THE EARNINGS OF LINGUISTIC MINORITIES:
FRENCH IN CANADA AND SPANISH IN THE UNITED STATES

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ABSTRACT

This paper measures and compares the relative earnings of

French and English speakers in Canada, and of Spanish and English

speakers in the U.S., in the 1970s and 1980s.

In Canada, the earnings gap between French and English

speakers narrowed over time, especially in Quebec. This decline

appears to have been caused primarily by a sharp increase in the

relative demand for French-speaking workers within Quebec during

the 1970s and 1980s. By 1986, nearly all of the remaining

earnings gap between French and English speakers in Canada could

be accounted for by differences in annual hours worked, marital

status, age, education, and region.

By contrast, the earnings gap between Spanish and English

speakers in the United States remained high during the 1970s and

1980s and is not largely accounted for by differences in a

standard set of control variables. If anything, there appears to

have been a slight deterioration in the relative earnings of

Spanish speakers in the U.S. during the 1970s. The most likely

explanation for this change is an increase in the relative supply

of Spanish speakers, due mainly to high levels of immigration.

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Introduction

The ability of economic agents to communicate contributes to the efficiency of many economic activities and transactions. Production and distribution activities that involve teamwork, supervision, and the interpretation of written or verbal instructions require that workers communicate in a common language. In addition, the fact that language and culture are often intertwined suggests that economic agents may derive utility from communicating in a particular language, independent of the value of that language in the production and distribution of goods and services.

The recognition of language as an economic variable was initiated in the seminal articles of Marschak (1965), Hocevar (1974), and Breton and Mieszkowski (1977) and furthered by the contributions of Vaillancourt (1980), Grenier (1982), and Robinson (1988). In the past few years, most of the research done on economic aspects of language has had an empirical orientation. Much effort has been devoted to testing the notion that the language abilities individuals possess are a genuine component of their overall human capital. A typical test involves fitting a standard wage equation -- augmented with one or more variables that measure an individual's ability to communicate in the dominant language of the labor market -- to cross-sectional survey data. By interpreting the estimated coefficients of the language variables as skill prices, one can use empirical results of this type to draw inferences about the economic value of different language skills.

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Table 1 summarizes recent empirical research on the relationship between language skills and earnings in Canada and the United States. The different research methods used in the studies may be responsible for the discrepancies in the findings. The research methods vary in three main ways. First, in some studies the measure of an individual's language skills is a dummy variable for whether an individual's mother tongue is the same as the dominant language of the labor market; in other studies it is an ordinal index of an individual's ability to communicate in the dominant language of the labor market. Researchers may measure speaking or reading ability, and language skills may be self-assessed or measured objectively. Second, different human capital variables are held constant in assessing the marginal contribution of language skills to wages. Immigrant status and years since immigration, for example, may or may not be included as control variables. Third, studies may be national or regional in scope and may refer to different time periods, gender groups, and linguistic groups.

Most Canadian studies concentrate on language-wage differentials in Quebec. These studies generally find that the return to French language ability increased in the 1970's for men. The few studies that examined the situation outside Quebec did not find strong language effects. The evidence reported in the U.S. studies is mixed. In some studies, language variables explain a significant portion of wage variation even after one controls for the effect of other standard human capital variables. But a

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sizable number of studies have failed to generate any convincing evidence that language has either a statistically significant or a substantively important effect on wages in the U.S.

A fundamental premise of the present study is that the return to language skills is determined by the interaction of the supply and demand for those skills, within local labor and product markets. This framework suggests that the return to language skills may vary according to the overall linguistic composition of local labor and product markets as well as in response to changes in other factors that may cause exogenous shifts in the supply or demand for particular language skills. We report empirical evidence based on this framework derived from 1971, 1981, and 1986 Canadian Census data and from 1970 and 1980 U.S. Census data. With the exception of the 1986 Canadian Census, all of these datasets have been used previously to study the wage effects of language skills, though not in as comparable a manner as reported below.

One of our principal aims is to test the view that a common economic framework can explain patterns and trends in the economic position of linguistic minorities in different national settings. Canada and the U.S. have similar economic structures and English is the majority language in both countries. However, the countries' linguistic minorities have little in common. Three important differences deserve mention. First, Canada's major linguistic minority -- a French-speaking population -- is not an immigrant group. The major linguistic minority in the U.S. -- a Spanish-speaking population -- is predominantly an immigrant group.

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Second, although the French-speaking population in Canada is a minority group nationally, it is a majority group in Quebec, a major province. In contrast, the Spanish-speaking population in the U.S. is a minority both nationally and in every state and SMSA. Finally, French is an official national language in Canada whereas Spanish is not an official language in the U.S.

In the next section, we briefly describe our theoretical framework. Our model suggests that markets with larger proportions of minority language speakers may value language skills differently than markets with smaller proportions. A large supply of minority language speakers may depress wages for workers who do not speak the dominant language. Alternatively, the community of minority language speakers may create its own demand for services in the minority language, a situation that may lead to higher wages. Determining which of these two opposing forces has been stronger in Canada and the U.S. at different points during the past two decades is the main empirical issue addressed below.

In Section II we describe the five datasets analyzed in this paper. We also discuss the validity of our use of these datasets to compare language-wage differentials over time and between Canada and the U.S. In addition, we test the quality of U.S. data on ethnicity as a proxy for language ability.

Section III presents our major empirical results. In the U.S., the increasing supply of Spanish speakers appears to be responsible for the slight deterioration of relative wages received by Spanish workers in the 1970's. In Quebec, by

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contrast, the French-speaking community appears to have shifted out the demand for French language skills by more than the increased supply of French-speaking workers, thereby leading to a relative improvement in the value of French language skills. For Canada as a whole, the earnings gap between French and English speakers, which was sizable in the early 1970's, became substantially more narrow by the 1980's.

I. Theoretical Framework

Consider a local economy with two language communities and two corresponding labor markets, each with a set of labor supply and labor demand curves. Assume that workers in both markets have identical characteristics, with the exception of the language they speak. It need not be assumed that the language an individual speaks is an exogenously fixed characteristic.

The location of the supply curve in each local labor market is determined largely by the number of individuals who speak each language. Outward shifts in the supply of labor can thus result from natural increase among a particular language community or from in-migration of individuals with similar language abilities, either from other local economies or from the other labor market within the same local economy.

Although our labor supply formulations for workers with different language characteristics are absolutely standard, our labor demand curves are, in one important respect, not. Our analysis permits the demand curves for workers with different

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language abilities to depend upon the number of consumers in local product markets with those same linguistic characteristics. In this way, the demand for minority language employees is permitted to increase (not necessarily proportionately) with the relative size of the minority language community. The existence of such an effect seems especially plausible in certain industries such as retail trade and health services. This formulation implies that the relative wages received by a linguistic minority may vary (probably positively) with the relative size of that minority community among all consumers.

