Ethnic Origin, Language and Earnings in Canada and the United States- A Survey

by

Farag Youssef

(516440)

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Supervisor: Professor Gilles Grenier

ECO 7997

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Over the past few years, labour economists have come to consider language as an important economic variable in the determination of earnings. Most of the research in this field is empirical and tries to see to what extent language differences between individuals can account for differentials in earnings whether it be between French and English speakers in Canada, or between Hispanics or other ethnic groups and English speakers in the United States.

Most Canadian studies regarding the effects of language on earnings focus on the province of Quebec. Even though Quebec anglophones and francophones have had different socio-economic welfare status for over 200 years, it is only since the early sixties that researchers have attempted to measure and quantify earnings differentials. This more accurate approach may have prompted the Quebec provincial government to take action (legislature, commissions) to rectify this problem.

The United States, being historically an immigration country, is also constituted by people of various ethnic origins. In recent studies, Hispanic Americans have gained importance since they are now the second largest ethnic minority after Black Americans. Many Hispanic immigrants arrive with a less than fluent command of English which may adversely affect their labour market integration and thus, their earnings potential.

The purpose of this paper is to survey the recent economic literature regarding the effects of ethnic origin and English language ability on earnings in the United States and in Canada. The study is divided into four main parts. The first, entitled "theoretical framework", deals with the various models developed to explain earnings differentials. We subsequently present the language data most commonly used by empirical studies. The last two parts present the empirical results for the United States and for Canada.

I) Theoretical Framework

In this part, we will examine several major theoretical models used throughout the literature to explain wage differentials due to labour market language ineptitudes and ethnic origins.

A) Discrimination by Taste Model

Becker(1957) put forth a theory based on discrimination by taste of economic agents. This type of theory can prevail in societies with strong racial prejudices or stereotypes about the social role of certain individuals; it has been used to explain the wage differentials between Whites and Blacks in the United States and between males and females.

The theory can also be applied to language and ethnic origin. Indeed, an employer can discriminate against somebody

because of his or her ethnic origin just as he can discriminate because of an individual's race or gender. This would theoretically give rise to two possible situations: first,there is pure and simple discrimination by the employer because he may not like foreigners, and not being able to speak English fluently emphasizes foreignness. Alternatively, an employer may have the preconceived idea that immigrants should accept jobs that are at the bottom of the job ladder because he believes a priori that the latter are less productive. Moreover, "employers may believe that non-English speakers are not as easily trainable for jobs higher up the job ladder." (Kossoudji, 1988, p. 211) Thus, they might not even hire them at all.

B) Imperfect Information Model

Arrow (1973) proposed a model to explain wage differentials based on imperfect information in the labour market. Migué (1970) had applied a similar model in the Quebec context and found that "networks were constituted around the dominant English-speaking community." (Grenier, 1984, p. 37) In other words, it was more costly to get information about a francophone candidate for a job than it was for an anglophone. In the same vein, Shapiro and Stelcner concluded that "the anglophone earnings advantage in 1970 was largely attributable to the in-migration of anglophones to assume highly paid positions in the private sector, often through internal labour markets and informal job networks to

which francophones did not have equal access." (Shapiro and Stelcner, 1987, p. 99) This idea can be extended to two points: first, a person needs to speak English fluently in order to get information about the jobs available; second, an increase in English fluency will enable an individual to better integrate himself or herself in the English majority and in those previously unaccessible networks of information. Therefore, the individual will have more personal contacts and friends from the language majority.

Kossoudji (1988) also points out similar behaviour in the United States. She writes that "information costs, screening and search effects alter access to certain jobs. Employers are generally less certain of the productivity of immigrant workers compared to native workers and a lack of English language ability may increase that uncertainty." (Kossoudji, 1988, p. 209) In other words, employers expect non-English speakers to have lower productivity; therefore wage offers will take this factor into account. Indeed, an average wage offer curve may be affected by English language ability because the employer will expect lower productivity on the part of an immigrant worker. Also, the employer will incorporate screening costs such as paying supervisors to monitor the employees, and turnover costs such as having to train new employees in case some of the previous employees shirked and were fired. Therefore, for a given level of skills, immigrants who lack English fluency will see their

wages reduced by a double negative effect due to the existence of imperfect information in the labour market.

C) The Human Capital Model

According to this theory, language will be part of an individual's general human capital. Therefore, as people invest in education and on the job training or experience, they will invest in language in order to increase their expected future earnings. If a worker cannot communicate effectively, this can adversely affect his productivity. Indeed, inefficient communication can prevent someone from getting a job, and even if that person does get a job, it could be below his or her skill level and he or she could end up with a lower wage. Put another way, people who have greater proficiency in the language that dominates the labour market should expect to receive higher wages.

D) Supply and Demand Model

Another framework could be the interaction of supply and demand in local labour markets. It is assumed that there are two labour markets for two language communities. The workers in the markets are identical in human capital and other characteristics except for their language skills. Therefore, the supply curve is determined by the number of people who speak a certain language. An outward shift of the supply curve would result from an increase in the number of immigrants who speak Spanish for example, or just an increase in the number of people who learn Spanish. "The demand for

workers with different language abilities depend upon the number of consumers in local product markets with those same linguistic characteristics." (Bloom and Grenier, 1991, p. 6)

In this framework, any changes in the supply of or demand for labour are expected to have an impact on relative wages. Therefore, if a certain linguistic minority group were to increase in size with respect to all consumers, then their relative wages should change accordingly by increasing. There will be more consumers from the linguistic minority group , which will increase the demand for workers with the same language abilities and put upward pressure on their wages. However, individuals from a certain linguistic minority who live in an area where they are highly represented might have lower relative wages. Indeed, they may lower their reservation wage due to the fact that they prefer to live in a community where their language is used. Such an argument is also put forth by Reimers when she writes that the "geographic wage difference may reflect a compensating differential arising on the supply side of the labour market. Such a differential could arise from a Mexican American and other Hispanic preference for living where there are many other Hispanics, or simply from the cost of migration." (Reimers, 1984, p. 411) The net effect of these opposed forces is difficult to determine. Nonetheless, this framework adds an interesting perspective in the explanation of earnings differentials.

Vaillancourt(1988) has also used the supply and demand model for studies involving the province of Quebec. He identifies three elements that determine the language a firm will choose to work and operate in: first, the language of the owners of the firm, whether it be that of the shareholders in the case of a private enterprise or that of the majority of voters in the case of a public enterprise; second, the language of the technology and the specialized inputs used in the firm, that is to say the language used to maintain and repair equipment; and third, the language of the markets in which the firm is selling its products. Since most firms operate in a competitive market structure, their size is insufficiently large for them to determine the dominant language of markets or that of the technology they use.

The use of the dominant language becomes important when a firm is dealing with international exchange. Indeed, Breton and Mieskowski(1977) have studied the emergence of a dominant language for international exchange and have concluded that the chosen language would be that of the largest market. This would arise when the number of languages used in exchanges increases too much; in order to minimize information and transaction costs the dominant language emerges. This theory would explain the surge of English as the dominant language of international exchange. Therefore, if a firm is operating in a sector which requires little or no contact with the exterior then knowledge of the dominant language is not required.

However, when the firm operates in sectors that are more open towards the rest of the world, knowledge of the dominant language becomes a prerequisite especially for those jobs that require the employee to transact with clients as well as furnishers of inputs. In the latter case, English language proficiency can become an important factor in earnings differentials among various ethnic groups. The firm will confront its demand for individuals with certain linguistic skills with the supply of workers and there will be an adjustment process until all vacancies have been filled.

In the labour economics literature, econometric methods have enabled authors to use available data to verify the effects of language proficiency on earnings mainly within the human capital framework. Before examining the empirical evidence in both countries, we propose to review some data sources widely used in research.

II) Language Data

A) United States Data

The United States data sources have not always been consistent over time. The 1970 Census of Population contains a question regarding a person's mother tongue which does not appear in the 1980 Census. However, in the 1980 Census, a question regarding self-assessment of spoken English which

does not appear in the 1970 Census was included. Therefore, using similar data to examine the evolution of language and earnings over this decade has not been possible. Some authors such as Bloom and Grenier (1991) and others have used ethnicity data as a substitute for language proficiency. Languages currently spoken at home (other than English) and spoken English fluency were two questions included in both the 1980 and 1990 Censuses, hence making comparisons possible. Most studies in the United States have based their analysis of language earning differentials on the Survey of Income and Education (SIE) conducted from April to June 1976. We now cover the broad lines of this survey.

