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Another Look at the Francophone Wage Gap in Canada: Public vs Private Sector, Quebec vs Outside Quebec[*]

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Abstract

Using a variant of the Blinder-Oaxaca decomposition method, I find no evidence that, outside Quebec, there was at any point in time between 1970 and 2000, a labour market advantage for Anglophones that cannot be explained by a higher relative demand for English skills, whether in the public sector or the private sector. However, I find that in Quebec's public sector, between 1970 and 2000, Francophones enjoyed a wage premium that may have gone beyond language skill considerations and that I cannot explain. Such a premium also appears to have been present in Quebec's private sector in 2000.

Key words: *Francophone-Anglophone wage differential, return to language skills, discrimination.*

JEL Classification: J700, J200.

Résumé

Utilisant une variante de la méthode de décomposition de Blinder et d'Oaxaca, je trouve aucune indication de discrimination salariale contre les francophones sur les marchés du travail à l'extérieur du Québec entre 1970 et 2000. Cependant, je trouve que dans le secteur public au Québec, entre 1970 et 2000, les francophones ont profité d'une prime salariale qui ne peut pas être complètement expliquée par une demande relative plus élevée de travailleurs parlant le français. Une telle prime semble aussi avoir existé dans le secteur privé au Québec en 2000.

Mots clés: *Disparités salariales entre Francophones et Anglophones, rendements liés aux connaissances linguistiques, discrimination.*

Classification JEL: J700, J200.

1. Introduction

There is now a considerable body of evidence that the wage gap between Francophones and Anglophones has dropped dramatically since 1970.[1] There is also a consensus in the literature that a major cause of this drop are higher educational attainment by Francophones, growing control of the Quebec economy by Francophones, and the passage of language laws promoting the use of French.

Most recently, Albouy (2008) finds that the drop in the wage gap in Quebec, which has been much more significant than that outside Quebec, has not been due so much to an increase in the wages of Francophones, but rather to a substantial decrease in the wages of Anglophones in that province. In fact, Albouy provocatively concludes that policy makers should be careful not to "confuse Francophone gains with Anglophone pains" (Albouy 2008, 24) and raises the possibility that Anglophone workers may be suffering from reverse discrimination. Note that this conclusion contrasts sharply with that of another recent study, that of Béland, Forgues et Beaudin (2008), which concludes that since about 1995, workers in Quebec, whether Anglophones or Francophones are " not paid for what they are, but for what they do. "

Despite the large amount of research about the Francophone-Anglophone wage gap, very little is known about the differences between the evolution of this gap in the public sector and that in the private sector.[2] There are at least three reasons why this gap might have evolved differently in the two sectors. First, there is ample evidence that the wage determination process is different between the public sector and the private sector. In particular, granting that the majority group controls the government, it is much easier to make a theoretical case for wage discrimination in the public sector than in the private sector because governments, unlike private businesses, are seldom subject to competitive market forces.[3]

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[1] See for example, Boulet and Lavallée (1983), Chiswick and Miller (1988), Bloom and Grenier (1992), Shapiro and Stelcner (1997), Vaillancourt, Lemay and Vaillancourt (2007) and Albouy (2008).

[2] Among the few studies that compare the Francophone wage gap across sectors are those of Vaillancourt (1988, 1991) which focus on Quebec and Wilson (1992) which looks at both Quebec and the rest of Canada.

[3] See, for example, Gunderson (1979) and Mueller (1999) for studies that compare the wage determination process in the private sector with that in the public sector. Cain (1986) surveys theories of wage discrimination in the

Second, and perhaps more importantly, we should expect language policies to have affected the public sector and the private sector very differently as federal and early Quebec language laws (*e.g.*, bill 22) were mostly targeted at the public sector, while later laws (*e.g.*, bill 101 in Quebec) directly affected the private sector. In particular, we should expect that the private sector outside Quebec should not have been significantly affected by the language laws, while the private sector in Quebec should have been affected later than the public sector in Quebec and that outside Quebec. Third, since Francophones in Quebec have historically been more in control of their public sector economy than their private sector economy, we should expect the Francophone language gap in Quebec to have been historically much smaller in the public sector than in the private sector. The results in this paper support these contentions.

Another contribution of this paper is that it introduces a variant of the Blinder-Oaxaca decomposition method to net-out the effects of a higher relative demand for a language skill from the "unexplained component" of the language gap. This variant relies on the assumption that in the absence of labour market discrimination, similarly skilled bilingual Anglophones and bilingual Francophones should earn "similar" wages (as in Béland, Forgues and Beaudin 2008), and can be seen as a bridge between language wage gap decomposition estimates that separate unilinguals and bilinguals (*e.g.*, Shapiro and Stelcner 1997) and those that do not (*e.g.*, Albouy 2008).

This paper is organized as follows. Section 2 describes the data used. Section 3 presents general statistics on the evolution of the Francophone wage gap between 1970 and 2000. Section 4 introduces the variant of the Blinder-Oaxaca decomposition method and discusses estimation issues related to returns to bilingualism and selection bias. Section 5 presents the empirical results. Section 6 discusses instances where bilingual individuals earned significantly less than similarly skilled unilingual individuals and Section 7 concludes.

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private sector and the public sector. I am not aware of studies that compare public/private differences in either gender or race based wage differentials.

Table 1: Characteristics of Francophones and Anglophones Wage Earning Men in Canada[†]

	Quebec				*Outside Quebec*			
	Public		*Private*		*Public*		*Private*	
	Fran.	*Angl.*	*Fran.*	*Angl.*	*Fran.*	*Angl.*	*Fran.*	*Angl.*
1970:								
% of language group	9.1	0.5	78.1	9.2	1.6	11.0	11.1	79.3
Average wage	$19.9	$20.4	$16.0	$22.4	$19.3	$20.2	$16.6	$18.9
Average log-wage	2.90	2.90	2.66	2.95	2.86	2.92	2.69	2.82
Average education (yrs)	10.5	11.1	9.4	11.6	11.0	11.4	9.0	10.9
Average age (yrs)	39.1	40.3	37.5	40.6	37.7	39.5	37.9	38.7
% bilingual	70.2	53.3	54.2	48.3	97.4	6.6	93.6	4.7
% CMA	27.8	33.6	31.7	44.9	3.1	11.3	8.2	17.2
% immigrants	1.8	13.1	3.7	23.2	1.5	14.3	4.9	16.7
Sample size	1,086	122	9,286	2,224	195	2,683	1,322	19,267
2000:								
% of language group	16.0	0.5	69.8	2.4	3.3	15.7	10.9	81.4
Average wage	$24.8	$24.8	$20.1	$22.2	$23.7	$24.2	$21.9	$22.1
Average log-wage	3.12	3.09	2.86	2.91	3.07	3.08	2.90	2.93
Average education (yrs)	14.9	15.1	12.8	13.5	14.6	14.9	12.7	13.3
Average age (yrs)	43.0	43.7	39.8	40.1	42.0	42.3	40.8	39.2
% bilingual	59.8	74.0	49.7	77.5	95.7	12.0	92.3	5.1
% CMA	69.8	84.1	60.4	86.0	54.9	61.0	47.2	61.8
% immigrants	2.6	18.2	2.2	14.4	5.0	10.2	4.5	9.5
Sample size	4,753	346	20,696	1,765	955	11.539	3238	59,818

[†]Men between the ages of 20 and 64, working full-time more than 20 hours a week and more than 26 weeks per year. Excludes self-employed and visible minorities.

2. The data

The data used in this study is very similar to that used in other studies of the Francophone wage gap.[4] To eliminate as many extraneous factors as possible, it is limited to men aged between 20 and 64 whose mother tongue is either English or French, who work (full-time) more than 20 hours per week and more than 26 weeks per year, and who are not self-employed. Visible minorities are not included. The datasets used are the Public Use Microdata Files on Individuals (PUMFI) from the Canadian Census for the years 1970, 1980, 1985, 1990, 1995 and 2000. The definition of the public sector is based on the industry codes in the PUMFI. The definition has changed over the sample years: it encompasses Public

[4] For example, the data used in this study is the same as that in Albouy (2008) except that it includes workers aged 60 to 64 and immigrants, but does not include self-employed workers.

Administration for the 1971 census, while it encompasses Public Administration/Government Services, Education and Health for the other years. No distinction is made between Federal and "Other" Public Administration/Government Services because it is not possible to do so for all sample years. As a result, since the size of the federal public sector has been declining relative to that of the provincial and local public sectors over the time period studied, our results will increasingly reflect over time the situation in the provincial and local public sectors, which may make policy implications harder to draw. Mean characteristics of the 1970 and 2000 samples are reported in Table 1.[5]

3. The Francophone wage gap over time

I begin by looking at the evolution of the total Francophone wage gap (unadjusted for skills and other attributes) between 1970 and 2000. Table 2 reports the gaps for 1970 and 2000, while Figure 1 also graphs the intermediate years. A positive entry means a Francophone advantage while a negative entry means an Anglophone advantage. It has been noted at several places elsewhere that the overall Francophone wage gap in Canada has decreased significantly since the 1970s: from about 15 points in 1970 to about 4 points in 2000. Another fact that has been noted (*e.g.*, Albouy 2008) is that the Francophone gap was much larger in Quebec than outside Quebec in 1970 (26 points compared with 12 points) and that the drop in the gap was much more dramatic in this province: a 22.7 points drop compared with a 10.6 points drop outside Quebec.

One thing that has not been noted elsewhere however is that the Francophone wage gap has been very different between the public and the private sectors, especially in Quebec, during the 1970-2000 period. The most striking result is that while the wage gap was consistently in favour of Anglophones in Quebec's private sector and, albeit to a smaller extent, in both the public and the private sectors outside

[5] A word of caution concerning the interpretation of the results for the grouping "Outside Quebec" in this paper: given that the majority of Francophones living outside Quebec live in Ontario, the results for the grouping "Outside Quebec" strongly reflects the situation of Francophones in Ontario. However, Grenier (1997) shows that the situation of Francophones outside Quebec is not homogeneous and that in particular, the nature and the extent of the Francophone wage gap in Ontario is quite different from that in New Brunswick.

Quebec, there was essentially no wage gap in Quebec's public sector over the period studied (see Figure 1b). In fact, in some years (*e.g.*, 1990), Francophones enjoyed a statistically significant wage advantage in that sector.

These findings are intriguing. The rest of this paper provides elements of explanation for this state of affairs. In particular, it examines the effects of observed attributes (*e.g.*, education, experience), language skills (*i.e.*, bilingualism) and unobserved factors (*e.g.*, motivation, discrimination against a language group) on the Francophone wage gap across sectors and in Quebec and outside Quebec.

Table 2: Francophone Wage Gaps over Time

	1970	*2000*	*Difference*
Canada-Overall	-0.153***	-0.037***	+0.115***
	(28.0)	(9.88)	(17.4)
Quebec			
Entire economy	-0.260***	-0.033***	+0.227***
	(20.5)	(2.38)	(12.2)
Public sector	0.001	0.028	+0.027
	(0.01)	(0.96)	(0.49)
Private sector	-0.287***	-0.052***	+0.236***
	(21.9)	(3.37)	(11.7)
Difference	0.288***	0.080***	-0.208***
	+(5.84)	+(2.41)	(3.51)
Outside Quebec			
Entire economy	-0.120***	-0.014*	+0.106***
	(9.07)	(1.56)	(6.69)
Public sector	-0.058**	-0.009	+0.049*
	(1.72)	(0.55)	(1.32)
Private sector	-0.130***	-0.028***	+0.102***
	(9.12)	(2.76)	(5.79)
Difference	0.072**	0.020	-0.052
	+(1.95)	+(1.03)	(1.26)

Notes: Gap figures are measured in log points. Absolute t-ratios are in parentheses where * is significant at the 10 percent level; ** is significant at the 5 percent level; and *** is significant at the 1 percent level. One-tail tests are used.

4. A model to explain the Francophone wage gap

The statistical model used in this paper to explain the Francophone wage gap is a variant of the Blinder-Oaxaca decomposition model (see Blinder 1973; Oaxaca 1973).