In this model, a language-wage differential is interpreted as reflecting some combination of labor supply and labor demand differences. In addition, varying the relative supply of workers who speak a particular language (e.g., through in- or out-migration of individuals with certain language characteristics) or varying the relative demand (e.g., by a shift in the language characteristics of participants in the relevant product market) may be expected to affect the relative wages received by the language group.

Two additional hypotheses suggest that the wages received by a linguistic minority will be lower in regions with larger linguistic minority populations. First, assuming individuals derive social and cultural benefits from living in communities where their language is used, minority language speakers may have a lower reservation wage in regions where they are more highly represented. Second, self-selection might reinforce these

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differentials, insofar as out-migrants from areas with a high proportion of minority-language speakers might place less value on these externalities or be more ambitious and aggressive in the labor market.

The nature of our data do not permit us to cleanly identify and disentangle the effects of these various forces on language-wage differentials. However, they can be used to perform some indirect tests. In addition, the model enriches our interpretation of the empirical results.

II. Language Data in Canada and the United States

Both Canadian and U.S. statistical agencies collect data on language and ethnicity. Language data may refer either to the first language learned and still spoken or understood (i.e., the mother tongue) or to the language usually spoken at home. Data on ethnicity may also be a useful indicator of language ability.

A. Canadian Data

Most researchers define linguistic groups in Canada on the basis of mother tongue, a variable that is reported in the Canadian Census and other survey datasets. Canadian Censuses also report information on ethnicity, but this variable has generally not been used to study language because it is an error-ridden measure of language ability whose definition has not been stable over time.[1]

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[1] In 1971 and before, the question on ethnicity referred to paternal ancestry, and only one ethnic origin was allowed per person; since 1981, the reference to paternal ancestry has been dropped and it is possible for the same person to have multiple ethnic origins.

In contrast, the definition of mother tongue has not changed over time.

The Canadian Censuses also report information on the ability of respondents to speak English and French (with the same questions asked in the various Canadian Censuses). Specifically, respondents are asked to indicate whether they can conduct a conversation in English, French, both English and French, or neither English or French. Only yes or no answers are allowed in response to these questions, and they represent a person's self assessment of his or her language ability. Although these data do not provide objective measures of language proficiency, they do distinguish two groups of people in a fairly comparable manner over time: those who consider themselves bilingual and those who do not.

Another useful language question has been included since Canada's 1971 Census. It refers to the language that a person usually speaks at home. This question is sometimes preferred to mother tongue by those who are interested in measuring the size of different linguistic groups in Canada. However, mother tongue may be preferable to language used at home for some analytical purposes because it is an exogenous characteristic for a person.

We analyze three data sets for Canada: the public use samples of the 1971, 1981, and 1986 Censuses. The two language categories used in our study of each Canadian Census are French and English mother tongue (individuals who report having other mother tongues are excluded from our samples). For these two mother tongues we consider individuals who are both unilingual and bilingual, on the

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basis of their ability to carry a conversation in one or the other of the official languages. These language variables are the ones typically analyzed by those who study language-wage differentials in Canada.[2] We define Quebec to be the region with a high proportion of French speakers; the rest of Canada constitutes the low-proportion region.

B. United States Data

Unlike the case for Canada, U.S. language data have not been

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[2] Although the definitions remained the same over time, it should be noted that there have been some slight changes in the way some responses are coded. For instance, in 1971, a person who reported English or French as mother tongue was assumed by Statistics Canada to speak that language, even if he or she also reported not being able to do so. In 1981 and 1986, the possibility that individuals might "forget" their mother tongue was allowed. The responses were adjusted in this study to the 1971 definition. Also, in 1971 and 1981, Statistics Canada allowed a person to have only one mother tongue, even though a few people reported more than one. In 1986, multiple mother tongues were permitted. In order to make the data comparable to previous Censuses, each individual was allocated only one mother tongue in this study. In some cases (those who were of English and French mother tongues and bilingual), this was done randomly.

This procedure can be justified on the basis of calculations made by Lachapelle (1988) who showed that respondents who indicated both English and French as mother tongues were represented in about equal numbers in each mother tongue group in the 1981 census. Statistics Canada has an imputation procedure to allocate non-responses or inconsistent responses that includes a set of criteria for the mother tongue question in the 1981 Census. Unfortunately, we do not have enough information to replicate this procedure for the 1986 census. Given this situation, a random allocation seems to be the best solution. Note that, although the proportion of such cases is small for the entire country, it is not negligible in comparison to the number of people who declare themselves of French mother tongue in the regions where the French speaking minority is very small.

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consistent across censuses. A question on mother tongue appeared in the 1970 Census but not in the 1980 Census.[3] English-speaking ability was assessed in 1980, but not in 1970.[4] As a result, we explore the use of ethnicity data -- which has been consistently reported for the U.S. -- as a proxy for language ability.

We tested the quality of the variable "Spanish origin" as an indicator of Spanish mother tongue using the 1976 Survey of Income and Education. This data set is unique among large survey datasets for the U.S. in that it reports information on both mother tongue and ethnic origin.[5] We exploited these overlapping data by fitting two sets of wage equations and comparing the results: the first set was specified to include a dummy variable with direct information on Spanish mother tongue as a regressor; the second set was specified identically, except that the Spanish mother tongue dummy variable was replaced with a Spanish origin dummy variable.

The estimates of these two specifications are reported in Table 2. Comparing them reveals the coefficients of interest to be remarkably similar in both sets of equations. This result appears

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[3] In addition, records from the 1970 Census that report mother tongue do not report the year of immigration. This is because two non-overlapping public use data sets were produced from the 1970 U.S. census, each with a different set of questions.

[4] The 1980 Census categorized English speaking ability into four levels: very well, well, not well, and not at all. A similar question was asked in the 1976 Survey of Income and Education. This latter survey also includes a variety of questions about language use and ability.