The SIE covers a broad range of demographic characteristics such as age, race, sex, schooling and ethnic origin. Many of these elements are needed as data input when studies are conducted to determine the earnings of various foreign-born men or women, especially those of Hispanic origin which represent the second-largest minority in the United States. More specifically, some questions sought information about the ethnicity or origin of individuals. The answers to these questions were coded into one of 32 categories including "Mexicano", "Mexican American", "Chilean" "Puerto Rican", "Central or South American" and "Asian". The individuals were also asked their country of birth. Those born outside the United States were asked their year of arrival. Again, answers for this question were placed in categories: before

1920, 1920-49, 1950-59, 1960-64, 1965-69 and all arrivals after 1970 are reported in individual years. As a refinement of the previous measure, respondents were asked how many years they have lived in their current State. The length of education or schooling is another important point of questioning. The individuals were asked how many years of schooling they completed abroad and the language in which they were taught history, science and arithmetic. Furthermore , of importance to this paper are the two direct measures of English language proficiency. The first measures a person's ability to speak and understand English, the second is the language usually spoken at home and the frequency of reading an English language newspaper. Finally, "respondents were asked to report the language spoken at home when they were children, current household language, the language they usually speak now, and the second language now." (McManus et.al., 1983, p. 105-106) Again, this is only an overview including a range of subjects commonly used in language-earnings differentials.

Table 1 of the Appendix, borrowed from Tainer (1988), gives us the rankings for various characteristics among foreign-born men by country of birth. These rankings are done for annual earnings, years of schooling, English proficiency and years in the US. We can notice that the top five and bottom five countries of origin with respect to annual earnings are somewhat similar. Of the top five in annual

earnings, four are also ranked in the top five with regards to years of schooling and English proficiency. Likewise, from among the bottom five for annual earnings, three countries also rank in the bottom five with regards to number of years of schooling and English proficiency. From this table one can conclude that there seems to be a link between English proficiency and earnings. Foreign-born European men seem to have a better command of spoken English and they therefore rank higher with respect to earnings, whereas foreign-born Hispanic or Asian men seem to be more deficient in spoken English and thus receive lower earnings.

From Table 2 of the Appendix, borrowed from Tainer (1988), we have the distribution of earnings by primary language spoken among foreign-born men. From the total number of foreign-born men earning under $5000,61 percent claimed they spoke a language other than English. Likewise, more than 50 percent of foreign-born men earning between $5000 and $10000 said they spoke a primary language other than English. On the other hand, 69 percent of the foreign-born men earning more than $20000 said that English was their primary language. From the data in the second table, it would seem that a great majority of individuals speaking primarily Spanish or an Asian language are clustered in lower scale earnings, under $10000. Indeed, 62.5 percent of foreign-born men whose primary language is an Asian language earn less than $10000 and 77.5 percent of foreign-born men who speak primarily Spanish earn

less than $10000. Comparatively, only 39.7 percent of foreign-born men who have English as primary language earn less than $10000. In parallel, when one looks at the higher earning levels such as the bracket from $35000 to $50000 we see that representation of English as a primary language is at 2.3 percent whereas respondents speaking primarily Asian are at 1.1 percent and Spanish becomes insignificant at only 0.3 percent . One last comparison which is noteworthy is between the percentage figures for native born men and foreign-born men who primarily speak English; one notices that for all earning levels, they do not differ much. This again suggests that language proficiency has an impact on wage differentials.

Finally, in Table 3 of the Appendix, borrowed from Grenier (1984,) we have descriptive statistics for males aged 25-64 with positive wages in 1975. The first striking element is the difference with respect to hourly wages between Hispanics at $4.96 and non- Hispanic White males at $6.52. In other words, the former are earning 24 percent less than the latter group. This could be explained in part by the lower level of education of Hispanics who average 10 years compared to 12.6 years for non- Hispanic Whites since they both have the same number of years for work experience. It is interesting to introduce the language dimension and examine how it differentiates Hispanic males among themselves. Indeed, the hourly wage of those Hispanics whose childhood language was Spanish is $4.84 compared to $5.66 (15 percent

higher) for those who spoke English as a child. Due to the fact that the latter group belongs to a younger generation, they have 3 more years of education and 5.6 less years of working experience. Furthermore, non-Hispanic White males still earn more (about 15 percent) than Hispanic males who spoke English even though both groups have exactly the same number of years of education, but the former have 4.9 additional years of work experience.

Again when one looks at the data under the place of birth columns, Hispanics born on the US mainland earn $5.28 per hour compared to $4.62 per hour for those Hispanics born outside the US mainland. This difference can partly be explained by the fact that an individual born in United States will most probably have been exposed to the English language and environment for a longer period of time compared to a person born outside the US mainland.

This table also provides information on the English proficiency of Hispanic males. In the first column, 40 percent of Hispanics declared that they had some kind of English speaking deficiency. Also, 20 percent of Hispanic males reported usually speaking English only compared to 34 percent who usually speak English with Spanish as a second language and finally, 46 percent reported they usually speak Spanish.

From the three tables we have just presented, one gets a sense of the various earning levels of different ethnic groups

in the United States. From the preliminary observations made, it would seem that English language proficiency is a relevant variable in the explanation of wage differentials.

B) Canadian Data:

In the Canadian context, most studies have used data from the 1971 Census and the 1981 Census. In 1971, a sample of 1 percent of the total population which represented 60 280 residents from the province of Quebec was used. In 1981, a sample of 2 percent of the population was used for the Census and this represented 128 768 residents from the province of Quebec (see Vaillancourt, 1988). This increase in the size of the sample enables researchers to undertake more subtle analysis using the 1981 data. A similar Census was conducted in 1986 with some small modifications in the way responses were coded. Nevertheless, all Censuses have similar questions which make comparisons over time possible in order to observe the evolution of wage differentials among linguistic groups.

To define linguistic groups, the answers pertaining to the mother tongue were retained in the majority of studies. Like the US data, the Canadian Censuses provide information on language proficiency of individuals. Respondents were asked if they could speak English or French or both. From the data, it was possible to distinguish several groups: the anglophones, the francophones, the allophones, those who are unilingual and those who are bilingual, and subsequently

analyze the evolution of their wages over time.

Table 4 of the Appendix, borrowed from Vaillancourt (1988), gives us the average earnings for men and women by language group in Quebec for 1970 and 1980. The earnings differentials presented are gross numbers which means they take into account all the human capital attributes of an individual (schooling experience, language etc...). We notice that unilingual francophone men earn an average of $5136 in 1970, which is the lowest level of all linguistic groups (except for other allophones). Also, anglophone groups are the highest paid in 1970, whether they be men or women. The earnings differentials among women are much smaller than those observed for men indicating that since 1970, this was mainly a problem for francophone men. Finally, looking at the 1980 data for men, one notices the situation of unilingual francophones has improved and that bilingual francophones are now at the top of the earnings ladder.

Table 5 from the Appendix, borrowed from Bloom and Grenier (1991), gives data regarding differences between individuals of those French and English mother tongue in years of education and returns to education. This table covers the 1970-1985 period for Quebec as well as for the rest of Canada. Overall, whether one looks at the 25-64 or the 25-34 age groups, francophones had about 2 years less education as compared to anglophones in 1970. However, by 1985 the education gap had narrowed considerably, especially for the

younger age group within and outside Quebec. There seems to have been an increase in the level of education of francophones in Quebec, and a better use of it on the labour market by 1985.

The preceeding discussion of the trends in the data suggest that the situation in Canada is substantially different from that of the US. Indeed, in Canada the francophones were at an earnings disadvantage in the early seventies but have managed to rectify the situation a bit more than a decade later.

III) Empirical Results for the United States

In this section, we examine the research undertaken in the United States. The studies have been organized according the results found. We look at those that found that language proficiency affects earnings, and then at those that found the opposite. Finally, some more recent studies addressing issues such as labour mobility, ethnic enclaves and reading ability are presented.

A) Studies Finding That Language Proficiency Affects Earnings

Making use of the data obtained from the 1976 SIE, McManus, Gould and Welch (1983) include a "common set of variables" for their ordinary least squares (OLS) estimates.

Some of these variables are years of schooling, work experience (which is approximated because no direct data was available on this variable), experience squared and a residence indicator variable. Furthermore, a series of "special" variables (that are not necessarily included in all regressions undertaken) are used such as the number of years of foreign education, an estimate for foreign experience, a US nativity variable and finally ethnicity indicators.

The authors subsequently decided to construct a measure of English language deficiency and add it as a "special variable". Due to the large number of distinct response patterns that may arise from the answers to the SIE language questions, McManus et. al. decided to reduce them to a manageable number: "using interactive responses to these questions the authors identified seven groups that captured most of the information about wages in the SIE language questionnaire and that, at the same time, are arguably well ordered in terms of proficiency in English". (McManus et.al., 1983, p. 112) Finally, these seven groups are put in the form of a scalar index of English language deficiency (ELD).