Figure 1: Francophone Wage Gap

Figure 1a: Quebec vs Outside Quebec

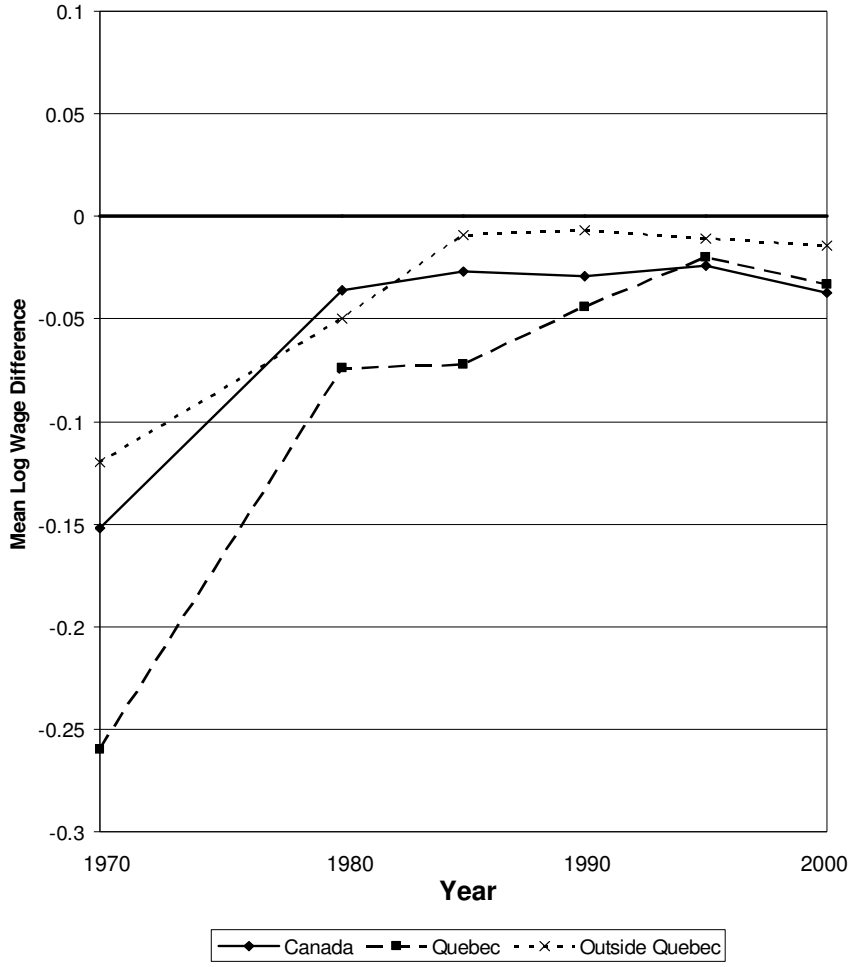
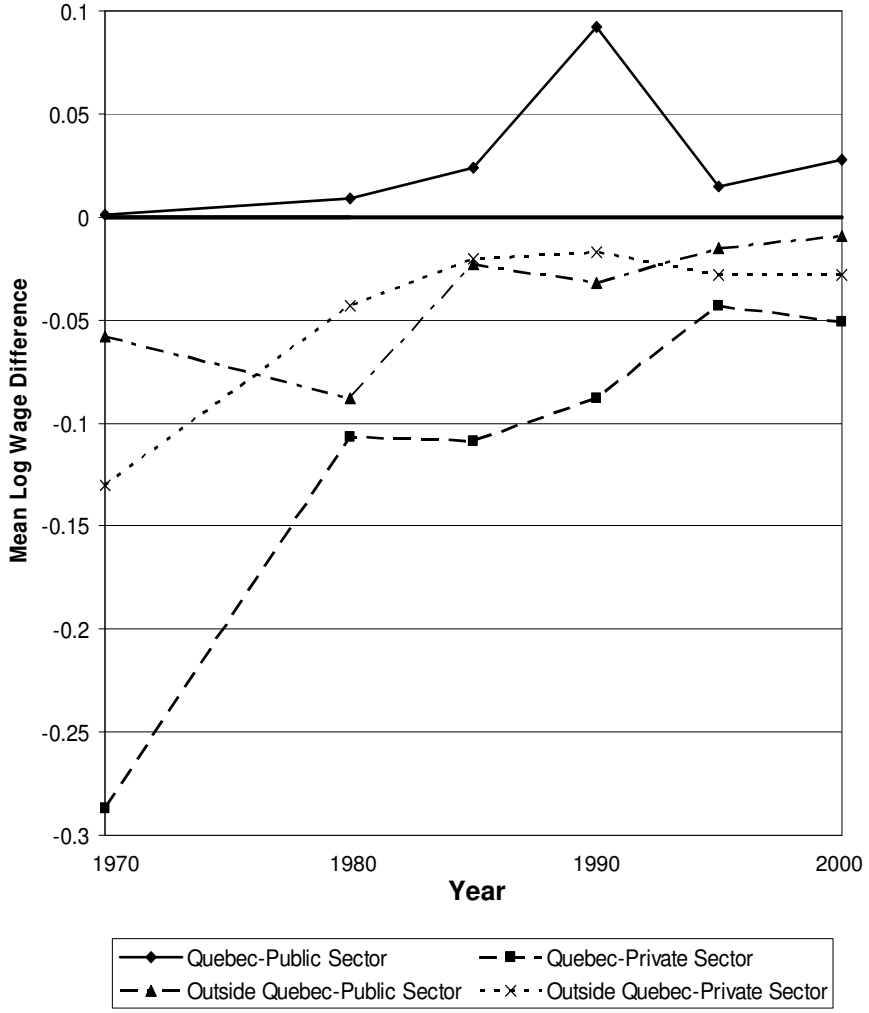


Figure 1b: Public vs Private Sector



4.1 Limits of the Blinder-Oaxaca decomposition model in explaining wage gaps

Consider two groups of workers *a* and *b* that are differentiated by race, gender or language skills and let *Z* denotes a vector of mean attributes/skills. Then for a given sample, the mean log wages of group *a* and group *b* can be written as

$$w^a = Z^a \gamma^a$$

and

$$w^b = Z^b \gamma^b$$

where γ^a and γ^b are OLS estimated vectors of returns to attribute/skills. As a result, the wage gap between these two groups can be decomposed as the sum of two components:

$$(w^a - w^b) = (Z^a - Z^b)\gamma^b + Z^a(\gamma^a - \gamma^b) \qquad (1)$$

The first term of the decomposition is the difference in attributes component (sometimes called the "explained" or "predicted" component) of the wage gap. This component measures the portion of the wage gap attributable to difference in observed attributes. The second term of the decomposition is often referred to as the "unexplained" component of the wage gap. This component reflects differences in returns to observed attributes between the two groups of workers.

Equation (1) is the so-called Blinder-Oaxaca decomposition, which has been used in numerous studies to explain wage gaps between races, genders or linguistic groups. The usefulness of this decomposition comes in particular from the interpretation that can be given to the unexplained component. For example, in the context of race and gender wage gap studies, if the unexplained component is not statistically significantly different from zero (and assuming of course that γ^a and γ^b are accurate estimates of the "true" returns to attributes), then one can infer that there is no labour market "discrimination."

However, a difficulty arises when interpreting the unexplained component in the context of language wage gap studies. The issue is that unlike race or gender, language is a skill and will be rewarded according to market supply and demand. This means that the unexplained component of the wage gap—in addition to possibly reflecting labour market discrimination—may also reflect different demand for language skills (this point is also made in Albouy 2008). Take the example of workers outside Quebec. Given the demographics, we would expect that all other things equal, outside Quebec, the demand for English speaking individuals would be greater than the demand for French speaking individuals. In other words, we would expect that all other things equal, the returns to skills for unilingual Anglophones would be greater than the returns to skills for unilingual Francophones; that is, in terms of equation (1), we would expect the unexplained component of the wage gap to be different from zero and to the advantage of Anglophones. And this would have nothing to do with discrimination. More generally though, unlike in the context of gender or race wage gaps, in the context of language wage gaps, the unexplained component is meaningless as an indicator of possible labour market discrimination as it will generally be different from zero even in the absence of labour market discrimination.

Another issue related to the use of equation (1) to decompose language wage gaps is the treatment of "bilingualism." Unlike for other attributes, the size of and the return to this attribute directly depend on the relative demand for language skills. For example, in Canada outside Quebec, one should expect the return to bilingualism to be higher for Francophones than for Anglophones and Francophones to be relatively more bilingual. This means that, all other things equal, treating bilingualism the same way as other skill attributes in decomposition (1), biases the magnitude of the explained component and that of the unexplained component in favour of the minority language group.[6]

[6] This can be seen as follows. Suppose bilingualism is a dichotomous variable that takes on a value of one if the individual is bilingual and zero otherwise and let superscript *a* and *b* in equation (1) respectively refer to Francophones and Anglophones. Using again the example of Canada outside Quebec, we should expect the Z variable associated with bilingualism to be greater for Francophones than for Anglophones (thus adding to the explained component of the wage gap) and should expect the γ coefficient associated with bilingualism to be greater for Francophones than for Anglophones (thus adding to the unexplained component of the wage gap). In other words, all other things equal, we should expect both the explained and the unexplained components to be greater than zero for Francophones, that is to be in favour of the minority group. In that sense, modeling the impact of

The next section modifies the Blinder-Oaxaca decomposition model to address these issues.

4.2 A variant of the Blinder-Oaxaca decomposition model to explain the Francophone wage gap

We assume that there are four distinct labour markets in Canada: one for each of the possible combinations of the two pairs (Quebec, non-Quebec) and (Public, Private). We also allow for the possibility that the wage determination process within these markets is different between Anglophones and Francophones.

Let the superscripts *A* and *F*, and the subscripts *Q*, O, *G* and *P* respectively denote Anglophones, Francophones, Quebec, outside-Quebec, Public sector and Private sector; B denote the proportion of bilingual individuals in a given sample (for example, B_{QP}^{A} denotes the proportion of Anglophones in Quebec's private sector who are bilingual) and *X* denote a vector of mean attributes/skills other than bilingualism. Then for a given census year, the mean log wages of a language group in a labour market (*e.g.*, the mean log wages of Anglophones in Quebec's private sector) can be written as

$$w_{QP}^{A} = \alpha_{QP}^{A} B_{QP}^{A} + X_{QP}^{A} \beta_{QP}^{A} \qquad (2)$$

where α is the return to bilingualism and β is a vector of returns to the other attributes. The coefficients α and β are OLS estimates. Thus, the Francophone wage gap within a labour market—Quebec's private sector labour market for example, can be decomposed as the sum of three components:

$$(w_{QP}^{F} - w_{QP}^{A}) = (X_{QP}^{F} - X_{QP}^{A})\beta_{QP}^{A} + (\alpha_{QP}^{F} B_{QP}^{F} - \alpha_{QP}^{A} B_{QP}^{A}) + X_{QP}^{F}(\beta_{QP}^{F} - \beta_{QP}^{A}) \qquad (3)$$

The first term of the decomposition is the difference in attributes (minus bilingualism) component of the wage gap. The second term of the decomposition is the difference in bilingualism component of the wage gap. One should expect this term to be positive if the returns to bilingualism are high for Francophones compared to Anglophones. Presumably, this term should be positive outside of Quebec

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bilingualism on the wage gap the same way as that of every other attribute biases the explained and the unexplained components of the wage gap in favour of the minority group.

since, given the preponderance of the English language outside Quebec, it is almost a necessity for Francophones to be bilingual to be able to work there. However, this term can be positive or negative in Quebec depending on the relative importance of knowing French versus knowing English in that province. The higher the relative demand for French, then the smaller this term should be. In particular, we should expect this term to have decreased after language laws were passed in Quebec.

The third term in equation (3) represents what I will call the "mother tongue" component of the wage gap. This component reflects differences in returns to observed attributes (other than bilingualism) between Francophones and Anglophones. These differences reflect a wage premium for a particular language group and can be due to a number of factors including higher relative demand for a language skill, differences in unobserved attributes that are complementary to observed attributes (*e.g.*, motivation) or outright language group discrimination. Following our discussion in the previous section, we should expect this component to be different from zero even when there is no discrimination. In particular, we should expect this component to be positive in Quebec (especially after the passing of the language laws) and negative outside Quebec to reflect a higher relative demand for French in Quebec and a higher relative demand for English outside Quebec.

4.3 Controlling for the effects of relative demand for language skills—The compensated mother tongue effect

As discussed earlier, the mother tongue effect may be influenced by at least three factors: a higher relative demand for a language skill, differences in unobserved attributes that are complementary to observed attributes or outright discrimination. Although it is not possible with the model and the data in this paper to perfectly distinguish between these factors, we can net-out some of the effects of a higher relative demand for a language by noting that if the variations in the differential return to bilingualism, which is $(\alpha_{QP}^{F} - \alpha_{QP}^{A})$, and the variations in the mother tongue effect mostly depend on variations in the relative demand for language skills (as opposed to other factors), then we should expect two things: first, we

should expect the estimates of the differential returns to bilingualism to be (strongly) negatively correlated with the estimates of the mother tongue effects and, second, we should expect the sum of these statistics, that is

$$\mathrm{E}_{QP} = (\alpha_{QP}^{F} - \alpha_{QP}^{A}) + X_{QP}^{F}(\beta_{QP}^{F} - \beta_{QP}^{A}), \qquad (4)$$

which I call the *compensated mother tongue effect* for reasons that will become obvious below, to be close to zero. Indeed, using again Quebec's private sector as an example, if there is a high relative demand for French skills, then the mother tongue effect should be positive while the difference in returns to bilingualism should be negative since, under such circumstances, the returns to Anglophones learning French should be greater than the returns to Francophones learning English. In other words, under such circumstances, we should expect the two terms in (4) to vary in opposite directions; that is, we should expect the difference in returns to bilingualism to compensate for the mother tongue effect. Furthermore, if we assume that a bilingual Francophone and a similarly skilled bilingual Anglophone are similar workers, as it is implicitly done in Béland, Forgues and Beaudin (2008), then in the absence of language group discrimination, they should earn similar wages, which means that E_{QP} should be equal to zero.

4.4. Estimation considerations and a caveat

Eight wage equations must be estimated for each census year: one Anglophone equation and one Francophone equation for each labour market. Table A1 in the Appendix lists the variables used in the analysis with their associated OLS coefficient estimates. Note that the coefficient estimates are generally of the expected signs,[7] except for the estimated return to bilingualism for Anglophones in Quebec's

[7]To verify the general validity of the model, I also performed three tests. First, I tested the hypothesis that the wage determination process in the public sector is the same as that in the private sector (using the notation in (3), this is the joint test of $\alpha_{QG}^{F} = \alpha_{QP}^{F}$, $\alpha_{QG}^{A} = \alpha_{QP}^{A}$, $\alpha_{OP}^{F} = \alpha_{OG}^{F}$, $\alpha_{OP}^{A} = \alpha_{OG}^{A}$, $\beta_{QG}^{F} = \beta_{QP}^{F}$, $\beta_{QG}^{A} = \beta_{QP}^{A}$, $\beta_{OP}^{F} = \beta_{OG}^{F}$ and $\beta_{OP}^{A} = \beta_{OG}^{A}$). This hypothesis was rejected resoundingly: p-values for Chi-square asymptotically distributed Wald statistics are less than 1/1000th of one percent for every census year. Second, I tested the hypothesis that the wage determination process is the same for Francophones and Anglophones (this corresponds to four tests— $\beta_{QG}^{F} = \beta_{QG}^{A}$, $\beta_{OG}^{F} = \beta_{OG}^{A}$, $\beta_{QP}^{F} = \beta_{QP}^{A}$ and $\beta_{OP}^{F} = \beta_{OP}^{A}$ — for each census year). This hypothesis is rejected at the 5 percent level

private sector in 1970 which is negative[8] and may be due to some form of selection bias—knowing an additional language should not lower your earnings.

