll'' training policy implemented in Quebec in the mid 1990's.

Our main result from this attempt at evaluating the Quebec policy is that we find no evidence of any relative increase in employer-sponsored training incidence in Quebec for males. For

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[1] Fortin, Nicole and Daniel Parent (2006) "The Training Divide: A Canada-US Comparison of Employee Training" Working Paper 2006 B-09, HRSDC-IC-SSHRC Skills Research Initiative, Industry Canada.

females, we find strong evidence of a large relative increase in the incidence of employer-sponsored training between 1994 and 2003. However, the enormous magnitude of that relative increase, especially given the fact that the policy intervention was fairly modest in its scope, leads us to conclude that some other unmeasured factor has been the driving force behind the increasing incidence of employer-sponsored training for females in Quebec. We briefly explore what that factor could be. We show that over the same time period female employment rates in Quebec showed a remarkable increase relative to Ontario females. We argue that although this increase in employment rates is likely to have contributed to the increased incidence of female employer-sponsored training in Quebec, it appears unlikely to be the sole explanation. It could be that firms employing females are more careful to label as training the activities they had always performed before, but then one would need to find solid evidence that this relabeling is a female-only phenomenon. Data coming from the em\ployer side would seem to represent a necessary complement to the analysis done here with individual survey data before we can ascertain exactly what has been the key determinant behind the large increase in reported female training.

In conclusion, we view our results for males to be a more accurate reflection of the impact of that policy. In a way, the lack of any measured impact of the policy may not be so surprising. First, it is almost certain that the training questions contained in the IALSS fail to capture all relevant dimensions of employer-sponsored training. In short, what an employee may not consider to be a ``training event'' might actually be considered as such by an employer. Second, in a related vein, as a reaction to the policy firms may simply have become more careful to record training-related expenses as a consequence of the introduction of the law, thus leaving a small role for additional policy-driven training. Third, forcing firms to ``train or pay'' might result in some firms deciding to simply pay the tax and avoid the costs of diverting resources toward more training if more training is deemed redundant. Indeed, we provide evidence that some employers do prefer to pay the tax.

1   Introduction

In response to competitive pressures arising from technological change and globalization, the need to develop the skills and knowledge of the workforce could not be more pressing for policy makers around the world. Recently Canadian policy makers have been concerned with employer-sponsored training, in particular about the apparent Canada-U.S. gap in this type of training. Indeed, in 1995 the province of Quebec introduced a so-called "1% of payroll" fiscal incentive to firms, requiring them to dedicate at least 1% of their payroll to training expenses. The policy was implemented in stages targeting firms having a payroll equal to or above to varying thresholds depending on the year.

Yet low levels of literacy may present a stumbling block that limits the efficacy of these programs. This, in turn, may imply that pre-market instruments may be more effective in increasing the incidence and success of employee-training. This problem may be particularly acute among minorities and immigrants whose first language is not the language of the workplace. Given the increasing proportion of immigrants coming from non-English or non-French speaking countries, this potential problem is likely to be heightened in the future. The problems leading to low levels of literacy among minorities (e.g. aboriginals in Canada, blacks in the United States) associated either with the quality of education or with the lack of parental involvement in reading, also appear to be persistent.

Other studies have looked at the role of quantitative illiteracy as an obstacle to employment (Rivera-Batiz (1992), Charette and Meng (1998)). There is also a growing literature (McIntosh and Vignoles (2001), Ishikawal and Ryan (2002), Green and Riddell (2003), Dougherty (2003)) studying the link between literacy skills and earnings. However, how basic skills acquired prior to entering the labour force interact with the provision of train-

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ing has received little attention in economics. Studies in the field of education (e.g. Kirsch, Junglebut and Campbell (1992), Boudard (2001)) have hinted that individuals with low literacy levels would have limited success in job training programs and in the job market. In an earlier study (Fortin and Parent (2005)), we used the International Adult Literacy Survey (IALS) 1994 to study the relationship between various types of literacy measures and employee-training, and showed that they were indeed closely linked. Our aim there was to investigate the determinants of the differences in the incidence and intensity of employee in Canada and in the United States. Like others (Boudard (2001), Lin and Tremblay (2003)), we found an unadjusted employee-training divide between Canada and the United States ranging from 4 to 9 percent depending on the type of training. However, when we corrected for standard covariates such as age, gender, education levels and firm size, and also for immigrant and ESL status, we generally did not find a significant negative effect of being Canadian vs. American in terms of the incidence and intensity of training. Interestingly, however our analysis of the incidence of training revealed opposite effects of literacy and quantitative literacy scores between the two countries, which we want to explore further in this paper.

An important contribution of our study was to highlight the important differences across demographic groups within a country in the incidence and intensity of training. Because the IALS asks information about demographic groups relevant to each country of interest, we studied the particular cases of African Americans and French Canadians, the latter group having very limited access to post-secondary education until the 1970s. Our measures of literacy indeed indicated that these two groups had lower levels of literacy than the majority group. We found in the IALS 1994 a raw training divide between French

and English-Canadians ranging from 11 to 21 percent depending on the type of training; this training divide was much larger than the Canadian/American divide. In addition, the positive effect of being an English-Canadian was robust to the addition of a complete set of covariates, including industry and occupation dummies. We also found that in both countries workers whose native language was not English/French were at a disadvantage with regards to employee-training by comparison with the majority group. While the results of the 1994 IALS indicate a substantial training divide between English Canadians and French/Other Canadians, the figures from the 2003 AETS, reported in Fortin and Parent (2005) and Peters (2004), indicate that the training gap between Quebec, New Brunswick, Manitoba, on the one hand, and the other provinces, on the other hand, has largely closed.

The goal of this paper is twofold. In the first part of the paper we want to pursue the study of the links between the levels and types of literacy (document, prose and quantitative) and employer-sponsored training using the 2003 International Adult Literacy and Life Skills Survey (IALSS) in order to address broadly the same set of questions addressed in Fortin and Parent (2005) with an eye to comparing the results across the two survey years which are nearly ten years apart. For example, has the role of literacy proficiency on the provision of training changed? In our earlier study, we had found two major differences between the U.S and Canada in the way the various literacy skills interact with the provision of training terms. The first one was that the U.S. employees, males in particular, who exhibit more deficiencies in terms of quantitative literacy, were actually more likely to be trained, whereas it was the opposite in Canada. The second major difference between Canada and the United States was the fact that document literacy was never found

to really matter for employee training in the United States, for either males or females. In Canada, it is found to be a very important correlate of all forms of training for females. Focusing on Canada only, in this paper we want to further investigate the issue of literacy and how it relates to training across demographic groups. One of the main findings of the analysis done using the 2003 IALLS is that we still see persistent differences in training intensity and incidence across demographic groups in Canada, with French-speaking Canadians still trailing much like they did ten years ago. Even within Quebec, Francophones trail in terms of general as well as job-related training, so the deficit in training does not appear to be merely a Quebec-wide phenomenon. However, our other key result is that there is actually little evidence of a discrepancy in training incidence for Francophones in Quebec in the case of employer-sponsored training. This is in contrast to what we measured in our earlier paper.

Given the significant deficit of Francophones for all other types of training except the employer-sponsored category, this last result is at least suggestive that the 1% training policy in Quebec has proved to be binding for many employers. To formally investigate this hypothesis, in the second part of the paper we exploit the relative consistency in the questions pertaining to training to merge both the 1994 IALS and the 2003 IALSS so as to perform an evaluation of the "1% of payroll" training policy implemented in Quebec in the mid 1990's.

Our main result from this attempt at evaluating the Quebec policy is that we find no evidence of any relative increase in employer-sponsored training incidence in Quebec for males. For females, we find strong evidence of a large relative increase in the incidence of employer-sponsored training between 1994 and 2003. However, the enormous magnitude

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of that relative increase, especially given the fact that the policy intervention was fairly modest in its scope, leads us to conclude that some other unmeasured factor has been the driving force behind the increasing incidence of employer-sponsored training for females in Quebec. We briefly explore what that factor could be. We show that over the same time period female employment rates in Quebec showed a remarkable increase relative to Ontario females. We argue that this increase in employment rates is likely to have contributed to the increased incidence of female employer-sponsored training in Quebec. However it would seem doubtful that it can explain all of the relative increase.

In conclusion, we view our results for males to be a more accurate reflection of the impact of that policy. In a way, the lack of any measured impact may not be so surprising. First, it is almost certain that the training questions contained in the IALSS fail to capture all relevant dimensions of employer-sponsored training. In short, what an employee may not consider to be a "training event" might actually be considered as such by an employer. Second, in a related vein, as a reaction to the policy firms may simply have become more careful to record training-related expenses as a consequence of the introduction of the law, thus leaving a small role for additional policy-driven training. Third, forcing firms to "train or pay" might result in some firms deciding to simply pay the tax and avoid the costs of diverting resources toward more training if more training is deemed redundant. Indeed, we provide evidence that some employers do prefer to pay the tax.

2 Data

In the first part of the paper we use as our main source of data the 2003 International Adult Literacy and Skills Survey (IALSS). In the second part where we study the Quebec training policy we use both the 1994 International Adult Literacy Survey (IALS) as well as the 2003 IALSS. As was the case in the 1994 IALS, the IALSS contains unique information about the respondent's literacy and numeracy skills, as well as information about the incidence and intensity of adult participation in education and training. In addition and importantly for our findings, the ethnic/cultural background of respondents is available in those data. Information on region of residence will allow us to see whether our estimates of the impact of the training determinants are identified mainly only through cross-regional differences, which would limit their usefulness somewhat, or whether the basic patterns are also there within regions. Because our focus is on employee training and because of the relatively small sample size of the IALSS, we include in our analysis all active labour market participants aged 16-65. To perform the formal analysis of the impact of the Quebec training policy, we also use the 1994 IALS and merge it with the IALSS. The detailed definitions of all variables used are given in Appendix A. All computations reported use the provided sample weights.[1]

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[1]Actually, the sample size of the 2003 IALLS is considerably larger than its 1994 predecessor. This is particularly true in the case of the "international" public use file of the IALS, released in 1996, in which all the information about training events is recorded (all the answers to the training questions in the 1994 public use file containing only Canadians have been coded as missing). The 1994 file does have information on region of residence, though, and with the individual identifiers provided in both the "Canadians only" file" as well as the international file, we are able to assign region of residence to the Canadian respondents included in the 1996 file which has all the training information.