[5] This test could not be performed using either of the U.S. Censuses since none of the available public use samples for either Census contain information on both Spanish ethnic origin and mother tongue.

to be due to the fact that only 14 percent of the individuals who report their ethnic origin as being Spanish in the Survey of Income and Education also report English as their mother tongue. Thus, our results suggest that the Spanish ethnic origin variable reflects much the same information as the Spanish mother tongue variable.[6]

We focus our attention on two data sets for the U.S.: the one-in-one thousand public use samples of the 1970 and the 1980 Censuses. Unfortunately, no comparable national data set is yet available for a more recent year. The data on Spanish origin, which is defined similarly in both data sets, is used to identify the Spanish-speaking population.[7] In our study, we compare individuals of Spanish origin to whites of non-Spanish origin; we exclude blacks and all other races from our comparison group. In addition, we divide the U.S. into regions of high and low

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[6] Further research is needed to determine whether these variables are capturing a true language effect, a true ethnicity effect, or both a language and an ethnicity effect. To this end, we estimated wage equations that included both Spanish ethnic origin and Spanish mother tongue as independent variables. In most cases, neither of these two variables was statistically significant, which partly reflects the facts that the two variables are highly correlated. Thus, our data are not very informative about the meaning of the language and ethnicity coefficients. Longitudinal data would appear to provide a better approach for addressing this issue.

[7] The category "Central and South American" was included in 1970 but not in 1980. The reason is that some people who came from the Central and South rsgions of the U.S. apparently reported themselves in that category even though they were not of Spanish origin. In 1980, people of Spanish origin from Central and South America had to report themselves in the category "Other Spanish."

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proportions of Spanish origin people. The distinction was made by
examining the Spanish origin population in each state and
metropolitan area. Arizona, California, Colorado, New Mexico and
Texas, and the metropolitan areas of New York and Florida
constitute the high Spanish-origin population region.[8] All other
regions of the United States constitute the low Spanish-origin
population.

In contrast to many earlier studies, we do not focus this
analysis on earnings differences among various Hispanic ethnic
groups (e.g., Mexican, Puerto Rican, Cuban, etc.). However, our
analysis of the 1980 Census does, in some cases, distinguish
people of Spanish origin according to their ability to speak
English. Those individuals who reported that they can speak
English well or very well are defined to be bilingual for the
purposes of this study, while those who reported that they do not
speak English well or that they do not speak English at all are
called monolingual.

III. Empirical Results

A. French-English Differentials in Canada

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[8] In the 1970 census, information on state and metropolitan
area was not available simultaneously on the same public use tape.
However, the state public use tape that we used had information on
whether a person lived in a metropolitan area or not, without
specifying the name of the metropolitan area. Given this
constraint, and since the largest metropolitan areas in New York
and Florida (New York City and Miami) have large Spanish-origin
populations, all the metropolitan areas in those two states were
defined as high Spanish origin population regions. For the sake of
consistency, the same definition was used for the 1980 Census, even
though information on specific metropolitan areas was available.

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The first panel of Table 3 reports real earnings levels in 1970, 1980, and 1985 for males ages 25-64 and 25-34 with different linguistic characteristics.[9] These figures are reported separately for individuals who reside in different linguistic regions in Canada. The second panel reports earnings differentials between individuals with different linguistic characteristics, again distinguishing between Quebec and the rest of Canada. The third panel describes the linguistic composition of the samples we analyze. For the sake of comparability with the regression results reported later, average earnings figures in Table 3 are in the form of geometric (as opposed to arithmetic) averages and earnings differentials are measured in log points (as opposed to percentage differentials).

We make two types of earnings comparisons: (1) between individuals with different language skills (e.g., English-speakers versus French-speakers, unilingual English-speakers versus bilingual English-speakers, and unilingual French-speakers versus bilingual French-speakers) and (2) between individuals with comparable language skills who reside in different linguistic regions within Canada. We are also interested in analyzing trends in earnings differentials over time, especially in view of the social and political movement that has been active since the early 1970's to promote the use of French in Quebec.

We provide a separate set of figures for 25-34 year olds

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[9] Earnings are defined in this study as wages and salaries only. Individuals who reported self employment income are excluded.

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because we expect their labor market outcomes to be more sensitive to exogenous shifts in the labor market. In contrast, the employment and earnings of older workers may reflect decisions and understandings that were established before the sample period. Females and youth are excluded from our analyses to avoid the well-known idiosyncrasies associated with their labor market behavior.

The figures in Table 3 reveal sizable differences in average earnings among 25-64 year old workers in all three Censuses, with French-speaking workers having relatively low earnings in both linguistic regions (i.e., within as well as outside Quebec). The earnings gaps are especially wide when one compares unilingual French workers to English-speaking workers in either linguistic region. This finding suggests that language skills can have an influence on earnings that is independent of any effects that might be due to ethnic background.

Table 3 also contains three other results that deserve mention. First, language-earnings differentials were larger within Quebec than outside Quebec for both age groups in 1970, although the pattern is reversed in 1980 and 1985. The 1970 pattern is consistent with the model sketched in Section I (i.e., the supply effect outweighs the demand effect) as well as with the two alternative hypotheses that involve the positive externality of remaining in a language community and self-selection in out-migration. The 1970 data alone do not permit us to distinguish among these hypotheses.

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Second, language-earnings differentials tended to decline between the 1970's and 1980's, for both age groups. Although the decline was quite sharp within Quebec (where differentials actually reversed signs for 25-34 year olds in 1980), it also occurred outside Quebec. This decline appears to have been caused by a sharp increase in the relative demand for French-speaking workers within Quebec during the 1970's and 1980's. One indicator of this demand shift is the fact that the decline in earnings differentials in Quebec was associated with a relative improvement in the employment-to-population ratio for Quebec's French-speaking workers. Yet, it is worth noting that there was also an increase in the relative supply of French-speaking workers in the 1970's. Indeed, Table 4 indicates that the linguistic composition of the Quebec workforce shifted toward the French from 1970 to 1985 -- almost exclusively by replacing the unilingual English. Nonetheless, since relative earnings improved during the period, we may infer that the demand shift dominated the supply shift.

Third, language-earnings differentials are generally higher for 25-64 year olds than for the subset of individuals aged 25-34. The fact that language-wage differentials are smaller for younger workers is consistent with the decline of differentials among 25-64 year olds and suggests a continuing trend toward overall wage parity between linguistic groups, both outside Quebec, and even more so in Quebec.

In order to further our understanding of the nature of the earnings differentials discussed above, we perform a simple

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analysis in which we examine the size of the estimated language-
earnings differentials when one fits standard regression models
that control for the effect on earnings of annual hours worked,
marital status, age, education, and region (when appropriate). The
results of this analysis, which are reported in Table 5, indicate
that the language-wage differentials that are reported in Table 3
reflect in large measure, though not entirely, the fact that
language is correlated with other variables that determine annual
earnings. For example, the 30 log point difference in annual
earnings between French and English speakers in Quebec in 1970 is
reduced to 13 points when one controls for annual hours worked,
marital status, age, and educational attainment. But even more
striking, in all other comparisons the French-English differentials
are rendered small and insignificantly different from zero by the
inclusion of these controls. Thus, although there is some evidence
of genuine language-wage differentials in Quebec in 1970, many of
the sizable differentials reported in Table 3 appear to be due to
the fact that English speakers work more hours per year (see Table
6) and tend to have higher educational attainment than French
speakers (see Table 11).

