Vancouver Centre of Excellence

Research on Immigration and Integration in the Metropolis

Working Paper Series

#97-10

Speak and Ye Shall Receive:
Language Knowledge as Human Capital

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November 1997

RIIM

Research on Immigration and Integration in the Metropolis

The Vancouver Centre is funded by grants from the Social Sciences and Humanities Research Council of Canada, Citizenship & Immigration Canada, Simon Fraser University, the University of British Columbia and the University of Victoria. We also wish to acknowledge the financial support of the Metropolis partner agencies:

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Speak and Ye Shall Receive: Language Knowledge as Human Capital[1]

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[1]. We would like to thank our friends and colleagues Fernando Mata and Jenna Hennebry at Canadian Heritage for their help and comments. As well, we received a great deal of help, both technical and substantive from François Pagé, Duncan Wrighte, John O'Grady and Colin Geitzler, Réjean Lachappelle, Louise Marmen, and Doug Norris all of whom work at Statistics Canada.

[2]. The opinions expressed in this report are those of the authors and do not necessarily reflect the views of the Department of Canadian Heritage or Statistics Canada.

Speak and Ye Shall Receive:
Language Knowledge as Human Capital

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1. Introduction

Canada is unique among settler societies in the fact that it has two official languages as proclaimed by Act as well as state support for the learning of non-official languages. Implementation of the Official Languages Act takes the form of both regulatory and program measures which attempt to ensure that basic services are available to Canadians in both official languages and that opportunities are available for learning an additional official language. Support for the learning of non-official languages has been through the Canadian Multiculturalism Act which had a relatively small program for funding the development of teaching materials. As well, the province of Quebec has instituted laws which act to protect French as the dominant language in that province.

Official language use has been an area of intense political and academic interest in Canada, but this debate has largely been confined to demographic studies examining issues related to language use and transfer particularly among and between official language groups. Studies such as these have looked at the long term viability of official language minority communities or the degree to which immigrant languages are retained from one generation to another (see for example: Lachapelle: 1989; Kralt and Pendakur: 1991). Many demographic processes related to language use are therefore fairly well understood. However, the economic value of language knowledge in Canada has not been as widely researched. Studies which have looked at economic payoffs to language knowledge are largely been confined to knowledge of official languages and

bilingualism (see: Breton: 1978; Bloom and Grenier: 1992; Shapiro and Stelcner: 1987; Shapiro and Stelcner: 1997; Vaillancourt: 1992; Christofides and Swidinsky: 1997). This paper attempts to measure the economic returns to both official and non-official language knowledge. We look at both earnings and employment probabilities in relation to three types of language knowledge: official language knowledge, non-official language knowledge and mother tongue.

The reason this relationship is important is because language knowledge can be viewed as a skill, and as such there should accrue economic benefits. At both a societal and individual level, the ability of citizens to speak more than one language may provide a competitive edge by allowing people to work in different sectors of the economy, and by increasing opportunities for international trade and tourism. At an individual level, the ability to speak an additional language adds to the store of human capital by increasing the number of possible trade partners an individual can have and thus should have a positive effect on labour market performance.

However, at the other extreme, it is also possible that language knowledge could indirectly act as a barrier, particularly in the case of immigrants, because it acts as a marker by which the majority can label a minority. Thus, prospective employers can use accent and language to define 'the other.' This can then result in fewer opportunities within the work force. Polyglots may thus be in a rather unique position of having a piece of human capital which can both help and hinder employment opportunities.

Another interesting facet of language ability as human capital is the fact that language knowledge is one of the few pieces of human capital that can be both ascribed and attained. Thus, where schooling may be related to choice and ability, language use can come naturally (i.e.: by mother tongue) or can be gained later in life. Thus, within the context of human capital theory, we can treat mother tongue(s) as a form of exogenous human capital whereas, languages learned after childhood can be treated as endogenous. If returns to these two types of language acquisition are different, we might expect that the "true" return to language knowledge is the return to mother tongue. Comparing between these two categories potentially provides a very powerful test of human capital theory.

Given the continuum of possibilities, it would seem that labour scholars (both economic and sociological) could add a great deal to the study of language and the economy by including

examining language knowledge as either a piece of human capital or a barrier to entry. Yet issues such as differential distribution across the labour market, or the value of language as an economic commodity have not been studied to any great extent. Where these issues have been examined, the focus has generally been on the place of the official language majorities. In other words, the few Canadian papers which have examined the confluence between labour and language, have concentrated on differences between the English and French population, rather than looking at the differences across all possible languages, both majority and minority (see for example: R. Fenwick, 1982; Bloom and Grenier, 1992). Where minority languages have been studied, it is mostly within the context of not knowing an official language (see for example, Evans and Kelly, 1986).

In part this is because language knowledge is multifaceted and often intrinsically related to being an immigrant. Thus, any net benefit to knowing a given language may be hidden by the fact that being an immigrant often has an economic cost (see for example, Akbari, 1992; Christophides and Swidinsky, 1994; Pendakur and Pendakur, 1997). This makes defining the cost or benefit of knowing more than one language very difficult to measure, particularly with commonly available data sets. The other hurdle is related to the fact that the payoffs for language knowledge may be different across sectors of the economy, or certain regions of the country and often, this level of detail is not available.

2 Research Question, Methodology and Data:

2a The Question

This research seeks to explore two questions. The first concerns the degree to which language knowledge (both official and non-official) correlates with earnings within the wage labour market. The second question concerns the degree to which language knowledge is correlated with full-time full-year employment status. The intent is to explore the issue of language knowledge as human capital and look at how language knowledge affects both an individual's propensity to be employed and an individual's earnings once employed.

However, compared to other economic analyses of language use, we do not restrict

ourselves to knowledge of official languages only. Rather we explore the relationships between official language knowledge, non-official language knowledge, mother tongue and earnings across a large number of language groups rather than confining ourselves to the official language majority groups. The advantage of such an approach is that payoffs to knowledge of non-official languages can also be explored and compared to payoffs for knowing the official languages.

If differences in the value of language human capital are a product of the numbers of people we can talk to, then it is likely that language 'markets' are very local. Thus what 'pays' in one region may not pay in another. For this reason, we concentrate our analysis on the three largest Census Metropolitan Areas (CMAs) in Canada -- Montreal, Toronto and Vancouver, treating each as a separate language market. This allows us to explore the dynamics of language knowledge and economic payoffs in a way that is not traditionally carried out.

2b Methodology:

Our goal is to develop an understanding of the relationship between language knowledge and ability to gain full-time full-year employment as well as the degree to which language knowledge affects wages. Answering these two questions requires two different regression methodologies. Establishing the impact on wages and salaries is accomplished using a standard OLS regression with the natural log of individual earnings from wage labour sources as the dependent variable. We use logistic regression to assess the impact of language knowledge on the propensity to be in full-time full-year employment.