2.1 Construction of training variables

Our analysis covers various types of employee training including job-related training, and employer-sponsored training. We also document participation in any form of training, as well as in personal interest training. This is useful in considering a possible substitution between employee and employer motivated training. The structure of the training questions in the 2003 IALSS is somewhat different than in the 1994 IALS. Respondents to the 1994 IALS were first asked whether, during the past 12 months, they received any form of adult education and training: the incidence of any training is measured by an affirmative answer to that question. Respondents were then asked about the number of courses they took in the past 12 months, and detailed questions about the type and characteristics of the training were asked only about the first three occurrences. On the other hand the 2003 IALSS, after asking the same general question as in 1994 about whether the individual took any training in the previous 12 months, then asks whether the individual took any courses as part of a program of studies leading to a certificate, a diploma, or a degree, including a trade/vocational diploma. Then those who responded in the affirmative were asked similar questions as in 1994 about the identity of the party who paid for that training, the reasons for that training, and total hours spent in the program. Those who had not taken part in such a program were asked questions about the number of hours spent training for a maximum of three training courses/events. For those who were in a structured program, they were asked to report hours spent training in non-program related courses for up to two such training events. In other words, for those taking part in a school-type program, up to two additional training events were reported on top of the one associated with their program, bringing their total number of training events up

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to the same maximum as the respondents who were had not taken part in a structured program.

The first consequence of this re-modeling of the questionnaire is that we are likely to under-report the incidence and intensity of non program-related training for the youngest individuals in the sample, those more likely to be enrolled in a school-type program. This should be less of an issue for the older individuals. The second, perhaps more important, consequence is that only hours spent training are reported for up to three events. The questions about the motive for training (i.e. job related or personal interest) as well as the important question about who paid for training was asked only for the "longest" training events or the most recent one in the case of a tie. Only those who were in a structured program were asked those questions and then were asked the same questions again for the "non-structured" they might have had. For everyone else, we only have one answer about who paid for training as well as the motive for that training.

Another limitation of the 2003 IALSS relative to the 1994 is the impossibility of identifying whether training is employer-provided. In our previous work we could identify who was the provider. Although this last limitation is unfortunate, our conclusions in Fortin and Parent (2005) were actually fairly similar for employer-sponsored and for employer-provided training. The key difference, which we still are able to identify in this paper, is between general training and job-related training on the one hand, and employer-sponsored training on the other hand. As we will see below the differences are quite important. The incidence of the different types of training studied is measured using an indicator variable that takes a value of 1 if an individual reported having taken that type of training. It is thus an individual based rather than an event based measure. For

example, if an individual reports three occurrence of training, the first of which being within a structured program and is job-related and an additional one in a non-structured training event which is for personal interest, this will generate an indicator of 1 for both the job-related category and personal interest category of training. Thus the sum of the proportions in these two categories may exceed the proportion in the any training category. Again, however, for all those not in a structured program (about 60% of all those who reported having had any training, or 35% of sample respondents), we can only code one training event as being either job related or for personal interest. A training event was classified as job-related or personal interest, depending on the main reason given to undertake the training. This job-related training category may be occupation/industry-specific but not necessarily firm-specific. A training event that was financially supported by an employer is coded as employer-sponsored training.

We measure the intensity of training in each of the type of training analyzed in terms of the total annual hours of training received by each respondent. For each of up to three training events, we use the annual number of hours directly reported in the Public Use File. If a respondent reports more than one training event of a given type, we add up the annual hours of training of all relevant events. To identify whether the hours spent training were financed by the employer or the individual, we multiply the maximum of the hours spent training across the three training events (if the individual did have three such events) by the indicator variable for whether the employer financed the course. For those in a structured program, we can directly identify whether that program was financed by the employer or not. Given the change in the questionnaire, it is not clear how our results would relate to those in Fortin and Parent (2005). Our expectation is that we

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will understate the impact of the explanatory variables when we examine sub-categories of training, i.e. job related or employer sponsored. The reason for this is that we are almost certainly misclassifying both the types of training, that is, coding as job related a training event that is for personal interest as well as coding as employer financed an event which is not employer financed. As it turns out, many of our results are similar to what we reported in our previous work. It is true, however, that some of our literacy indicator estimates appear to be somewhat smaller than they were using the 1994 IALS.

2.2 Construction of explanatory variables

It is well documented that formal schooling and firm size have been identified as important determinants of training incidence and intensity. Comparing education levels across countries is always a challenge because of cross-country differences in education systems. One of the key advantages of working with the IALSS is that a particular effort has been provided to standardize as best as possible the questions on educational attainment. We thus use the five categories of schooling directly included in the Public use File: primary level or less, some secondary, completed secondary, some post-secondary and completed university degree. As summarized by Chaykowski and Slotsve (2003), many studies find empirical evidence that the incidence and intensity of training increases with firm size, so it is important to include this variable. We also include in our analysis dummies for being in a age group, gender when we combine males and females in the analysis, and immigrant status. We also add a dummy indicator for French or English being used as a second language (ESL), in addition to demographic group-specific dummies for being French Canadian , English Canadian, or neither of the previous two. The classification of

Canadians into ethnic/cultural groups (French Canadians, English Canadians and other Canadians) appeals both to ancestry and language most often spoken at home during youth. The construction of the demographic groups is discussed in detail in Appendix A. Note that the 2003 IALSS does not have information on marital status.

2.2.1 Literacy and numeracy proficiency variables

Another particularity of the IALS, and the reason it was designed, is to capture the potentially different levels of literacy performance across languages and cultures. As explained in Boudard (2001), there are various concepts of literacy used in surveys of industrialized nations. Literacy used to be defined in terms of a basic reading ability which most individuals in developed countries are now expected to attain. For economic performance, literacy is more usefully defined in terms of an individual's ability to use written information effectively in their work environment. In the IALS, literacy is defined in terms of this latter behavioural mode and measured on three separate dimensions: a) Prose literacy-the knowledge and skills needed to understand and use information from texts including editorials, news stories, poems, and fiction; b) Document literacy-the knowledge and skills required to locate and use information contained in various formats, including job applications, payroll forms, transportation schedules, maps, tables, and graphics; and c) Quantitative literacy-the knowledge and skills required to apply arithmetic operations, either alone or sequentially, to numbers embedded in printed materials, such as balancing a check book, calculating a tip, completing an order form, or determining the amount of interest on a loan. Statistics Canada (2001). A respondent's proficiency in these three dimensions is measured in terms of a series of five plausible values for each of the three

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literacy domains, where the two upper categories were merged. As shown in appendix table A1, we do find significantly lower proportions of respondents in the upper categories among French Canadians.

3   Results

Part I

Analysis of the 2003 IALSS

3.1   Descriptive Statistics-2003 IALSS

In Tables 1 to 3, we provide overall descriptive statistics on the incidence and intensity of employee training, as well as by demographic group and age. Much like what we found in Fortin and Parent (2005), the raw data strongly suggests that French Canadians trail in terms of basically all forms of training. Not surprisingly then, we also find that Quebec residents also have the lowest incidence of training. However, while in the absolute we come to pretty much the same qualitative conclusion as when we used the 1994 IALS, the picture is quite different when we compare the descriptive statistics in Table 1 to those in Table 1 of Fortin and Parent (2005). We find a striking relative progress for both French-Canadians and all those who do not identify with either French- or English Canadians. The absolute decrease of training incidence in the case of English Canadians is not readily explicable. There is just no apparent reason why the incidence of employer-sponsored

training should have decreased from 36% in 1994 to 26% for that group. We think that this drop is a direct-and unfortunate-consequence of the training module questionnaire remodeling. The reason we can be relatively confident that this is the reason is simply that the remodeling should have had no effect on the incidence of having received any training, since the question is exactly the same in the 2003 IALSS as in the 1994 IALS. Indeed, we observe an overall modest increase in the incidence of any training for all three groups. But the fact that respondents could not report who financed their training events for each one separately is obviously having a big impact on whether training is coded as job-related or employer-sponsored. In any event, given that the incidence of employer-sponsored training is basically the same for French Canadians and other Canadians in 2003 as in 1994, and that there is no obvious reason why individuals in those two groups should have such a different reporting pattern compared to English-Canadians, the relative catchup is almost certainly for real. Table 2 further explores the differences across demographic groups in Canada. Focusing on employer-sponsored training, we can see that the age group for which the difference is the smallest across all three demographic groups are those aged 25-35, arguably a most critical age interval in the labour market in terms of skill acquisition. While not all training occurs early, as can be seen from looking at Table 3, standard arguments about the optimal timing to acquire skills imply that young workers starting in their careers should be a particularly important group for firms. As in Table 2, the fraction of English Canadians receiving employer-sponsored training is much lower in the 2003 ILASS than it is in the 1994 IALS. However the fractions for the other two groups are, again, not very different than they were ten years earlier. Somehow, those demographic groups have substantially improved their relative position compared

to what it was a decade ago. In Table 3 we report the intensity of training, measured by the average annual number of positive hours of training received in total (for up to three training events) for each type of training. We can see that conditional on receiving employer-sponsored training, French-Canadians actually enjoy an advantage in terms of hours spent training. As these descriptive statistics indicate, there are many confounding factors that can explain the raw differences in training incidence and intensity. As shown in table A1, French-Canadians' level of educational attainment, in particular the proportion with a university degree and their affiliation to larger firms are lower. Are these factors sufficient to explain away the difference highlighted above? To evaluate this and other issues, we now turn to regression analysis to assess the impact of those different factors.