In order to obtain the effect of ELD on earnings the authors established the following model:

Log Wage= Common Effects+ELD. Delta + Special Effects +Error,

where each of these terms have been defined previously. Regression estimates show that an individual belonging to

group 7, which is the least proficient, would have his wage reduced by 3.4 percent for each year of schooling and by 0.9 percent for each year of potential experience. Therefore, the traditional earnings advantage associated with additional years of schooling and on-the-job experience is reduced by an individual's ELD. Moreover, the estimates also show that "once ELD is taken into account the differentials in wages which are associated with Hispanic ethnicity, US nativity, schooling abroad, and time in the United States are no longer statistically significant." (McManus et.al.,1983, p. 121) The authors explain this finding by the fact that these special variables will indirectly affect wages through ELD. Regarding the method used by McManus et. al., Chiswick (1991, p. 152) comments: "what is less clear, however, is whether the analysis is reflecting the effects of the explanatory variables on the language categories or on the earnings weights". He argued that the way ELD was defined may lead to an eventual over-estimation of the language effect.

McManus (1985) tried to reevaluate the use of SIE questions in order to obtain new indicators of English fluency. The overall technique for measuring the costs of language disparity is the same as the one used in his previous article (with Gould and Welch), with some differences with respect to the variables included in the new English proficiency index. Indeed, the previous index was very general in the sense that it tried to include all the language

related questions. In this study, only two sets of questions are retained: the ability to speak and understand English and the personal languages spoken. As for the questions regarding household language, they were dropped. Again a scalar index for language ability is constructed. The number of groups in this study was reduced to four that vary from full English fluency to not well members. Then estimates were made to examine how much each of the three deficient groups would earn if they mastered English perfectly. The value-difference is then interpreted as the money wages lost due to lack of English fluency. Mc Manus writes: "This value per week ranges from $20.33 for the Very Well group to $39.32 for the Not Well group. Assuming a 50-week working year, I next compute the dollar value per year of English fluency by group. This ranges from about $1000 for Very Well to nearly $2000 for Not Well." (McManus, 1985, p. 825) Mc Manus concludes that English language deficiency still accounts for a major part of the wage differential between Anglophone men and Hispanic men.

Tainer (1988) starts her article by stating that she will also apply the human capital framework to explain earnings differentials among foreign-born men. She emphasizes the importance of English language proficiency (ELS) in this type of theory. Again the argument is made that inability to communicate in English will reduce worker productivity and this will be reflected in the form of lower wages. Having discussed the importance of including language proficiency as

a determinant of earnings, Tainer undertakes two separate regressions: the first where English language proficiency is excluded from the wage equation and the second where English language proficiency is included. This is done in order to show that omitting language proficiency from the earnings function causes some coefficients to be upwardly biased. The empirical model used is as follows:

$$LogW = BX + U,$$

where the log of annual earnings serves as a dependent variable, B is a vector of coefficients to be estimated, X is the vector of standard independent variables and U is the stochastic disturbance.

The author uses two measures of English language proficiency, both of which are based on the SIE. First, a measure called SPEAK which was based on the following question: "How well do you speak English?" The answers could range from not at all to very well and were coded respectively from 1 to 5. The second measure is called INDEX and incorporates three questions: "What language do you primarily speak? what language do you primarily speak at home? How well do you speak English?" The results from both these measures are somewhat different, "yet both show that language proficiency is related to earnings." (Tainer, 1988, p. 116). When one looks at the coefficients of schooling and years in the US resulting from a regression, that excludes language proficiency, one finds these coefficients to be larger than in

the subsequent equations that include language variables whether it be SPEAK or INDEX. The independent variable PRESKUL, which is an additional year of schooling acquired abroad, causes annual earnings to increase by 4.65 percent when SPEAK is taken into account. But when SPEAK is omitted from the equation, an additional year of schooling acquired abroad will increase earnings by 6.15 percent (upward bias). It is therefore clear that ELS is positively related to earnings and omitting such a variable will render biased estimates.

We notice that Tainer reaches results similar to those of the McManus et. al.study; that is to say, that language proficiency has a significant impact on earnings. However, running seperate regressions for people of different origin the ahthor finds that ELS "does not have the same impact on the earnings of European men relative to the earnings of foreign-born Hispanic or Asian men". (Tainer, 1988, p.118) If one examines the coefficients for the SPEAK and INDEX language variables it can be seen that they are smaller for European-born men from non-English speaking countries. Therefore, it is not as profitable for a European man to speak very good English as it would be for other foreign-born men. Indeed, for the European-born from non-English speaking countries, each unit increase in proficiency (SPEAK) will increase annual earnings by 12.7 percent, whereas for men of Hispanic ethnicity, the annual earnings will increase by 17.4 percent,

and for Asian-born men they will increase by 17.1 percent. On average, European-born men have a better proficiency in English (upon arrival to the US) than do Asian or Hispanic men. Attaining perfect fluency will yield smaller monetary rewards (for European-born) than for the latter two groups.

In the same vein, Tainer also examined the amount of money lost in annual earnings due to lack of perfect fluency. The estimates calculated show the difference in annual earnings between two identical men of a certain ethnicity when they have different language abilities. For example, the difference in annual earnings between two men of Hispanic ethnicity when one speaks English very well and the other not at all (with all other characteristics identical) is $5623. Men from Asian ethnicity seem to be the most hit because the lower the annual earnings of an ethnic group, the more costly it is for these individuals to lack English proficiency.

To sum up the findings of Tainer's research, we have on the one hand that ELS has a positive effect on annual earnings and is statistically significant. Therefore, omitting this variable will cause the estimated coefficients for schooling and experience to be upwardly biased. On the other hand, deficiency of spoken English will affect certain ethnic groups more than others.

The main critique one can raise against Tainer's study, like many others, is her choice of variables representing language skills (SPEAK and INDEX). Indeed, as we have seen,

the data obtained from the SIE asked individuals how well they spoke English. This data is quite subjective; people assessing their language abilities can be subject to personal bias. To remedy this problem, Rivera-Batiz (1990) uses test-based measurements of individual English language proficiency. The data set used comes from the 1985 National Assessment of Educational Progress (NAEP). The nationally representative survey (of persons 21 to 25 years old) provides scores on a reading proficiency test administered to each individual sampled, thus yielding objective, unbiased data. The study estimates human capital wage equations very similar to the ones in Tainer's article. However, these equations are estimated for male and female immigrants and second-generation individuals. The results from the study confirm once again that English proficiency is relevant in explaining the variance of wages among immigrants and second-generation individuals or, in the words of the author: "our analysis unequivocally suggests that English reading deficiency is a major factor constraining the wage opportunities of immigrants and may explain a substantial fraction of the relatively lower wages received by non-English speaking immigrants in the US." (Rivera-Batiz, 1990, p.299) It would therefore seem that a test-based measure of language proficiency has a greater impact on earnings than a self-assessed measure as in Tainer's article.

Grenier(1984) uses the SIE data to estimate equations

based on the human capital earnings function. The model used is very similar to the ones presented previously, that is to say, that the log of the wage is the dependant variable and it is regressed against a standard set of independent variables. The language ability measure was specified in different ways and subsequently included in the model. The first measure aims at examining language used to communicate with clients and co-workers on the job. Therefore, the most appropriate measure from the SIE would be the questions and answers related to an individual's ability communicate in English. In this case English speaking deficiency was chosen and it was found that wages were be negatively affected. A second measure of language ability was defined as the language usually spoken by an individual. It was found that usually speaking Spanish would negatively affect wages by 23 percent. A third measure consisted of the combination of the above two. However, "the cumulative effect of both is not significantly greater than the effect of either one." (Grenier, 1984, p. 46) Finally, the individual's mother tongue was used in a regression and this indicated that given time to adjust to labour market language requirements, speaking Spanish as a child would still adversely affect a person's wage by around 7 percent.

The author pushes his analysis a step further by decomposing the wage differential between Hispanic and non-Hispanic White males. Grenier writes: "of the 28.3 point

difference attributable to mean characteristics, more than one-third - 10.1 points - is due to the language handicap. The remainder is due to different endowments in the characteristics that are common to both Whites and Hispanics, with education accounting for the major share of the wage difference." (Grenier, 1984, p. 48) According to this result it would seem that most of the wage differential is explained by two variables, leaving very little place for the possibility of ethnic discrimination. This leads one to think that the discrimination by taste model is inapplicable to this study.

Now let us turn our attention to some empirical studies that find that language proficiency plays a marginal role in the explanation of earnings.

B) Studies Finding That Language Proficiency has Little or No Effect on Earnings

Reimers (1984) examines the estimated parameters of a wage function (which shows the impact on wages of given variables) while holding other characteristics of the individual constant. The data set used included the record of every male aged 14 or over who identified himself as being of Hispanic origin in the 1976 SIE. The survey identifies five major Spanish-origin groups which are Mexican-American, Puerto Rican, Cuban, Central or South American and "other Spanish". These groups are compared to Non-Hispanic White or Black men.