In both cases, one challenge to estimating the economic impact of knowing an additional language is piecing apart the benefit due to language knowledge versus that due to personal ability -- perhaps people who have the ability to speak more than one language are also more able to gain higher wages. If this is true, then any benefit (or cost) measured in our model may be a product of personal ability rather than language knowledge. A similar problem occurs when one attempts to look at economic outcomes as a product of schooling – is it the schooling, or is it that people who go on to get more schooling are also personally more able to get higher wages. Problems related to such 'endogenous' characteristics have posed major roadblocks for scholars interested in human capital and economic outcomes because researchers cannot be sure as to what they are

measuring as an end product.

However, we suggest that the processes by which a language can be gained offer a unique opportunity to control for such methodological problems. Language knowledge can be gained in different ways and we propose that one way to approach the issue of personal productivity is to differentiate between language knowledge which is 'natural' or known from birth and language knowledge which is gained later in life. This categorization is important because, while it can be argued that people who learn an additional language later in life may have other abilities which can affect performance in the labour force, it is far harder to envision this being the case for people who start out with two languages.

Mother tongue is formally defined as the first language(s) learned and still understood, and, while it is generally the case that people declare only one mother tongue, the Canadian census captures up to four languages reported as mother tongue. The difference between mother tongue responses and language knowledge responses can thus be used as indicators of languages which are present from childhood, as opposed to those which are gained later in life. For this reason, we divide language knowledge into major components as defined by official language knowledge, non-official language knowledge and mother tongue.

After initial analysis on official language knowledge, we conduct a more detailed analysis of language use and earnings by examining thirteen specific non-official language knowledge groups. In this way it is possible to assess the value of knowing not only the two official languages, but also selected non-official languages, such as German, Italian, and Chinese.

2c. The Data

Our primary data set is a customized microdata file for individuals composed of selected variables from the 1991 Census 20% database.[3] The population examined is comprised of non-farm, permanent residents of Canada living in Montreal, Toronto and Vancouver.[4] We look at

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[3]. The database we use is roughly equivalent to a 20% of the total population, however, confidentiality requires that we not release the actual counts.

[4]. We initially ran regressions for Canada as a whole, however we restricted our analysis to the three CMAs because it quickly became apparent that different CMAs have very different pay-offs

(continued...)

only men aged 20 to 64, who are not in full time school attendance. Immigrants who had arrived in either 1990 or 1991 were dropped because of incomplete or missing income data. In the case of wage regressions, we looked only at men and women whose primary source of income was from employment in the wages labour sector.

The Variables:

The census main base provides a unique opportunity to explore issues related to language because there is information on different types of language knowledge:

- A question on official language knowledge tells us whether respondents feel they are able to speak English and/or French. Possible responses are English only, French only, both English and French or neither official language.
- A question on non-official language knowledge provides information on which languages other than English or French respondents feel they are able to speak.

The responses to both these questions are based on the respondent's **self assessment** of his or her ability to 'conduct a conversation' in the given language. Up to three non-official languages are captured.

- A question on mother tongue provides information on the first language learned and still understood.[5]

While the mother tongue question is designed to elicit a single response, a maximum of four responses are captured from the mother tongue question (English and French are captured separately, along with up to two write-in responses).[6]

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[4](...continued)
to language knowledge and are effectively different language markets.

[5]. There is also a question asked on which language is spoken most often at home. However, we did not use the results of this question in our analysis, in part because we wished to explore language knowledge rather than the more restrictive issue of languages spoken at home.

[6]. The mother tongue question asks "What is the language that [the respondent] first learned at home in childhood and still understands." It is thus designed to draw a single response. Despite this, there are people to respond that they have more than one mother tongue. However, cross-census comparisons (by Réjean Lachapelle) indicate that the pattern of responses is unstable in that the same people do not always report multiple languages from one census to another.

We use the combinations of language responses to explore five types of language knowledge. As a first stage we look simply at official language knowledge in order to examine differences in knowing English, French, both English and French, and neither English nor French.

In the next stage of the analysis we divide these four basic categories of official language knowledge by the number of non-official languages known (ie: English plus one, two or three non-official languages). This provides us with an indication of the degree to which labour market outcomes are affected by the number of languages known. In the third stage, we look at the way in which language knowledge came about by combining categories of mother tongue, official language knowledge and non-official language. This allows us to compare people who know both official languages by way of mother tongue to those who have learnt an additional official language later in life. In the same way, we can compare individuals who started off with both a non-official language and an official language to those who started with a non-official language as mother tongue and then learned an official language later. In the fourth and last stage, we take a look at the thirteen most frequently reported non-official languages in order to examine the relationship between the returns to non-official language knowledge.

Along with the language variables we include as independent variables, categories for:

- Canadian-born ethnicity including twenty european origin groups, aboriginal and visible minority ethnic groups (for a total of 35 categories);
- Place of birth (11 categories);
- Foreign place of birth interacted with visible minority status (10 categories);
- Census family status (4 categories);
- Canadian schooling (21 categories);
- Foreign Schooling in four levels by ten foreign places of birth (40 categories);
- Full-time / Part-time status (2 categories);
- Weeks Worked (11 categories); and;
- Specific occupations with high levels of unreported income -- tips (6 categories).

As well, we include continuous measures (and their squares) of potential labour market experience in Canada and in ten regions outside Canada for immigrants. Potential labour market experience in Canada is an estimated variable and is equal to either years since completion of schooling or years since immigration, whichever is less. In the case of immigrants, potential labour market experience outside Canada, is separated into ten regions, and is equal to years between completion of schooling and immigration to Canada. We assume that their labour

market experience outside Canada is the same as their region of birth. Finally we have included 10 continuous variables which provide interactions of Canadian experience and foreign experience for immigrants interacted with ten places of birth.

3. Results

3a. Official Language Knowledge

Table 1a shows selected coefficients from log-earnings regressions on workers age 20 to 64 not in school full time, whose primary source of income was from wages and salaries in Canada's three largest Census Metropolitan Areas (CMAs). The table shows the differences in log earnings due to knowledge of Canada's official languages, controlling for place of birth (interacted with visible minority status), ethnicity, household type, education (in Canada and ten foreign regions), potential experience (in Canada and ten foreign regions), full-time/part-time status and weeks worked. The coefficients reported show the differences in log-earnings (which may be interpreted as percentage differences in earnings) among men or among women who differ in their official language knowledge, but not in place of birth, ethnicity, household type, education, experience, full-time status and weeks worked. In all cases, the dropped category is English unilinguals, so that percent differences are in comparison to English unilinguals. The top panel shows information for males and the bottom panel shows the same type of regression output for females.

