LANGUAGE, EMPLOYMENT, AND
EARNINGS IN THE UNITED STATES:
SPANISH-ENGLISH DIFFERENTIALS
FROM 1970 TO 1990

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ABSTRACT

This paper analyzes employment and earnings differentials between Spanish speakers and English speakers in the United States, using data from the 1970, 1980, and 1990 U.S. censuses. The results show that Spanish speakers, both men and women, do not perform as well in the labor market as English speakers. The results also reveal that Spanish-English earnings and unemployment differentials increased slightly in the 1970s, most likely because of rapid growth in the number of Spanish speakers. By contrast, these differentials increased sharply in the 1980s, also a period of rapidly increasing supply. However, there is no evidence that the widening of differentials in the 1980s reflects an increase in the labor market rewards to English language proficiency. Rather, they appear to be the result of Spanish speakers having relatively little of those labor market characteristics, most notably education, whose market value increased dramatically during the 1980s.

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Language, Employment, and Earnings in the United States: Spanish-English Differentials from 1970 to 1990

People of Hispanic origin constitute the largest ethnic minority in the United States. One important characteristic of most members of this minority is that their native tongue, Spanish, is not the major language of the United States labor market. Although Hispanics will have an advantage in those jobs that require Spanish, problems with spoken English may delay their integration into the mainstream economy and affect their economic well-being.

Many investigators have studied the economic status of Hispanic Americans. Recent studies have generally found that language skill, or more precisely, a deficiency in being able to communicate in English, is an important factor in explaining the relatively low earnings of Hispanic Americans. Most of this research is based on the Survey of Income and Education (SIE), a large sample survey conducted by the U.S. Bureau of the Census in 1976 that contains many questions on language use and ability. Another important source of data for studying Hispanic Americans is U.S. population censuses, which contain direct information on language starting in 1980, though not in as much detail as in the SIE. However, an important advantage of census data over the SIE is that they permit researchers to make comparisons over time.

The purpose of this paper is to measure and analyze employment and earnings gaps between English speakers and Hispanics/Spanish speakers using data from successive U.S. censuses. In so doing, we extend our earlier work (Bloom and Grenier 1992a) and the existing literature by including data from the 1990 census and by analyzing earnings gaps among women. Since relatively few datasets that include measures of individuals' labor market

characteristics and outcomes contain direct information on individuals'
mother tongue, spoken language, language proficiency, and so on, studies of
the labor market effects of language skills often assume a close connection
between language and ethnicity and use the latter, which is reported in most
surveys, as an indicator of the former. Empirical support for the use of
Hispanic ethnicity as a proxy for Spanish mother tongue is provided in Bloom
and Grenier (1992a).

The paper begins with a brief survey of the economic literature on
earnings gaps between Hispanics and non-Hispanic Whites in the United States
(i.e., Spanish-English earnings gaps). It then describes the conceptual
framework we use to guide our empirical analyses. It continues with a
description of the data and a presentation and discussion of the empirical
results.

Review of the Literature

Economists generally treat language as a kind of "human capital," which
can be developed in the same way that individuals develop other productive
skills (Bloom and Grenier 1992b). For example, individuals can acquire or
improve their language abilities by attending school, conversing with
others, engaging in self-study, and so forth. Although most people
communicate predominantly in their mother tongue throughout their lives,
learning another language is not uncommon. Members of linguistic minorities
are particularly likely to acquire the dominant language of the society in
which they live. What is significant for economists is that the development
of language skills is not without costs. Learning a language typically
requires resources to pay for instruction and materials and, perhaps more
important, the commitment of time, which also has value. As a basic
proposition of economic analysis is that individuals respond to incentives,

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economists generally believe that individuals seek to acquire those language skills whose expected financial benefits exceed their expected costs. The anticipation of various nonpecuniary benefits, for example, widening intellectual horizons or gaining social acceptance, though difficult to measure, will also play a role in these decisions.

In 1969, the average annual earnings of prime-age Hispanic men in the U.S. were 32 percent lower than for non-Hispanic white men. By 1989 the shortfall had risen to 39 percent. The size of this differential has stimulated a great deal of economic research over the years (and also of sociological research, although that literature is not reviewed here). In examining this research, it is useful to divide the economic studies on the earnings of Hispanic Americans into three generations. The first generation, which consists of studies done mainly during the 1960s and early 1970s, analyzed gross earnings gaps between Hispanics (typically just Mexicans) and non-Hispanics. These studies usually considered only one major cause of the earnings gap: differences in educational attainment. The second generation of studies, carried out from the mid-1970s to the early 1980s, used multiple regression analysis to examine the role of a longer list of labor market characteristics, such as age, marital status, and region of residence, in addition to educational attainment, to explain earnings gaps between non-Hispanics and the different Hispanic subgroups. Although none of the first or second generation studies had language ability, per se, as a central focus of analysis, mainly because of data limitations, we review them here because they provide the intellectual roots for more recent labor market research that focuses directly on language ability. Finally, the third generation of studies, those conducted from the early 1980s on, emphasized the role of English language skills as an

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independent and potentially important determinant of earnings and other labor market outcomes.

First-Generation Studies

Fogel's (1966) study is perhaps the earliest attempt to provide an analytical explanation for the relatively low earnings of Hispanic Americans. Using a sample of men from the 1960 U.S. census, Fogel analyzed differences in median incomes between Whites and various national origin groups, including Mexicans and Puerto Ricans. He also constructed an index of educational attainment for the same groups, which he compared to their average incomes. One of his key findings was that differences in educational attainment accounted for a sizeable portion of the differences in median income, especially for Mexicans.