The log of the real wage rate is regressed against explanatory variables such as: education level, work experience in the US and abroad, place of birth, English fluency, race, government employment, US military experience and health disability. It seems that a lack of English proficiency does not significantly lower wage offers in all cases. Puerto Ricans and Cubans seem to be the most affected. If they were to attain very good fluency in English, their average wage would increase by 8 percent. Likewise, attaining full command of English would increase the average wage of Central and South Americans by 6 percent and "other Hispanic" men by 3 percent. For men of Mexican origin, language fluency makes almost no differences with respect to wages.

Likewise, Carliner (1980) uses data from the one in a hundred sample of the 1970 Census of Population. Again using the human capital framework, English is introduced as an explanatory variable along with a standard set of independent variables. Carliner writes: "it was expected that immigrants from English-speaking countries would have more human capital than other immigrants and therefore, second generation native English speakers would have higher human capital than other children of immigrants." (Carliner, 1980, p. 96) This proved not to be the case: none of the estimated coefficients for the language variables were found to be statistically significant.

The above two articles find little or no effect on earnings. In Reimer's article even though language is

included as an explanatory variable education is found to be a much more significant variable in the explanation of wage differentials. In Carliner's article, increases in formal education are also found to be important. However in this case, the data set used comes from the 1970 Census where ethnic minorities are grouped according to mother tongue. This may have lead to the unusual result regarding the language effects on earnings. Furthermore, Carliner's main objective was to show that recent immigrants and third generation have lower earnings than second generation individuals.

C) Recent Literature Complements

In this final section we propose to examine four more recent studies whose findings complement the literature surveyed so far. They undertake regressions similar to those of previous articles and they all find that language deficiency affects earnings of ethnic minorities. However, the results are presented in terms of negative labour mobility in the first study, in terms of ethnic enclaves in the second, in terms of reading ability in the third and in terms of supply and demand flows in the last study.

Kossoudji (1988) published an article using the 1976 SIE. All individuals sampled were men aged 20 to 64 participating full time in the labour force. The study estimates one equation for Asians and another for Hispanics in

order to compare these two major ethnic groups. Also, the author gathers all the occupations under six main groups from the most to the least productive: professionals; managers; clerical and sales workers; craft and kindred workers; operatives; and service workers and laborers. After defining an English language ability variable, the author tries to examine the effects of language deficiency on wages and the occupations in which individuals of a certain ethnic group tend to be clustered. "Generally, immigrants who do not speak English are pushed down the occupational ladder". (Kossoudji, 1988, p. 224) However, it would seem that the Hispanic job pattern differs from the Asian one. Indeed, Hispanic immigrants who are deficient in spoken English tend to be clustered into service and operative occupations where productivity is low and earnings potential is therefore significantly lowered. Asians, on the other hand, seem to have "maintained a high probability of managerial work where their earnings potential is much higher." (Kossoudji, 1988, p. 221) Deficiency in English did not push them out of managerial positions because they have managed to borrow funds from more wealthy established Asians and practice self-employment. These strong links within ethnic enclaves gave Asians the possibility to avoid certain areas where their earnings could be affected by English deficiency. Immigrants of Hispanic ethnicity were not as fortunate to find such an established support system; consequently, their possibilities

for self-employment and the benefits of managerial work. Nonetheless, a number of Asian immigrants must also move toward service work because of their lack of spoken English. Kossoudji concludes that, by improving their English language abilities, immigrants would stand to lose less with respect to wages, and they would be able to make better use of their already existing human capital.

In 1990, McManus published another article, this time regarding the effects of language enclaves. An enclave is defined as a voluntary grouping of individuals sharing similar characteristics such as language and ethnicity. The 1980 U.S. Census of population is used to show the relation between Hispanic men's English fluency and the enclave size. To measure the size of a Hispanic enclave, the author uses the percent of persons in a county group who are of Spanish origin. It is found that knowledge of English will decline the bigger the enclave. Also, the preliminary data indicates that the more Hispanics there are in a certain county or geographic location, the better are their chances of increasing their occupational opportunities whereas, in areas of lower concentration, Hispanic men tend to be pushed down the occupational ladder into menial, non-verbal jobs.

As in all previous studies, a non-linear regression is undertaken to examine the earnings impact of ethnic enclaves. The regression results show that English proficiency makes human capital elements such as schooling and work experience

more valuable salary - wise for Hispanic men. Also, "the estimates indicate that returns to English fall at a decreasing rate as the county group's Hispanic population increases, and that returns to English rise at a decreasing rate as its non-Hispanic population increases". (McManus, 1990, p. 249) Therefore, it can be interpreted that ethnic enclaves will cushion or reduce the losses associated with deficient English for new immigrants. They will also act as a temporary transition station in order for newcomers to fully adapt to their new economic environment.

Chiswick (1991) undertook a study to fill certain gaps within the literature. Indeed, since the SIE does not contain data on English speaking proficiency at the time of immigration it is difficult to follow the evolution and improvement of this variable over time. "Furthermore, the research has not been able to resolve the issue as to whether speaking ability is sufficient or whether the speaking variable is reflecting some of the effects of an important unmeasured variable with which it is correlated, fluency in reading English" (Chiswick, 1991, p. 153). The author used survey of illegal aliens apprehended in the Los Angeles area which contains data on both of the above points. The sample is composed of 836 males, most of which are Mexicans.

The results of the earnings regression show that "reading skills dominate speaking skills" (Chiswick, 1991, p. 166). This indicates the importance of being able to properly read

and write English in order to pierce the US labour market. It was found that speaking and reading fluency improve with duration of residence in the US, and for those with more schooling the improvement is even greater. Finally, Chiswick reports that Hispanics have lower reading fluency than other aliens, which may reflect the negative influence of living in language minority enclaves. This view is opposed to that of McManus who regards language enclaves as being a positive influence on the earnings of immigrants.

A final noteworthy study is the one by Bloom and Grenier(1991) who try to see if a common economic framework can explain wage differentials of various linguistic minorities in different countries. Indeed, English is the major labour market language in both Canada and the United States. However, the linguistic minorities (French in Canada and Spanish in the US) differ in three main ways: in the US the Spanish speaking minority is largely an immigrant group whereas in Canada, the French-speaking are not; in Canada francophones are a majority in the province of Quebec,but in no State in the US are hispanophones a majority; and French is an official language in Canada, while Spanish is not in the US.

The framework used is the interaction of supply and demand for language skills. This interaction will determine wage returns. In Canada there has been a reduction of the earnings differentials between francophone and anglophone men

from 1970 to 1980. This could be due to an increased demand for French workers mainly in Quebec while the supply of francophones remained fairly stable over the same decade. In the US, due to a constant flow of Spanish- speaking immigrants, their relative supply remained high thus causing the earnings gap between Spanish and English speakers to remain high during the 1970's and 1980's.

It is clear that English language deficiency does have a negative impact on earnings. However, the extent to which this latter variable is affected remains undetermined. We have seen that most of the data used come from the 1976 SIE, but there are so many ways in which one can construct a measure for English language deficiency and integrate it in a regression that the results yielded are quite different. As far as the theoretical predictions are concerned, only the human capital model has been systematically used and verified; however, the empirical evidence does not contradict any of the other theories. For a clear overview of this section, table 6.1 of the Appendix, borrowed from Bloom and Grenier (1991), summarizes the major findings of the studies presented.

We will now turn our attention to Canadian empirical studies most of which are conducted within the province of Quebec since it seems to be the only place where substantial earning disparities among linguistic groups have occurred.

IV) Empirical Results for Canada

Even though Canada and the US are neighbouring countries, they have experienced different immigration patterns. Most of the Hispanic or Asian immigration to the US has occured fairly recently, whereas the francophones in Canada and more specifically in Quebec have been here for more than 300 years.

The Canadian context, and particularly the province of Quebec, is quite unique. In order to fully comprehend the wage differentials that arose between francophones and anglophones, it is important to take a close look at the evolution of the Quebec economy and more precisely at the ownership of firms. Therefore, unlike our presentation of the US studies, where firm ownership is not a major explanatory element, we have decided to devote a section to deal with this issue before examining the Canadian empirical findings. Raynauld, in his seminal 1974 book, addresses the fundamental question regarding the nationality of entrepreneurs and its repercussions on the economy of Quebec. Indeed, if there is a lack of native businessmen, foreign businessmen will be "imported", which means an increased presence of subsidiaries. The greater this foreign presence, the more it will stimulate nationalism because "French-Canadians are preoccupied with their participation as a group in the political, economic, social and cultural decisions of their country." (Raynauld, 1974, p. 12 translated from French) To study the question of

the nationality of businessmen we will first examine the arguments and facts put forth by Raynauld, and then we will look at how the situation has evolved over a crucial 17 year period (from 1961 to 1978).