Table 1a

Returns to Official Language Knowledge, by Sex, 1991

Official Language	Montreal Coef.	Sig	Toronto Coef.	Sig	Vancouver Coef.	Sig
Males						
English	comparison		comparison		comparison	
French	-0.018		0.064	†	-0.021	†
Bilingual	0.049	***	0.037	***	-0.019	
Neither	-0.171	***	-0.129	***	-0.096	***
Females						
English	comparison		comparison		comparison	
French	-0.02	*	0.01	†	-0.22	†
Bilingual	0.06	***	0.03	***	-0.02	
Neither	-0.10	***	-0.18	***	-0.10	***

Source: Custom microdata file for individuals,
1991 Census of Canada, population age 20-64 not in school full time.
Individuals whose primary source of income is wages and salaries

Note: † : less than 200 weighted cases

Significance: *: 0.1 level; **: 0.05 level; ***: 0.01 level

Looking first at official language unilinguals, in the case of males, it appears that French unilinguals do not earn significantly less than English unilinguals.[7] It is particularly interesting to see this insignificant difference in Montreal, where there is a large population of French unilinguals, and where there is a history of French unilinguals earning less than English unilinguals (see Shapiro and Stelcner: 1987; Christophides and Swidinsky, 1994, 1997). However, it seems that based on data from the 1991 Census, and conditional on other individual characteristics, French unilingual males earn about the same as English unilinguals in all three CMAs. For females, the picture is somewhat different. While French unilinguals do not face a significant penalty in either Toronto or Vancouver, they do face a two percent penalty in Montreal.

English-French bilinguals earn more than English unilinguals in both Montreal and Toronto. Men and women able to speak both official languages earn statistically significant premiums over English unilinguals of up to 6 percent in Montreal and Toronto. However, in

[7]. It should be noted however, that there are very few French unilinguals (either male or female) living in Vancouver and Toronto.

Vancouver, those able to speak both official languages earn about the same as English unilinguals. This difference in the role of language in earnings outcomes between Vancouver, Toronto and Montreal is the first of many such differences across the CMAs we find in these data.

Not knowing an official language hurts workers in all three CMAs. As expected, almost all workers without official language ability are immigrants. However, the majority of immigrants do speak an official language, even at the time of entry. Thus, since we control for place of birth, foreign education, foreign experience and visible minority status, we can identify the effects of language knowledge *independent* of immigration status. For men , workers who do not speak English or French earn 17 percent less than unilingual English workers. In Toronto, the corresponding earnings gap is 13 percent, while in Vancouver, it is 10 percent. In the case of women, the situation is comparable, with those in Montreal earning 10 percent less, and those in Toronto facing the largest gap at 18 percent less. Overall, although workers who do not speak an official language earn significantly less than official language speakers in all three cities, the differential is smaller in Vancouver than in Montreal or Toronto.

The results in Table 1a are broadly consistent with the findings of previous research concerning the effects of official language knowledge on earnings. However, while previous research has focused on Quebec, or on Canada as a whole, we offer distinct findings for three large urban labour markets. Indeed, we see some striking differences in the effects of official language knowledge on earnings across Canada's three largest CMAs which suggest that the payoffs to knowing both official languages are highly localized. It also points to the fact that there are differences in the way men and women are able to take advantage of language knowledge.

Table 1b shows selected conditional odds from logit regressions on all workers age 20 to 64 who are not in school full time, in Canada's three largest CMAs. The dependent variable is a flag indicating Full-Time Full-Year (FTFY) working status, and the independent variables are controls for place of birth (interacted with visible minority status), ethnicity, household type, education (in Canada and ten foreign regions), and potential experience (in Canada and ten foreign regions). The estimates reported show the differences in FTFY work probabilities (evaluated at mean characteristics) for men who differ in their official language knowledge, but

not in place of birth, ethnicity, household type, education and experience. The conditional odds indicate the likelihood of full-time full year employment as compared to the comparison group – English unilingual. The conditional odds are expressed as ratios. Thus a one to one ratio indicates that the odds of being employed are the **same** as the comparison group. Values higher than one indicate a **greater** probability of employment and values lower than one indicate a **lower** likelihood of full-time full-year employment.

Table 1b: Conditional Odds of Full-time Full-year Employment by Official Language Knowledge by Sex in Selected CMAs, 1991

	Montreal		Toronto		Vancouver	
	Cond. Odds	Sig.	Cond. Odds	Sig.	Cond. Odds	Sig.
Males						
English	comparison		comparison		comparison	
French	1.28	***	0.48	†	0.21	*** †
Bilingual	1.58	***	1.12	**	0.88	**
Neither	0.09	***	0.38	***	1.01	
Females						
English	comparison		comparison		comparison	
French	0.97		0.60		0.30	†
Bilingual	1.34	***	1.01		0.94	
Neither	0.64	***	0.60	***	0.64	***

Source: Custom microdata file for individuals, 1991 Census of Canada, population age 20-64 not in school full time.
Note: † : less than 200 weighted cases
Significance: *: 0.1 level; **: 0.05 level; ***: 0.01 level

These results show different patterns across official language knowledge groups than those we saw in Table 1a. Looking first at males, while French unilingual workers do not earn less than English unilingual workers in any of the three cities, French unilingual men are somewhat more likely to have have full-time full-year work Montreal (.21 and 1.28 respectively). The difference in FTFY work probabilities between official language bilinguals and English unilinguals is also quite different across cities. Official language bilinguals are 1.5 times more likely than English unilinguals to have FTFY work in Montreal, and 1.12 times more likely in Toronto. However, in Vancouver, official language bilingual males are less likely to be employed FTFY. Turning to men who speak neither English nor French, we see that in Montreal and Toronto, it is very unlikely that they will

have full-time full year employment. However, in Vancouver, the conditional odds of employment for this group is about the same as it is for unilingual anglophones with similar characteristic.

Looking at women we see little difference between unilingual francophones and the comparison group unilingual anglophone women. However, official language bilingual women in Montreal are 1.34 times more likely to be employed FTFY, while women unable to speak an official language are only about 0.6 times as likely to be employed FTFY.

The results presented in Tables 1a and 1b are consistent with previous research in finding very large returns to knowledge of either official language in terms of earnings (conditional on work) and in terms of FTFY work probabilities (see Stelcner and Shapiro: 1987). We also confirm the finding that official language bilinguals may earn more and have higher FTFY work probabilities than official language unilinguals. However, we find striking differences across the three CMAs: on the whole it seems that knowledge of either official language is always good for the individual. However, being unilingual Francophone in either Toronto or Vancouver, places one in a situation similar to that of persons unable to speak an official language. Further, it seems that official language bilinguals have the largest advantage over English unilinguals in Montreal, and may face some disadvantage in Toronto and Vancouver in their ability to get full-time full-year employment.

Comparing the results of the two tables, it appears that among men, being unilingual francophone in Montreal actually helps job prospects, but does not necessarily increase wages. Being a bilingual male however, helps both job prospects and wages in Montreal, but actually hurts job prospects in Vancouver. The situation is similar for women in Montreal, with bilingualism associated with both better job prospects and higher wages but not in Vancouver.