3.2 Probit Analyses of the Incidence of Training

We report in Tables 4, 5, and 6 the marginal effects from a Probit model of various explanatory variables on the incidence of receiving training. Letting T be an indicator variable take the value 1 if an active labour market participant receives a type of training and 0 otherwise, we estimate the probability of receiving training using the model

$$Pr(T = 1|X) = Pr(T^* > 0|X) = \Phi(X'\beta) \tag{1}$$

where X denotes a vector of covariates, Φ is the cumulative normal distribution, and T^* the latent variable is determined by

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$$T^* = X\beta + \varepsilon \tag{2}$$

$$T = 1[T^* > 0] \tag{3}$$

where $1[]$ denotes the indicator function. Because we cannot identify the parameters independently of the nuisance parameter σ, the standard error of the normal distribution, we only identify the ratio $\frac{\beta}{\sigma}$. It is thus convenient to normalize to one, but interpreting the Probit coefficients would require thinking in the Z (normal quantile) metric, so we instead report the marginal effects, that is by how much the probability of the outcome occurring changes when the explanatory variable changes from zero to one (all our regressors of interest are 0-1 indicator variables). While we report results pooling together males and females and all three demographic groups, we also perform some analyses separately by gender, and also by demographic group to relax the strong assumption that all covariates act in the same way for all those individuals, irrespective of their socio-demographic characteristics. In all specifications we use the same basic set of covariates, namely education, age and firm size dummies. We do not test for as wide a variety of specifications as we do in Fortin and Parent (2005). What we do, though, is to show one specification which excludes the region of residence dummy indicator and another which includes it. As it turns out, the difference across those two otherwise identical specifications are interesting in that they basically allow us to compare two sets of estimates which are identified quite differently. If we exclude region of residence we basically use all the variation in the data, both within and across regions to identify the estimates. On the other hand, if we

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do include the region of residence dummies, we use only the within province variation to identify them. If we first look at columns 2 and 3 we can see that the parameter estimates more or less confirm what we saw in the descriptive statistics. French Canadians are found to be at a disadvantage to the other two groups, more educated individuals are more likely to be trained, and larger employers are associated with more training. We should be somewhat cautious here in that it is likely that a good part of the "any training" received by the younger individuals is in fact formal education. Hence it may not be surprising that the age effect estimates are so large (and negative) and that more education is associated with more training as there is danger of a simple mechanical relationship here. It is interesting to note that once we include the regional dummies the difference between French-Canadians and English Canadians is not as large. It is still significantly different from zero, however, which suggests that whatever the French Canadian identifier is capturing is not just a Quebec-specific effect that would be at play for all demographic groups. French-speaking Quebeckers are found to trail their English-speaking counterparts for both "any" as well as "job-related" training, although, it is true, at only the 10% level. So while there seems to be a Quebec-specific factor influencing training incidence for all demographic groups in Quebec, part of the difference is idiosyncratic to Francophones in Quebec. If we turn to employer-sponsored training (columns 5 and 6), the best way to summarize the evidence in that table is that belonging to any of the three demographic groups does not matter at all (females are still at a disadvantage, though). What matters is whether one is using French or English as a second language, which is true for all types of training, not just employer-sponsored training, and whether one works in a small firm or not. Even educational attainment is not all that relevant. As for age, remem-

ber that those estimates measure effects relative to those aged 16-25. There is not such a big discrepancy across all other age groups, except for the oldest group. It seems as though being older is not associated with less training, controlling for all other observables. The finding that being French-Canadian has absolutely no negative effect on the incidence of employer sponsored training is the one major difference between our work using the 1994 IALS and this one using the 2003 IALSS. In our previous paper we found significant differences in the incidence of employer-sponsored training, with French-Canadians on the short end. This is not true here. Although of course many different things could have contributed to this closing of the gap between French- and English-Canadians, in our view it seems difficult to exclude a priori the role played by the Quebec policy of essentially forcing many employers to devote 1% of their payroll to training. While it is true that the educational attainment gap has decreased considerably over the ten year interval, it is not immediately obvious why it would have played more of a role for employer-sponsored training than for other types of training. In any event, we will turn below to a formal analysis of the training policy. Also, while it is true that educational attainment increased in relative terms for French-Canadians, there is still quite a significant gap in literacy at the top end, as pointed out above (see Table A1). Again, why such a gap would not generate a training gap, given that literacy does seem to influence the receipt of training, in the case of employer-sponsored training is not clear. On the subject of literacy skills, in Table 5 we report for the overall sample and the various subgroups the effect of the literacy indicators on the both the probability of receiving job-related as well as employer-sponsored training. Although the results for the overall sample would seem to indicate quite strongly that prose literacy is the only dimension of literacy skills that

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matter for the receipt of training, such a conclusion would be somewhat misleading as it masks important heterogeneity across demographic groups. While it is true that for both groups other than French-Canadians prose literacy appears to dominate relative to the other dimensions of literacy, especially document literacy, for French Canadians quantitative skills seem to play a relatively more important role. We say "relatively" because in the case of employer-sponsored training the role of any of the literacy skill measures is at best fairly modest. As we can see in Table 6, where we report the effect of literacy on the receipt of job-related and employer-sponsored training by gender, only in the case of employer-sponsored training do we observe significant differences across genders, with prose literacy having a stronger effect for males.

3.3 Tobit Results of the Intensity of Training

To analyze the intensity of training, we appeal to the classic Tobit Model. Letting H be a variable that captures the hours spent in training, which is essentially continuous over strictly positive values but takes on the value zero with a positive probability, we estimate the probability of receiving training using the model

$$H^* = X\beta + u \tag{4}$$

$$H = max(0, H^*) \tag{5}$$

with

$$u|X \sim N(0, \sigma^2)$$

where H^* is a latent variable, X denotes a vector of covariates and β is the parameter

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vector. Note here that we report the marginal impact of each explanatory variables on the average observed hours trained:

$$\frac{\partial E(H|X)}{\partial x_j} = \frac{\beta_j}{\sigma}\Phi(\frac{X\beta}{\sigma})$$ (6)

This is different than the actual estimated coefficient which measures the effect of the covariates on the "latent" or desired hours, not the actual hours.[2] It is also different from the marginal impact of the covariates conditional on a positive number of hours spent training. This latter quantity takes as a given that some training is taking place and thus abstract from the occurrence of training. By contrast, the impact of the covariates on the average observed hours captures both the impact on the incidence as well as the effect on the intensity conditional on being trained. It is well known that the Tobit model is more sensitive to misspecification than the Probit. In particular, it tends to be sensitive to out-liers and so-called "long-tailed" distributions. Hence we chose to top-code the maximum value for the annual hours spent training. Instead of choosing more or less arbitrarily a certain numeric value for the top-code, we recoded all annual hours above the value of the 99th percentile to be equal to that value. In short, we top code the upper percentile of the distribution. This gets around the problem that some extreme values might have undue influence.[3] The main advantage of looking at duration compared to just the inci-dence of training is that we can potentially get more refined results if it turned out that

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[2]If the dependent variable had no mass point at zero and the censoring occurred due to top-coding only, then it would make sense to report the marginal effect on the latent outcome as it would have some meaning. But in this case, with a mass point at zero, much like in the labour supply literature, it does no really make sense to talk about negative desired hours of training.

[3]Although it would appear preferable to use semi-parametric estimators such as the censored least-absolute deviations estimator, which are robust to these type of mispecifications, in practice these techniques work relatively well only with larger samples than the ones we have here.

some individual characteristics have more explanatory power due to the duration dimension. Looking first at Table 7, as in Fortin and Parent (2005), the coefficients become more statistically significant when compared to the corresponding Probit results, which is not entirely surprising given that using hours allows us to exploit more variation in the dependent variable. On a more substantive note, we can see that the firm size effect is somewhat different for employer-sponsored training compared to job-related training. In the former case, it seems that there is a substantial difference between having less than 100 workers and the other ones. Employer-sponsored training is more a feature of larger firms than job-related training when we take intensity into account. This was not immediately apparent when we looked at the incidence of training (Table 4). Another interesting result in Table 7 is the impact of adding regional dummies on the test of of whether there are significant differences between French-Canadians and English Canadians. While in Table 4 we found that adding region of residence dummies made the differences across groups only marginally significant for any training and job related training, here we can see that the test of equality between the two groups is quite decidedly rejected. Perhaps even more striking is the fact that whether we add regional dummies or not, there is a significant difference in training intensity for employer-sponsored training. This is quite an interesting result because we found exactly the opposite in Table 4. There we saw that in terms of incidence there was nothing special about belonging to any demographic group when it comes to employer-sponsored training, a result that contrasted with our previous work using the 1994 IALS where we found large differences in terms of incidence. But when it comes to intensity, demographics obviously matter. What could rationalize such a result? In our view, it adds credibility to the hypothesis that firms in Quebec that are covered

by the 1%-of-payroll legislation are constrained by it. Firms may be forced to comply with the law but they are not forced to go beyond the minimum level of compliance. In short, francophone Quebeckers may now be more likely to receive firm-sponsored training than was the case previously-hence the catch-up documented in Table 4-but no more than what is required by the law-the intensity margin controlled by the firm. Among other results, education is also found to matter more for employer-sponsored training when we use the intensity of training as our dependent variable as opposed to just the incidence, although the effects are relatively modest. Looking at differences across genders (Table 8), we can see that the education effect is basically driven entirely by males. Somehow, educational attainment plays no role for females in terms of increasing the chances of receiving employer-sponsored training. The other key result in Table 8 is that the differences between French-Canadians and English-Canadians are significant for both genders, with male differentials being about 25% smaller than for females (-3.174 vs -2.209).

Part II

An Analysis of the 1% of Payroll Training Policy in Quebec

3.4   Institutional Context

Sensing that employers, private and public alike, did not provide enough skill upgrading opportunities for their workers, the Government of Quebec adopted on June 22, 1995 a new law designed to promote skill development. The law's stated goal has been to help develop worker skills so as to improve employability, adaptation, and worker mobility across jobs. Initially, the intent was for all employers with a payroll of at least $250,000 to devote 1% of it to training expenses. The actual implementation of the law was somewhat different. In 1996 only firms with a payroll of at least $1million were covered. The threshold moved down to $500000 in 1997 and to its originally intended level of $250000 in 1998). As of January 1, 2004, only firms with a payroll of at least $1 million are covered by the law.

Under the law all training activities must be approved by the Ministry of Labour. Training can be provided by an external entity or by an internal one, e.g. workers forming a group for the purpose of training co-workers. In either case, approval is required. Having interns or apprentices is admissible. All schooling institutions are basically recognized as potential providers of training, including e.g. Institut de tourisme et d'hotellerie and the Conservatoire de musique et d'art dramatique. So the coverage is quite comprehen-

sive.