A) The Evolution of Entrepreneurship in Quebec, 1961-1978

Raynauld begins by establishing three categories of firms: those controlled by French-Canadian businessmen, those controlled by English-Canadian businessmen and those under foreign control (mainly US). This classification enables the author to better evaluate the importance of French-Canadian firms in Quebec. Raynauld uses two general criteria to determine the category of a firm. First, the ethnic origin and the language used by the board of directors is determined by their names. In general, if the board of directors mostly have anglophone sounding names, then it assumed that the owners of the firm are English-Canadian. Second, in order to distinguish between firms under foreign control and those under English-Canadian control, if at least 50 percent of a firm's assets are owned by non-residents, then it is considered a foreign firm. Finally, to determine the importance or the size of an establishment, Raynauld uses the sales of the firm or its number of employees.

The author finds that there seems to be a relation between the size of firms and the ownership of the firms. For example, French-Canadian businessmen tend to own smaller

firms. Also, one can note that French-Canadian firms or establishments are clustered in labour-intensive industries, where a unit of production requires a lot of labour such as in agriculture, services, small commerce and construction. As for English-Canadian and foreign firms, they are proportionally represented in all sectors.

The study subsequently limits its scope to the manufacturing sector, with the size of a firm being determined by the value added. It seems that French-Canadian businessmen have trouble adjusting the size of their firms in accordance with the industry in which they operate and evolve. The statistical data show that the foreign group is clustered in high productivity industries. Also, foreign firms are almost twice as productive and efficient as French-Canadian firms. Raynauld writes: "If French-Canadian firms have low productivity, it is primarily because they are insufficiently productive within the industries in which they operate; and secondly because they are clustered in industries where productivity is generally low." (Raynauld, 1974, p.97) Low productivity is usually associated with low earnings. Raynauld found that the French-Canadian group is mainly constituted of low salary firms whereas the other two groups are more clustered in high salary industries.

Export data,provide further support for the above ideas. The foreign group leads with 51.5 percent of total manufacturing exports of the province. The English-Canadian

group of firms comes in second with 44 percent of these exports and the French-Canadian group was at 4.5 percent of total manufacturing exports. In order to have a certain export capacity, the firms must be efficient and of a certain size, which was clearly not the case for French-Canadian establishments in the 1960's.

The regional distribution of firms is another good indicator of size and strength. In the metropolitan area of Montreal, firms owned by the anglophone group are largely dominant compared with the very limited presence of French-Canadian firms. The foreign group is also present outside metropolitan areas in order to exploit natural resources; however, the French-Canadian businessmen, not having been able to capture part of the export market, must establish their firms outside the Montreal region. This again is an unfavourable position for the French-Canadian group due the small size of markets outside the main metropolis.

Finally, Raynauld comments on the performance of firms. In general, it seems that foreign firms are larger in size relative to Canadian firms, and their value added per employee is also larger. The author writes that: "the nationality of firm owners is an independent variable intimately related with economic performance and if a transfer of ownership is undertaken from one group to another, this would definitely have an incidence on performance indicators." (Raynauld, 1974, p. 120).

Since Raynauld published his book, important changes have come about in the economy of Quebec and more specifically to the ownership of firms. In 1978, Raynauld and Vaillancourt published a book depicting the evolution that has occurred over the 60's and 70's. The new study contains the same industries and sectors as the previous one, but it depicts the increased French-Canadian ownership and control since the beginning of the "Révolution tranquille". In 1978, 31.2 percent of jobs were in anglophone-dominated firms whereas, in 1961, the rate was at 39.3 percent of the Quebec labour force. This fall on the English-Canadian side can be explained by gains made on the francophone side:its control of 47.1 percent of the labour force in 1961 to 54.8 percent in 1978. As for the foreign groups' control, it has not changed over the 17 year period.

The gains of the French-Canadian group are apparent in almost all of the industries of the study. We will only point out those industries in which the French presence has undergone substantial increases. The manufacturing industry had 21.7 percent of its labour force under French-Canadian control in 1961, but 27.8 percent in 1978; for construction the numbers are 50.7 percent of the labour force in 1961 to 74.4 percent in 1978, and the financial sector almost doubled with 25.8 percent in 1961 and 44.8 percent in 1978. On average, French-Canadian ownership over the whole economy has increased by half a percent each year.

The improvement of the francophone position within the province of Quebec brings forth an obvious question: what caused these observed changes over time? Throughout the second half of the 1970's, Toronto started its expansion to become the largest Canadian city, thus forcing Montreal to redefine its place. During the same time, the Quebec government implemented several bills and laws such as Bill 101 (1977) aimed at increasing the use of French in the private and public sectors. Many unilingual anglophone males who were very highly paid saw in Toronto a place to make important economic gains and, therefore, there was a large out-migration. Indeed, Shapiro and Stelcner put forth the same idea by writing: "according to Statistics Canada, between 1976 and 1981, Quebec experienced a net out-migration of people aged 20-64 of 96980 of whom 70035 had English as their mother tongue." (Shapiro and Stelcner, 1987, p. 100) This corresponds to the phenomenon of territorial polarisation because anglophones derive more cultural affinities in living in Toronto where they are surrounded by a majority of anglophones.

On the francophone side, there is "la Révolution tranquille" which included educational reform. Progressively, francophone workers achieved higher levels of education; there was an increase in the number of Accounting, Administration and Economics degrees they held. This new generation of business-oriented francophones has, on the one hand, increased

its presence in managerial positions and, on the other hand, fostered a new entrepreneurial spirit. This last point also explains the surge of new firms and enterprises owned and controlled by francophones.

B) Findings of Selected Research on Earnings

After having examined the evolution of firm ownership in Quebec, one can already get a general idea regarding the results of empirical studies on earnings of different linguistic groups. Indeed, during the 70's, francophones seemed to be clustered in low productivity industries; therefore, their earnings were lower than those of anglophones. This situation seems to have slowly evolved to correct itself during the next decade. In Canada, unlike the United States, most empirical findings agree with respect to the effect of language and language transfers on earnings. For this reason, we will not use the same approach as for the US studies. Instead, the chronological order in which the research was done will be followed to show the evolution of the literature over a decade. During the first half of the 80's, the empirical work was based on data from the 1971 Census, thus it yielded results that indicated an earnings disadvantage associated with French on the labour market. Most research undertaken during the latter part of the 80's used both the 1971 and 1981 Censuses, revealing the evolution of earnings by linguistic groups.

In 1979, Veltman, Boulet and Castonguay published a short

article using data from the 1971 Census of Canada. A multiple regression equation with earnings in dollars is estimated. The results of the regression give the difference in income of a certain language group with respect to the mean income for the sample as a whole. The authors find that: "bilingualism commands a premium for every group when compared to their unilingual counterparts, with the exception of persons who move from English mother tongue to French home language... and linguistic movement toward English is associated with higher incomes than is linguistic movement toward French". (Veltman et al., 1979, p. 476) Also, a distinction is made between acquiring a second language and using it at home (integrative bilingualism) and acquiring that second language while preserving one's mother tongue (retentive biligualism). This article seems to confirm the imperfect information theory presented in the first part of the paper. Indeed, those individuals opting for integrative bilingualism towards the anglophone community benefit from higher income in the Montreal area. As we have seen in the previous section, the English-Canadians were firmly established in the Montreal metropolitan area's private sector and, therefore, informal networks and social ties appear. Transferring and integrating into these networks ultimately translates into higher earnings. Even though it cannot be confirmed, it would seem that the discrimination theory, which is closely linked to the network theory, is also verified by the earnings differentials

found between language groups with English as a mother tongue and those with French as a mother tongue.

In his 1981 article, Carliner used data from the 1971 Canadian Census to determine wage differences across Canada. Again earnings regressions are estimated for men, with the hourly wage as the dependent variable and a standard set of explanatory variables with the language spoken at home used to define eight language groups. The study undertakes four different regressions for Montreal, Quebec, Toronto, English Canada and one for the country as a whole.

Carliner obtains the same result as Veltman et.al. with regards to the Montreal area. Indeed, monolingual English speakers have the highest wages, followed by native English speakers who are bilingual. There was a monetary advantage to learning English for the other language groups at the bottom of the wage ladder such as monolingual francophones and allophones who speak no official language. There are no such advantages to learning French for anglophones. In Quebec outside the Montreal area, the situation was not found to be substantially different, although native bilingual anglophones earned the most followed by monolingual anglophones. As for the regression undertaken for English Canada geographical location , French speakers were found to earn less than English speakers. However, Carliner notes that "it is curious that the wage difference between French and English native speakers outside Quebec was smaller than the difference in

that province." (Carliner, 1981, p. 394)

Carliner found that different levels of education is the main factor that can explain wage differentials among the various linguistic groups across Canada. In response to this situation, the Quebec provincial government has increased its demand for French speakers in governmental positions and has created policies to discourage the use of English in the private sector. As for the federal government, policies aimed at increasing French language training for their civil servants were implemented, more bilingual workers were recruited and services in French were increased.