4.4.1 Bilingualism and selection bias

More generally, as pointed out in Albouy (2008), since bilinguals typically have better observable skills than unilinguals, they may also have better unobserved skills, which would lead to an upward bias in the estimated return to bilingualism. For the purpose of this paper though, in particular for measuring accurately the compensated mother tongue effect, what is key is not so much whether such selection bias exists, but whether it is significantly different for Anglophones than for Francophones—that is, the extent to which estimates of $(\alpha_{QP}^{F} - \alpha_{QP}^{A})$ reflect relative demands for language skills as opposed to selection biases. A way to ascertain this is by calculating the correlation coefficients between these estimates and the mother tongue effects. Following our previous discussion, if these correlation coefficients are strongly negative, then it suggests that variations in the estimates of $(\alpha_{QP}^{F} - \alpha_{QP}^{A})$—and that variations in the mother tongue effects for that matter—mostly reflect variations in relative demand for language skills and are therefore not significantly affected by selection biases. Indeed, this is what I find in every labour market studied in this paper: the coefficient of correlation varies between -0.70 in Quebec's public sector and -0.97 in the public sector outside Quebec.[9]

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in 7 of the 12 public sector regressions and in all of the private sector regressions. Finally, I tested the assumption that the wage determination process for Anglophones and Francophones differ only up to a fixed effect—an assumption made for example by Béland, Forgues and Beaudin (2008). This assumption was rejected at the 5 percent level in 7 of the 12 public sector regressions and in 10 of the 12 private sector regressions.

[8] The return to bilingualism is also negative for Anglophones in Quebec's public sector in 1985 and in Quebec's private sector in 1990, but not statistically significantly.

[9] Comparing correlation coefficients does not test for the possibility that the difference in returns to bilingualism due to selection bias could have been constant over time. However, the only instance where the regression of the estimates of $(\alpha_{QP}^{F} - \alpha_{QP}^{A})$ on the mother tongue effects does not yield a constant term statistically significantly different from zero is the case of the public sector in Quebec, and this constant term probably reflects something else than a constant difference in selection biases. Indeed, since there were significant variations in the relative observed skills of Anglophones and Francophones in that labour market (especially between 1970 and 1980), one should expect that there were significant variations in the relative unobserved skills as well, which goes against the possibility that the difference in selection biases was constant.

4.4.2 Self-selection bias

A perennial issue in wage discrimination studies is how to account for self-selection and this study is no exception to that. In particular, given the flow of Anglophones out of Quebec from the mid 1970s onwards, a legitimate question is whether these were the "best" Anglophones (see Albouy 2008). If this was the case, then the estimates of the compensated mother tongue effects would be biased upwards in Quebec (from 1980 onwards), meaning that one could conclude that Anglophones were discriminated against in Quebec while actually they were not.

Another instance of possible self-selection is the choice between working in the public sector or in the private sector. Indeed, one could argue that Francophones are positively selected in the public sector (much as they are perceived to be in France), while Anglophones are not as positively selected, or possibly negatively selected. In this case, for example, the compensated mother tongue effect would be biased upwards in the public sector, which would suggest discrimination against Anglophones while actually there would not be.[10]

I will basically follow two (albeit imperfect) strategies to gauge the importance of potential self-selection biases: I will use relative observable skills as a proxy for relative unobservable skills (and therefore self-selection) and I will compare the wages that individuals earn in their actual labour markets with what they would earn if they worked in alternative labour markets.

4.4.3 A caveat

A key assumption for the compensated mother tongue effect to be equal to zero is that bilingual Francophones and bilingual Anglophones with the same skills are, to a large extent, similar workers and

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[10] To correct for possible sample selection bias associated with the choice between working in the public and working in the private sector, I estimated the decomposition (3) using coefficients estimated by switching regression models (see Maddala, 1983). Because the results are very similar to those in Table 3 and Table 4, and because of concerns about the reliability of such estimates (see for example, Manski, 1989), they are not reported here. They are however available from the author.

should thus be paid similar wages. However, Vaillancourt, Lemay and Vaillancourt (2007) argue that they are not similar workers. Their point is that bilingual Anglophones will know English better than bilingual Francophones, but bilingual Francophones will know French better than bilingual Anglophones. As a result, according to them, we should expect that in a labour market where French-language skills command higher returns than English-language skills (*e.g.*, Quebec), bilingual Francophones should earn more than equivalently skilled bilingual Anglophones and vice-versa in a market where English-language skills command higher returns than French-language skills (*e.g.*, outside Quebec). In other words, if they are correct, we should expect the compensated mother tongue effect to be positive for Francophones in Quebec and for Anglophones outside Quebec. This is a testable hypothesis that I empirically address in Section 6. Meanwhile, I will keep this caveat in mind when drawing conclusions about labour market discrimination from estimated mother tongue effects.

5. Sources of the Francophone wage gap

Wage gap decompositions for 1970 and 2000 and the differences between sectors are presented in Tables 3 and 4 and in Figures 2 and 3 for intermediate years. Changes between 1970 and 2000 are reported in Table 5. We see that the sources and the evolution of the Francophone wage gap greatly vary across labour markets.

5.1 The Francophone wage gap in Quebec's public sector

As pointed out earlier, between 1970 and 2000, Quebec's public sector is the only labour market studied where the wage gap was consistently is favour of Francophones. A striking result is that the mother tongue effect explains all of this. Indeed, unlike in any other labour market in Canada, Francophones in Quebec's public sector were consistently paid as well as and often significantly better than similarly skilled Anglophones: as much as 13.7 points better in 1990 and 9.2 points in 1995 (see Figure 2a). A

Table 3: Elements of the Francophone Wage Gap—Quebec[†]

	Entire economy	**Public**	**Private**	**Difference**	**Entire economy**	**Public**	**Private**	**Difference**
	Quebec-1970				*Quebec-2000*			
Observed gap	-0.260*** (20.5)	0.001 (0.01)	-0.287*** (21.9)	0.288*** (5.84)	-0.033*** (2.38)	0.028 (0.96)	-0.051*** (3.37)	0.080*** (2.81)
Difference in attributes gap	-0.161*** (18.9)	-0.059*** (2.89)	-0.174*** (18.8)	0.115*** (5.05)	-0.063*** (7.48)	-0.006 (0.38)	-0.084*** (8.28)	0.078*** (4.33)
Education effect	-0.118*** (15.9)	-0.046*** (6.67)	-0.123*** (15.1)	0.078*** (7.29)	-0.029*** (11.0)	-0.011*** (4.79)	-0.036*** (9.59)	0.025*** (5.70)
Other effects[‡]	-0.043*** (5.36)	-0.013 (0.07)	-0.051*** (5.88)	0.037** (1.70)	-0.034*** (3.84)	0.005 (0.37)	-0.048*** (4.85)	0.053*** (2.82)
Bilingualism effect	0.082*** (7.78)	0.046 (1.15)	0.077*** (7.06)	-0.030 (0.73)	-0.010 (0.45)	0.027 (0.70)	-0.014 (0.57)	0.041 (0.89)
$\hat{\alpha}^F$	0.125*** (13.9)	0.083*** (3.34)	0.118*** (12.5)	-0.035* (1.32)	0.060*** (9.79)	0.067*** (5.73)	0.058*** (8.16)	0.010 (0.71)
$\hat{\alpha}^A$	-0.026* (1.36)	0.023 (0.33)	-0.026* (1.33)	0.049 (0.69)	0.053** (1.92)	0.018 (0.34)	0.055** (1.74)	-0.038 (0.62)
Mother tongue effect	-0.181*** (11.0)	0.014 (0.23)	-0.190*** (11.0)	0.203*** (3.23)	0.040* (1.57)	0.007 (0.14)	0.047* (1.59)	-0.40 (1.27)
Compensated mother tongue effect	-0.030** (1.85)	0.074* (1.55)	-0.045*** (2.64)	0.119*** (2.35)	0.047*** (3.02)	0.056** (1.84)	0.049*** (2.71)	0.007 (0.20)

[†] Gap figures are measured in log points. Absolute t-ratios are in parentheses where * is significant at the 10 percent level; ** is significant at the 5 percent level; and *** is significant at the 1 percent level. One-tail tests are used.

[‡] Include Potential experience, Occupation, Immigration and CMA effects.

Table 4: Elements of the Francophone Wage Gap—Outside Quebec[†]

	Entire economy	Public	Private	Difference	Entire economy	Public	Private	Difference
	Outside Quebec-1970				*Outside Quebec-2000*			
Observed gap	-0.120***	-0.058**	-0.130***	0.072**	-0.014*	-0.009	-0.028***	0.020
	(9.07)	(1.73)	(9.12)	(1.95)	(1.56)	(0.55)	(2.76)	(1.03)
Difference in attributes gap	-0.113***	-0.078***	-0.123***	0.045***	-0.030***	-0.032***	-0.044***	0.013***
	(51.1)	(16.2)	(47.9)	(8.24)	(24.8)	(14.9)	(29.9)	(4.85)
Education effect	-0.087***	-0.025***	-0.092***	0.067***	-0.019***	-0.016***	-0.027***	0.011***
	(42.2)	(23.4)	(36.8)	(24.8)	(51.1)	(20.9)	(44.9)	(11.3)
Other effects[‡]	-0.026***	-0.054***	-0.032***	-0.022***	-0.011***	-0.016***	-0.017***	0.002
	(13.1)	(11.5)	(21.6)	(4.24)	(8.90)	(7.34)	(11.3)	(0.60)
Bilingualism effect	0.124***	0.090	0.113**	-0.023	0.048*	0.058	0.044*	0.014
	(2.59)	(0.58)	(2.28)	(0.14)	(1.54)	(0.69)	(1.33)	(0.16)
$\hat{\alpha}^F$	0.132***	0.092	0.121**	-0.028	0.052*	0.064	0.048*	0.016
	(2.59)	(0.58)	(2.28)	(0.17)	(1.57)	(0.73)	(1.34)	(0.17)
$\hat{\alpha}^A$	0.003	0.000	0.005	-0.004	0.016**	0.029***	0.009	0.020
	(0.20)	(0.01)	(0.27)	(0.13)	(2.02)	(2.26)	(0.92)	(1.20)
Mother tongue effect	-0.131***	-0.070	-0.119***	0.049	-0.031	-0.035	-0.028	-0.007
	(2.65)	(0.45)	(2.33)	(0.30)	(0.96)	(0.40)	(0.80)	(0.08)
Compensated mother tongue effect	0.002	0.022	-0.003	0.025	-0.005	0.000**	0.011	-0.011
	(0.13)	(0.61)	(0.15)	(0.61)	(0.43)	(0.50)	(0.79)	(0.48)

[†] Gap figures are measured in log points. Absolute t-ratios are in parentheses where * is significant at the 10 percent level; ** is significant at the 5 percent level; and *** is significant at the 1 percent level. One-tail tests are used.

[‡] Include Potential experience, Occupation, Immigration and CMA effects. For Outside Quebec, Other effects also include regional fixed effects (i.e., B.C., Alberta, Prairies, Ontario and Maritimes effects).