Note that firms choosing not to devote 1% of their payroll to training have to pay the same amount to the government in the form of an extra 1% payroll tax.[4] The money goes into a special fund, the "Fonds de développement et de reconnaissance des compétences de la main-d'oeuvre", and is then used to finance worker "skill advancement programs" deemed acceptable by the Commission des partenaires du marché du travail (CPMT). To quote from the Commission's website: The Commission "is a provincial consultation body that brings together representatives from business, labor [sic], education, community and governmental organizations dedicated to improving the efficiency of the labour market. These labour market stakeholders pool their expertise and ideas in order to enhance public employment services and foster workforce skills development and recognition." The amount of the fund available to the CPMT in 2007-2008 was at $20.7 million.[5] Assuming that the amount collected in taxes in a given fiscal year is all spent, this would indicate that quite a few covered employers elected to pay the higher payroll tax instead of spending the money on admissible training activities. The fact that some employers do not even bother trying to meet the law's requirements and prefer paying a higher payroll tax is suggestive that whatever impact would be generated by such an intervention, it seems unlikely to be very large.

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[4]Firms can also elect to partially fulfill the requirements of the law (e.g. 0.5% devoted to training expenses) and pay the rest in the form of an added payroll tax.

[5]http://www.cpmt.gouv.qc.ca/organisation/index_en.asp..

3.5 Evaluation Framework

We adopt a standard difference-in-differences analysis of the effect of the program in which our treatment group consist of respondents in Quebec in 1994 and 2003 while the control group is made of respondents in other Canadian provinces. As the timing of the law indicates, we view 1994 as representing the environment before the new policy was implemented while 2003 represents the "after period". Thus, what we are looking for in this type of framework is whether we can observe a change in Quebec in terms of employer sponsored training relative to other provinces. Formally we estimate the following model:[6]

$$T_{it} = \beta_0 + \beta_1 QC_{it} + \beta_3 t + \beta_4 (t \times QC) + X'_{it}\gamma + u_{it} \tag{7}$$

where T_{it} is dummy indicator for whether respondent i reports receiving employer-sponsored training in year t, QC_{it} is a dummy indicator for whether the respondent is from Quebec, t is dummy for being surveyed in 2003, and X is a vector of control variables such as education, firm size, etc. Our explanatory variable of interest is the interaction term between the year and the Quebec dummies, $(t \times QC_{it})$. The parameter associated with it represents the so-called "treatment effect", that is the relative increase in the incidence of employer-sponsored training in Quebec. As usual in this sort of framework, the crucial identifying assumption is that whatever time trend there was in the incidence of training, it was the same both inside and outside Quebec, controlling for the observed explanatory variables X. While such an assumption may be reasonable when the time span is relatively short, it

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[6]We use the Probit formulation. Using ordinary least squares makes little difference to the quantitative results and no difference to the qualitative results.

becomes more questionable when many years separate the "before" from the "after", as is the case here. The analysis is performed pooling males and females as well as by gender.

To check the robustness of our results, we perform sensitivity analyses using different control groups (e.g. Ontario only instead of all Canadian provinces) and we also perform a falsification analysis using Ontario as the treatment group and all provinces other than Quebec as the control group. Since no training policy change occurred in Ontario between 1994 and 2003, we would not expect to find an "effect" there. If we do, this would cast doubt on the validity of our basic results.

3.6   Results

The results are reported in Tables 9-12[7]. In Table 9 we make use of the full sample i.e. all Quebec residents irrespective of ethnicity are included in the treatment group while all Canadians living in the other provinces are in the control group. If we first look at the results obtained when pooling males and females we can see that the incidence of employer-sponsored training increased in Quebec by more than ten percentage points between 1994 and 2003 relative all other Canadian residents. The same effect is observed for job-related training, which would seem to be somewhat surprising. However, note that the training question asked all respondents to first categorize the type of training they received-general interest of job related-and then they are asked who paid for it, from which we construct our employer-sponsored training dummy indicator. Thus job-related training does include employer-sponsored training.[8] Interestingly, the evidence is much

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[7]All models include the following controls: educational attainment, literacy scores, 1-digit industries and occupations, firm size, age, region of residence, and English/French language proficiency.

[8]Another way to code the training questions would be to net out of all job-related training all employer-sponsored training. All those job-related training events that are not employer-sponsored (and are mainly

weaker that general interest training increased over the same time period in Quebec in relative terms.

Breaking down the sample along gender lines reveals enormous differences. Basically we find little evidence of any effect for males (Panel C) while the results for females show a very large relative increase in employer-sponsored training (Panel B). Even though that relative increase happened, we are skeptical about whether it increased *because* of the policy. Such a large behavioural response following the introduction of what is a fairly modest intervention does not appear plausible.[9] We come back below on what could be a more likely explanation for the tremendous increase in employer-sponsored training in the case of females.

In Tables 10 and 11 we do the same analysis as in Table 9 but with different treatment/control groups. In Table 10 we only use French Canadians. Those living in Quebec belong to the treatment group while those outside Quebec are in the control group. While we find little evidence of any relative increase in employer-sponsored training when we pool males and females together, again we get very different results when we perform the analysis separately. Females experienced a very large relative increase while males actually saw a relative decline compared to their non Quebec counterparts. Since there is no reason to suspect that a policy would generate the exact opposite impact of the intended one, the results in Panel C of Table 10 simply suggest that some other factor or set of factors was driving the incidence of employer-sponsored training in the two groups.

self-financed) would then truly complement the employer-sponsored component. We did that and the result was that non employer-financed training did not increase nearly as much in Quebec relative to the employer-sponsored category, as one would expect.

[9]As mentioned above, firms have the choice to simply pay a higher payroll tax instead of trying to meet the law's requirements, and it seems that many employers chose to do so.

In Table 11, we do the opposite and use all non French Canadians only. Here we find significant effects for both males and females but, again, it simply does not seem plausible to attribute such a large increase to the training policy: something else is going on for females in Quebec relative to the rest of Canada.

In Table 12, where we report our falsification exercise results, we can see that there is very little evidence, as one would expect in an environment where no training policy was introduced, that the incidence of employer-sponsored training changed relative to all other non Quebec provinces. And this is equally true for females and males.

3.7   Why Is There Such a Big Increase for Females?

As mentioned above we are highly skeptical that the remarkable increase in the incidence of employer-sponsored training for females in Quebec was driven by the policy. The fact that basically no increase is observed for males simply makes the female results appear to be driven by another factor, as one would think that males should also have benefitted from the policy. It seems extremely unlikely-although not impossible-that the law was binding for firms employing a disproportionate share of females.

To explore what could be a plausible reason for the measured relative increase in the incidence of employer-sponsored training we looked at whether female labour supply, as measured by the employment rate, behaved differently in Quebec vs. females living in other Canadian provinces over the 1990's and early 2000's. Remember that the key condition required for the difference-in-differences estimates of the impact of the training policy to truly reflect the causal effect of the policy is that no confounding unmeasured factor was also giving raise to an increased incidence of training in Quebec relative to

other Canadian provinces. As mentioned above when the "before-after" comparisons are done within a relatively short period of time (say, 3 years), this may not be a bad approximation. However, in our case, we are comparing training incidence measured 9 years apart. Obviously a lot of things could change differently in Quebec over such a long period of time. For example, the province introduced its "$5 dollar-a-day" daycare policy in 1997. One possible impact of that policy could be that it boosted female labour force participation. Indeed, that was one of the results found in Baker, Gruber and Milligan (2005)'s analysis of that policy. One would then expect training incidence to increase for females in Quebec given that a greater fraction of them are in the labour force.

In Figures 9-11 we show the employment rates of females and males, respectively, aged 25-44 by educational attainment category, using those with at least a high school diploma. The visual evidence in those figures is supportive of the hypothesis that female labour supply increased relatively more in Quebec than in other Canadian provinces. Such a conclusion is not so obvious in the case of males although, to be sure, some relative improvement can also be observed for men.

To check whether the visual evidence is supported by a more rigorous analysis, we merged the 1993 and 2003 Labour Force Surveys and performed a difference-in-differences analysis analogous to the one we perform for training incidence using instead the employment rate as the dependent variable. The results are reported in Table 13.[10] We can see that the female employment in Quebec did increase relative to that in other Canadian provinces. In fact the increase is twice as large as that for males.

The key question then is whether a 4-5 percentage point increase in female employ-

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[10]Individuals of all educational attainment categories are pooled in the estimation

ment rates can rationalize the very large relative increase in female employer-sponsored training incidence estimated in Tables 9-12. This would seem doubtful. In sum we find evidence that labour markets changed in relative terms for females living in Quebec but the measured relative change would appear not to be large enough to account for all of the increase in the incidence of training for females in Quebec.

4   Conclusion

As in our previous work using the 1994 IALS, we find significant differences across demographic groups in terms of having either any training or some form of job-related training. We also find that the usual observable "marker" of individual skills, educational attainment, matters very little when it comes to employer-sponsored training, something we also found with the IALS once we included literacy scores.

As for the impact of the 1% training policy implemented in Quebec in the mid 1990's, we are left with somewhat of a puzzle. On the one hand we find no evidence of any impact for males, which could in part be due to measurement problems, some training probably being left unreported due to its largely informal nature. On the other hand, Quebec females did experience a remarkable relative increase in the incidence of employer-sponsored training, so remarkable in fact as to stretch the credibility of the hypothesis that it was caused by the policy. Only if it were true that firms employing a disproportionate share of females found themselves to be constrained by the policy could this have occurred. One thing to note is that the large relative increase in the incidence of female training is estimated controlling for many of the observed characteristics that are known

to positively influence training receipt, such as education and literacy. We also control for occupations and industries. Consequently, other factors than those usual determinants of training must be contributing to its greater incidence for females living in Quebec. We explored the possibility that women have simply become more active in the labour force in Quebec over the same period of time. While this can explain some of the increase in training, it appears unlikely to be the sole explanation. It could be that firms employing females are more careful to label as training the activities they had always performed before, but then one would need to find solid evidence that this relabeling is a female-only phenomenon. Data coming from the employer side would seem to represent a necessary complement to the analysis done here with individual survey data before we can ascertain exactly what has been the key determinant behind the large increase in reported female training.

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APPENDIX A: Definition of the variables

- Active labour market participants: Individuals who were either employed at the time of the interview or had been employed in the previous 12 months.

- Any training: Respondents were asked whether in the previous 12 months, they received any training or education including courses, private lessons, correspondence courses, private lessons, correspondence courses, workshops, on-the-job training, apprenticeship training, arts, crafts, recreation courses or any other training or education. This question was coded as a one for an affirmative answer and zero otherwise.