Another striking finding in Table 5 relates to the dramatic
decline in wage differentials from 1970 to 1985 between Quebec
workers who can speak at least some French and Quebec workers who
speak only English. Indeed, the considerable earnings disadvantage
suffered by unilingual French workers in 1970 -- relative to
comparable unilingual English workers -- was entirely eliminated by

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1985, and actually became a clear earnings advantage among 25-34 year olds. Since the estimates reported in Table 5 provide no evidence of a similar wage change outside Quebec, this finding constitutes further evidence of a strong outward shift in the demand for French language skills in Quebec between the 1970's and 1980's.[10]

B. Spanish-English Differentials in the United States

Tables 7 through 10 report statistics relating to the labor market outcomes experienced by Spanish and English speaking males in the U.S. in 1970 and 1980. To facilitate comparisons between the U.S. and Canada, we report statistics for the U.S. that are reasonably comparable to those reported above for Canada. Thus, we provide separate analyses for males aged 25-64 and 25-34 residing in different linguistic regions.

The results of Tables 7 through 10 for the U.S. may be summarized as follows. First, the raw earnings differentials are sizable in both 1970 and 1980, but are relatively larger (1) for 25-64 year olds and (2) in regions with a high proportion of Spanish language workers. Second, the results indicate that monolingual Spanish workers fare less well in the labor market than bilingual Spanish workers. Third, the estimates reveal that Spanish workers became increasingly concentrated during the 1970's in regions that already had a large proportion of Spanish speakers,

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[10] This outward shift in the demand for French language skills can be related to language policies that were implemented in Quebec since 1969 (see Vaillancourt, 1990).

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with only a small increase in the proportion of Spanish speakers outside these areas. Fourth, the earnings differentials between the Spanish- and English-speaking workers shrink when one controls for the effects on earnings of a standard set of control variables. However, unlike the case of Canada, the language-earnings differentials in the U.S. do not vanish in size or significance when the controls are included. This finding suggests that language-wage differentials are currently a more deeply-rooted phenomenon in the U.S. than in Canada.

Because of their general similarity with the results for Canada, the U.S. results lend further support to the view that language-wage differentials are partly determined in the same way as any other garden-variety skill price, and partly on the basis of the linguistic composition of a region. Indeed, the slight deterioration in the relative earnings of Spanish-speaking workers in the U.S. during the 1970's is most likely explained by the increase in their relative supply. For example, from 1970 to 1980, the number of male Spanish workers increased at an annual rate of approximately 5.4 percent in regions with a high proportion of Spanish speakers, more than triple the rate of increase among non-Spanish workers in those areas. Similarly, the number of Spanish male workers increased more than twice as fast as non-Spanish male workers in the regions with low proportions of Spanish speakers.

This conclusion about the importance of relative supply shifts in the U.S. contrasts with our reliance on a demand-shift

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explanation of the recent improvement in the relative earnings of French-speakers in Canada. The relative supply of French-speakers did, in fact, shift in Canada in the 1970's also, increasing in Quebec and declining outside Quebec. The difference in the relative growth rate of different linguistic groups in Canada and the U.S. highlights the fact that the main sources of additional French-speaking workers in Quebec were fertility and geographical redistribution within Canada, whereas the main source of additional Spanish workers in the U.S. was immigration.

C. Differences in Returns to Education

A linguistic minority might receive relatively low wages because its members earn a relatively low return on their investments in schooling. Indeed, it seems reasonable to suppose that English-language schooling (throughout the U.S. as well as in Canada outside Quebec) contributes less per unit of time to the human capital of individuals for whom English is not the mother tongue than it does for native English speakers. Similarly, it seems likely that the return to schooling received in a language other than English would also be relatively low in a labor market in which English is the dominant language.

To test this hypothesis, we fit a set of wage equations that allowed for interactions between the effects of mother tongue and years of schooling. The results are reported in Tables 11 and 12. Although many of the estimated interaction effects are small and imprecise, they are all negative, indicating a lower schooling

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coefficient for members of linguistic minorities.

Tables 11 and 12 also report differentials in average educational attainment between different linguistic groups in Canada and the U.S. The figures indicate that schooling gaps narrowed considerably in Canada from 1971 to 1986 for 25-64 and 25-34 year olds, both within and outside Quebec. In contrast, schooling gaps in the U.S. increased slightly in regions with a high proportion of Spanish speakers and sizably in regions with relatively low Spanish proportions.

Taken as a whole, the results of Tables 11 and 12 suggest that changes in educational attainment and in the structure of returns to schooling are important to understanding the changing economic position of linguistic minorities in Canada and the U.S. However, neither set of changes appear to follow a consistent pattern or to offer more than a partial explanation for the changes observed in the relative earnings of linguistic minorities.

D.   Cohort Analyses

The estimates in Table 5 indicate that the regression-corrected language-earnings differentials changed from −.08 log points in 1970 to +.04 log points in 1985 among the 25-34 year olds in Quebec. Strictly speaking, this result indicates that the relative earnings in 1985 of French-speaking males born in the 1950's was larger than the relative earnings in 1970 of French-speaking males born betweeen the mid 1930's and the mid 1940's. Insofar as this improvement in relative economic position

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could reflect a pure vintage effect associated with period of birth, it does not necessarily indicate an improvement over time in the relative economic position of any given population (i.e., a true "time effect").

In order to determine whether the comparison of cross-sectional results in Tables 3 and 5 for Canada and in Tables 7 and 8 for the U.S. reflect "vintage effects" or "time effects" (or both), we have calculated gross and regression-corrected earnings differentials for well-defined cohorts at different points in time. These results are presented in Tables 13 and 14. In the case of Canada, both inside and outside Quebec, the gross- and regression-corrected cross-sectional and cohort results reveal very similar patterns. These results suggest that the improved relative economic position of 25-34 year old French speakers in Quebec was associated largely with labor market changes that occurred over time and only slightly with the entry into the labor market of cohorts that might be different in terms of their latent relative quality. These results are consistent with the view that increased demand for French speakers from 1970 to 1985 has improved the relative economic position of French-speaking males in Quebec.