Figure 2: Wage Gap Decomposition—Quebec

Figure 2a: Public Sector

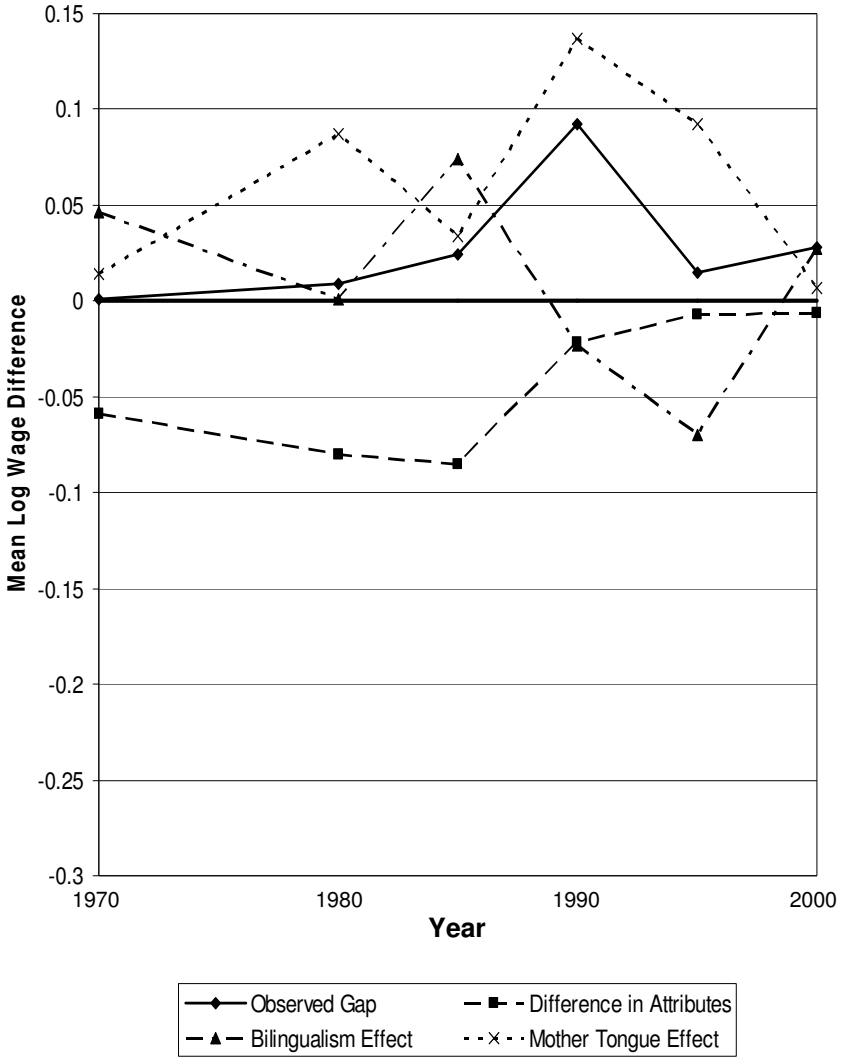


Figure 2b: Private Sector

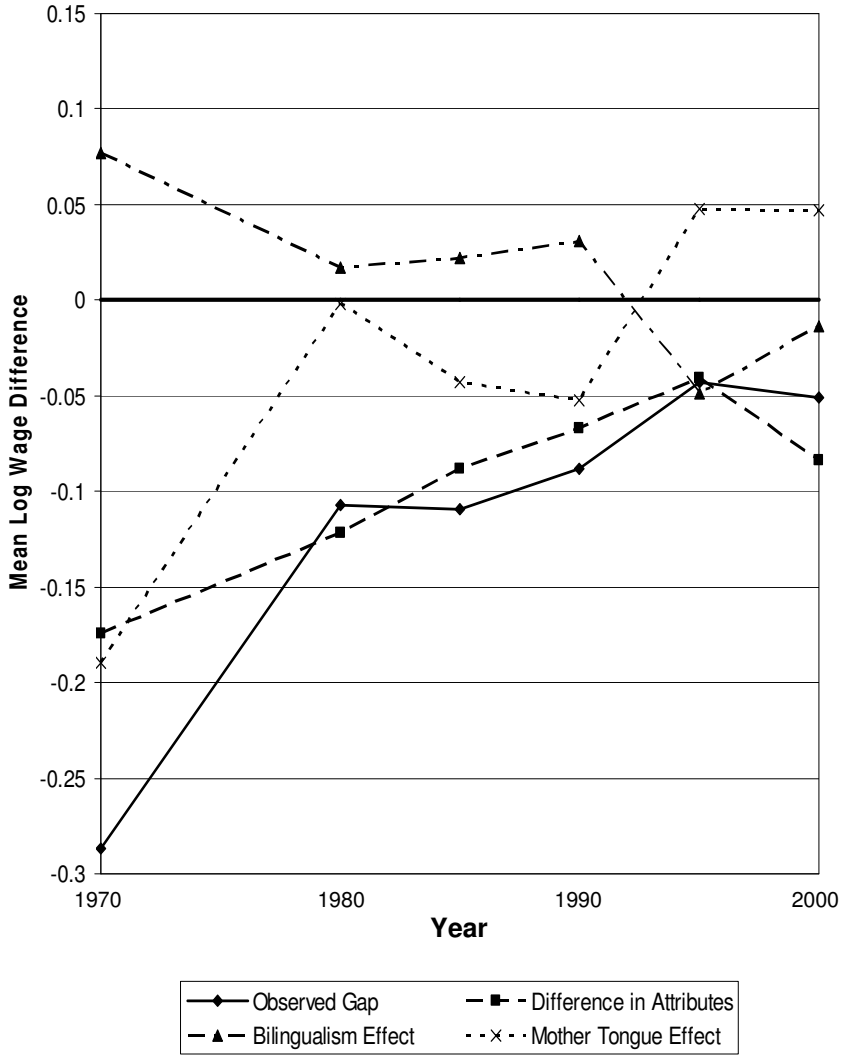


Figure 3: Wage Gap Decomposition—Outside Quebec

Figure 3a: Public Sector

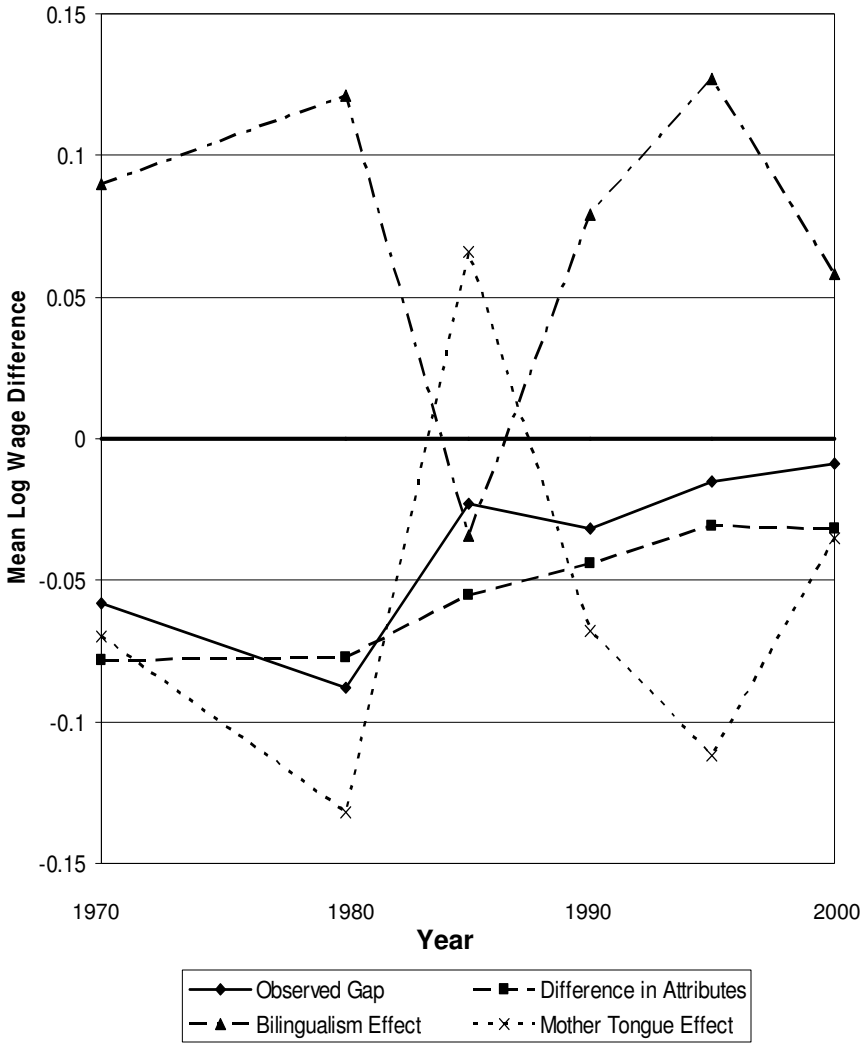


Figure 3b: Private Sector

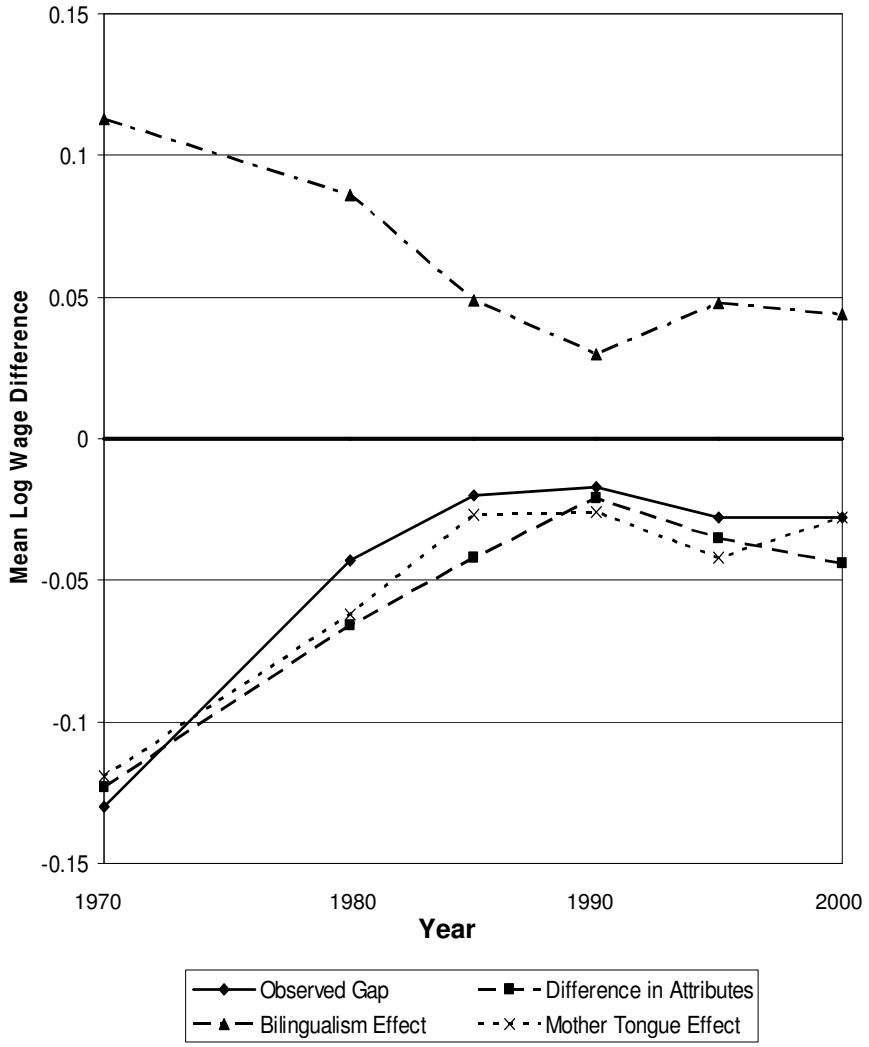


Figure 4: Bilingualism in Quebec

Figure 4a: Returns to Bilingualism

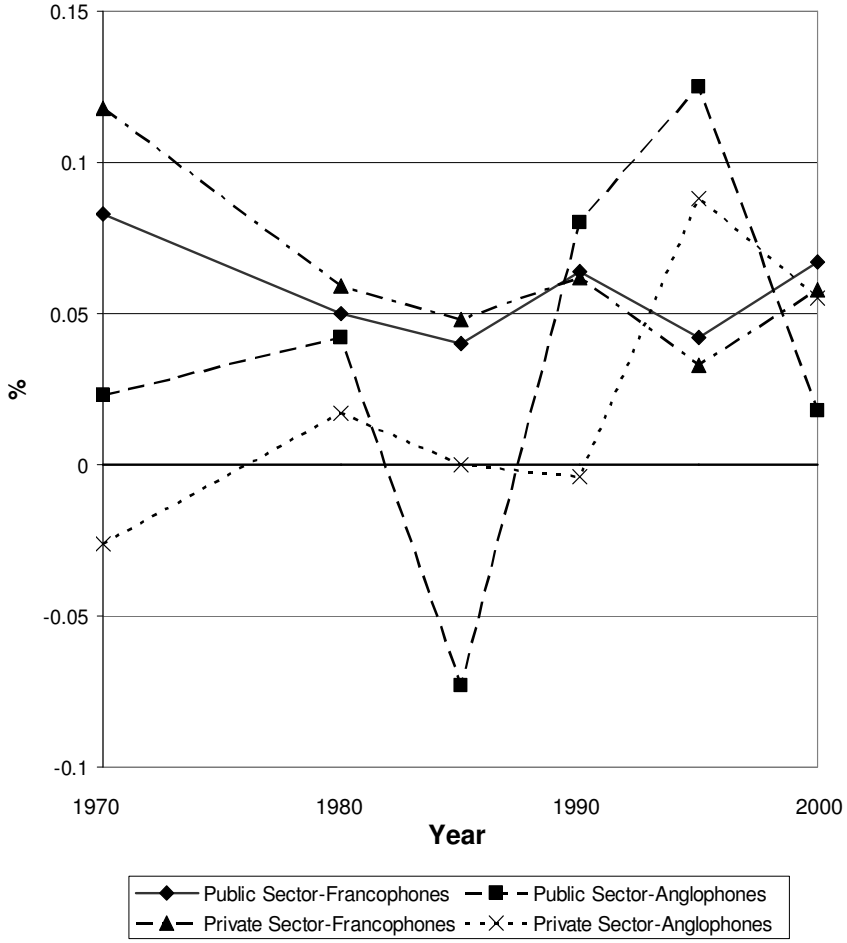
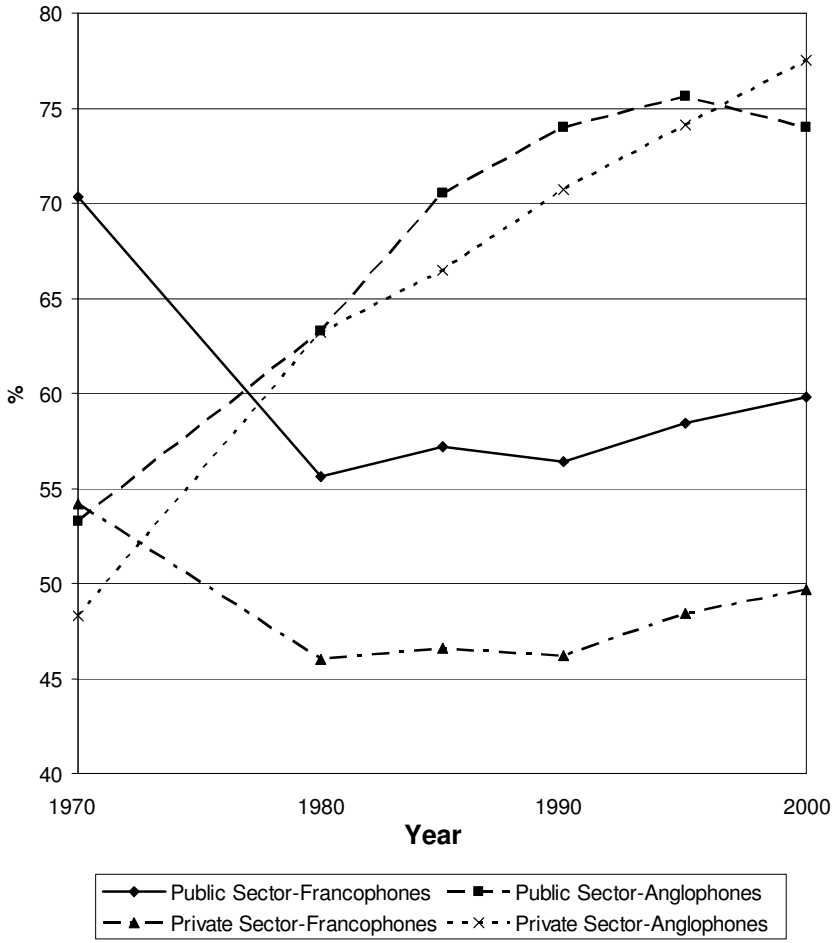


Figure 4b: Percentage Bilingual



legitimate question is whether this premium for Francophones just reflected a higher relative demand for French skills—possibly as a response to Quebec language laws[11]—or whether other factors were at play.