- Job-related training: Respondents who answered that they had received any training in the previous 12 mount were asked "What was the main reason you took this training or education?" If the answer was 1) career/job related purposes, the training was coded as job related training.

- Personal interest training: Respondents who answered that they had received any training in the previous 12 mount were asked "What was the main reason you took this training or education?" If the answer was 2) personal interest , the training was coded as personal interest training.

- Employer-sponsored training: Respondents who undertook some training were asked "Was this training or education financially supported by" If the answer was "An employer", the training was coded as employer-sponsored training.

- Firm size: The number of persons employed by the business at all locations in Canada available in five categories: less than 20, between 20 and 99, between 100 and 499, between 500 and 999, 1000 or more.

- French, English and Other Canadians: Respondents were asked to "To which ethnic or cultural groups did your ancestors belong?" in the Canadian survey, which recorded among valid answers "French", "English", and "Canadian". Respondents who answered French or English were classified as French or English Canadians, notwithstanding the restriction below. The respondents who answered "Canadian" or declined to answer (32 percent) were classified into the French, English or Other group according to their answer to the question "What language did you first speak as a child?", for which the only answers recorded were the language of the interview,

French, English and Other. A respondent who did not answer French among the languages in the answer to the question "When you were growing up, what language or languages were usually spoken in your home?" was removed from the French Canadian category. Canadians who were classified as neither French nor English Canadian, were classified as Other.

- Literacy and Numeracy Dummies: A respondent's proficiency in three dimensions of literacy are measured in terms of a series of five plausible values for each of the three domains, where the two upper categories were merged. The three literacy domains include the ability to understand and use information from texts (prose literacy), from different formats, including schedules, graphics and tables (document literacy) and requiring the application of arithmetic operations (quantitative literacy).

Table 1.   Proportions of Active Labour Force Participants Receiving Training

	Any training	Number of courses taken	Job-related	Personal interest	Employer sponsored	Wanted job training
Canada						
All	0.60	2.66	0.41	0.09	0.22	0.40
English Canadians	0.63	2.83	0.43	0.09	0.26	0.41
French Canadians	0.54	2.77	0.36	0.08	0.22	0.37
Other Canadians	0.60	2.54	0.41	0.09	0.21	0.41
Province of residence						
Atlantic Provinces	0.58	3.06	0.39	0.08	0.22	0.38
Quebec	0.55	2.47	0.38	0.09	0.21	0.38
Ontario	0.60	2.64	0.39	0.10	0.25	0.41
West	0.64	2.72	0.46	0.10	0.25	0.42

Source: IALSS (2003) Individuals selected where either employed at the time of the interview or had been employed in the last 12 months. With around 1,000-2,000 observations per country, differences exceeding 0.025-0.03 are statistically significant at the 5% level.

Table 2.   Proportion of Active Labour Force Participants Receiving Training by Age Group

	Any training	Number of courses taken	Job-related	Personal interest	Employer sponsored	Wanted job training
English Canadians						
16 - 25	0.77	2.00	0.59	0.18	0.12	0.38
26 - 35	0.65	2.56	0.42	0.08	0.25	0.52
36 - 45	0.63	2.92	0.42	0.07	0.32	0.47
46 - 55	0.61	3.50	0.42	0.06	0.31	0.38
56 - 65	0.47	2.70	0.29	0.06	0.22	0.22
French Canadians						
16 - 25	0.71	2.65	0.54	0.19	0.11	0.36
26 - 35	0.59	3.65	0.39	0.08	0.27	0.48
36 - 45	0.53	2.51	0.34	0.05	0.26	0.42
46 - 55	0.47	2.44	0.30	0.05	0.23	0.28
56 - 65	0.34	2.25	0.20	0.05	0.21	0.17
Other Canadians						
16 - 25	0.77	2.29	0.59	0.18	0.09	0.36
26 - 35	0.63	2.28	0.45	0.08	0.30	0.51
36 - 45	0.55	2.69	0.37	0.06	0.24	0.47
46 - 55	0.56	2.82	0.34	0.07	0.23	0.36
56 - 65	0.37	2.82	0.18	0.07	0.13	0.19

Source: IALSS (2003) Individuals selected where either employed at the time of the interview or had been employed in the last 12 months. With around 100-200 observations per age group, differences exceeding 0.05-0.08 are statistically significant at the 5% level.

Table 3.   Annual Number of Hours of Training of Participants by Country/Demographic Groups

	Any training		Job-related		Employer-sponsored	
Canada						
All	76.4	(138.9)	65.6	(133.7)	44.2	(83.1)
English Canadians	73.1	(135.2)	63.3	(132.2)	47.7	(100.2)
French Canadians	75.9	(128.4)	64.8	(123.8)	51.4	(99.9)
Other Canadians	78.1	(143.2)	67.0	(136.8)	40.1	(65.6)

Source: IALSS (2003) Individuals selected where either employed at the time of the interview or had been employed in the last 12 months. Average computed only for respondents with positive hours.
Standard deviations in parentheses.

Table 4.   Marginal Effects of Explanatory Variables on the Incidence
             of Any Training and Job-related Training from a Probit Model

	Any Training		Job-related		Employer-Sponsored	
	(1)	(2)	(3)	(4)	(5)	(6)
Ethnic Group (Other Canadian omitted)						
French Canadian	-0.070 ***	-0.042 ***	-0.069 ***	-0.054 ***	-0.017 *	0.001
	(0.014)	(0.016)	(0.013)	(0.015)	(0.010)	(0.013)
English Canadian	-0.010	-0.011	-0.024 **	-0.022 **	-0.008	-0.008
	(0.012)	(0.012)	(0.012)	(0.012)	(0.009)	(0.009)
French/English a	-0.083 ***	-0.086 ***	-0.114 ***	-0.113 ***	-0.097 ***	-0.096 ***
Second Language	(0.018)	(0.018)	(0.016)	(0.016)	(0.011)	(0.011)
Immigrant	0.017	0.016	0.029 *	0.029 *	0.004	0.005
	(0.016)	(0.016)	(0.016)	(0.016)	(0.013)	(0.013)
Female	0.012	0.012	-0.034 ***	-0.034 ***	-0.023 ***	-0.022 ***
	(0.011)	(0.011)	(0.011)	(0.011)	(0.008)	(0.008)
Education (Primary Omitted)						
Some Secondary	0.089 *	0.083 *	0.130 **	0.126 **	-0.009	-0.013
	(0.047)	(0.047)	(0.061)	(0.061)	(0.043)	(0.043)
Secondary	0.147 ***	0.141 ***	0.158 ***	0.155 ***	0.039	0.036
	(0.046)	(0.046)	(0.059)	(0.059)	(0.045)	(0.045)
Some Post-secondary	0.182 ***	0.178 ***	0.185 ***	0.182 ***	0.052	0.049
	(0.044)	(0.044)	(0.059)	(0.060)	(0.047)	(0.047)
University	0.208 ***	0.206 ***	0.203 ***	0.202 ***	0.045	0.043
	(0.044)	(0.044)	(0.060)	(0.015)	(0.047)	(0.047)
Age Intervals (16-25 omitted)						
26 - 35	-0.240 ***	-0.240 ***	-0.192 ***	-0.192 ***	0.186 ***	0.186 ***
	(0.016)	(0.016)	(0.013)	(0.013)	(0.016)	(0.016)
36 - 45	-0.263 ***	-0.263 ***	-0.225 ***	-0.225 ***	0.190 ***	0.190 ***
	(0.016)	(0.016)	(0.013)	(0.013)	(0.016)	(0.016)
46 - 55	-0.269 ***	-0.270 ***	-0.240 ***	-0.242 ***	0.180 ***	0.179 ***
	(0.016)	(0.016)	(0.013)	(0.013)	(0.016)	(0.016)
56 - 65	-0.373 ***	-0.375 ***	-0.311 ***	-0.313 ***	0.239 ***	0.242 ***
	(0.018)	(0.045)	(0.012)	(0.012)	(0.012)	(0.012)
Firm size (less than 20 omitted)						
20-99	0.114 ***	0.114 ***	0.086 ***	0.087 ***	0.131 ***	0.130 ***
	(0.014)	(0.014)	(0.015)	(0.015)	(0.016)	(0.016)
100-499	0.167 ***	0.168 ***	0.163 ***	0.165 ***	0.241 ***	0.243 ***
	(0.014)	(0.014)	(0.017)	(0.017)	(0.018)	(0.018)
500-999	0.130 ***	0.132 ***	0.110 ***	0.111 ***	0.232 ***	0.235 ***
	(0.018)	(0.018)	(0.021)	(0.021)	(0.022)	(0.022)
1000 and over	0.204 ***	0.206 ***	0.151 ***	0.154 ***	0.239 ***	0.242 ***
	(0.011)	(0.011)	(0.012)	(0.012)	(0.012)	(0.012)
Literacy Scores Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Occupations Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Regional Dummies	No	Yes	No	Yes	No	Yes
Pseudo-R2	0.135	0.136	0.099	0.100	0.127	0.130
Predicted Probability At X-bar	0.611	0.612	0.395	0.394	0.189	0.188
Test: Fr. Canadian = Eng. Canadian	15.70 ***	2.89 *	9.99 **	3.31 *	0.66	0.39

Source: IALSS (2003) Individuals selected where either employed at the time of the interview or had been
 employed in the last 12 months, leaving 12256 observations. Robust standard errors in parentheses.
*** indicates significance at the 1% level, ** at the 5% level and * at the 10% level.