These kinds of differences across CMAs suggest that the *market* for official language knowledge is local, and not national. Further, the differences between Montreal and the other two CMAs indicates that the differences in payoffs to official language knowledge may be related to differences in the compositions of the three cities. The next subsection explores links between *nonofficial* language knowledge and labour market outcomes.

3b. Non-official Language Knowledge

Table 2a shows selected coefficients from log-earnings regressions on all workers in Canada's three largest CMAs. The coefficients reported show the differences in log-earnings for men who differ in their official language knowledge *and* non-official language knowledge, but do not differ in place of birth, ethnicity, household type, education, experience, full-time status and weeks worked. Estimated coefficients are given by CMA, official language knowledge, and by number of nonofficial languages known. We find three dominant patterns in Table 2a. First, on the face of it, knowledge of non-official languages appears to be bad for earnings. In Montreal, men who speak English and one non-official language earn 13 percent less than English unilinguals, and men who speak French and one non-official language earn about 4 percent less than English unilinguals. In Toronto and Vancouver, men who speak English and one non-official language respectively earn 5 percent and 3 percent less than English unilinguals. For all three CMAs, and for all three degrees of non-official language knowledge, all of the statistically significant coefficients on non-official language knowledge are negative.

For women, although the same type of pattern is evident, there are differences. Bilingual women in Montreal can expect a bonus even if they speak an additional non-official language of between 3 and 6 percent. However in the other CMAs, knowledge of a non-official language hurts income levels.

Second, in most cases, the marginal effects of non-official language for men seem to be negative. Given official language knowledge, men who know two non-official languages earn less than men who know just one non-official language (only some of these differences *between* coefficients are statistically significant). For women, the pattern is more varied. While it is often the case that knowledge of non-official languages hurts income possibilities, it is not necessarily the case that more languages hurt more. Thus while women in Toronto able to speak English and two additional languages earn comparatively less than those able to speak only one non-official language, this is not the case in Vancouver.

Third, for both men and women, the earnings gaps due to non-official language knowledge are smaller in Vancouver than in the other two CMAs.

Table 2a:
Returns to Language Knowledge, Official and Non-Official by Sex
Selected CMAs, 1991

CMA	Official Language Knowledge	Non-Official Language Knowledge							
		no NOLs		One NOL		Two NOLs		Three NOLs	
		Coef.	Sig	Coef.	Sig	Coef.	Sig	Coef.	Sig
Males									
Montreal	English	Comparison		-0.126	***	-0.131	***	-0.085	
	French	-0.018		-0.043	**	-0.025		-0.239	**
	Bilingual	0.049	***	-0.035	**	0.002		-0.060	**
	Neither	Not Applicable		-0.171	***	-0.090		0.463	
Toronto	English	Comparison		-0.052	***	-0.068	***	-0.056	***
	French	0.064	†	0.130	†	0.093	†	0.051	†
	Bilingual	0.037	***	-0.019		-0.036		-0.008	
	Neither	Not Applicable		-0.129	***	-0.164	***	-0.099	
Vancouver	English	Comparison		-0.033	***	-0.034		-0.041	†
	French	-0.021	†	0.219	†	Not Estimated		Not Estimated	
	Bilingual	-0.019		-0.086	***	-0.095	**	-0.314	*** †
	Neither	Not Applicable		-0.096	***	0.035		-0.072	†
Females									
Montreal	English	Comparison		-0.05	**	-0.09	**	0.08	
	French	-0.02	*	-0.03		0.03		-0.13	
	Bilingual	0.06	***	0.03	**	0.05	**	0.02	
	Neither	not applicable		-0.10	***	-0.10		0.23	†
Toronto	English	Comparison		-0.04	***	-0.05	***	-0.03	
	French	0.01	†	0.26	* †	0.14	†	0.53	†
	Bilingual	0.03	***	-0.01		0.01		-0.02	
	Neither	not applicable		-0.18	***	-0.15	***	0.07	†
Vancouver	English	Comparison		-0.02		0.00		-0.02	
	French	-0.22	†	-0.11	†	-0.05	†	not estimated	
	Bilingual	-0.02		-0.05	*	-0.02		0.02	
	Neither	not applicable		-0.10	***	-0.13	*	0.10	†

Source: Custom microdata file for individuals, 1991 Census of Canada, population age 20-64 not in school full time. Individuals whose primary source of income is wages and salaries

Source: Custom microdata file for individuals, 1991 Census of Canada, population age 20-64 not in school full time. Individuals whose primary source of income is wages and salaries

Note: † : less than 200 weighted cases

Significance: *: 0.1 level; **: 0.05 level; ***: 0.01 level

Table 2b shows selected conditional odds ratios from logit regressions analogous to those in Table 2a. The dependent variable is a full-time full-year flag, and the independent variables are controls for place of birth, ethnicity, household type, education, potential experience. The estimates reported show the likelihood of FTFY employment for men and women who differ in their official language knowledge and nonofficial language knowledge, but are otherwise identical. As in the earnings regressions, the pattern for men and women is different.

In Montreal men who speak one official language in combination with a nonofficial

language are no more likely to be employed all year full time than is the case for unilingual anglophones. However, for women, in most cases, knowing a non-official language in combination with one official language results in lower probabilities of employment. The situation for official language bilinguals is a little different. As was seen in table 1a and 1b, bilinguals in Montreal have higher odds of being employed FTFY. This is carried through for those able to speak a non-official language, particularly in the case of women, however the propensity to be employed FTFY does decrease somewhat with non-official language knowledge. In both Toronto and Vancouver, the impact of non-official language knowledge is either non-existent or negative, particularly in the case of women. This suggests that in Montreal, as opposed to the other CMAs, people able to speak non-official languages are able to use that knowledge to their advantage, whereas this is not the case in the other two CMAs.

Quebec's Charter of the French Language:

Quebec's Charter of the French Language (Bill 101), introduced in 1977, is an additional and important language policy which has not been discussed in this paper, One provision of this law requires the children of immigrants to Quebec to attend French language elementary and secondary schools, if they choose to enter the public school system. Children of immigrants who were schooled in English language schools in Quebec are eligible to attend English language schools (see McAndrew and Lamarre, 1996).

This means that the children of recent immigrants who started their schooling after 1977 were required, in the vast majority of cases, to enter French language schools. Prior to this year, immigrants could enter either language system and usually chose to enter the English language school system (Comité interministériel sur la situation de la langue français: 1996).