5.1.1 An unexplained premium for Francophones

There is some evidence that there might have been a higher relative demand for French language skills in Quebec's public sector between 1970 and 2000, which could have contributed to a wage premium for Francophones.

- Between 1970 and 1985 the quality of Francophone workers seems to have declined relative to that of Anglophones (as indicated by the decrease in the attributes component of the wage gap between 1970 and 1985), which would be consistent with an increase in the relative demand for Francophone workers.
- Both the returns to knowing English for Francophones and the proportion of bilingual Francophones in this labour market declined between 1970 and 2000 (see Figure 4).
- The proportion of bilingual Anglophones increased during that time period (see Figure 4b).

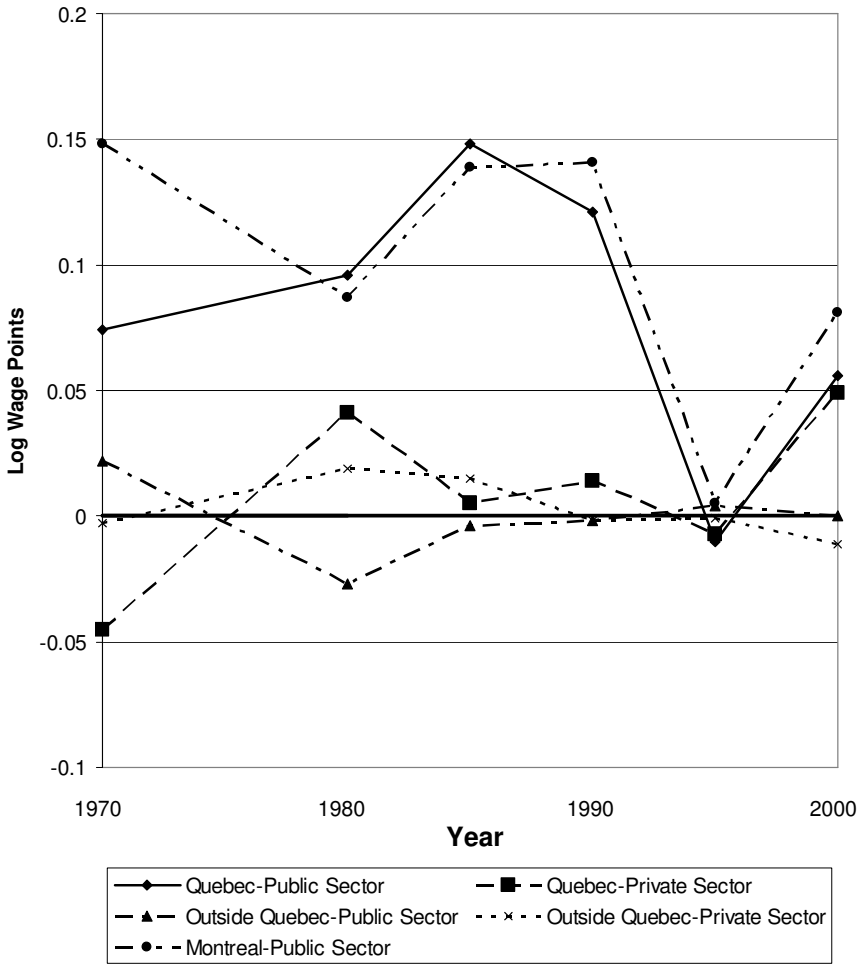
However, there is also evidence that a higher relative demand for French cannot alone explain why the mother tongue effect was consistently in favour of Francophones; other factors must have been at play.

- If there had been a higher relative demand for French, then one should expect that the return to bilingualism for Anglophones would have generally been positive during that time period. But this was not the case—the return to bilingualism for Anglophones was significantly greater than zero only in 1995.
- If the mother tongue effect only reflected a higher relative demand for Francophone skills during that period, then, as discussed in Section 4.3, one should expect that a bilingual Anglophone should have earned approximately the same wage as a similarly skilled bilingual Francophone. In other words, we should expect the *compensated* mother tongue effect to have been close to

[11] The effects of language laws on the preference for Francophones in Quebec's public sector may have also been leveraged by the rapid growth of that sector in the 1970s and 1980s. It is plausible that the need to hire large numbers of individuals who could speak French put a premium on Francophones.

zero. However, it was actually statistically significantly to the advantage of Francophones for all years except 1995 (see Figure 5).[12] The magnitude of this advantage (about 10 points on average if we exclude 1995) makes it dubious that it is only due "bilingual Anglophones not being the same as bilingual Francophones" in Quebec.

Figure 5: Compensated Mother Tongue Effects

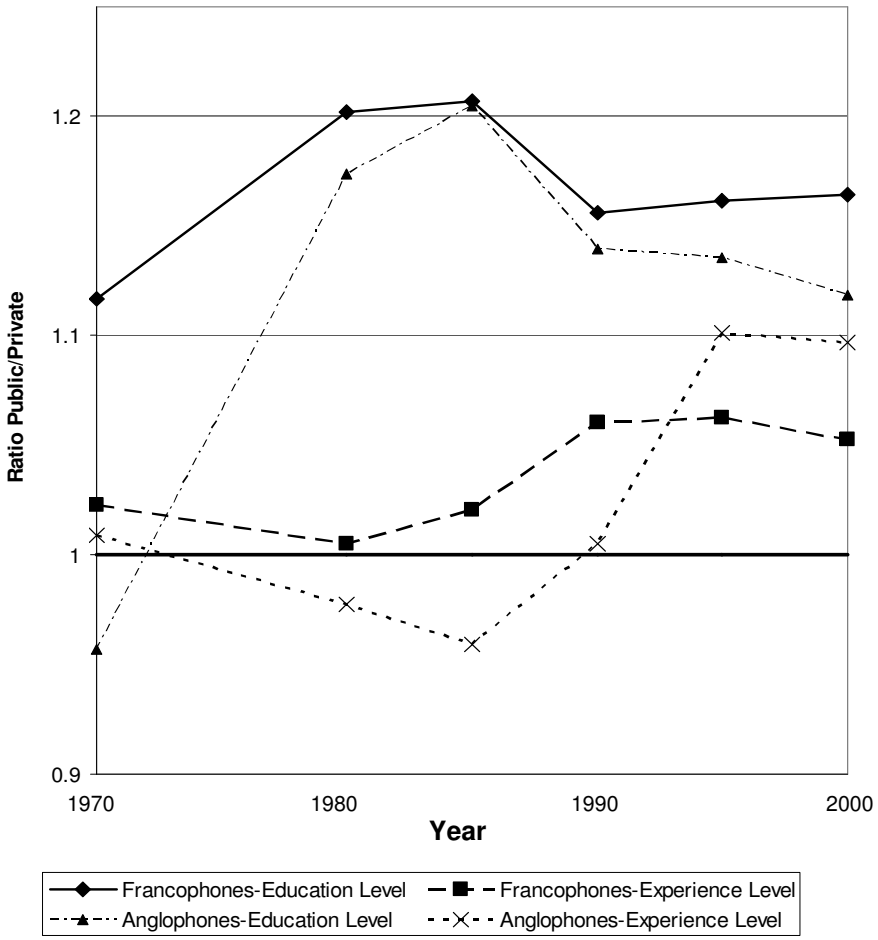


What were the other factors at play is unclear. In particular, there is no evidence that Francophones had superior unobservable attributes than Anglophones. In fact, some evidence would suggest the opposite: key observed skills of Francophones working in the public sector were generally lower than those of

[12] The reasons for the abrupt increase in returns to bilingualism for Anglophones in Quebec's public sector and the associated drop in the compensated mother tongue effect in the early 1990s are unclear. I am not aware of any evidence that there was at that point in time a concerted campaign to increase the representation of Anglophones in the public sector in Quebec in advance of the 1995 referendum on sovereignty.

Anglophones (as manifested by the negative sign of the attribute component of the wage gap in that labour market). It is also difficult to argue convincingly that Francophones had superior unobservable skills because they were *positively* selected in that labour market since, according to Figure 6, Anglophones seem to have been *positively* selected as well (at least since 1980): for both language groups, the average levels of education and experience were generally higher in the public sector than in the private sector. Finally, the fact that most of the head office jobs in Quebec's public sector are in Quebec City while most Anglophones live in Montreal does not provide a satisfactory explanation either as the compensated mother effect is even more to the advantage of Francophones if the analysis is done for Montreal only (see Figure 5).

Figure 6: Public Sector vs Private Sector
(Selected Skills, Quebec)



5.2 The Francophone wage gap in Quebec's private sector

The evolution of the Francophone-Anglophone wage differential in the private sector in Quebec between 1970 and 2000 was nothing short of dramatic.[13] The wage advantage that stood at almost 28.7 points in favour of Anglophones in 1970 was reduced to 5.1 points in 2000—a 23.6 point drop. While part of the drop is due to Francophones having improved their skills during that time period, most of the drop was due to changes in the mother tongue effect: it went from being significantly negative in 1970 (an Anglophone advantage) to being significantly positive in 2000 (a Francophone advantage).

5.2.1 An unexplained premium for Anglophones in 1970

In 1970, in Quebec, the wage situation of Francophones relative to that of Anglophones was very different in the private sector from that in the public sector. While the wage gap in the public sector was basically non-existent, it was 28.7 points to the advantage of Anglophones in the private sector (see Table 3). A number of factors were at play. One of these is that Francophones in the private sector were significantly less skilled (principally less educated) than their counterparts in the public sector—that accounts for 11.5 points of the differential in the gap. A much more significant factor though is the difference in the mother tongue effects: while in the public sector, the mother tongue effect was slightly to the advantage of Francophones, it was very significantly to the advantage of Anglophones in the private sector. In fact, I estimate that in this sector, Francophones were paid on average about 19 percent less than similarly skilled Anglophones, suggesting a strong labour market premium for Anglophones.

As discussed in other papers (e.g., Shapiro and Stelcner 1997; Vaillancourt, Lemay and Vaillancourt 2007), one possible reason for this premium is that although the language of the majority in Quebec was French, there was probably a higher relative demand for English skills because of Anglophones' greater ownership of the Quebec private economy. This paper provides further evidence of

[13] Since most of the economy is private, a number of the results reported in this section may seem similar to those reported in studies of Quebec's entire economy (e.g., Shapiro and Stelcner 1997; Vaillancourt, Lemay and Vaillancourt 2007; Béland, Forgues et Beaudin 2008 and Albouy 2008). However, the magnitude of these results is sometimes quite different. In particular, because the Francophone wage gap in the public sector is very different from that in the private sector, estimates for the whole economy generally understate the situation in the private sector. For example, for 2000, the observed gap for the entire economy is 50 percent smaller than that for the private sector: -3.3 points compared with -5.1 points. The interpretation of the results in this paper is also quite different given that a different decomposition methodology is used to explain the wage gap.

that: I estimate that the return to bilingualism was about 11.8 percent for Francophones, the highest it ever was for Quebec for the years studied and almost as much as it was for Francophones in the private sector outside Quebec in that year. Further evidence of a higher relative demand for English than French is that there was no incentive for Anglophones to become bilingual—the return to bilingualism for them was -2.6 points (statistically significant at the 10-percent level).

In spite of the return to bilingualism for Francophones being very high, it could not offset the premium for Anglophones in that labour market. Indeed, while a bilingual Francophone could expect to earn almost 12 per cent more than a similarly skilled unilingual Francophone in 1970, he was still earning about 7.2 percent less than a similarly skilled unilingual Anglophone and about 4.5 percent less than a similarly skilled bilingual Anglophone (see Table 3).