Table 5.   Marginal Effects of Literacy and Numeracy Scores for Different Types of Training by Ethnic Group

	Job Related				Employer-Sponsored			
	Canada	Fr. Can.	Eng. Can.	Other Can.	Canada	Fr. Can.	Eng. Can.	Other Can.
	(1)	(2)		(3)	(4)	(5)		(6)
Quantitative Level 2	0.014	0.091	0.029	-0.017	-0.013	0.067	-0.009	-0.039
	(0.019)	(0.040)	(0.045)	(0.025)	(0.015)	(0.032)	(0.039)	(0.019)
Quantitative Level 3	-0.013	0.089	0.030	-0.069	0.012	0.056	0.056	-0.022
	(0.021)	(0.041)	(0.049)	(0.029)	(0.018)	(0.035)	(0.044)	(0.022)
Quantitative Level 4	0.023	0.122	0.082	-0.044	0.035	0.081	0.118	-0.017
	(0.025)	(0.051)	(0.057)	(0.035)	(0.022)	(0.045)	(0.055)	(0.026)
Prose Level 2	0.095	0.025	0.067	0.138	0.053	-0.060	0.059	0.095
	(0.027)	(0.045)	(0.069)	(0.037)	(0.024)	(0.034)	(0.067)	(0.034)
Prose Level 3	0.176	0.099	0.177	0.212	0.115	-0.034	0.133	0.168
	(0.030)	(0.052)	(0.074)	(0.042)	(0.027)	(0.040)	(0.069)	(0.038)
Prose Level 4	0.228	0.086	0.272	0.260	0.167	-0.080	0.189	0.263
	(0.034)	(0.062)	(0.079)	(0.048)	(0.035)	(0.038)	(0.086)	(0.052)
Document Level 2	-0.008	-0.078	0.039	-0.006	0.028	0.029	0.072	0.022
	(0.026)	(0.043)	(0.064)	(0.036)	(0.022)	(0.038)	(0.062)	(0.030)
Document Level 3	-0.014	-0.044	-0.005	-0.002	-0.013	0.072	-0.001	-0.031
	(0.029)	(0.050)	(0.070)	(0.042)	(0.024)	(0.045)	(0.062)	(0.032)
Document Level 4	0.009	-0.038	-0.027	0.055	-0.024	0.096	-0.039	-0.038
	(0.033)	(0.058)	(0.076)	(0.048)	(0.026)	(0.059)	(0.064)	(0.034)
No. observations	12256	3172	2909	6167	12256	3172	2905	6151

Source: IALSS (2003) The estimates are obtained from models with the same covariates as those in column 6 of Table 4.

Table 6. Marginal Effects of Literacy and Numeracy Scores for Different Types of Training by Gender

	Job Related		Employer-Sponsored	
	Females	Males	Females	Males
	(1)	(2)	(3)	(4)
Quantitative Level 2	0.066	-0.043	-0.013	-0.016
	(0.025)	(0.029)	(0.019)	(0.025)
Quantitative Level 3	0.039	-0.067	0.041	-0.021
	(0.028)	(0.033)	(0.023)	(0.028)
Quantitative Level 4	0.063	-0.027	0.044	0.012
	(0.035)	(0.038)	(0.029)	(0.032)
Prose Level 2	0.102	0.099	0.011	0.076
	(0.040)	(0.037)	(0.032)	(0.036)
Prose Level 3	0.180	0.189	0.068	0.156
	(0.045)	(0.042)	(0.036)	(0.039)
Prose Level 4	0.211	0.264	0.110	0.219
	(0.050)	(0.047)	(0.045)	(0.053)
Document Level 2	-0.009	-0.018	0.032	0.028
	(0.035)	(0.037)	(0.029)	(0.035)
Document Level 3	-0.050	0.007	-0.031	0.007
	(0.041)	(0.043)	(0.032)	(0.038)
Document Level 4	0.046	-0.032	-0.035	-0.009
	(0.047)	(0.048)	(0.033)	(0.041)
N	6144	6112	6144	6122

Source: IALSS (2003) The estimates are obtained from models with the same covariates as those in column 6 of Table 4.

Table 7.   Marginal Effects of Explanatory Variables on Annual Hours
                                 of Training from a Tobit Model

	Any Training		Job-related		Employer-Sponsored	
	(1)	(2)	(3)	(4)	(5)	(6)
Ethnic Group (Other Canadian omitted)						
French Canadian	-9.235 ***	-6.829 ***	-13.601 ***	-11.666 ***	-2.808 ***	-2.569 ***
	(1.098)	(1.254)	(1.655)	(1.894)	(0.455)	(0.531)
English Canadian	-1.334	0.289	-0.994	1.535	-0.451	0.427
	(0.898)	(0.910)	(1.347)	(1.377)	(0.379)	(0.394)
French/English a	-2.178 *	-3.143 ***	-5.425 ***	-6.840 ***	-2.478 ***	-2.876 ***
Second Language	(1.340)	(1.336)	(2.050)	(2.062)	(0.601)	(0.618)
Immigrant	-2.077 *	-3.595 ***	-1.514 **	-3.945 **	-1.224 **	-1.925 ***
	(1.252)	(1.250)	(1.895)	(1.911)	(0.541)	(0.558)
Female	-1.440 *	-1.605 **	-5.575 ***	-5.771 ***	-1.705 ***	-1.788 ***
	(0.839)	(0.836)	(1.234)	(1.281)	(0.364)	(0.373)
Education (Primary Omitted)						
Some Secondary	11.920 ***	11.067 **	26.762 ***	26.870 ***	0.630	0.789
	(5.110)	(5.076)	(8.176)	(8.281)	(2.110)	(2.178)
Secondary	17.580 ***	16.548 ***	30.950 ***	30.643 ***	3.278 *	3.333 *
	(5.072)	(5.037)	(8.129)	(8.231)	(2.093)	(2.160)
Some Post-secondary	21.482 ***	21.068 ***	37.084 ***	37.777 ***	3.956 **	4.273 **
	(5.095)	(5.060)	(8.160)	(8.263)	(2.101)	(2.168)
University	25.238 ***	24.796 ***	41.223 ***	41.877 ***	3.524 ***	3.915 ***
	(5.125)	(5.090)	(8.202)	(8.305)	(2.118)	(0.587)
Age Intervals (16-25 omitted)						
26 - 35	8.666 ***	8.827 ***	15.596 ***	16.458 ***	11.823 ***	11.728 ***
	(1.214)	(1.209)	(1.877)	(1.885)	(0.609)	(0.625)
36 - 45	6.661 ***	6.908 ***	11.074 ***	11.186 ***	11.243 ***	11.218 ***
	(1.120)	(1.194)	(1.858)	(1.863)	(0.601)	(0.616)
46 - 55	2.151 *	2.258 *	4.990 **	4.953 **	9.164 ***	8.967 ***
	(1.253)	(1.247)	(1.936)	(1.941)	(0.618)	(0.633)
56 - 65	-1.774	-1.861	-3.725 *	-3.938 *	8.081 ***	7.604 ***
	(1.637)	(1.626)	(2.551)	(2.552)	(0.762)	(0.781)
Firm size (less than 20 omitted)						
20-99	8.770 ***	8.637 ***	11.912 ***	11.657 ***	6.880 ***	6.871 ***
	(1.193)	(1.119)	(1.877)	(1.833)	(0.575)	(0.587)
100-499	10.499 ***	10.133 ***	15.592 ***	14.850 ***	12.191 ***	11.550 ***
	(1.264)	(1.260)	(1.918)	(1.930)	(0.575)	(0.590)
500-999	8.617 ***	8.624 ***	15.654 ***	15.591 ***	13.655 ***	13.404 ***
	(1.554)	(1.544)	(2.343)	(2.347)	(0.678)	(0.693)
1000 and over	10.358 ***	10.112 ***	15.802 ***	15.263 ***	12.173 ***	11.947 ***
	(0.971)	(0.968)	(1.485)	(1.492)	(0.475)	(0.486)
Literacy Scores Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Industry and Occupations Dummies	Yes	Yes	Yes	Yes	Yes	Yes
Regional Dummies	No	Yes	No	Yes	No	Yes
Test: Fr. Canadian = Eng. Canadian	58.48 ***	30.68 ***	69.21 ***	49.04 ***	32.92 ***	32.13 ***

Source: IALSS (2003) Individuals selected where either employed at the time of the interview or had been
 employed in the last 12 months, leaving 12256 observations. Robust standard errors in parentheses.
*** indicates significance at the 1% level, ** at the 5% level and * at the 10% level.

Table 8.   Marginal Effects of Explanatory Variables on Annual Hours of Training
                            from a Tobit Model by Gender

	Females		Males	
	Job Related (1)	Employer-Sponsored (2)	Job Related (3)	Employer-Sponsored (4)
Ethnic Group (Other Canadian omitted)				
French Canadian	-12.470 ***	-3.174 ***	-9.575 ***	-2.209 ***
	(2.741)	(0.756)	(2.499)	(0.827)
English Canadian	1.692	0.474	1.059	0.684
	(1.998)	(0.565)	(1.827)	(0.619)
French/English a	-6.042 **	-2.083 ***	-7.168 ***	-3.615 ***
Second Language	(2.937)	(0.842)	(2.800)	(1.004)
Immigrant	-2.463	-2.526 ***	-5.407 ***	-1.735 ***
	(2.713)	(0.793)	(2.598)	(0.891)
Education (Primary Omitted)				
Some Secondary	2.849	-3.507	42.352 ***	5.588 **
	(12.450)	(3.292)	(10.847)	(3.351)
Secondary	18.738 *	-1.214	37.010 ***	7.850 **
	(12.258)	(3.228)	(10.823)	(3.339)
Some Post-secondary	25.350 **	-0.061	45.102 ***	8.406 **
	(12.314)	(3.241)	(10.873)	(3.356)
University	29.100 ***	0.277	51.278 ***	7.058 ***
	(12.369)	(3.261)	(10.936)	(3.389)
Age Intervals (16-25 omitted)				
26 - 35	41.448 ***	7.502 ***	19.797 ***	17.447 ***
	(11.025)	(0.868)	(2.461)	(0.997)
36 - 45	42.773 ***	7.575 ***	9.999 ***	16.177 ***
	(10.781)	(0.848)	(2.456)	(0.991)
46 - 55	15.576 *	5.199 ***	5.600 ***	14.007 ***
	(11.238)	(0.875)	(2.548)	(1.012)
56 - 65	-9.884	5.049 ***	-5.783 *	15.675 ***
	(14.715)	(1.098)	(3.365)	(0.790)
Firm size (less than 20 omitted)				
20-99	33.049 ***	7.812 ***	14.368 ***	7.300 ***
	(10.387)	(0.815)	(2.463)	(0.940)
100-499	25.876 **	9.579 ***	21.135 ***	14.892 ***
	(11.067)	(0.828)	(2.596)	(0.938)
500-999	26.419 **	6.796 ***	23.662 ***	21.741 ***
	(13.358)	(0.992)	(3.177)	(1.102)
1000 and over	36.633 ***	9.194 ***	20.352 ***	15.675 ***
	(8.282)	(0.658)	(2.075)	(0.790)
Literacy Scores Dummies	Yes	Yes	Yes	Yes
Industry and Occupations Dummies	Yes	Yes	Yes	Yes
Regional Dummies	Yes	Yes	Yes	Yes
Test: Fr. Canadian = Eng. Canadian	27.36 ***	24.89 ***	17.88 ***	11.43 ***
N	6144	6144	6112	6112

Source: IALSS (2003) Individuals selected where either employed at the time of the interview or had been
employed in the last 12 months, leaving 12256 observations. Robust standard errors in parentheses.
*** indicates significance at the 1% level, ** at the 5% level and * at the 10% level.