Our analysis for the U.S. suggests a different conclusion. From 1969 to 1979, the relative economic position of 25 to 34 year old Spanish-speaking males deteriorated slightly (based on the regression-corrected differentials reported in Table 8). In contrast, the relative economic position of Spanish-speaking males aged 24 to 33 deteriorated substantially by the time they reached

ages 34 to 43 in 1979. Although these results are a bit puzzling,

our suspicion is that they reflect the strong inflow of

Spanish-speaking males into the U.S. labor market during the

1970's.   Assuming young Spanish-speaking workers are closer

substitutes for older Spanish-speaking workers and for young

English-speaking workers than they are for older English-speaking

workers, a strong inflow of young Spanish-speaking workers would

tend to result in larger language-earnings differentials for an

older cohort as it aged, but would not necessarily affect

differentials among young cohorts entering the labor market. This

hypothesis does imply, however, that earnings levels would be

depressed for the recent labor market entrants (both Spanish-

speaking and English-speaking) relative to the older cohorts of

English-speakers. This pattern is exactly what one observes in the

first panel of Table 7 in which the earnings levels for 25-34 year

olds declined by substantially larger percentages from 1969 to 1979

than the earnings levels for 25-64 year olds.   Thus, supply-side

shifts appear to offer the most coherent explanation for the

changing structure of language-earnings differentials in the U.S.

Summary and Conclusions

    The foregoing analysis has measured and compared the relative

earnings of the major linguistic minorities in Canada and the U.S.

Although the two countries have the same dominant language and are

similar in many other respects as well, there are important

differences concerning the situation of their linguistic

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minorities. Hispanics in the U.S. are an immigrant group while French speakers in Canada are not; one major Canadian province has a French-speaking majority while Hispanics in the U.S. are a minority in all states; and French is an official language in Canada while Spanish is not an official language in the U.S.

Our empirical analysis is guided by the assumption that the return to language skills in both Canada and the U.S. is determined by the interaction of the supply and demand for those skills, within local labor and product markets. We examine data from the 1971, 1981, and 1986 Censuses for Canada, and from the 1970 and 1980 Censuses for the U.S., thereby allowing us to measure changes over time in the relative earnings of the two linguistic minorities.

The empirical results for French speakers in Canada and Spanish speakers in the U.S. are similar in many respects. In both countries, there is evidence in the early 1970's that individuals who were unable to communicate in the dominant language of the labor market were penalized. However, the trends have been very different between Canada and the U.S. since the early 1970's. In Canada, we find evidence of an important decrease in the earnings gap between French- and English-speaking men. In contrast, the earnings gap between Spanish- and English-speaking men in the U.S. remained large -- and actually increased slightly -- in the 1970's. This difference between Canada and the U.S. can be explained by differential supply-demand shifts in the two countries. The demand for French speakers seems to have increased in Canada during the

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1970's (especially in Quebec), with relatively small changes in the supply of French speakers. In the U.S. the supply of Spanish-speakers increased during the 1970's due to rapid immigration, while there seems to be little evidence of a sizable outward shift occurring in the relative demand for Spanish-speaking workers.

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Table 1
Summary of Studies on the Effects of Language Ability on Earnings

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1. U.S. Studies

Study	Data and description	Major findings
Gwartney and Long (1978)	1970 Census. Earnings regressions are estimated for males and females belonging to several ethnic minorities. Non-English mother tongue is a dummy regressor.	The results are mixed. Non-English mother tongue has a significant negative association with earnings for some groups, but for other groups the coefficient is either not significant or significant with a positive sign. Spanish mother tongue does not have a significant coefficient.
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)	<u>1976 SIE</u>. Earnings regressions are estimated for Hispanic men. An index of language ability is 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 finding, however, 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 (see Chiswick, 1989).
Reimers (1983, 1984)	<u>1976 SIE</u>. 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)	<u>1976 SIE</u>. 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)	<u>1976 SIE</u>. Earnings regressions are estimated for Hispanic men. An index of language ability is defined, with endogenous weights as in McManus <u>et al.</u> (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)	<u>1976 SIE</u>. 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)	<u>1976 SIE</u>. 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 (1989)	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 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.	Reading ability is more important than speaking ability in the explanation of earnings.
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.

2.   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.
Boulet (1980)	1961 Census; 1971 Census; 1978 survey done by Bernard and Renaud of University of Montreal. The study reports gross earnings differentials for men in the Montreal metropolitan area, and also includes some earnings regressions (with earnings in dollars).	Gross earnings differentials between English and French mother tongue men decreased from 1961 to 1977. The differentials were 51% in 1961, 30% in 1970, and 15% in 1977). The differentials appear to be due mainly to the presence of a highly paid English speaking elite.

Lacroix and Vaillancourt (1980)	1973 Survey of Highly Qualified Manpower. Earnings regressions are estimated for men and women in Quebec. Language attributes are included on the right hand side. Separate analyses are performed for age, industry, and occupation sub-groups.	English has higher returns in the sectors of the economy with markets outside of Quebec. French has higher returns for internal sectors.
Vaillancourt (1980)	1971 Census. Earnings regressions are estimated for men in the province of Quebec and in the Montreal metropolitan area. Dummy variables are included for mother tongue and bilingualism. Separate analyses are performed for age, industry, and occupation sub-groups.	Bilingualism has monetary returns for French speaking men, but not for English speaking men.
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.

Lacroix and Vaillancourt (1981)	<u>1971 Census; 1971 survey by Quebec Commission on French language; 1978 survey by Bernard and Renaud of University of Montreal; 1979 survey by the Quebec Conseil de la langue francaise</u>. Earnings regressions are estimated for men and women in Quebec. Various measures of language ability are used in addition to the usual ones from Census data. Separate analyses are performed for age, industry, and occupation sub-groups.	The return to speaking French increased between 1971 and 1978. Earnings disparities between English and French speaking men decreased between 1970 and 1980.
Shapiro and Stelcner (1981)	<u>1971 Census</u>. Earnings regressions are estimated for males and females in Canada, Quebec, and Ontario. The study focuses on the role of language in explaining male-female earnings differentials.	Language variables are important for determining male earnings, but not female earnings.
Shapiro and Stelcner (1982)	<u>1971 Census</u>. 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 women than for men.

Grenier (1985)

1979 survey by the
Quebec Conseil de
langue française.
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 who 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 period.	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.
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 in explaining earnings differentials.

Robinson (1988)	<u>1971 Census; 1981 Census; 1973 CARMAC; 1979 Quality of Life survey</u>. Earnings regressions are estimated for men and women in Canada. The endogeneity of language choice is taken care of through fixed and random effects models.	The endowment of French mother tongue is not a handicap in the earnings generation process. Bilingualism has positive returns.
Vaillancourt (1988)	<u>1971 Census; 1981 Census</u>. 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.