To assess the possibility that Anglophones in this labour market had relatively better wages because they were positively selected, I compared their wages with those of their counterparts outside Quebec. Using the method outlined in (3), I decomposed $w_{QP}^{A} - w_{OP}^{A}$ and found that controlling for bilingualism, Anglophones in the private sector in Quebec were earning 5.6 percent more than similarly skilled Anglophones in the private sector outside Quebec (statistically significant with a p-value of 0.003). To control for the possibility that this result was due to the fact that there were relatively more head-offices in Montreal at that time (which would provide a reason for positive selection), I performed two tests: first, I decomposed the wage gap between Anglophones in the private sector in Quebec and their counterparts outside Quebec (that is, $w_{QP}^{A} - w_{OP}^{A}$), but omitting observations from Montreal and Toronto;[14] and, second, I decomposed the Francophone wage gap in Quebec, but omitting Anglophones living in Montreal. Both tests reject the explanation that Anglophones might have been positively selected because of the presence of head-offices in Montreal. In the first test, I found that the unexplained component of the gap was larger for the restricted sample than for the full sample: 7.9 points compared

[14] Beside positive selection, another possible explanation for similarly skilled Anglophones in the private sector earning higher wages in Quebec than outside Quebec could be that the wage determination process in the private sector in Quebec was fundamentally different from that outside Quebec, because of different economic environments for example. If this was the case though, we would expect to also observe substantial differences in returns to attributes between Francophones in the private sector in Quebec and those outside Quebec, which we do not. In fact, a Wald test that the wage determination process of Francophones in the private sector in Quebec is not statistically different from that outside Quebec in 1970 fails to be rejected (p-value of 0.36).

with 5.6 points. In the second test, I found that the compensated mother tongue effect in favour of Anglophones was even larger for the restricted sample than for the full sample: 5.2 points compared with 4.5 points. The bottom line is that although these tests are consistent with the notion that Anglophones in Quebec's private sector might have been positively selected (and therefore that Francophones might not have been discriminated against), they are also consistent with the notion that the labour market where Anglophones were the most positively selected in Canada was the private sector in Quebec outside Montreal, which is possible but hard to explain.

5.2.2 An unexplained premium for Francophones in 2000

While, between 1970 and 2000, Francophones became relatively more skilled (*e.g.*, became more educated) and many head-offices left Quebec,[15] the major reason though for the drop in the observed wage gap during that time period was an increased premium for Francophones as measured by the change in the mother tongue effect. In fact, the latter explains almost three times as much of the drop in the wage gap as the former: 23.6 points compared with 9.0 points (see Table 5). I discuss two possible reasons for the increased wage premium for Francophones: an increased demand for French language skills and reverse discrimination.

There is strong evidence that there was an increase in the relative demand for French language skills in Quebec's private sector during that time period, indeed much larger than in the public sector:

- The economic returns to bilingualism and the proportion of bilingual workers increased for Anglophones, while the economic returns to bilingualism and the proportion of bilingual workers decreased for Francophones (see Table 3 and Figure 4).
- Between 1970 and 2000, the return to bilingualism for Anglophones in Quebec's public sector increased by about 1 percentage point (although at its peak, that is in 1995, the returns for bilingualism had increased by about 10 percentage points) while it increased by 8.2 percentage points for those in the private sector (see Figure 4a).

[15] See Boulet (1980) for a discussion of the impact of the departures of head offices on the Francophone wage gap in Montreal.

Table 5: Elements of the Francophone Wage Gaps over Time: 2000 vs 1970

	Quebec		Outside Quebec	
	Public	**Private**	**Public**	**Private**
Observed gap	0.027	0.236***	0.049*	0.102***
	(0.49)	(11.7)	(1.32)	(5.79)
Difference in attributes	0.053**	0.090***	0.046***	0.079***
	(2.08)	(6.56)	(8.86)	(26.7)
Education effect	0.035***	0.088***	0.008***	0.065***
	(4.85)	(9.75)	(6.53)	(25.2)
Other effects	0.018	0.002	0.038***	0.015***
	(0.72)	(0.18)	(7.45)	(5.34)
Bilingualism effect	-0.018	-0.091***	-0.032	-0.069
	(0.34)	(3.35)	(0.18)	(1.16)
$\hat{\alpha}^F$	0.015	-0.060***	-0.028	-0.073
	(0.56)	(5.12)	(0.16)	(1.14)
$\hat{\alpha}^A$	0.005	0.082**	0.029	0.005
	(0.06)	(2.18)	(0.90)	(0.25)
Mother tongue effect	-0.007	0.236***	0.035	0.091*
	(0.09)	(6.95)	(0.19)	(1.48)
Compensated mother tongue effect	-0.018	0.094***	-0.022	0.014
	(0.31)	(3.78)	(0.35)	(0.56)

Notes: Gap figures are measured in log points. Absolute t-ratios are in parentheses where * is significant at the 10 percent level; ** is significant at the 5 percent level; and *** is significant at the 1 percent level. One-tail tests are used.

That the increase in the demand for French language skills in Quebec should have been greater in the private sector than in the public sector should come as no surprise. The first language laws (*e.g.*, Bill 22 enacted in 1974) were mostly affecting public sector organizations but Francophones had always been over-represented in these organizations[16] and as our previous discussion showed, there is no evidence supporting the notion that they might have been at a disadvantage in that labour market before these laws were enacted. On the other hand, Bill 101 (enacted in 1977) began imposing much stricter requirements on businesses. For example, while "francization" certificates were optional under Bill 22, they became mandatory for firms with more than 50 employees under Bill 101. And, as we saw earlier, there is strong evidence that in the private sector, Quebec Francophones were at a disadvantage relative to similarly skilled Anglophones before these laws were passed. In fact, for many francophone Quebecers at that time,

[16] In 1970, the probability of a Francophone Quebecer to work in the public service was about twice as much as that of an Anglophone: 10.5 percent versus 5.2 percent. This no doubt reflects some amount of self-selection. In fact, for a Quebecer, a Probit model shows that being Francophone increased the likelihood of working in the public sector by about 20 percent in that year.

the objective of these laws (especially Bill 101) was more than to protect the francophone culture; it was also to level the playing field between them and Anglophones in the private sector labour market.[17]

Another factor that has probably contributed to increasing returns to French language skills and would have had a greater impact in reducing the wage gap in the private sector than in the public sector is the increase in Francophone ownership of the Quebec economy. Vaillancourt, Lemay and Vaillancourt (2007) suggest that in fact, this might have had a larger impact on the relative value of language skills than the language laws of the 1970s. This might be accurate, but at the same time, it raises the issue that perhaps the increased premium for Francophones in Quebec's private sector went beyond language considerations.[18] In other words, could it be that Quebec's private sector labour market is returning to a situation like the one (arguably) prevailing in 1970, but in reverse? A situation where it is now Francophones who control much of the Quebec economy, but where it is now Anglophones who are penalized in the labour market—not because they cannot speak French but because their mother tongue is not French. We can see if there is any evidence of this by comparing how much bilingual Anglophones were earning compared to similarly skilled Francophones and by comparing how much Anglophones in the private sector in Quebec were earning in 2000 compared to their counterparts outside Quebec.

As it was the case for Francophones in 1970, in 2000, Anglophones in Quebec's private sector could gain access to the market premium for the other language group by becoming bilingual. I find that holding skills constant, in 2000, a bilingual Anglophone could expect to earn just about the same as a unilingual Francophone, but about 4.9 points less than a bilingual Francophone, as measured by the compensated mother tongue effect (see Table 3).[19] The cause of this is difficult to pinpoint, but it appears

[17] See Shapiro and Stelcner (1997) for a discussion of the objectives of language laws in Quebec.

[18] Albouy (2008) is another writer who raises the issue of possible reverse discrimination, although for the whole Quebec labour market.

[19] One reason why Béland, Forgues and Beaudin (2008) find that in Quebec, unilingual Anglophones earn as much as unilingual Francophones and bilingual Anglophones earn as much as bilingual Francophones while I do not is that unlike me, they assume the same wage determination process for (i) Francophones and Anglophones (except for a fixed effect), and for (ii) the public and the privates sectors. Two assumptions that are statistically strongly rejected in this paper.

that it is probably not because Anglophones had poorer unobserved skills than Francophones.[20] Indeed, comparing wages in Quebec with those outside Quebec, I find that in 2000, holding skills constant, bilingual Anglophones in the private sector in Quebec were earning significantly less than their counterparts outside Quebec (by about 6.4 points), while bilingual Francophones were earning only slightly less (by about one point). Since it is doubtful that Anglophones in Quebec's private sector had that significantly poorer unobserved skills than their counterparts outside Quebec (especially considering they had better observed skills) and since there is no evidence that Francophones in this labour market were positively selected, it appears that in 2000, Francophones in this labour market might have been benefiting from reverse discrimination.

5.3 The Francophone wage gap in the public sector outside Quebec

The public sector outside Quebec is different from the other labour markets in a very fundamental way—it is the only labour market where there is no statistical evidence that could suggest there was Francophone-Anglophone wage discrimination at any point in time between 1970 and 2000. Although Anglophones generally enjoyed a wage advantage over Francophones in that market, this advantage was entirely due to differences in attributes (see Table 4 and Figure 3a) and a higher relative demand for English language skills. In fact, this labour market is the only one among those studied in this paper where controlling for skills, bilingual Francophones could generally expect to earn more than unilingual Anglophones and as much as bilingual Anglophones (see Table 4 and Figure 5). It is also interesting to note that in this labour market, the bilingualism effect and the mother tongue effect were almost perfectly negatively correlated[21] which, following the discussion in Section 4.2, should be expected when the mother effect only reflects relative demand for a language skill as opposed to other factors including discrimination.

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[20] Another possible explanation for the compensated mother tongue effect being to the advantage of Francophones in Quebec's private sector in 2000 is that bilingual Francophones are not the same as bilingual Anglophones in Quebec; they should command higher wages. However, the magnitude of this advantage being rather large (almost 5 points) and the fact that there was no such advantage in 1985, 1990 and 1995 (which would beg the question why there would be suddenly such an advantage in 2000) suggests that this is probably not a reasonable explanation.

[21] The correlation coefficient between the differential return to bilingualism and the mother tongue effect in the public sector outside Quebec is -0.97 with an absolute t-ratio of 8.73.

5.3.1 Impact of language laws

Because most of the research on the Francophone language gap has focussed on the situation in Quebec, there has been a tendency to forget that there was a lot of action on the language front outside Quebec between the late 1960s and early 1990s. Most of the language policy changes focused on the public sector. Some landmark policy changes include the followings:

- In 1969, the *Official Languages Act* declares the federal public service officially bilingual.
- In 1982, the *Charter of Rights and Freedom* makes English and French the official languages in Canada.[22]
- In 1982, New Brunswick becomes the first (and so far the only) province to be officially bilingual.
- In 1986, Ontario passes the *French Language Services Act* which guarantees access to provincial government services in French in 25 designated areas across the province.

One consequence of these changes is that the returns to learning French for Anglophones in the public sector outside Quebec increased significantly between 1970 and 2000: from nothing at all to about 3 percent (see Table 4). During the same period of time, the proportion of bilingual Anglophones working in the public sector almost doubled from 6.6 to 12 percent (see Table 1). By itself, the combination of these two factors increased the relative wage advantage of Anglophones (by 2.8 points), but this was exactly offset by the effects of the reduction in the labour market premium for Anglophones as measured by the reduction in the mother tongue effect (accounting for a 2.8 points reduction in the wage gap). This suggests that by themselves, the passage of the laws listed above did not have a significant impact on the Francophone wage gap in the public sector outside Quebec. In fact, the drop in the observed wage gap in favour of Anglophones from about 5.8 points in 1970 to about 0.9 point in 2000 can be entirely explained by the improvement in Francophones' attributes (see Table 5).

5.4 The Francophone wage gap in the private sector outside Quebec

[22] The *Charter* proffers to English and French preferred status in law over all other languages and provides among other things that Canadians have the right to receive services from federal departments and from Crown corporations in both official languages and that English and French will have equal status of languages of work within the federal public service in areas of the country where there is sufficient demand for services in both official languages.

In 1970, the wage situation of Francophones in the private sector outside Quebec was similar to that in Quebec (in fact, a test that the wage determination process for Francophones was the same in both labour markets fails to be rejected—p-value of 0.35). The observed wage gap was significantly smaller though (13 points compared with 28.7 points). There are basically three reasons for that:

- Francophones working in the private sector were more skilled outside Quebec than in Quebec (accounting for 5.1 points of the difference in the gaps);
- although the return to bilingualism for Francophones outside Quebec was comparable to that in Quebec, there were more bilingual Francophones outside Quebec than in Quebec (accounting for 3.6 points of the difference in the gaps); and
- as noted in Section 5.2.1, the wage premium for Anglophones as measured by the mother tongue effect was much greater in Quebec than outside Quebec (accounting for 7.1 points of the difference in the gaps).

As in Quebec, the relative wage situation of Francophones in the private sector outside Quebec improved quite significantly between 1970 and 2000, more than in the public sector in fact: the Francophone wage gap in the private sector went from -13.0 points to about -2.8 points, a 10.2-point improvement, compared to a 4.9-point improvement in the public sector (see Table 5). The increase in Francophones' skills explains a large part of the reduction in the gap (about 7.9 points), but the reduction in the labour market premium for Anglophones (as measured by the mother tongue effect) explains even more (about 9.1 points). What can explain the reduction in the premium for Anglophones in this labour market is unclear. One can probably rule out though an increase in the relative demand for French skills.

- Although language laws outside Quebec have been targeted to the public sector, one could argue that they may have had ripple effects on the private sector by increasing the demand for French language skills in that sector as well, thus reducing the labour market premium for Anglophones. While for the period 1970 to 2000, I observe an increase in the returns to bilingualism for Anglophones (plus 0.5 percent) and an increase in the proportion of Anglophones who are bilingual in this labour market (plus 0.4 percent), which is consistent with an increase in the demand for French skills, the changes are so small that it would be a stretch to ascribe the 9.1

points reduction in the labour market premium for Anglophones to an increase in the demand for French skills.