Table 9. The Impact of the 1% Training Policy on the Incidence of Training-Full Sample
(Standard Errors in Parentheses)

Panel A: Pooled Males and Females

	Employer-Sponsored	Job Related	General Interest
Quebec X 2003	0.104	0.104	0.046
	(0.021)	(0.022)	(0.021)
Quebec	-0.099	-0.110	-0.090
	(0.012)	(0.016)	(0.018)
Year (2003)	-0.003	0.003	0.022
	(0.001)	(0.001)	(0.001)
N= 14,927			

Panel B: Females

	Employer-Sponsored	Job Related	General Interest
Quebec X 2003	0.334	0.213	0.129
	(0.039)	(0.032)	(0.029)
Quebec	-0.205	-0.205	-0.187
	(0.013)	(0.022)	(0.027)
Year (2003)	-0.009	-0.003	0.019
	(0.001)	(0.002)	(0.002)
N= 7463			

Panel C: Males

	Employer-Sponsored	Job Related	General Interest
Quebec X 2003	0.003	0.037	-0.021
	(0.024)	(0.030)	(0.030)
Quebec	-0.022	-0.048	-0.017
	(0.012)	(0.024)	(0.025)
Year (2003)	0.001	0.006	0.023
	(0.002)	(0.002)	(0.002)
N= 7456			

Source: 1994 IALS and 2003 IALSS. The estimates are obtained from models using the same covariates as those in columns 2,4,6 of Table 4. The control group consists of all respondents living in all canadian provinces outside Quebec.

Table 10. The Impact of the 1% Training Policy on the Incidence of Training: French Canadians Only

Panel A: Pooled Males and Females

	Employer-Sponsored	Job Related	General Interest
Quebec X 2003	0.022	0.078	0.051
	(0.028)	(0.035)	(0.020)
Quebec	-0.054	-0.122	-0.083
	(0.021)	(0.025)	(0.027)
Year (2003)	0.005	0.003	0.014
	(0.003)	(0.00)	(0.004)
N= 4,273			

Panel B: Females

	Employer-Sponsored	Job Related	General Interest
Quebec X 2003	0.210	0.305	0.256
	(0.041)	(0.005)	(0.054)
Quebec	-0.230	-0.320	-0.244
	(0.035)	(0.037)	(0.038)
Year (2003)	-0.006	-0.001	0.006
	(0.003)	(0.005)	(0.005)
N= 2,140			

Panel C: Males

	Employer-Sponsored	Job Related	General Interest
Quebec X 2003	-0.128	-0.125	-0.152
	(0.037)	(0.051)	(0.057)
Quebec	0.066	0.046	0.067
	(0.027)	(0.038)	(0.042)
Year (2003)	0.016	0.016	0.024
	(0.004)	(0.035)	(0.006)
N= 2,133			

Source: 1994 IALS and 2003 IALSS. Treatment group consists of all French Canadians living in Quebec whereas control group members include all other French Canadians living in other canadian provinces. The estimates are obtained from models using the same covariates as those in columns 2,4,6 of Table 4.

Table 11. The Impact of the 1% Training Policy on the Incidence of Training: Non Fr. Can. Only

Panel A: Pooled Females and Males

	Employer-Sponsored	Job Related	General Interest
Quebec X 2003	0.156	0.132	0.091
	(0.035)	(0.032)	(0.031)
Quebec	-0.125	-0.127	-0.130
	(0.014)	(0.023)	(0.025)
Year (2003)	-0.005	0.002	0.021
	(0.001)	(0.001)	(0.002)
N= 10,646			

Panel B: Females

	Employer-Sponsored	Job Related	General Interest
Quebec X 2003	0.473	0.166	0.147
	(0.072)	(0.049)	(0.042)
Quebec	-0.213	-0.156	-0.212
	(0.013)	(0.035)	(0.039)
Year (2003)	-0.001	-0.003	0.019
	(0.002)	(0.002)	(0.002)
N= 5,323			

Panel C: Males

	Employer-Sponsored	Job Related	General Interest
Quebec X 2003	0.147	0.109	0.042
	(0.042)	(0.045)	(0.045)
Quebec	-0.212	-0.104	0.062
	(0.039)	(0.032)	(0.035)
Year (2003)	0.019	0.004	0.022
	(0.002)	(0.002)	(0.002)
N= 5,323			

Source: 1994 IALS and 2003 IALSS. Treatment group consists of all non French Canadians living in Quebec whereas control group members include all other non French Canadians living in other canadian provinces. The estimates are obtained from models using the same covariates as those in columns 2,4,6 of Table 4.

Table 12. The Impact of the 1% Training Policy on the Incidence of Training: Ontario vs. Others

Panel A: Pooled Females and Males

	Employer-Sponsored	Job Related	General Interest
Ontario X 2003	-0.005	-0.007	0.051
	(0.016)	(0.020)	(0.020)
Ontario	-0.038	-0.035	-0.076
	(0.012)	(0.015)	(0.016)
Year (2003)	-0.005	0.003	0.019
	(0.001)	(0.002)	(0.002)
N= 11,650			

Panel B: Females

	Employer-Sponsored	Job Related	General Interest
Ontario X 2003	-0.019	0.036	0.123
	(0.022)	(0.029)	(0.028)
Ontario	-0.019	-0.049	-0.096
	(0.018)	(0.023)	(0.023)
Year (2003)	-0.008	0.003	0.015
	(0.002)	(0.002)	(0.003)
N= 5,864			

Panel C: Males

	Employer-Sponsored	Job Related	General Interest
Ontario X 2003	-0.043	-0.090	-0.057
	(0.022)	(0.028)	(0.030)
Ontario	0.005	0.031	-0.003
	(0.002)	(0.022)	(0.023)
Year (2003)	-0.001	0.009	0.024
	(0.002)	(0.003)	(0.002)
N= 5,786			

Source: 1994 IALS and 2003 IALSS. Treatment group consists of all Ontario respondents whereas control group members include all other non Quebec respondents. The estimates are obtained from models using the same covariates as those in columns 2,4,6 of Table 4.

Table 13. Employment Rates in Quebec and in Other Canadian Provinces: 2003 vs 1993

	Females	Males
Quebec X 2003	0.046	0.023
	(0.002)	(0.002)
Quebec	-0.044	-0.032
	(0.002)	(0.001)
Year (2003)	0.035	-0.005
	(0.001)	(0.001)
N	635759	605284

Source: 1993 and 2003 Labour Force Surveys. The estimate associated to the interaction
variable Quebec X 2003 represents the relative increase in the employment rate
of females in Quebec between 1993 and 2003.

Table A1.   Sample means

	All	French	English	Other
French Canadian	0.162	1.000	0.000	0.000
English Canadian	0.256	0.000	1.000	0.000
Other Canadian	0.582	0.000	0.000	1.000
Female	0.466	0.447	0.445	0.480
Immigrant	0.200	0.024	0.090	0.298
Second Language	0.180	0.001	0.002	0.309
Education				
Primary	0.013	0.015	0.002	0.018
Some Secondary	0.157	0.175	0.138	0.160
Secondary	0.331	0.345	0.370	0.311
Some Post-secondary	0.242	0.251	0.246	0.239
University	0.256	0.215	0.245	0.272
Age Intervals				
16 - 25	0.196	0.192	0.179	0.204
26 - 35	0.221	0.203	0.197	0.236
36 - 45	0.264	0.269	0.262	0.263
46 - 55	0.223	0.244	0.236	0.212
56 - 65	0.096	0.092	0.126	0.085
Firm size				
Less than 20	0.297	0.301	0.294	0.297
20-99	0.149	0.158	0.159	0.142
100-499	0.120	0.110	0.115	0.125
500-999	0.068	0.073	0.064	0.068
1000 and over	0.366	0.357	0.368	0.367
Literacy and numeracy scores				
Quantitative Level 1	0.149	0.148	0.095	0.172
Quantitative Level 2	0.302	0.331	0.301	0.295
Quantitative Level 3	0.355	0.365	0.375	0.343
Quantitative Level 4	0.194	0.156	0.228	0.190
Prose Level 1	0.111	0.117	0.053	0.134
Prose Level 2	0.269	0.327	0.230	0.270
Prose Level 3	0.408	0.391	0.471	0.385
Prose Level 4	0.212	0.165	0.246	0.211
Document Level 1	0.114	0.138	0.059	0.132
Document Level 2	0.266	0.324	0.230	0.265
Document Level 3	0.390	0.382	0.422	0.378
Document Level 4	0.230	0.156	0.289	0.225
No. obs.	12256	3179	2910	6167

Source: IALSS (2003) Individuals selected where either employed at the time of the interview or had been employed in the last 12 months.