Table 2
Comparisons of Relative Earnings Using
Spanish Origin and Spanish Mother Tongue as Spanish Indicator
For Males By Linguistic Region
in the United States: 1975

	Age group 25-64		Age group 25-34	
	Mother tongue	Spanish origin	Mother tongue	Spanish origin

Earnings differentials (log points)[a]

High Spanish[b]

S to W	-.38	-.43	-.26	-.27
SM to W	-.81	-.89	NR	NR
SB to W	-.25	-.31	NR	NR

Low Spanish[b]

S to W	-.29	-.24	-.24	-.20
SM to W	-.65	-.67	NR	NR
SB to W	-.14	-.11*	NR	NR

Regression corrected earnings differentials (log points)[c]

High Spanish

S to W	-.10	-.12	-.08*	-.11
SM to W	-.17*	-.19*	NR	NR
SB to W	-.10	-.12	NR	NR

Low Spanish

S to W	-.06*	-.05*	-.03*	-.01*
SM to W	-.14*	-.15*	NR	NR
SB to W	-.03*	-.02*	NR	NR

Table 2 (continued)

Sample size[d]

High Spanish		1969	1948	775	763
Proportions	W	.891	.842	.897	.829
	S	.108	.156	.103	.171
	SM	.025	.032	NR	NR
	SB	.082	.125	NR	NR
Low Spanish		5396	5377	1969	1961
Proportions	W	.988	.985	.988	.985
	S	.012	.015	.012	.015
	SM	.004	.003	NR	NR
	SB	.009	.010	NR	NR

*   The coefficient is not significantly different from zero at
     the 5 per cent level.

NR   Results not reported because sample size is too small.

(a) Definitions of symbols: S=Spanish, W=non-Spanish White,
    SM=Spanish monolingual, SB=Spanish bilingual.

(b) High Spanish proportion regions include the states of
    Arizona, California, Colorado, New Mexico, Texas and the
    metropolitan areas of the states of Florida and New York.
    All other regions constitute the low Spanish proportion
    regions.

(c) Variables included in regression: 4 dummies for weeks worked
    in previous year, 6 dummies for hours worked in the week
    preceding the Census or the survey, 2 marital status dummies,
    3 regional dummies, 3 period of immigration dummies, age, age
    squared, education, education squared.

(d) Whites are undersampled (8 per cent of total) and observation
    are weighted accordingly. The proportions are those obtained
    after weighting the observations.

Source: 1976 Survey of Income and Education.

Table 3
Real and Relative Earnings of
Males by Mother Tongue and Linguistic Region
in Canada: 1970, 1980, 1985

	Age group 25-64			Age group 25-34		
	1970	1980	1985	1970	1980	1985

Earnings in 1985 Canadian dollars (geometric mean)[a]

Quebec						
English (All)	24054	24306	21908	20718	19570	15563
Unilingual	24369	22774	20532	20151	17501	11485
Bilingual	23748	25217	22499	21280	20671	17453
French (All)	17820	22012	19600	16994	19971	16083
Unilingual	15605	19544	17209	15445	18769	14704
Bilingual	20564	25144	22483	19024	21413	17853
Rest of Canada						
English (All)	21248	24035	21623	20009	21248	17895
French (All)	17610	20987	18311	17174	19599	16182
Unilingual	10848	14047	10410	NR	NR	NR
Bilingual	18457	21605	19110	NR	NR	NR

Earnings differentials (log points)[b]

Quebec						
F to E	-.30	-.10	-.11	-.20	.02*	.03
EB to EU	-.02*	.10	.09*	.05*	.17	.41
FU to EU	-.45	-.15	-.18	-.27	.06*	.24
FB to EU	-.17	.10	.09*	-.06*	.20	.43
Rest of Canada						
F to E	-.19	-.14	-.17	-.15	-.08	-.10
FU to E	-.67	-.53	-.72	NR	NR	NR
FB to E	-.14	-.10	-.11	NR	NR	NR

Table 3 (continued)

		Age group 25-64			Age group 25-34		
		1970	1980	1985	1970	1980	1985

Sample size

Quebec		9596	10881	11611	3447	4256	4462
Proportions	E	.153	.117	.106	.121	.105	.097
	EU	.076	.042	.031	.059	.034	.026
	EB	.077	.075	.075	.062	.070	.070
	F	.847	.882	.894	.879	.895	.903
	FU	.440	.466	.459	.476	.473	.486
	FB	.407	.417	.435	.403	.422	.417
Rest of Canada		21029	26211	29753	7239	10890	11872
Proportions	E	.922	.929	.934	.921	.931	.940
	F	.078	.071	.066	.080	.069	.060
	FU	.007	.005	.005	NR	NR	NR
	FB	.071	.066	.061	NR	NR	NR

*   The coefficient is <u>not</u> significantly different from zero at
    the 5 per cent level.

NR Results not reported because sample size is too small.

(a) Constant dollars are obtained from using CPI for Canada.

(b) Definitions of symbols: F=French, E=English, EU=English
    unilingual, EB=English bilingual, FU=French unilingual,
    FB=French bilingual.

Table 4
Employment-Population Ratios,
Labor Force Participation and Unemployment Rates for
Males, by Mother Tongue and Linguistic Region
in Canada, 1971, 1981, 1986

	Age group 25-64			Age group 25-34		
	1971	1981	1986	1971	1981	1986

Employment-population ratio

Quebec
English	.912	.845	.793	.905	.855	.819
Unilingual	.911	.833	.733	.899	.862	.742
Bilingual	.913*	.852*	.820	.910*	.852*	.850
French	.830	.826*	.789*	.848	.865*	.817*
Unilingual	.802	.793	.746*	.823	.843*	.779*
Bilingual	.863	.866	.839	.879*	.890*	.865

Rest of Canada
English	.929	.895	.856	.933	.922	.872
French	.873	.831	.788	.897	.895	.837
Unilingual	.801	.605	.582	NR	NR	NR
Bilingual	.881	.851	.806	NR	NR	NR

Labor force participation

Quebec
English	.949	.897	.865	.952	.929	.924
Unilingual	.950	.880	.824	.952	.910	.887
Bilingual	.949*	.907*	.883	.953*	.937*	.939
French	.882	.889*	.876*	.900	.938*	.928*
Unilingual	.862	.867*	.852*	.884	.924*	.912*
Bilingual	.904	.914	.904	.921*	.955	.949

Rest of Canada
English	.963	.928	.923	.970	.963	.968
French	.928	.883	.872	.956	.947	.938
Unilingual	.878	.711	.701	NR	NR	NR
Bilingual	.933	.898	.887	.NR	NR	NR

Table 4 (continued)

Unemployment rate

Quebec

English	.039	.058	.084	.050	.079	.114
Unilingual	.040	.053	.111	.055	.053	.164
Bilingual	.038*	.061*	.072	.045*	.091*	.096
French	.058	.070*	.100*	.058*	.079*	.119*
Unilingual	.069	.085	.125*	.068*	.088*	.146*
Bilingual	.045*	.052*	.073	.045*	.067*	.088

Rest of Canada

English	.035	.036	.073	.038	.043	.091
French	.059	.059	.096	.062	.055*	.107*
Unilingual	.088	.148	.170	NR	NR	NR
Bilingual	.057	.053	.092	NR	NR	NR

*   Not statistically different from English (or English
    unilingual) at the 5 per cent level.