We attempted to test the impact this provision had on the wages and job prospects of immigrants by looking at immigrants living in Montreal who were born from 1965 to 1971. These immigrants were from six to twelve years old by 1977. This population was divided into two groups, one comprised of people arriving in 1974 to 1976, the other made up of immigrants who came to Canada in 1977 to 1979. We thus compare immigrants who started their schooling before the law took effect to a group who arrived after the introduction of the law. The comparison is therefore between immigrants who had a choice of school language alternatives (the pre-1977 group) to immigrants who did not. One caveat to our analysis is that it assumes there was no migration (ie: we assume that immigrants in our sample were schooled in Montreal and remained in the CMA). However we are comfortable with this assumption in part because we can use our controls on language knowledge as a marker, particularly for the post-Bill 101 group which was more than likely schooled in French, in Quebec as opposed to other provinces where the dominant schooling language is English (with the possible exception of New Brunswick, which is not a centre for immigrant intake).

As was done for the entire population, in table 2, we controlled for place of birth, visible minority status, schooling, weeks worked, family status, official language knowledge and work experience (derived from age and years of schooling).

We were unable to find any statistically significant difference between the two groups for either males or females either in wages or propensity to be employed full-time full-year. In other words, immigrants who entered the public school system who did not have a choice as to the language of schooling, appear to have done as well (or as poorly) as those who arrived prior to the introduction of the law. In the same way, tests of ability to get full time full year work using logistic regression did not reveal any statistically significant differences between the two groups.

If language knowledge is a form of human capital, then the results in Sections 3a and 3b suggest that dominant official language knowledge ability (French in Montreal and English in Vancouver and Toronto), is to varying degrees, correlated with better labour market outcomes in terms of earnings and FTFY employment probabilities.

Table 2b: Conditional Odds of Full-time Full-year Employment by Official and Non-Official Language Knowledge by Sex in Selected CMAs, 1991

CMA	Official Language Knowledge	Non-Official Language Knowledge							
		no NOLs		One NOL		Two NOLs		Three NOLs	
		Cond. Odds	Sig.	Cond. Odds	Sig.	Cond. Odds	Sig.	Cond. Odds	Sig.
Males									
Montreal	English	Comparison		1.20		0.58		39.37	
	French	1.28	***	1.19		0.55		0.00	***
	Bilingual	1.58	***	1.38	***	1.09		0.94	
	Neither	not applicable		0.09	***	317.15		0.00	*** †
Toronto	English	Comparison		0.87	***	0.72	*	0.52	*
	French	0.48	†	0.00	†	0.00	*** †	0.00	*** †
	Bilingual	1.12	**	1.00		0.74		0.80	
	Neither	not applicable		0.38	***	0.22	A	0.00	***
Vancouver	English	Comparison		0.90	*	0.63	**	1.20	
	French	0.21	*** †	0.01	†	not estimated		not estimated	
	Bilingual	0.88	**	0.80	*	0.93		0.76	
	Neither	not applicable		1.01		0.00	***	0.00	***
Females									
Montreal	English	Comparison		0.83	***	0.76	***	1.16	
	French	0.97		0.91	**	0.96		0.59	* †
	Bilingual	1.34	***	1.12	***	1.21	***	1.34	***
	Neither	not applicable		0.64	***	0.55	**	1.20	†
Toronto	English	Comparison		0.87	***	0.90	***	0.82	***
	French	0.60	†	0.46	** †	0.24	†	60.21	†
	Bilingual	1.01		0.89	***	0.83	***	0.78	**
	Neither	not applicable		0.60	***	0.75	**	0.21	** †
Vancouver	English	Comparison		0.92	***	0.93		1.00	
	French	0.30	†	0.46	†	2.71	†	not estimated	
	Bilingual	0.94		0.83	***	0.72	***	1.21	
	Neither	not applicable		0.64	***	0.73		0.43	†

Source: Custom microdata file for individuals, 1991 Census of Canada, population age 20-64 not in school full time
Note: † : less than 200 weighted cases
Significance: *: 0.1 level; **: 0.05 level; ***: 0.01 level

It also suggests that the three CMAs are distinct markets for these forms of human capital. However, the econometrics of human capital have long been plagued by problems of correlations with unobserved variables. For example, if the type of people who acquire any particular form of human capital are also more likely to have other abilities which are valued in the labour market then we may be confusing personal ability with a return to language knowledge. In the next section, we address this issue by exploring the returns to mother tongue in the context of human capital theory.

3c. Mother Tongue versus Learned Language

The previous sections have looked only at ability to speak English or French in combination with non-official languages, but have ignored the way in which this language knowledge is acquired. This is problematic because language acquisition can be thought of as divided into two forms -- a language can be acquired either 1. as a child or 2. later in life. It is possible that these two 'paths' to language knowledge can lead to different types of payoffs because they can also be thought of as indicators of comfort level with a given language (ie: people who speak a language by right of mother tongue may be more comfortable with that language than those who learn that language later in life).

In this subsection, we argue that including mother tongue as part of language knowledge has the potential to provide analysts with a means of differentiating between the returns to unobserved ability and the returns to human capital. Mother tongue is defined in the 1991 Census database as the first language learned and still understood by the respondent.[8] Since it is learned in childhood, we believe that mother tongue language can be treated as if it were *not* chosen. On the other hand, languages that are not learned as mother tongue are much more likely to be learned later in life, and therefore more likely to be learned as a result of a conscious choice. For people who learn languages as the result of a conscious choice, there is an immediate estimation problem. In particular, people who *choose* to learn additional languages may be different from people who know the language by virtue of mother tongue(s); language learners may be more able or more motivated in otherwise unobservable ways than non-learners. If so, then the estimated return to language knowledge will include both the return to language knowledge and the return to these unobserved characteristics. In contrast, the estimated return to mother tongue should be unpolluted by correlations with unobserved variables. Thus, we argue that the return to language knowledge in a pure human capital model with unobserved productivity-related characteristics should be given by the measured return to mother tongue.

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[8]. Although the question is designed to elicit a single response, up to 4 mother tongues are captured (English, French and up to two additional non-official write-in responses).

To assess the true return to language knowledge, we separate individuals who have the same language knowledge into two categories: those who learned the language in childhood as mother tongue, and those who learned the language later in life. Since everyone has at least one mother tongue, this distinction is only relevant for people who know at least two languages; we can ask whether or not the second language is a mother tongue or not. Table 3a shows selected

Table 3a: Selected Coefficients from Log-Earnings Regressions: Paths to Language Knowledge
Selected CMAs, 1991