Shapiro and Stelcner (1982) have tried to stress an important aspect regarding the role of gender thus far mainly ignored in the literature. Indeed, it is found that managerial positions are mainly occupied by anglophone males; however, it is very rare to find females in such positions whether they be anglophones or francophones. Women are mostly clustered in clerical positions.

In light of the above, the results of their regressions are not surprising. As the previous studies have found for males within the province of Quebec, unilingual anglophones earn the most, and unilingual francophones earn 19 to 22 percent less. With regards to females, all of the estimated coefficients for the various linguistic groups are not statistically different from zero except for unilingual francophones, and even then, the earnings differential with

the reference group (unilingual anglophones) is less than that for males. Shapiro and Stelcner suggest that this situation was due to the inflow of highly educated and highly paid anglophone males in managerial positions in the private sector. "The problem for women...is that they are crowded into low paying occupations, where linguistic skills are less important, and hence they earn less than men. This crowding effect cuts across linguistic lines". (Shapiro and Stelcner, 1982, p. 112) The authors therefore argue that legislation such as Bill 101 is more likely to benefit highly educated francophone males than females, regardless of which linguistic group they belong to. Shapiro and Stelcner conclude that such legislation must be implemented simultaneously with policies aimed at improving the occupational distribution of women on the labour market.

Using the 1979 survey by Quebec's Conseil de langue française, Grenier (1985) analyzes the effects of language endowments on the earnings of francophone and anglophone men and women. Throughout the study, estimates for women are usually inconclusive, because of selection bias in the data as well as inaccurate measures of their working experience; most of the conclusions will therefore apply to men.

The first regression is undertaken for francophone as well as anglophone men. It is found that both groups' earnings are similarly affected by their linguistic endowments. This result shows that there has been evolution

on the part of francophones over the seventies. We will come back to this point in more detail when presenting subsequent and more recent studies. Another result of the initial regression is that bilingual individuals earn more than unilingual counterparts regardless of which linguistic group is considered. The author then estimates earnings regressions for anglophones and francophones separately. The similarity in earnings found previously disappears. For a French speaker, being bilingual will yield a 6 percent earnings advantage over a unilingual francophone and transferring to English as the usual language spoken at home increases earnings by 20 percent. "For anglophone men on the contrary, neither bilingualism nor linguistic transfer will significantly affect earnings". (Grenier, 1985, p. 252 translated from the French) Grenier concludes, like all the authors we have examined so far,that an investment in learning English still seems to yield greater income than the same investment in learning French in Quebec.

Grenier co-authored another study with Lacroix in 1986 which was intended to fill a serious gap in the literature. Indeed, all the studies discussed so far have concentrated on earnings differentials in the Montreal metropolitan area and the rest of Quebec. The Ottawa-Hull area should also be considered because of the important presence of the federal government. The authors decided to use data from the 1981 Canadian Census to estimate earnings regressions for men only

in the national capital region.

The results show that anglophone workers earn on average 15 percent more than francophones. One possible explanation for this situation is that anglophones seem to have higher levels of education and they also utilize it more effectively because they are better integrated in job information networks. Learning French for English speakers yields monetary rewards, but the same is not true for French speakers with regards to English. The authors note that this is due to the small number of unilingual francophones in Ottawa. As was mentioned previously, the presence of the federal government and its policies reinforcing bilingualism explains why anglophones gain more by becoming bilingual since most francophones are already bilingual. Finally, the authors conclude with a comparison over time: "the state of earnings differentials in the Ottawa-Hull region in 1980 is similar to that of Quebec in 1970. The unilingual anglophone earns more on average than a bilingual francophone. Therefore, there remains some catching up to do with respect to this situation in the Ottawa-Hull area". (Grenier and Lacroix, 1986, p.381)

In 1987, two very interesting and complementary studies were published, one by Grenier and the other by Shapiro and Stelcner. Grenier's article analyzes the characteristics of individuals who have decided to emigrate from Quebec and the earnings of those who stay. The Shapiro and Stelcner article concentrates more on the evolution of earnings disparities

among the various ethnic groups or language groups. Indeed, they find that in 1970 unilingual francophone males earned 21 to 25 percent less than unilingual anglophone males whereas in 1980, this gap was reduced to 5 percent. With regards to bilingual francophone males, earnings differential with the reference group (unilingual anglophone males) disappeared. The authors note that this remarkable improvement in the francophone situation is largely due to an outflow of emigrants during the second half of the 1970's. Both articles found that most migrants were unilingual anglophones "in managerial, administrative and related occupations" (Grenier, 1987, p. 788).

Some of the legislation put in place in 1977 was designed to increase the use and importance of the French language on the job market. Grenier's article complements Shapiro and Stelcner's by analyzing in more detail certain variables that affect migration. He finds that the younger an individual, the easier it will be for him or her to relocate; similarly, the more educated a person, the more mobile they are. Likewise, bilingual anglophones are more likely to stay in Quebec than their unilingual counterparts, and those anglophones born outside Quebec are the most likely to leave. It is clear that French has gained considerable importance over the decade and knowledge of it is now rewarded. Shapiro and Stelcner summarize the evolution of the French ethnic group by writing: "The improved relative earnings position of

francophone males is apparently the combined result of an increase in the demand for people who speak French both in the public and private sectors, improved education levels of francophones, a reduction in the external recruitment of anglophones, the departure of anglophones and the exodus of corporate head offices." (Shapiro and Stelcner, 1987, p. 100)

The above conclusions apply mainly to males in Quebec. For women it seems that the earnings gap during the seventies and eighties was not as significant as it was for men. This can be explained by the fact that women seemed to be largely excluded from the high paying jobs that the unilingual anglophone males occupied as previously noted by these authors in 1982. Therefore, the laws aiming at increasing the francophone presence in such jobs did not have the same impact on women as they did on men. Due to the fact that women have mainly remained in traditional stereotyped jobs, even though they have increased their level of qualifications , women have not been paid commensurately.

Another group of people who still face earnings differentials are the allophones, individuals whose mother tongue is neither English nor French. It seems that the allophones who speak only French are paid less than the allophones who speak only English. The allophone situation has not tremendously improved from the 1970's to the 1980's. Indeed, Shapiro and Stelcner clearly state that "the remaining earnings disadvantage of unilingual francophone males in the

total sample may be caused by the lower earnings of immigrants from countries in which French is widely used." (Shapiro and Stelcner, 1987, p. 100) It is therefore clear, that the laws in the 1970's have produced the desired effects with respect to the improvement of earnings of the unilingual and bilingual francophone males. However, future Quebec laws and policies should be aimed at improving the situation of ethnic minorities and women in the labour market.

In 1988, Grenier published an article specifically aimed at examining the earnings of married women only, from various language groups. Using data from the 1981 census, he estimated equations that yield similar results to those previously obtained by Shapiro and Stelcner. In general, language variables do not have a significant impact on earnings. Married allophone women seem to have the highest earnings followed by anglophones and francophones. However, the differences between groups are relatively small. It is also found that linguistic knowledge affects participation in the labour market. More precisely, bilingual anglophones and francophones are more likely to be in the labour market than their unilingual counterparts.

Chiswick and Miller (1988) wrote an article in which they treat in sequence the roles of immigrant generation, French ethnicity and language. Using both the 1971 and 1981 Censuses, they estimate earnings regressions for men in Canada. Again their results confirm previous findings

regarding the earnings position of language groups. The authors write: "the disadvantage from being of French ethnic origin or of being monolingual French speaking clearly declined or disappeared over the decade, while the advantage of being a monolingual English speaker also declined and disappeared during this period." (Chiswick and Miller, 1988, p. 205) Another evolution that occurred over the decade was in the returns to bilingualism. Indeed, bilingual individuals earn on average 4 percent more than monolingual French Canadians in Quebec or than monolingual English Canadians outside Quebec. This type of empirical study indicates that the legislation implemented by the Quebec government has helped to reverse the situation of disadvantaged francophones in a very short period of time.