Figure 1a. Female Employment Rates in Quebec and ROC
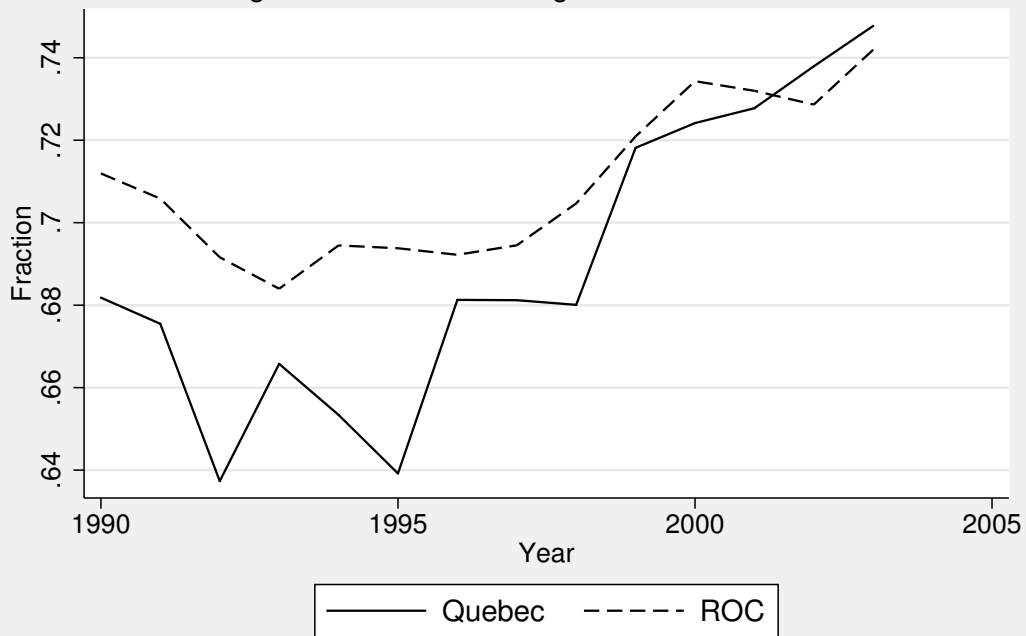High School Graduates Aged 25–44 Source: LFS

Figure 1b. Female Employment Rates in Quebec and ROC
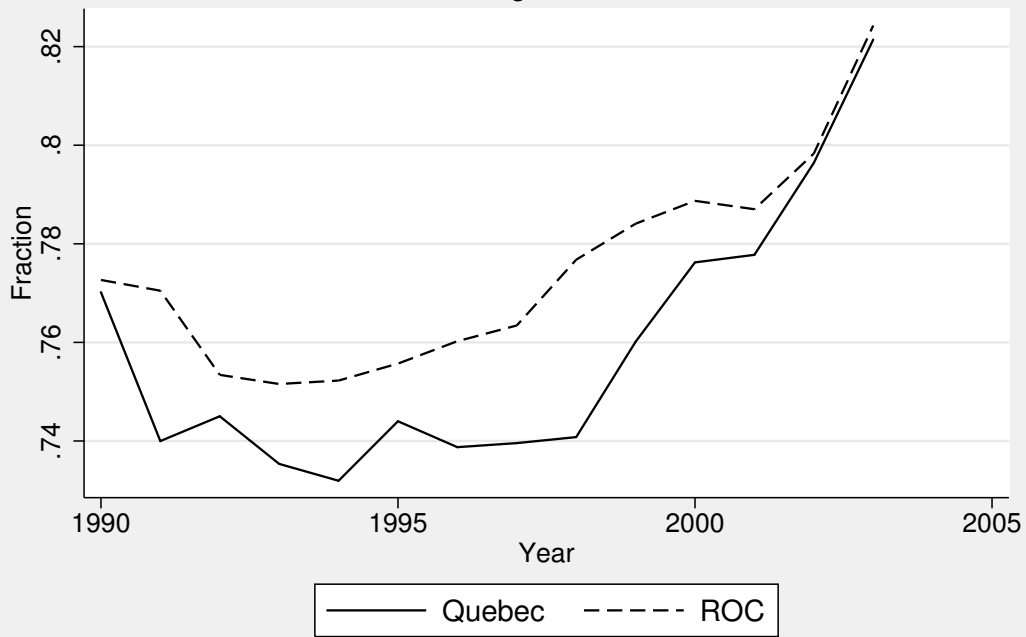Some Post–Sec. Aged 25–44 Source: LFS

Figure 1c. Female Employment Rates in Quebec and ROC
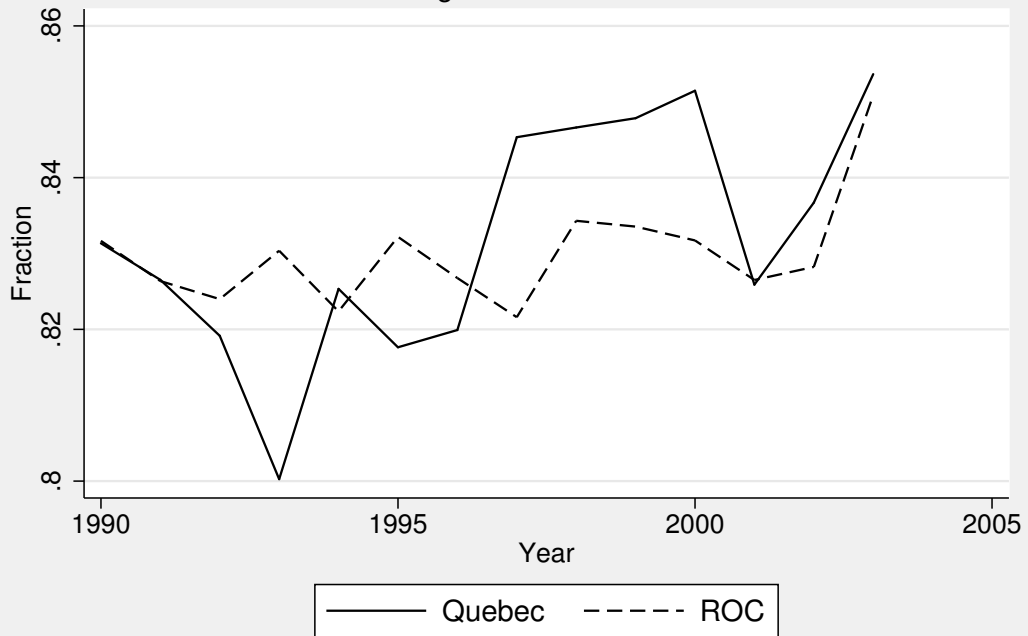B.A.+ Aged 25–44 Source: LFS

Figure 2a. Male Employment Rates in Quebec and ROC
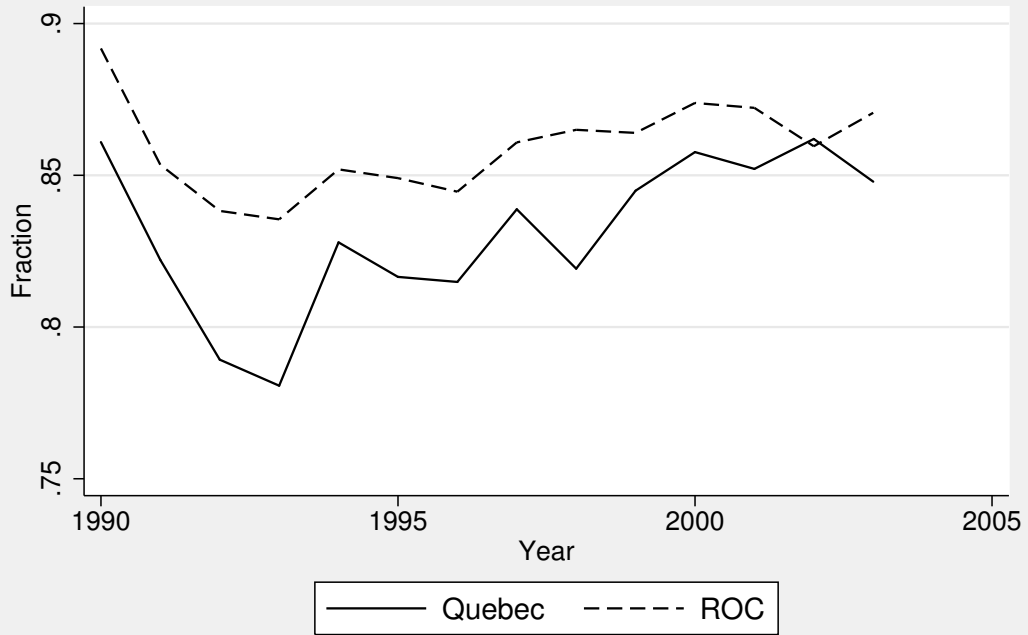High School Graduates Aged 25–44 Source: LFS

Figure 2b. Male Employment Rates in Quebec and ROC
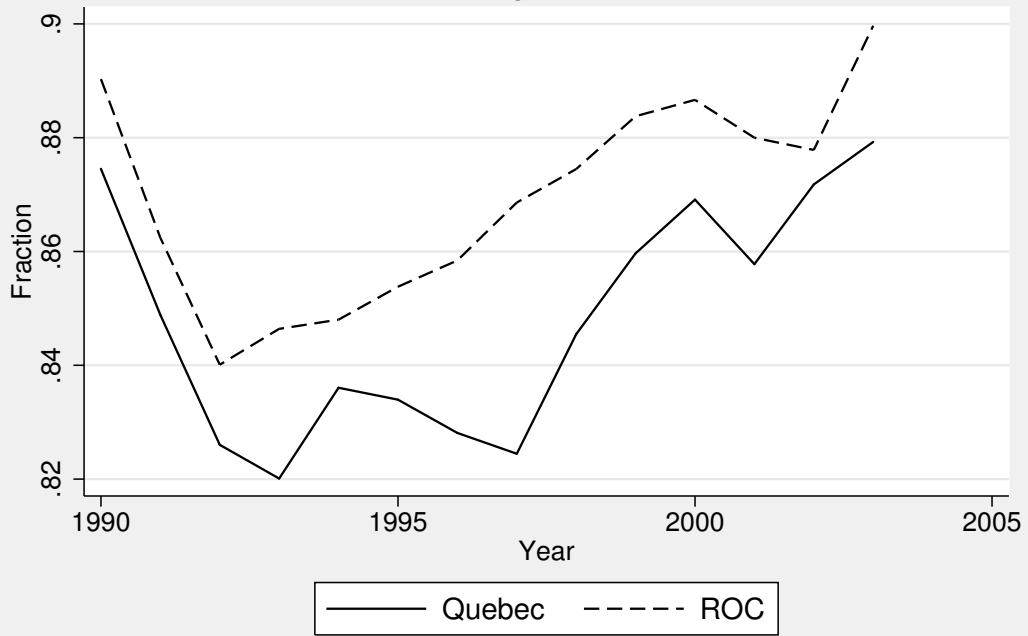Some Post–Sec. Aged 25–44 Source: LFS

Figure 2c. Male Employment Rates in Quebec and ROC
B.A.+ Aged 25–44 Source: LFS