Panel A

CMA	Mother Tongue	Additional Language Knowledge: None	Other Official: Mother	Other Official: Learned	Nonofficial: Mother	Nonofficial: Learned
		Coef Sig.	Coef Sig.	Coef Sig.	Coef Sig.	Sig.
Males						
Montreal	English	Comparison	-0.065 **	0.049 ***	0.000	-0.056
	French	-0.012		0.057 ***	-0.202 ***	-0.115 ***
Toronto	English	Comparison	-0.074	0.037 ***	-0.120 ***	-0.043 ***
	French	0.064 †		0.045 **	0.226 †	-0.485 †
Vancouver	English	Comparison	-0.240 **	-0.016	-0.055	-0.013
	French	-0.024 †		-0.018	No Estimates	No Estimates
Females						
Montreal	English	Comparison	0.030	0.053 ***	-0.153 **	-0.070
	French	-0.001		0.087 ***	0.042	-0.011
Toronto	English	Comparison	-0.064	0.038 ***	-0.027	0.017
	French	-0.001 †		0.012	0.336 †	No Estimates
Vancouver	English	Comparison	-0.235 ***	-0.008	-0.054	-0.014
	French	-0.235 †		-0.046	No Estimates †	-0.099

Panel B

CMA	Mother Tongue	Additional Language Knowledge: None	English: Mother	English: Learned	French: Mother	French: Learned
Males						
Montreal	Nonofficial	-0.173 ***	0.000	-0.142 ***	-0.202 ***	-0.028
Toronto	Nonofficial	-0.127 ***	-0.120 ***	-0.049 ***	0.226 †	0.176 †
Vancouver	Nonofficial	-0.101 ***	-0.055	-0.041 ***	No Estimates †	0.213 †
Females						
Montreal	Nonofficial	-0.115 ***	-0.153 **	-0.054 **	0.042	-0.038 *
Toronto	Nonofficial	-0.192 ***	-0.027	-0.048 ***	0.336 †	0.255
Vancouver	Nonofficial	-0.105 ***	-0.054	-0.026 *	No Estimates †	-0.122 †

Source: Custom microdata file for individuals, 1991 Census of Canada, population age 20-64 not in school full time. Individuals whose primary source of income is wages and salaries
Note: † : less than 200 weighted cases
Significance: *: 0.1 level; **: 0.05 level; ***: 0.01 level

coefficients from log-earnings regressions with the same controls as in Tables 1a and 2a. Here,

estimates are shown for all unilingual and bilingual men by official language knowledge and by whether or not additional language knowledge was acquired by mother tongue or learned later in life.

The table is divided into two panels. Panel A (the top part) displays information for men and women who have either English or French as a mother tongue (the official languages). Panel B displays information for men and women who have a non-official language as a mother tongue. There is some repetition across the two panels because people can report more than one mother tongue. Thus people who claim both an official language and a non-official language are represented on both panels. Thus, the coefficients in the second to last column of Panel A, (Non-official mother tongue) are repeated in the second and fourth column of Panel B.

With the anatomy of Table 3 explained, it is now possible to look at the findings. Looking first at official languages, we see that in all three CMAs, official language bilingual men who have one official language as mother tongue and the other as a learned language earn significantly more than unilingual anglophones. In Montreal, men who know both official languages by virtue of mother tongue, however, earn 7 percent less than English unilinguals. In contrast, men whose mother tongue is English only and have learned French earn 5 percent *more* than English unilinguals. Men whose mother tongue is French only and have learned English earn 6 percent more than English unilinguals. Thus, there is an 11 percent earnings difference between men who have knowledge of both official languages by mother tongue and men who have knowledge of both official languages where one language is learned later in life, even though these two groups know the same languages. We see a similar pattern among official language bilinguals in Toronto and Vancouver.

The results for women are similar. Women in Montreal with either English or French as mother tongue, who have learned the other official language earn 5 to 8% more than unilingual anglophone women. In Toronto, although there is payoff for anglophones who learn French, the reverse is not true and in Vancouver, as was the case for men, we found no payoff for learning an additional official language.

The returns to non-official mother tongues and non-official learned languages for men starting with English or French are shown on the right-hand side of Table 3a. The pattern

observed for official languages seems to hold here as well: for mother tongue French men in Montreal and mother tongue English men in Toronto, learning a non-official language is correlated with better earnings outcomes than having a non-official language as an additional mother tongue. For the results shown in the top panel of Table 3a, we note that once again, the estimates for Vancouver reveal a different pattern from those for Toronto and Montreal. In particular, for men with a single official language mother tongue, learners of an official or non-official language earn neither more nor less than English unilinguals.

For women with non-official language knowledge, (either by virtue of mother tongue or learned), the pattern is somewhat different. First, as opposed to the case for men where four of the coefficients are negative and significant (in Montreal and Toronto), for women, this is only true for one case – women in Montreal with English and a non-official language as mother tongue. Thus on the surface it appears that knowing a non-official language may be less of a barrier to women than it is for men.

The bottom panel of Table 3a explores this possibility in more depth. Panel B shows estimates for men and women with a non-official mother tongue in combination with either an English or French (learned or by mother tongue). The patterns are very different in the three CMAs. In Montreal, while men with a non-official mother tongue who have French as an additional mother tongue earn 20 percent less than English unilinguals, men with a non-official mother tongue who have learned French earn almost the same as English unilinguals. Similarly, among Toronto men those who have English and a non-official language as a mother tongue earn 12 percent less than English unilinguals and those who learned English (but started with a non-official language) earn only 5 percent less than English unilinguals. As was the case in Tables 1 and 2, not knowing an official language hurts. Thus both men and women unable to speak English or French can expect to receive between 10% and 19% less than unilingual anglophones. However, the magnitude of the penalty varies across cities. Thus, the penalty tends to be lower in Vancouver and higher in Montreal and Toronto.

Looking specifically at women, it appears that the penalties for learning a non-official language tend to be lower than was the case for men. Thus, while men who learn a non-official language face a penalty of between 4 and 14%, women face a much smaller penalty of between 3

and 5%. Women with both an official and a non-official language as mother tongue tend not to face a wage penalty except in the case of women in Montreal who have English and a non-official language as mother tongue.

Table 3b shows selected conditional odds from logit regressions analogous to those in

Table 3b: Conditional Odds of Full-time Full-year Employment by Official
Selected CMAs, 1991

Panel A		Additional Language Knowledge									
CMA	Mother Tongue	None		Other Official				Nonofficial			
				Mother		Learned		Mother		Learned	
		Coef	Sig.	Coef	Sig.	Coef	Sig.	Coef	Sig.	Coef	Sig.
Males											
Montreal	English	comparison		0.760	***	1.180	***	0.580	***	0.900	
	French	0.840	***			1.060		0.900		0.790	**
Toronto	English	comparison		0.860		0.920	***	0.790	***	0.900	***
	French	0.240	** †			0.960		0.220	†	0.600	†
Vancouver	English	comparison		0.450	***	0.850	***	0.730	***	0.830	***
	French	0.320	** †			0.840	**	no estimate		0.020	†
Females											
Montreal	English	comparison		1.310	***	1.358	***	0.608	***	0.930	
	French	0.953				1.323	***	0.801		0.893	
Toronto	English	comparison		0.883		1.015		0.856	***	0.915	***
	French	0.595				1.015		0.517	†	0.026	†
Vancouver	English	comparison		1.121		0.937		0.793	**	0.945	
	French	0.301	†			0.950		no estimate		0.284	†