NR   Results not reported because sample size is too small.

Source: Canadian Censuses, 1971, 1981, 1986; public use samples,
individual files.

Table 5
Regression Corrected[a] Relative Earnings of
Males by Mother Tongue and Linguistic Region
in Canada: 1970, 1980, 1985

	Age group 25-64			Age group 25-34		
	1970	1980	1985	1970	1980	1985

Earnings differentials (log points)[b]

Quebec

F to E	-.13	-.01*	-.01*	-.08	.05*	.04*
EB to EU	.01*	.09	.04*	.06*	.12	.24
FU to EU	-.18	.02*	-.01*	-.11	.12	.19
FB to EU	-.09	.07	.04*	-.01*	.15	.25

Rest of Canada

F to E	.01*	.02*	.01*	-.02*	.02*	.04*
FU to E	-.02*	.04*	.06	NR	NR	NR
FB to E	.01*	.03*	.00*	NR	NR	NR

* The coefficient is not significantly different from zero at
  the 5 per cent level.

NR Results not reported because sample size is too small.

(a) Variables included in the regression: 4 dummies for weeks
    worked in the previous year, 6 dummies for hours worked in
    the week preceding the Census, 2 marital status dummies, 3
    regional dummies (for rest of Canada only), age, age squared,
    education, education squared.

(b) Definitions of symbols: F=French, E=English, EU=English
    unilingual, EB=English bilingual, FU=French unilingual,
    FB=French bilingual.

Source: Canadian Censuses, 1971, 1981 and 1986; public use
samples, individual files.

Table 6
Weeks Worked Per Year and Hours Worked Per Week,
Males by Mother Tongue and Linguistic Region
in Canada: 1981 and 1986

| | Age group 25-64 | | Age group 25-34 | |
	1981	1986	1981	1986
Weeks worked per week				
Quebec				
English	46.5	46.1	44.6	43.9
Unilingual	46.8	45.1	44.1	40.5
Bilingual	46.3*	46.5*	44.9*	45.1
French	45.2	44.6	44.7*	43.1*
Unilingual	44.0	43.2	44.3*	41.9*
Bilingual	46.6*	46.1*	45.2*	44.5
Rest of Canada				
English	46.5	45.5	45.6	44.1
French	44.2	42.7	43.9	41.5
Unilingual	36.6	31.4	NR	NR
Bilingual	44.7	43.5	NR	NR
Hours worked per week				
Quebec				
English	42.3	42.3	43.2	42.2
Unilingual	41.5	42.2	42.2	43.3
Bilingual	42.7	42.4	43.6*	41.8*
French	42.1*	42.1	41.8	41.8*
Unilingual	42.5	42.3	42.3*	42.1*
Bilingual	41.6*	41.7	41.2*	41.4*
Rest of Canada				
English	44.4	45.0	44.2	44.8
French	43.6	44.4*	43.5*	44.7*
Unilingual	43.1*	41.4	NR	NR
Bilingual	43.6	44.6*	NR	NR

*   Not statistically different from English (or English
    unilingual) at the 5 per cent level.

NR Results not reported because sample size is too small.

Source: Canadian Censuses, 1981 and 1986; public use samples,
individual files.

Table 7
Real and Relative Earnings of
Males by Language* and Linguistic Region
in the United States: 1969 and 1979

	Age group 25-64		Age group 25-34	
	1969	1979	1969	1979

Earnings in 1979 U.S. dollars (geometric mean)[a]

High Spanish[b]				
White	16190	15726	14395	13092
Spanish (All)	9970	9548	10104	8918
Monolingual	NA	6965	NA	NR
Bilingual	NA	10522	NA	NR
Low Spanish[b]				
White	15120	14791	14073	12661
Spanish (All)	11655	10355	11708	9445
Monolingual	NA	7526	NA	NR
Bilingual	NA	11355	NA	NR

Earnings differentials (log points)[c]

High Spanish				
S to W	-.48	-.50	-.35	-.38
SM to W	NA	-.81	NA	NR
SB to W	NA	-.40	NA	NR
Low Spanish				
S to W	-.26	-.36	-.18	-.29
SM to W	NA	-.68	NA	NR
SB to W	NA	-.26	NA	NR

Table 7 (continued)

Sample size[d]

High Spanish		8826	10752	2660	4199
Proportions	W	.882	.836	.853	.804
	S	.118	.164	.147	.196
	SM	NA	.038	NA	NR
	SB	NA	.125	NA	NR
Low Spanish		21892	24314	6675	9199
Proportions	W	.980	.979	.977	.976
	S	.019	.021	.023	.024
	SM	NA	.004	NA	NR
	SB	NA	.017	NA	NR

*   Spanish origin is used as a proxy for Spanish mother tongue. White of non-Spanish origin is used as a proxy for English mother tongue.

**   All differentials reported in this table are significantly different from zero at the 5 per cent level.

NA   Information not available for that year.

NR   Results not reported because sample size is too small.

(a) Constant dollars are obtained from using the CPI for the entire U.S.

(b) High Spanish proportion regions include the states of Arizona, California, Colorado, New Mexico, Texas and the metropolitan areas of the states of Florida and New York. All other regions constitute the low Spanish proportion regions.

(c) Definitions of symbols: S=Spanish, W=non-Spanish White, SM=Spanish monolingual, SB=Spanish bilingual.

Source: U.S. Censuses, 1970 and 1980, public use samples 1:1000.