A reason that could potentially explain the dramatic reduction in the wage premium for Anglophones in the private sector outside Quebec but that is not tested in this paper is the assimilation of Francophones, especially in Ontario. In this paper, I have defined Francophones and Anglophones based on mother tongue. However, the results in Grenier (1987) and Lavoie and Saint-Germain (1991) suggest that if I had used language spoken at home instead, which would have somewhat controlled for the effects of assimilation, could have resulted in significantly smaller Francophone wage gaps outside Quebec.

6. A further look at the returns to bilingualism

We have seen that between 1970 and 2000, there were many instances where there was a wage premium for a language skill (for example, for French in the public sector in Quebec and for English in the private sector outside Quebec). However, it is important to note that individuals could most of the time enjoy this premium if they became bilingual. In fact, among the four markets studied and the six census years, there are only four instances where bilingual individuals could not expect to earn at least as much as similarly skilled unilingual individuals, all these instances are found in Quebec: bilingual Francophones compared to unilingual Anglophones in the private sector in Quebec in 1970, and bilingual Anglophones compared to unilingual Francophones in the public sector in Quebec in 1980, 1985 and 1990.

A related issue is how wages compare between bilingual Francophones and bilingual Anglophones. As discussed in Section 4.4.3, according to Vaillancourt, Lemay and Vaillancourt (2007), we should expect that Francophones in Quebec should earn more than equivalently skilled bilingual Anglophones and vice-versa outside Quebec. What I find for Quebec is consistent with this view: whether in the public or the private sector, bilingual Francophones generally earn more than similarly skilled bilingual Anglophones, about 5 percent more on average in 2000 (as measured by the compensated mother tongue effect—see Figure 5 and Table 3). On the other hand, outside Quebec, I find that there is no statistically significant difference between the earnings of bilingual Francophones and those of equivalently skilled bilingual Anglophones (if anything, there is a small advantage for bilingual

Francophones). A possible explanation for this is that bilingual Francophones outside Quebec are on average much more fluent in English than bilingual Anglophones in Quebec are fluent in French. Another possible explanation is that there might currently be more tolerance outside Quebec for individuals who do not perfectly speak the language of the majority. I am not aware of any of these explanations having been seriously statistically tested.

7. Conclusion

It is well known that the wage determination process greatly differs between the public sector and the private sector. Taking this into account and using a variant of the Blinder-Oaxaca decomposition method help paint a more accurate picture of the sources and evolution of the Francophone wage gap in Quebec and outside Quebec.

In 1970, Francophones earned less than Anglophones in all labour markets except the public sector in Quebec. Some of this was due to Francophones's attributes (*e.g.*, lack of education), but most of it was due to a labour market premium for Anglophones. In the public and private sectors outside Quebec, this premium probably only reflected a high relative demand for English language skills: unilingual Francophones were earning less than equivalently skilled unilingual Anglophones in these markets, but bilingual Francophones were earning as much as bilingual Anglophones.

On the other hand, in Quebec's private sector in 1970, the wage premium for Anglophones may have been going beyond language skill considerations, as bilingual Francophones were earning significantly less than equivalently skilled unilingual and bilingual Anglophones. Another piece of evidence to that effect is that Anglophones in that labour market seem to have been overpaid relative to their counterparts outside Quebec.

The Francophone wage gap closed dramatically between 1970 and 2000. A lot has been said about the role that education and the acquisition of other skills by Francophones played in closing this gap. However, I find that the reduction in the labour market premium for Anglophones played an even greater role, especially in the private sector where this premium was the largest in the first place. It is

difficult to accurately identify the causes of the reduction in the premium for Anglophones, but language laws probably had a significant impact, especially in the private sector in Quebec.

By 2000, it appears that the wage premium for Anglophones had vanished in all sectors both in and outside Quebec. However, it had turned into a premium for Francophones in the private sector in Quebec. And it is unclear that this premium was based on language considerations alone: holding skills constant, Anglophones in this sector were earning less than their counterparts outside Quebec; and although bilingual Anglophones were earning about the same as unilingual Francophones, they were earning significantly less than bilingual Francophones (unlike in previous years where they were earning about the same).

The situation in Quebec's private sector in 2000 is thus very similar to the one prevailing in 1970, but in reverse. This raises the issue that language policy in Quebec (*i.e.*, Bill 101) may have been having an unintended effect: it may be resulting in reverse discrimination in the private sector. In fact, I find as much evidence of wage discrimination against Anglophones in Quebec's private sector in 2000 as I find there was against Francophones in 1970.

Arguably the most unexpected result of this study though is that while I did not find any evidence consistent with language based wage discrimination in either the public sector or the private sector outside Quebec, I found some in Quebec's public sector for every year studied except 1995.[23] In fact, the unexplained wage premium for Francophones in this labour market is possibly the major reason why unlike in any other labour market studied, there was essentially no wage gap in that market between 1970 and 2000.

All of this makes me conclude that if at this juncture, there is a potential problem on the wage-language front in Canada, then it is in Quebec and it lies with the treatment of Anglophones. While the evidence provided in this paper to this effect is by no means irrefutable and that it may be difficult for some to have a lot of sympathy for Anglophones in Quebec—given that they still earn more on average than Francophones and that there is anecdotal evidence that they can be very successful without learning

[23] Following our discussion in Section 2 on the limitation of our empirical definition of public sector, this result probably reflects more the situation in the provincial and local public sectors in Quebec, than in the federal public sector in Quebec.

any French, the high economic cost of discrimination—especially against an ethnic group that is highly skilled and very mobile—makes it imperative that policymakers closely monitor the situation.

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APPENDIX

Table A1: Regression Coefficients†
(Quebec—Public Sector)

	1970		1980		1985		1990		1995		2000	
	Coef.	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**
Anglophones												
Constant	1.571	8.12	2.227	11.1	1.551	6.89	1.388	6.24	1.977	7.83	1.651	7.47
Bilingual	.023	0.33	.042	0.94	-.073	1.16	.080	1.29	.125	2.61	.018	0.34
Education	.078	6.67	.035	3.52	.071	7.21	.063	5.51	.035	3.18	.046	4.79
Experience	.058	5.67	.056	6.51	.055	5.94	.069	6.39	.074	6.99	.060	5.59
Experience^2	-.001	4.90	-.001	5.96	-.001	4.19	-.001	4.46	-.001	5.42	-.001	4.03
Immigrant	.026	0.27	-.024	0.36	-.059	1.05	.019	0.25	-.055	1.02	-.049	0.71
CMA	-.044	-0.72	-.006	0.09	.054	0.76	-.016	0.24	-.101	1.41	.029	0.45
Occup. 1	-.088	-1.03	-.101	1.12	-.042	0.35	-.160	1.10	-.309	2.37	.069	0.45
Occup. 2	-.281	2.60	-.157	1.22	-.584	3.19	-.091	0.49	-.317	2.71	-.003	0.02
Occup. 3	-.129	1.39	-.039	0.44	-.179	2.61	-.130	1.92	-.273	2.25	-.152	0.91
Occup. 4	-.403	2.26	-.218	2.03	-.213	2.13	-.180	1.59	-.522	4.21	-.195	1.24
Occup. 5	-.010	0.91	-.436	4.60	-.221	1.97	-.254	2.23	-.553	3.90	-.345	2.16
Occup. 6	-.227	0.98	-.323	3.38	-.187	2.01	-.141	1.91	-.947	2.80	-.576	4.15
Occup. 7	-.652	2.29	-1.16	12.6	-.009	0.07	.062	0.29	-.231	1.90	.050	0.32
Occup. 8	-.186	1.02	-.299	2.71	-.314	2.50	-.380	1.29	-.174	1.19	.020	0.12
Occup. 9			-.364	2.76	-.094	0.58	-.287	1.67	-.229	1.46	.039	0.22
Occup. 10			-.463	3.86	-.294	1.95	-.078	0.31				
Occup. 11			-.549	3.54			-.116	0.83				
Francophones												
Constant	1.943	19.2	2.454	37.5	1.880	33.3	1.868	36.5	2.057	37.8	2.029	36.7
Bilingual	.083	3.34	.050	3.68	.040	3.00	.064	6.27	.042	3.67	.067	5.73
Education	.058	11.2	.040	11.2	.052	17.8	.055	20.3	.047	17.7	.042	14.8
Experience	.035	9.79	.034	15.8	.044	19.3	.042	22.2	.038	17.0	.039	16.5
Experience^2	-.001	7.80	-.001	13.2	-.001	13.5	-.001	15.0	-.000	10.5	-.001	10.2
Immigrant	-.113	1.37	-.041	1.00	-.068	1.68	-.037	1.12	-.069	1.92	-.089	2.25
CMA	-.068	3.11	-.034	2.43	.052	3.91	.015	1.40	-.010	0.82	.069	5.46
Occup. 1	.018	0.39	-.051	1.93	-.039	1.47	-.024	1.34	-.137	4.30	-.123	3.93
Occup. 2	-.211	5.17	-.024	0.61	-.063	1.88	-.040	1.65	-.112	3.66	-.010	3.09
Occup. 3	-.073	1.75	-.057	2.74	-.063	2.97	-.030	1.94	-.150	4.63	-.182	5.37
Occup. 4	-.147	1.11	-.297	9.88	-.188	6.62	-.149	6.14	-.322	10.5	-.327	10.3
Occup. 5	-.180	3.22	-.375	16.0	-.239	9.38	-.211	10.4	-.428	12.9	-.504	14.3
Occup. 6	-.098	1.71	-.277	12.4	-.125	5.74	-.072	4.02	-.427	5.64	-.342	3.58
Occup. 7	-.107	2.06	-.152	3.57	-.180	4.52	-.201	2.68	-.039	1.19	-.041	1.21
Occup. 8	-.145	2.31	-.348	10.4	-.139	3.53	-.097	3.90	-.106	3.25	-.070	2.11
Occup. 9			-.291	10.3	-.146	2.85	-.092	3.66	-.267	6.97	-.247	5.15
Occup. 10			-.368	9.57	-.220	6.41	-.123	2.80				
Occup. 11			-.536	11.3			-.141	5.22				

Regression Coefficients
(Quebec—Private Sector)

	1970		1980		1985		1990		1995		2000	
	Coef.	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**
Anglophones												
Constant	2.066	28.4	2.096	27.6	1.946	17.9	1.877	21.6	1.992	13.8	1.911	13.0
Bilingual	-.026	1.33	.017	0.77	.000	0.01	-.005	0.20	.088	2.90	.055	1.74
Education	.056	15.1	.054	13.0	.042	7.24	.056	12.6	.046	8.05	.055	9.60
Experience	.046	16.6	.043	14.4	.058	13.4	.046	13.4	.058	13.6	.038	8.58
Experience^2	-.001	12.7	-.001	10.1	-.001	9.07	-.001	8.39	-.001	9.33	-.001	4.87
Immigrant	-.090	3.71	-.107	4.12	-.127	3.67	-.080	2.54	-.102	2.98	-.126	3.32
CMA	.012	0.63	-.078	2.81	.077	2.04	.038	1.36	-.031	0.80	.061	1.64
Occup. 1	-.099	2.96	-.075	1.91	-.078	1.77	-.011	0.32	-.160	1.73	-.091	1.00
Occup. 2	-.373	11.7	-.116	0.95	-.258	1.38	-.160	1.10	-.275	2.22	-.332	2.31
Occup. 3	-.725	13.1	-.108	1.16	-.172	0.83	.149	0.52	-.523	5.32	-.373	3.93
Occup. 4	-1.19	-9.78	-.663	3.12	-.723	3.25	-.201	1.25	-.573	6.11	-.513	5.52
Occup. 5	-.368	10.7	-.306	8.98	-.312	8.19	-.314	9.75	-.791	7.81	-.617	6.15
Occup. 6	-.255	5.55	-.548	10.1	-.670	9.65	-.616	12.6	-.747	6.66	-.632	5.70
Occup. 7	-.484	7.36	-.075	0.61	-.309	7.58	-.801	6.98	-.220	2.33	-.119	1.30
Occup. 8	-.377	9.01	-.289	9.04	-.137	1.88	-.288	8.14	-.721	5.14	-.779	6.75
Occup. 9			-.225	4.02	-.292	3.75	-.227	4.21	-.410	4.25	-.405	4.28
Occup. 10			-.241	4.49	-.384	6.92	-.298	5.90				
Occup. 11			-.253	6.16			-.309	7.00				
Francophones												
Constant	2.038	51.9	2.230	74.7	1.890	53.0	2.027	71.2	1.963	39.3	2.252	54.7
Bilingual	.118	12.5	.059	7.67	.048	5.33	.062	8.79	.033	4.40	.058	8.16
Education	.043	21.0	.041	24.8	.045	23.8	.044	27.9	.043	27.6	.038	27.7
Experience	.035	25.0	.037	34.6	.049	40.2	.040	39.7	.042	37.4	.037	36.0
Experience^2	-.001	20.7	-.001	24.7	-.001	28.5	-.001	26.3	-.001	23.0	-.000	21.2
Immigrant	-.045	1.89	-.146	5.64	-.164	4.84	-.093	3.48	-.058	2.00	-.108	4.25
CMA	-.018	1.98	-.059	7.99	.063	7.45	.050	7.43	.023	3.17	.042	6.08
Occup. 1	-.042	1.49	.015	0.80	-.009	0.47	-.051	3.87	-.038	0.91	-.198	5.87
Occup. 2	-.299	13.9	.038	0.71	-.173	2.90	-.146	2.34	-.079	1.66	-.259	6.57
Occup. 3	-.558	20.1	-.012	0.23	-.167	0.92	-.221	2.28	-.210	4.98	-.405	11.9
Occup. 4	-.796	8.64	-.269	2.59	-.288	3.35	-.189	4.02	-.298	7.12	-.519	15.4
Occup. 5	-.257	11.7	-.274	18.9	-.282	17.9	-.343	29.0	-.446	10.5	-.622	18.0
Occup. 6	-.117	4.90	-.536	24.1	-.532	22.0	-.560	32.9	-.458	10.2	-.649	17.9
Occup. 7	-.356	13.7	.027	0.91	-.199	12.8	-.705	19.3	-.146	3.43	-.262	7.53
Occup. 8	-.207	8.80	-.203	14.4	-.000	0.00	-.224	19.3	-.387	8.00	-.593	13.6
Occup. 9			-.040	2.33	-.245	12.3	-.074	5.32	-.179	4.29	-.368	10.9
Occup. 10			-.269	14.7	-.276	13.1	-.336	20.5				
Occup. 11			-.239	13.0			-.214	14.0				