Finally, we will briefly discuss Vaillancourt's book, also published in 1988. The study is very complete and quite detailed, and it includes a lot of the results previously found in the literature. The author examines the effects of language attributes according to age groups, education levels, occupations and industries for men and women separately. The results show that earnings differentials strictly arising from language attributes are much smaller than observed average wage differences among the various language groups. Vaillancourt also writes: "in 1980, there are almost no returns to knowing English compared to high returns for the same individual in 1970." (Vaillancourt, 1988, p. 158

translated from the French) This conclusion is valid for men as well as for women in Quebec and brings to mind a brief yet powerful sentence written by Shapiro and Stelcner: "there has been a normalization of the Quebec society in the sense that, for the most part, francophones are no longer a disadvantaged majority." (Shapiro and Stelcner, 1987, p. 101)

Again, table 6.2 from the Appendix, borrowed from Bloom and Grenier (1991), gives a summary of the major findings in the Canadian literature.

SUMMARY AND CONCLUSION

From the theories presented in the first part of the paper only the effects on earnings within the human capital model have been systematically tested. With regards to the discrimination and the imperfect information models, it is more difficult to monetarily quantify the losses incurred. Attempts to verify the discrimination model were made by Grenier (1984) and the results supported the theory. By examining the empirical findings we can see that the imperfect information model or the network theory as it is also called is true. This is very visible in the case of Quebec, when one looks at a firm's ownership and the linguistic composition of the top administrators of that same firm. As for the supply and demand interaction model, it largely depends on labour mobility as well as possible government interventions to

stimulate demand.

The data used in both countries is based on respondents' self-assessment of their language abilities. For US studies, the 1976 SIE has used especially the questions regarding English speaking fluency. By contrast, the 1971 and 1981 Canadian Censuses both include a question on an individual's mother tongue, which was commonly used by researchers because of its exogeneity. Although Canadian data is more consistent and, permits comparison over time, it is important that future censuses in both countries include previously asked questions on English fluency and new ones on reading ability.

In the US, it seems that the earnings of Hispanics are negatively affected by English language deficiencies. Asians are also affected by this problem but to a lesser extent due to an already well-established ethnic social net that facilitates the transition for newcomers. In any case, a sizeable number of studies have found that earnings were significantly affected by language inaptitudes. Some more moderate results say that language variables can account for up to one third of the earnings differentials. On the other hand, some researchers have found that language variables are not statistically significant in the explanation of earnings. More recent studies have concentrated on the role of reading ability (Chiswick, 1991). This is an important element since not all jobs are manual - quite a few require reading and writing skills. However, as we have mentioned, due to the

lack of appropriate data research in this area has been limited. Ethnic enclaves and their impact on immigrants have been examined, yet views remain mixed on the contributions of such social gatherings.

The discrepancies in the US findings can be explained by the fact that different authors have used different research methods. These methods vary in three main ways. First, some studies see if an individual's mother tongue is the same as the dominant language of the labour market. In other studies, researchers may use an individual's speaking or reading ability and these language skills can either be self-assessed or measured objectively with the use of tests. Second, in the context of the human capital theory, different human capital explanatory variables are held constant in order to examine the contribution of language competence to wages. Third, studies also vary with respect to gender groups - some are just about men or women or both. The studies also vary in geographic scope: some are national while others are regional. Some refer to different time periods while others refer to different linguistic groups. With the recent economic developments regarding the NAFTA agreement, and future trade prospects with Latin America, the Spanish presence or supply of workers will continue to be increasingly felt in the United States. Very rapidly , the Hispanic ethnic community will become the largest in the US, surpassing the black community. It is important for the US labour market to assimilate these

newcomers and to use their full human capital potential. Therefore, the presence of ethnic enclaves could be an instrument to facilitate this process as long as it is temporary, and free government language improvement courses should be another instrument envisaged to reduce this problem.

In Canada, most of the empirical evidence agrees that in the early seventies, unilingual anglophone men were the highest paid linguistic group in Quebec. Also, unilingual francophones men were one of the lowest paid groups. There were monetary rewards for allophones or francophones to learn English but the reverse was not true in 1970. By the early eighties, the relative position of francophone males had improved considerably. Unilingual anglophones were no longer at the top of the earnings scale; bilingualism had a positive monetary return. This improved situation, which did not occur for Hispanics in the United States, can be explained by an increased demand for the French language on the Quebec labour market while the supply of francophone workers remained stable over the decade (1970-1980). Indeed, some provincial laws have changed the patterns of in and out-migration, and a better level of education and the departure of corporate head offices have all contributed to the "francisation" of Quebec. As for the rest of Canada outside Quebec, the linguistic earnings differentials are not an important issue since the francophone population is quite limited in these areas. For women, the situation is different since language variables do

not significantly affect their earnings. Being concentrated in clerical occupations, language legislation has not contributed to improving their earnings. The real problem for women is more of a gender earnings differential than a linguistic group earning differential. Finally, ethnic minorities still remain at an earnings disadvantage which is the same problem faced by Hispanics and Asians in the United States. This could be due to lower levels of education, lower proficiency in French or in English, pure and simple discrimination or a combination of these factors. In any case, the Quebec provincial government must shift its attention towards these persisting inequalities and try to resolve them.

Since most authors use the human capital framework, it is clear that language ability should be included as an explanatory variable. Disregarding language variables would only lead to biased coefficient estimates. Furthermore, since Canada and the United States are both immigration countries, and since newcomers seem to earn less due in part to language deficiencies, it is important that further research be conducted with respect to the functional role of ethnic enclaves as a transition phase towards the integration of migrants into their new labour market.

Appendix

TABLE 1

Rankings Among Foreign-Born Men by Country of Birth

Annual Earnings	Years of Schooling	English Proficiency (SPEAK)	Years in the U.S.
1.Scandinavia	Korea	England	Canada
2.England	Japan	Germany	Germany
3.Germany	Germany	Scandinavia	Poland
4.France	England	Canada	Russia
5.Korea	Scandinavia	France	England
6.Canada	France	Other	Other
7.Other	Vietnam	Other U.S .Terr.	U.S.Terr. France
8.Poland	Other	N.A.	Puerto Rico
9.China	China	Poland	Italy
10.Japan	Other U.S.Terr.	Philippines	Scandinavia
11.Philippines	Canada	Japan	Philippines
12.Italy	Poland	Russia	Mexico
13.Greece	Russia	Greece	Greece
14.Russia	Philippines	Italy	China
15.N.A.	N.A.	Puerto Rico	Other
16.Cuba	Cuba	China	Japan
17.Other U.S.Terr.	Greece	Vietnam	Cuba
18. Portugal	Italy	Korea	Portugal
19. Mexico	Puerto Rico	Cuba	Korea
20. Puerto Rico	Mexico	Mexico	N.A.
21. Vietnam	Portugal	Portugal	Vietnam

Source: U.S. Department of Commerce. Bureau of Census, SIE 1976. Borrowed from Tainer (1988).

TABLE 2

Distribution of Earnings by Primary Language Spoken Among Foreign-Born Men

	Under 5,000	$5,000- 9,999	10,000- 14,999	15,000- 19,999	20,000- 24,999	25,000- 34,999	35,000- 49,99	50,000+	Total
English	16.0%+	23.7%	27.3%	15.7%	7.8%	5.8%	2.3%	1.3%	2,231
European	22.1	39.6	27.4	7.0	2.4	1.0	0.2	0.2	412
Spanish	34.9+	42.6	16.2	3.9	0.8	0.4	0.3	0.9	746
Asian	34.6+	27.9	21.0	9.2	2.9	2.9	1.1	0.4	272
Other	27.0	28.9	22.0	13.2	4.4	2.5	1.9	0	159
N A.	16.4	24.4	22.5	14.5	9.2	7.4	3.8	1.9	476
Total	21.5	29.0	24.3	12.2	5.8	4.3	1.9	1.1	4,297
Native-born Men	18.0	21.8	29.1	16.3	7.2	4.6	1.8	1.1	90,590

SOURCE: 1976, SIE, borrowed from Tainer (1988).