Panel B							
		Additional Language Knowledge					
CMA	Mother Tongue	None	English		French		
			Mother	Learned	Mother	Learned	
Males							
Montreal	Nonofficial	0.580 ***	0.510	0.770 **	0.790 **	0.680 ***	
Toronto	Nonofficial	0.610 ***	0.910	0.860 ***	0.600 †	0.350	†
Vancouver	Nonofficial	0.650 ***	0.550 **	0.670 ***	0.020 †	no estimate	
Females							
Montreal	Nonofficial	0.640 ***	0.608 ***	0.828 ***	0.801	0.916 *	
Toronto	Nonofficial	0.584 ***	0.856 ***	0.849 ***	0.517 †	0.481 **	
Vancouver	Nonofficial	0.622 ***	0.793 **	0.888 ***	no estimate †	0.597	†

Source: Custom microdata file for individuals, 1991 Census of Canada, population age 20-64 not in school full time. Individuals whose primary source of income is wages and salaries
Note: † : less than 200 weighted cases
Significance: *: 0.1 level; **: 0.05 level; ***: 0.01 level

Table 3a. The dependent variable is a FTFY flag, and the independent variables are controls for place of birth, ethnicity, household type, education, potential experience. The conditional odds of having FTFY work (evaluated at mean characteristics) for men and women who differ in their

official language mother tongue status and in whether or not their additional languages are mother tongues, but are otherwise identical. In the earnings regressions, learning languages was found to be associated with higher wages. In the case of work probabilities, the story is a bit more mixed. In Montreal, for example, anglophone men who learned French, were eighteen points higher than for unilingual English men. However, in the other CMAs, people who learned an additional language either faced a decreased probability of employment, or there was no effect. This is true regardless of whether the learned language is an official or a non-official language. This pattern of learners having higher FTFY work probabilities holds for persons with non-official mother tongues as well (shown in the bottom panel of Table 3b). The same pattern generally holds true for women, however in the case of women, there are fewer significant results, suggesting that additional learned languages have a lesser impact on the employment opportunities of women than men. There are, however, two exceptions to this statement. Women living in Montreal who learn the other official language show large higher probabilities of FTFY employment (1.36 and 1.32 times)

Men who know two official languages by right of mother tongue often face statistically significant lower probabilities of employment than those who learn an additional official language. Men in Montreal and Vancouver who have both English and French as mother tongue face much lower probabilities of FTFY employment than is the case for unilingual anglophones. Women who speak both official languages by right of mother tongue, however, either face no penalty, or as in the case of Montreal, have a higher probability of FTFY employment. This is surprising because it suggests that the opportunities for people who have two official languages as mother tongue are fundamentally different depending on whether one is male or female. It also suggests that there are big differences between learning an additional language and knowing two languages from childhood.

It seems, then, that the returns to language knowledge (either as earnings or FTFY work probabilities) are different between those who have additional mother tongues and those who learn additional languages later in life. In particular, it is broadly true across CMAs and mother tongue categories that people who have language knowledge by virtue of mother tongue earn less and have lower FTFY work probabilities than people who have language knowledge by learning

later in life. This pattern could be due to the correlation of language learning with unobserved individual characteristics. In this case, the true return to language knowledge is given by the return to mother tongue language knowledge. However, it seems from Table 3a and Table 3b that for both official and nonofficial language knowledge, the return to mother tongue is negative. In the next subsection, we take a slightly different approach. We push to the side the issue of why the returns to language knowledge are negative and focus on how the returns to language knowledge differ across Canada's thirteen largest non-official languages.

3d. Returns to Specific Languages

Table 4a shows selected coefficients from log-earnings regressions with the same controls as in Tables 1a, 2a and 3a. Previously, coefficients for non-official language were allowed to vary with official language but not allowed to vary by particular non-official language. However, in these regressions, respondents living in the three CMAs were pooled and interactions were created for each CMA - language combination. Further the return to non-official language knowledge is not allowed to vary across official language, but is allowed to vary by thirty-nine non-official language - CMA combinations. For example, the earnings difference for Italian speakers in Montreal is required to be the same for men who speak either, both or neither official language.

The first thing that is readily apparent is that all save for one of the significant coefficients are negative. Thus, except for the unique case of female Ukrainian speakers in Vancouver, an ability to speak one of the top thirteen non-official languages either does not help an individual's income, or it is indicative of an income penalty.

That said, it is also apparent that there are substantial differences by both CMA and genders. Looking first at males, it appears that Spanish, Arabic and Tagalog speakers face large wage penalties in all three CMAs of between 7 and 22%. In addition, Greek, Arabic, Punjabi, Tagalog and Ukrainian speakers in Montreal all faced penalties in excess of 15%. This was also true for Greek and Vietnamese speakers in Toronto and Arabic and Hindi speakers in Vancouver. Overall, however, the penalties tended to be highest in Montreal, followed by Toronto and Vancouver.

Table 4a
Returns to Non-Official Language Knowledge, for Males and Females for Selected CMAs, 1991

	Montreal		Toronto		Vancouver	
	Coef	sig	Coef	sig	Coef	sig
Males						
German	-0.018		0.002		-0.025	
Greek	-0.303	***	-0.152	***	-0.078	
Italian	-0.071	***	-0.016		-0.007	
Polish	-0.068		0.004		-0.017	
Portuguese	-0.021		0.003		0.069	
Spanish	-0.066	***	-0.098	***	-0.066	**
Ukrainian	-0.157	**	-0.028		-0.020	
Arab	-0.145	***	-0.070	**	-0.214	**
Hindi	0.065		-0.054		-0.235	***
Punjabi	-0.180	*	-0.140	***	-0.083	
Chinese	-0.073		-0.033		0.046	
Tagalog	-0.216	**	-0.136	***	-0.107	**
Vietnamese	0.072		-0.185	***	-0.002	
Neither E/f	-0.075	**	-0.075	***	-0.088	***
Females						
German	-0.010		-0.021		0.002	
Greek	-0.139	***	-0.009		0.071	
Italian	-0.068	***	-0.012		0.013	
Polish	-0.112	**	-0.024		0.031	
Portuguese	-0.076	**	-0.026		-0.054	
Spanish	0.004		-0.067	***	-0.037	
Ukrainian	-0.058		0.004		0.113	**
Arab	-0.087	**	-0.193	***	0.062	
Hindi	-0.122		-0.152	***	-0.161	**
Punjabi	-0.164		-0.184	***	-0.086	
Chinese	-0.038		0.041		0.003	
Tagalog	0.101		-0.102	***	-0.077	*
Vietnamese	-0.026		-0.253	***	-0.124	*

Source: 1991 Census of Canada individual file, population 20-64 no in school full time.
Selection: Population whose primary source of income is wages and salaries
Significance: *: 0.1 level; **: 0.05 level; ***: 0.01 level
Note: Coefficients are reported for persons who speak one non-official language or less.