Regression Coefficients
(Outside Quebec—Public Sector)

	1970		1980		1985		1990		1995		2000	
	Coef.	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**
Anglophones												
Constant	1.914	33.2	2.312	58.6	1.86	51.2	1.872	58.8	1.942	45.3	1.986	42.4
Maritimes	-.096	5.26	-.052	4.18	-.016	1.26	-.051	5.36	-.116	10.9	-.110	8.81
Prairies	-.097	4.26	.009	0.61	.005	0.32	-.095	8.23	-.098	8.42	-.090	6.60
Alberta	-.084	3.90	.025	1.89	.011	0.77	-.057	5.60	-.100	8.40	-.059	4.94
B.C.	-.035	1.73	.074	6.20	-.007	0.56	-.051	5.06	.024	2.41	-.005	0.45
Bilingual	.000	0.01	.027	1.79	.040	2.72	.021	1.89	.018	1.73	.029	2.26
Education	.064	23.4	.039	17.7	.051	27.6	.053	30.5	.046	24.3	.046	20.9
Experience	.042	19.4	.040	27.3	.051	32.7	.048	37.3	.042	24.9	.044	26.7
Experience^2	-.001	15.2	-.001	21.3	-.001	24.2	-.001	26.2	-.001	16.1	-.001	17.9
Immigrant	-.032	1.62	-.009	0.69	-.041	3.16	-.014	1.34	-.032	2.66	.000	0.03
CMA	-.043	-1.86	-.049	5.80	.058	6.09	.053	7.61	.052	7.00	.058	6.92
Occup. 1	-.021	0.83	-.070	4.48	-.047	2.88	-.035	2.72	-.025	1.03	-.107	4.45
Occup. 2	-.281	10.8	-.141	6.25	-.165	7.13	-.142	8.17	-.043	1.81	-.180	7.55
Occup. 3	-.152	7.17	-.070	5.53	-.084	6.21	-.080	7.59	-.100	3.97	-.228	9.00
Occup. 4	-.309	5.31	-.284	11.5	-.207	7.90	-.146	7.21	-.220	8.79	-.309	12.2
Occup. 5	-.167	4.34	-.349	19.9	-.292	14.8	-.231	15.1	-.337	12.9	-.496	18.5
Occup. 6	-.246	5.11	-.212	15.7	-.117	8.87	-.079	7.50	-.259	7.58	-.361	9.25
Occup. 7	-.233	5.66	-.437	4.85	-.149	5.91	-.335	11.3	.038	1.55	-.049	1.97
Occup. 8	-.195	6.69	-.199	9.18	-.132	4.92	-.160	7.86	-.032	1.28	-.063	2.58
Occup. 9			-.255	11.3	-.327	8.81	-.191	9.87	-.166	5.37	-.293	8.63
Occup. 10			-.295	9.15	-.255	12.8	-.155	6.11				
Occup. 11			-.503	22.3			-.254	15.0				
Francophones												
Constant	1.541	6.26	2.301	14.6	1.944	15.0	1.821	19.5	1.655	10.4	2.158	13.74
Maritimes	-.160	2.82	-.023	0.64	-.090	2.18	-.096	3.90	-.090	2.89	-.098	3.01
Prairies	-.092	-1.05	.042	0.83	-.058	1.11	-.065	1.77	-.052	1.37	-.135	2.77
Alberta	-.113	1.45	-.046	0.69	-.061	1.01	-.003	0.07	-.191	3.71	.0253	0.42
B.C.	-.253	2.23	.075	1.42	-.053	0.72	-.019	0.44	-.135	1.92	-.114	1.65
Bilingual	.092	0.58	.132	2.30	-.031	0.43	.087	2.01	.134	1.90	.064	0.73
Education	.081	9.45	.038	4.89	.057	8.80	.056	12.0	.057	11.3	.048	7.21
Experience	.053	6.62	.037	8.09	.050	9.67	.045	13.3	.044	7.89	.029	6.27
Experience^2	-.001	5.04	-.001	6.77	-.001	7.11	-.001	9.45	-.001	5.20	-.000	3.39
Immigrant	-.265	1.20	-.000	0.00	-.060	1.01	-.057	1.07	-.253	3.34	-.139	2.03
CMA	-.083	0.87	-.091	2.74	.055	1.60	-.028	1.27	.045	1.60	.077	2.79
Occup. 1	-.129	1.47	-.145	2.52	-.092	1.67	-.006	0.14	-.070	0.70	-.242	2.86
Occup. 2	-.287	4.15	-.122	1.87	-.166	2.05	-.036	0.73	.004	0.04	-.323	3.99
Occup. 3	-.076	1.18	-.111	2.03	-.133	2.67	-.071	1.84	-.077	0.75	-.230	2.93
Occup. 4	-.482	2.47	-.422	5.72	-.316	3.99	-.203	3.37	-.145	1.50	-.450	5.56
Occup. 5	-.054	0.31	-.401	6.47	-.339	5.77	-.186	4.86	-.393	3.71	-.570	6.96
Occup. 6	-.132	1.14	-.303	5.95	-.170	3.65	-.087	2.63	-.023	0.16	-.349	2.22
Occup. 7	-.041	0.30	-.381	3.23	-.113	1.14	-.236	2.32	.032	0.34	-.110	1.40
Occup. 8	-.210	2.11	-.286	4.86	-.154	1.93	-.135	2.00	-.008	0.08	-.129	1.62
Occup. 9			-.337	4.17	-.242	2.28	-.248	4.53	-.146	1.31	-.447	3.73
Occup. 10			-.288	3.40	-.266	3.37	-.061	0.70				
Occup. 11			-.611	6.27			-.119	3.07				

Regression Coefficients
(Outside Quebec—Private Sector)

	1970		1980		1985		1990		1995		2000	
	Coef.	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**	**Coef.**	**|t|**
Anglophones												
Constant	2.206	83.5	.200	112	1.967	94.6	2.040	112	2.255	78.0	2.186	87.1
Maritimes	-.264	23.0	-.109	13.4	-.116	13.0	-.141	19.7	-.171	20.8	-.190	24.4
Prairies	-.146	11.6	-.038	4.36	-.069	7.35	-.128	17.9	-.138	17.3	-.167	21.9
Alberta	-.038	3.19	.100	13.5	.061	7.52	-.050	8.08	-.044	6.39	-.026	4.25
B.C.	.052	5.48	.143	21.4	.079	10.3	.031	5.44	.058	9.46	.018	2.89
Bilingual	.005	0.27	.015	1.32	.012	0.95	.011	1.11	.012	1.04	.009	0.92
Education	.048	36.8	.045	40.0	.045	40.7	.046	44.5	.041	36.6	.047	44.9
Experience	.039	41.6	.040	56.4	.051	64.0	.045	67.7	.048	64.7	.045	64.2
Experience^2	-.001	32.4	-.001	40.4	-.001	45.3	-.001	45.6	-.001	42.9	-.001	41.4
Immigrant	-.020	2.31	-.057	7.77	-.074	9.24	-.054	8.15	-.065	8.77	-.070	9.24
CMA	-.028	3.34	-.032	6.44	.063	11.2	.072	16.2	.048	9.99	.068	14.8
Occup. 1	-.125	7.56	-.049	4.88	-.028	2.78	-.026	3.27	-.271	12.6	-.229	13.1
Occup. 2	-.365	26.4	-.221	5.40	-.190	5.16	-.073	2.74	-.369	15.4	-.333	15.5
Occup. 3	-.604	32.0	-.123	1.84	-.212	2.93	-.177	3.59	-.436	20.2	-.420	23.8
Occup. 4	-.883	23.0	-.289	7.48	-.132	3.24	-.159	5.31	-.553	25.9	-.568	32.9
Occup. 5	-.309	21.8	-.266	30.7	-.314	35.4	-.293	41.4	-.728	32.3	-.712	38.7
Occup. 6	-.218	13.6	-.547	33.5	-.610	40.8	-.582	48.6	-.637	27.8	-.605	31.8
Occup. 7	-.394	22.8	-.063	3.52	-.209	24.1	-.715	37.9	-.353	16.3	-.310	17.7
Occup. 8	-.308	20.7	-.193	22.7	-.216	19.7	-.208	30.0	-.804	26.4	-.786	27.8
Occup. 9			-.146	14.4	-.307	24.6	-.176	21.0	-.420	19.7	-.412	23.8
Occup. 10			-.245	20.8	-.354	31.3	-.303	31.1				
Occup. 11			-.278	25.9			-.230	27.3				
Francophones												
Constant	2.140	15.9	2.441	27.6	2.234	24.2	2.156	25.8	2.125	16.2	2.276	20.6
Maritimes	-.346	9.77	-.172	7.14	-.135	4.96	-.159	6.85	-.219	8.34	-.240	10.1
Prairies	-.215	5.05	.008	0.21	-.170	4.26	-.182	5.25	-.128	3.03	-.111	2.96
Alberta	-.125	2.24	.014	0.38	.070	1.57	-.078	2.19	-.088	2.44	-.068	2.22
B.C.	.101	2.02	.172	4.23	.008	0.14	-.015	0.40	-.055	1.28	.010	0.27
Bilingual	.121	2.28	.096	3.30	.054	1.43	.033	0.98	.053	1.49	.048	1.34
Education	.038	6.64	.026	5.57	.029	6.34	.034	7.13	.039	7.85	.041	8.81
Experience	.038	9.32	.032	11.3	.043	13.2	.041	15.7	.044	14.3	.034	12.3
Experience^2	-.001	7.58	-.000	8.07	-.001	9.05	-.001	10.7	-.001	9.05	-.000	6.98
Immigrant	-.112	1.45	-.010	0.22	.029	0.52	-.021	0.36	-.074	1.27	-.111	2.33
CMA	-.059	1.49	-.009	0.40	.045	1.80	.085	4.35	.021	0.93	.062	2.89
Occup. 1	.017	0.17	-.073	1.39	.046	0.97	-.036	0.90	-.112	1.12	-.134	1.84
Occup. 2	-.304	3.54	.040	0.18	-.102	0.58	.237	2.28	-.179	1.69	-.378	4.06
Occup. 3	-.572	6.06	-.272	1.25	.127	0.50	-.091	0.59	-.317	3.19	-.404	5.41
Occup. 4	-.824	5.31	-.206	1.79	-.177	0.98	-.307	2.46	-.379	3.88	-.495	6.80
Occup. 5	-.193	2.27	-.387	9.17	-.368	8.10	-.268	8.32	-.530	5.26	-.583	7.56
Occup. 6	-.138	1.55	-.609	9.95	-.642	9.46	-.545	10.6	-.404	3.89	-.444	5.57
Occup. 7	-.369	4.03	-.009	0.19	-.237	5.59	-.664	7.20	-.314	3.15	-.305	4.09
Occup. 8	-.196	2.23	-.231	5.84	-.286	5.85	-.179	6.00	-.701	5.61	-.751	6.32
Occup. 9			-.187	4.12	-.262	5.01	-.151	4.52	-.302	3.06	-.310	4.27
Occup. 10			-.289	5.97	-.456	8.07	-.284	6.68				
Occup. 11			-.290	5.89			-.172	4.65				

[†]Occupation groupings vary from census year to census year depending on the parameters of the censuses and the sample sizes.

	1970	1980	1985	1990	1995 and 2000
Reference category	Management	Management	Management	Management	Senior management, Health
Occup. 1	Natural Sc., Engineers	Natural Sc., Engineers	Natural Sc., Engineers, Other pimary	Natural Sc., Engineers	Professionals Business/Finance, Natural Sc., Engineers
Occup. 2	Clerical, Sales	Social Sciences	Social Sciences	Social Sciences	Teachers, Contractors, Supervisors
Occup. 3	Services	Teaching	Teaching	Teaching	Administration, Social Sciences, Manufacturing
Occup. 4	Farming	Health	Health	Health	Clerical, Technical, Art, Construction, Transportation, Processing
Occup. 5	Processing, Machining	Clerical, Sales	Clerical, Sales	Clerical, Sales	Chefs, Child care, Travel
Occup. 6	Construction	Services	Services	Services	Retail, Primary
Occup. 7	Transportation	Other primary	Processing, Machining	Farming	Other mgmt.
Occup. 8	Other occupations	Processing, Machining	Construction	Processing, Machining	Protective services
Occup. 9		Construction	Transportation	Construction	Wholesale, Other trades
Occup. 10		Transportation	Other occupations	Transportation	
Occup. 11		Other occupations		Other occupations	