TABLE 3

Descriptive Statistics for Males Aged 25-64 with Positive Wages in 1975, Hispanics by Childhood Language and Place of Birth, and Non-Hispanics

		Hispanic Males				
		Childhood Language		Place of birth		Non-Hispanic White Males
	Total	Spanish	English	Outside U.S Mainland	On U.S Mainland	
	Mean (Standard Deviation)					
Hourly wage($)	4.96 (3.07)	4.84 (3.08)	5.66 (2.92)	4.62 (2.85)	5.28 (3.30)	6.52 (4.08)
Years of education	10.0 (4.3)	9.6 (4.3)	12.6 (7.2)	9.3 (4.5)	10.7 (3.9)	12.6 (3.1)
Years of experience	23.5 (12.0)	24.3 (12.0)	18.7 (11.0)	24.5 (11.4)	22.6 (12.6)	23.6 (12.5)
	Proportion					
Region						
North East	.185	.200	.091	.324	.051	.242
North Central	.083	.082	.089	.099	.067	.299
South East	.078	.078	.074	.121	.036	.208
W. So. Central	.226	.236	.169	.123	.326	.086
West	.429	.404	.577	.333	.520	.165
Marital status						
Married, spouse present	.788	.796	.740	.781	.796	.815
other	.212	.204	.260	.219	.204	.185
Veteran status						
Veteran	.323	.287	.547	.135	.504	.570
Nonveteran	.677	.713	.453	.865	.496	.430
Health status						
Health impairment	.084	.087	.068	.059	.109	.102
No health impairment	.916	.913	.932	.941	.891	.898
English speaking deficiency	.399	.463	.	.622	.186	.
Usually speaks English only	.201	.091	.869	.053	.342	.
Usually speaks English and Spanish	.337	.374	.113	.274	.398	.
Usually speaks Spanish	.462	.535	.018	.673	.260	.
Spoke Spanish as a child	.860	1.000	.000	.986	.738	.
Sample size	2428	2009	419	938	1490	5970

SOURCE: 1976 SIE, borrowed from Grenier (1984).

TABLE 4

Average earning, Quebec, Men and Women, 1970 and 1980

	Men		Women	
Linguistic Group	1970($)	1980($)	1970($)	1980($)
Unilingual Anglophones	8171	17635	3835	10271
Bilingual Anglophones	8938	19562	3956	10759
Unilingual Francophones	5136	14408	3097	8801
Bilingual Francophones	7363	19547	3842	11195
Anglophone Allophones	6462	15637	3329	9753
Francophone Allophones	5430	13287	3241	8191
Bilingual Allophones	7481	17946	3881	10868
Other Allophones	4229	10003	2343	7539

SOURCE: 1971 and 1981 Censuses, borrowed from Vaillancourt (1988).

TABLE 5

Differences Between French and English Mother Tongue in Years of Education and Returns to Education, for Males by Linguistic Region in Canada: 1970, 1980, 1985

	Age group 25-64			Age group 25-34		
	1970	1980	1985	1970	1980	1985
Quebec						
Return to education	-.009	-.003*	-.004*	-.008*	-.010*	-.002*
years of education	-2.2	-1.5	-1.9	-1.9	-1.0	-0.5
Rest of Canada						
Return to education	-.016	-.004*	-.018	-.013	-.009*	-.030
years of education	-1.9	-1.5	-1.5	-1.5	-0.9	-0.6

* The coefficient is not significantly different from zero at the 95 per cent level.

SOURCE: Canadian Censuses, 1971, 1981 and 1986; public use samples, individual files. Borrowed from Bloom and Grenier (1991).

TABLE 6.1

Summary of Studies on the Effects of Language Ability on Earnings

U.S. Studies

Study	Data and description	Major findings
Carliner (1980)	1970 Census. Wage and earnings regressions are estimated for men of various ethnic groups. A dummy variable for non-English mother tongue is included among the regressors.	There is no significant mother tongue effect on wages or earnings.
McManus, Gould, and Welsh (1983)	1976 SIE. Earnings regressions are estimated for Hispanic men. An index of language constructed from the various language questions available in the SIE. The index weights are estimated on the basis of their effect on earnings.	Language explains virtually all observed Hispanic wage differentials. This appears to be the result of the authors' definition of the index of language ability, which is based on endogenous weights. This procedure may overestimate the effect of language.
Reimers (1984)	1976 SIE. Earnings regressions are estimated for men in the various Hispanic groups (Mexican, Puerto Rican, Cuban, Central and South American, Other Hispanic). A dummy variable for not speaking English very well is included in the regressions.	There is no significant effect on earnings of not speaking English very well.

Grenier (1984)	1976 SIE. Wage regressions are estimated for Hispanic men. Various measures of language ability are defined and included in alternative specifications of the model.	Overall, language variables are important and account for approximately one-third of the earnings differentials between Whites and Hispanics.
McManus (1985)	1976 SIE. Earnings regressions are estimated for Hispanic men. An index of language ability is defined, with endogenous weights as in McManus et al. (1983). The variables included in the index, however, are different.	The author estimates that the cost of English deficiency is between $1000 and $2000 a year (in 1976 dollars).
Kossoudji (1988)	1976 SIE. Earnings and occupation choice are modeled simultaneously for immigrant men with various language skills. A simple measure of language ability is included in the regressions.	Immigrants who do not speak English are "pushed down" the occupational ladder.
Tainer (1988)	1976 SIE. Earnings regressions are estimated for foreign born men. A simple index of English language proficiency is defined.	The effect of English language proficiency is significant, particularly among Hispanics and Asians.
Chiswick (1990)	1986 Survey of illegal aliens apprehended in the Los Angeles area. The sample is composed of about 800 males, most of whom are Spanish speakers. Independent variables used in earnings regressions	Reading ability is more important than speaking ability in the explanation of earnings.

Chiswick (1990) continued	include a measure of speaking and reading ability at the time of the survey and a measure of speaking ability prior to coming to the U.S.	
McManus (1990)	1980 Census. Earnings regressions are estimated for Hispanic men. To assess the importance of Hispanic enclaves the author includes the local proportion of Hispanics and the local proportion of Hispanics who speak English as independent variables.	Enclaves reduce the earnings losses associated with limited English skills. An increase in the proportion of Hispanic men who speak only English lowers the returns to English.
Rivera-Batiz (1990)	1985 National Assessment of Educational Progress (NAEP), Young Adult Literary Assessment Survey. Earnings regressions are estimated for immigrant males and females ages 21-25 who speak various languages. A measure of English language ability is defined on the basis of scores from a reading test.	The test-based measure of proficiency has more effect on earnings than a self-assessed measure.

SOURCE: Borrowed from Bloom and Grenier (1991)

TABLE 6.2

Summary of Studies on the Effects of Language Ability on Earnings

Canadian Studies

Study	Data and description	Major findings
Veltman, Boulet and Castonguay (1979)	1971 Census. Earnings regressions (with earnings in dollars) are estimated for men in the Montreal metropolitan area. Dummy variables are included on the right hand side for bilingualism and for language spoken at home.	For men whose mother tongue is French, there are monetary returns to both bilingualism and to speaking English at home. There are no such returns to speaking French for men whose mother tongue is English.
Carliner (1981)	1971 Census. Earnings regressions are estimated for men in Quebec and English Canada. The language spoken at home is used to define language groups.	In Quebec, there are substantial economic returns to learning English for French speakers, but no economic reward for English speakers to learn French. There are no significant returns to learning English for French speakers outside Quebec.
Shapiro and Stelcner (1982)	1971 Census. Earnings regressions are estimated for males and females in Quebec.	For males, the return to learning English is much greater than the return to learning French. The difference between the returns to learning English and to learning French is less for

Shapiro and Stelcner (1982) Continued.		women than for men.
Grenier (1985)	1979 survey by the Quebec Conseil de langue francaise. Earnings regressions are estimated for male and female Quebec residents. The study considers selectivity in the decision to learn a language.	Selectivity appears to be more important for French speakers who learn English than for English speakers who learn French.
Grenier and Lacroix (1986)	1981 Census. Earnings regressions are estimated for men residing in the Ottawa metropolitan area.	Returns to learning French are positive for men whose mother tongue is English primarily because of the presence of the Federal government. The net effect of learning English for men whose mother tongue is French is not significant in the regressions, but this is probably due to the small number of unilingual French speakers in Ottawa.
Grenier (1987)	1981 Census. Earnings regressions are estimated for men lived in Quebec in 1976 and subsequently moved. The returns to the knowledge of French and English are analyzed in relation to selectivity in emigration from Quebec from 1976 to 1981. Many men of English mother tongue migrated during this	Selectivity in migration appears to be important for English speakers. The returns to bilingualism for men whose mother tongue is English are underestimated when selectivity is ignored.

	period.	
Shapiro and Stelcner (1987)	1971 Census; 1981 Census. Earnings regressions are estimated for men and women living in Quebec.	There was an important reduction in earnings differentials between language groups from 1970 to 1980, especially for men.
Chiswick and Miller (1988)	1971 Census; 1981 Census. Earnings regressions are estimated for men in Canada. Ethnicity rather than mother tongue is used to define the French group.	French ethnicity had a negative effect on earnings in 1971 and a positive effect in 1981. There is a positive return to bilingualism.
Grenier (1988)	1981 Census. Earnings regressions are estimated for women living in Quebec.	Language attributes are not very important explaining earnings differentials.
Vaillancourt (1988)	1971 Census; 1981 Census. Earnings regressions are estimated for men and women in Quebec. The samples are broken down according to various attributes, including age groups, occupations, and industries.	In general, the return to speaking English was higher in 1971 than it was in 1981.

SOURCE: Borrowed from Bloom and Grenier (1991).

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