Women were less likely to face a wage penalty than was the case for men. However, also indicative of the difference between men and women is the fact that no single women's language group faced a penalty in all three CMAs. For example, Greek, Italian speaking women faced a penalty of between 7 and 14% in Montreal, but not in Toronto or Vancouver. Spanish and Punjabi speaking

women however faced a 7% and 18% wage penalty in Toronto, but not in Montreal or Vancouver.

Table 4b
Conditional Odds of Full-time Full-year Employment by Non-Official Language Knowledge for Males and Females for Selected CMAs, 1991

	Montreal		Toronto		Vancouver	
	Cond. Odds	Sig.	Cond. Odds	Sig.	Cond. Odds	Sig.
Males						
German	1.066		1.072		0.996	
Greek	0.648	***	0.798	***	0.690	**
Italian	0.975		0.912	**	0.881	
Polish	0.939		0.850	**	0.781	
Portuguese	1.028		0.881	**	0.833	
Spanish	0.700	***	0.758	***	0.724	***
Ukrainian	1.219		0.989		0.823	
Arab	0.648	***	0.603	***	0.716	
Hindi	0.986		0.868		0.980	
Punjabi	1.361		0.706	***	0.763	**
Chinese	1.197		0.990		1.097	
Tagalog	1.070		0.933		0.867	
Vietnamese	1.074		0.852		0.727	**
Neither E/F	0.750	***	0.710	***	0.737	***
Females						
German	0.935		0.970		0.931	
Greek	0.709	***	0.934		0.969	
Italian	0.956		0.930	*	0.812	**
Polish	0.844		1.063		1.047	
Portuguese	1.075		1.016		1.230	
Spanish	0.804	***	0.743	***	0.898	
Ukrainian	0.883		1.029		0.937	
Arab	0.600	***	0.533	***	0.854	
Hindi	1.250		0.850		0.871	
Punjabi	1.561	*	0.737	***	0.713	***
Tagalog	2.136	***	1.419	***	1.559	***
Chinese	1.552	**	1.045		1.232	**
Vietnamese	1.505	**	0.696	***	0.808	
neither e/f	0.842	**	0.726	***	0.748	***

Source: 1991 Census of Canada individual file, population 20-64 not in school full time
Significance: *: 0.1 level; **: 0.05 level; ***: 0.01 level
Note: Conditional odds are reported for persons who speak one non-official language or less.

What is also apparent is that for both men and women, fewer groups faced negative wage differentials in Vancouver than in the other two CMAs. Thus, while four female-language combinations showed significant penalties in Vancouver, this was true of five groups in Montreal

and six in Toronto. For male-language combinations this was true of seven language groups in Montreal, six in Toronto and four in Vancouver.

Thus, while the results in Table 2a suggest that non-official language is associated with lower earnings, the estimates in Table 4a suggest that not all non-official languages are equal; languages like Spanish, Arabic, Tagalog and Greek may be associated with lower earnings than languages like German or Chinese.

Table 4b shows selected conditional odds from logit regressions analogous to those in Table 4a. The dependent variable is a FTFY flag, and the independent variables are controls for place of birth, ethnicity, household type, education, potential experience. The estimates reported show the expected differences in FTFY work probabilities for men and women who differ in their particular non-official language knowledge, but are otherwise identical.

Among men, we see a similar pattern to that in Table 4a, with Greek and Spanish speakers having significantly lower probabilities of FTFY work in all three CMAs. In addition, Toronto men who speak Polish, Italian and Portuguese all have lower probabilities of having FTFY work than English unilinguals. Men in the other language groups have about the same probability of being in FTFY work as the control group.

For women, the story is very different. A number of what could be considered 'non-white' language groups actually show higher probabilities of FTFY work which are statistically significant. Thus, women living in Montreal who speak Punjabi, Tagalog, Chinese or Vietnamese actually have a higher probability of being engaged in FTFY work than is the case for unilingual anglophone women. The same is true for Tagalog speaking women in Montreal and Tagalog or Chinese speaking women in Vancouver.

A number of other language groups face statistically significant penalties. Unlike the case for men, however, there is no group that faces a penalty is all three CMAs. Thus, Spanish speaking women living in Montreal and Toronto exhibit lower conditional odds of being in FTFY work, but this is not the case for Spanish speaking women in Vancouver. Italian speaking women in Toronto and Vancouver face lower probabilities of FTFY work, but not Italian speaking women in Montreal.

4. Conclusions

In this paper we look at the return to language knowledge, controlling both for the languages learned, and the paths by which language knowledge was attained. We started out by looking at official language knowledge and found that the returns to language knowledge are quite different across CMAs. However, in all CMAs, knowing an official language is better than not knowing an official language, and often, being official language bilingual is better than being unilingual in English or French. However, overall, it is apparent that the market for language knowledge is local. Thus, what may pay in one CMA may not pay in another, even if that language is the other official language.

We also explored the economic returns of languages known by mother tongue versus languages learned later in life and found that mother tongue language knowledge is correlated with poorer labour market outcomes in comparison with learned language. This finding suggests that the true return to official and non-official language knowledge, unpolluted by unobserved variable bias is somewhere between the two returns.

Finally we looked at the economic returns to the thirteen largest non-official languages spoken in the three CMAs. We were surprised to find that non-official language knowledge rarely improves labour market outcomes. This is, in part a reflection of the fact that the vast majority of the people who speak non-official languages are part of the ethnic language community. Thus we may be measuring a cultural attribute rather than a direct penalty. However, the fact that the penalties remained even after extensive controls for immigrant status suggests that there may be something else going on. Such wage differences, could, for example, be indicative of labour market discrimination. If employers discriminate or pay differentially based on cultural characteristics, perhaps they are using language knowledge and accent as a marker for defining 'the other'. It is also possible that language knowledge is indicative of some other cultural trait which employers identify, such as family name. Thus language knowledge may be indicative of a much broader cultural trait.

The wage differences could also be indicative of something less sinister. If language knowledge is not viewed as a piece of human capital, and instead is viewed as a consumer good, then perhaps the differences we witnessed for non-official languages and even the official

languages in Vancouver and Toronto, are simply a product of the fact that Canadians do not learn an additional language to earn money – they do it because they want to.

This conclusion albeit surprising, is somewhat disheartening for two reasons. First if one believes that language knowledge is a skill and therefore marketable, it suggests that a piece of human capital is being wasted. It appears that in a broad sense, the Canadian labour market simply does not value language knowledge and the possibilities such knowledge brings. Second, and possibly worse, it appears that being part of a language community may actually hurt employment opportunities. Thus, rather than merely being neutral, the ability to speak an non-official language, acts as 'reverse human capital' and appears to have a real effect on both wages and employment opportunities.

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