Table 9
Employment-Population Ratios,
Labor Force Participation and Unemployment Rates for
Males, by Language* and Linguistic Region
in the United States, 1970 and 1980

	Age group 25-64		Age group 25-34	
	1970	1980	1970	1980

Employment-population ratio

High Spanish[a]

White	.897	.857	.913	.904
Spanish	.862	.846**	.876	.875
Monolingual	NA	.794	.NA	NR
Bilingual	NA	.863**	.NA	NR

Low Spanish[a]

White	.895	.858	.927	.894
Spanish	.892**	.776	.910**	.754
Monolingual	NA	.777	NA	NR
Bilingual	NA	.776	NA	NR

Labor Force participation

High Spanish[a]

White	.921	.889	.939	.945
Spanish	.903	.895**	.918**	.929**
Monolingual	NA	.864**	NA	NR
Bilingual	NA	.905	NA	NR

Low Spanish[a]

White	.918	.899	.952	.949
Spanish	.923**	.847	.946**	.838
Monolingual	NA	.844	NA	NR
Bilingual	NA	.847	NA	NR

Table 9 (continued)

Unemployment rate

High Spanish[a]

White	.025	.036	.026	.043
Spanish	.045	.055	.046	.059
Monolingual	NA	.081	NA	NR
Bilingual	NA	.047	NA	NR

Low Spanish[a]

White	.025	.046	.026	.057
Spanish	.033**	.083	.038**	.101
Monolingual	NA	.080**	NA	NR
Bilingual	NA	.084	NA	NR

*   Spanish origin is used as a proxy for Spanish mother tongue.

**   Not statistically different from non-Spanish White at the 5 per cent level.

NA   Information not available for that year.

NR   Results not reported because sample size is too small.

(a) High Spanish proportion regions include the states of Arizona, California, Colorado, New Mexico, Texas and the metropolitan areas of the states of Florida and New York. All other regions constitute the low Spanish proportion regions.

Source: U.S. Censuses, 1970 and 1980, public use samples 1:1000.

Table 10
Weeks Worked Per Year and Hours Worked Per Week,
Males by Language* and Linguistic Region
in the United States: 1980

	Age group 25-64	Age group 25-34
Weeks worked per year		
High Spanish[a]		
White	47.9	47.2
Spanish	46.0	45.6
Monolingual	44.2	NR
Bilingual	46.6	NR
Low Spanish[a]		
White	48.1	47.4
Spanish	46.0	45.2
Monolingual	44.6	NR
Bilingual	46.4	NR
Hours worked per week		
High Spanish[a]		
White	44.3	44.4
Spanish	42.1	42.1
Monolingual	41.3	NR
Bilingual	42.3	NR
Low Spanish[a]		
White	44.5	44.3
Spanish	43.0	43.1**
Monolingual	43.7**	NR
Bilingual	42.8	NR

*   Spanish origin is used as a proxy for Spanish mother tongue.

** Not statistically different from White at the 5 per cent
    level.

NR Results not reported because sample size is too small.

(a) High Spanish proportion regions include the states of
    Arizona, California, Colorado, New Mexico, Texas and the
    metropolitan areas of the states of Florida and New York.
    All other regions constitute the low Spanish proportion
    regions.

Source: 1980 U.S. Census, public use samples 1:1000.

Table 11
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[a]	-.009	-.003*	-.004*	-.008*	-.010*	-.002*
Years of education	-2.2	-1.5	-1.2	-1.9	-1.0	-0.5

Rest of Canada

Return to education[a]	-.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.

(a) Coefficient of French mother tongue interacted with years of education in an earning regression where the other independent variables are 4 dummies for weeks worked in the previous year, 6 dummies for hours worked in the week preceding the Census, 2 marital status dummies, 3 regional dummies (for rest of Canada only), age, age squared, education, education squared, and one dummy for French mother tongue.

Source   Canadian Censuses, 1971, 1981 and 1986; public use samples, individual files.

Table 12
Differences Between Individuals of Spanish and Non-Spanish Origin
in Years of Education and Returns to Education,
for Males by Linguistic Region
in the United States: 1969, 1979

	Age group 25-64		Age group 25-34	
	1969	1979	1969	1979
High Spanish				
Return to education[a]	-.007*	-.014*	-.007*	-.007
Years of education	-3.3	-3.5	-3.2	-3.3
Low Spanish				
Returns to education[a]	-.020	-.002*	-.030	-.007*
Years of education	-1.4	-2.2	-1.4	-2.2

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

(a) Coefficient of Spanish origin interacted with years of
     education in an earning regression where the other
     independent variables are 4 dummies for weeks worked in the
     previous year, 6 dummies for hours worked in the week
     preceding the Census or survey, 2 marital status dummies, 3
     regional dummies, 3 period of immigration dummies, age, age
     squared, education, education squared, and a dummy for
     Spanish origin.

Source: U.S. Censuses, 1970 and 1980, public use samples 1:1000.

Table 13
Relative Earnings of the 25-34 Canadian Male Cohort
(Men Who Were 25-34 in 1971)
By Mother Tongue and Linguistic Region

	1970	1980	1985
Quebec			
Gross earning differential (log points)[a]			
F to E	-.20	-.12	-.06*
EB to EU	.05*	.23	-.04*
FU to EU	-.27	-.11*	-.23
FB to EU	-.06*	.18	.05*
Regression corrected earning differentials[a] [b]			
F to E	-.08	-.02*	.04*
FB to EU	.06*	.23	-.03*
FU to EU	-.11	.09	.00*
FB to EU	-.01*	.16	.02*
Rest of Canada			
Gross earning differential (log points)[a]			
F to E	-.15	-.17	-.21
Regression corrected earning differential[a] [b]			
F to E	-.02*	-.01*	-.02*

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

(a) Definitions of symbols: F=French, E=English, EU=English unilingual, EB=English bilingual, FU=French unilingual, FB=French bilingual.

(b) Variables included in the regression: 4 dummies for weeks worked in the previous year, 6 dummies for hours worked in the week preceding the Census, 2 marital status dummies, 3 regional dummies (for rest of Canada only), age, age squared, education, education squared.

Source: Canadian Censuses, 1971, 1981 and 1986; public use samples, individual files.

Table 14
Relative Earnings of the 25-34 U.S. Male Cohort
(Men Who Were 25-34 in 1971)
By Language* and Linguistic Region**

	1969	1979
High Spanish		
Gross Earning differential (log point)[a]		
S to W	-.35	-.58
Regression corrected earning differential[a] [b]		
S to W	-.13	-.29
Low Spanish		
Gross earning differential (log points)[a]		
S to W	-.18	-.50
Regression corrected earning differentials[a] [b]		
S to W	-.08	-.21

*   Spanish origin is used as a proxy for Spanish mother tongue.

**   All differentials reported in this table are significantly
     different from zero at the 5 per cent level.

(a) Definitions of symbols: S=Spanish, W=non-Spanish White.

(b) Variables included in regression: 4 dummies for weeks
     worked in previous year, 6 dummies for hours worked in the
     week preceding the Census, 2 marital status dummies, 3
     regional dummies, 3 period of immigration dummies, age, age
     squared, education, education squared.

Source: U.S. Censuses, 1970 and 1980, public use samples 1:1000.