Adopting a similar approach, Poston, Alvirez, and Tienda (1976) decomposed earnings differences between non-Hispanics and Mexicans into a portion due to differences in schooling and a portion due to differences in the labor market reward for schooling (i.e., the schooling coefficient in multiple regression analysis). Comparing data from the 1960 and 1970 U.S. censuses, they found that the portion of the earnings difference due to differential labor market rewards assigned to schooling for Hispanics and non-Hispanics increased during the 1960s.

Carliner (1976) used data from the 1970 Current Population Survey to estimate rates of return to years of schooling for Whites, Blacks, and different Hispanic groups. He found that the rate of return to education was about two percentage points lower for Mexicans than for Whites. Rates of return to schooling were also lower for Blacks relative to whites, but they were higher for Cubans and for Central and South Americans. For Puerto Ricans and other Spanish-speaking groups, they were about the same as those

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for Whites. These results must be interpreted with caution, however,
because some of Carliner's samples were quite small.

Second-Generation Studies

The second generation of studies combined the economic theory of human
capital with multivariate statistical techniques to assess the contribution
to earnings differences of multiple characteristics of workers in addition
to their education. For example, using a sample of male workers from the
1970 U.S. census, Long (1977) decomposed White-Hispanic earnings
differentials into portions due to differences in workers' characteristics
and differences in the labor market rewards assigned to those
characteristics. The characteristics he considered include education, age,
region of residence, marital status, and hours worked. His results also
revealed higher returns to education for Cubans than for Mexicans or Puerto
Ricans, but not as high as for Whites. Long's major findings were that
about half of the earnings differentials between Whites and Hispanics could
be attributed to differences in their labor market characteristics, a
finding later confirmed by Gwartney and Long (1978) in their analysis of the
1960 and 1970 U.S. censuses.

Carliner (1980) used data for men from the 1970 U.S. census to
correlate earnings and labor market characteristics for eight ethnic groups,
including Puerto Ricans, Chicanos, and Cubans. Carliner was particularly
interested in the evolution of earnings across first, second, and third
generation Americans. One of his key findings was that increases in human
capital are particularly important in explaining cross-generation increases
in the earnings of Puerto Ricans and Cubans. Among the labor market
characteristics whose connection to earnings he studied, Carliner included a
dummy variable for English mother tongue as a proxy for language skills.

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(Mother tongue was reported in a version of the public use sample of the 1970 U.S. census that unfortunately did not include another key labor market variable: year of immigration.) However, he found that the coefficient of this variable was insignificantly different from zero.

Reimers (1983, 1984) used the Survey of Income and Education to analyze earnings data for men belonging to five Hispanic groups, as well as for non-Hispanic Whites and non-Hispanic Blacks. She found strong evidence of differential labor market rewards for particular characteristics among Puerto Ricans, Central and South Americans, and other Hispanics relative to Whites, but not for Mexicans or Cubans. Although language ability was only of peripheral interest in her studies, Reimers included a variable for English-speaking ability in her regression specifications, and found that it had a negative effect on earnings that was insignificantly different from zero for all groups except Puerto Ricans.

Also deserving of mention is DeFreitas' (1991) detailed statistical analysis of the economic position of Hispanics in the United States, carried out using decennial census data from 1950 through 1980, the 1976 SIE, and data from the Current Population Survey through 1987. DeFreitas documented a large earnings gap between Hispanics and non-Hispanic Whites that has widened steadily since the 1960s. He also showed that the earnings of low-skill Hispanics fell in the 1980s relative to those of high-skill Hispanics, a development that mirrors broader changes in the U.S. wage structure (discussed further below).

Third-Generation Studies

The third and current generation of studies takes as its central focus the role of language skills in earnings determination. These studies are also done in the context of human capital theory, with language itself

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treated as part of an individual's human capital. In other words, the
studies view the ability to communicate in the language of the labor market
as an independent contributor to someone's productivity, and therefore to
their earnings. Investigators had recognized the potential importance of
language earlier (for example, Chiswick 1978; Carliner 1980; Reimers 1983,
1984), but the lack of data limited careful testing of detailed hypotheses
related to language.

The SIE, which was conducted in early 1976, provided the long-awaited
data breakthrough needed for more detailed study of the effects of language
skills on earnings. The SIE included questions about different aspects of
language, some of which referred to an individual's past situation (e.g.,
mother tongue and language used at school), while others referred to
conditions at the time of the survey (e.g., language used at home, language
usually spoken by a person in different situations, and the ability to
understand and speak English).

One of the difficulties researchers who worked with the SIE faced was
how to best exploit the large amount of information on language. McManus,
Gould, and Welch (1983) considered all the language variables and defined
seven levels of language proficiency based on the effect of groups of
language variables on earnings. They then used their index in an earnings
equation and found that language proficiency explains a great deal of
earnings variability. However, Chiswick (1991) pointed out a serious
technical problem related to the use of earnings data in the construction of
the language proficiency index. This problem likely leads to upwardly
biased estimates of the strength of the language-earnings relationship.

Other researchers have used the SIE's language questions to define and
test novel new hypotheses. McManus (1985) included a simple indicator based
on proficiency of understanding and speaking English in his earnings model,

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and found a significant impact on earnings. Grenier (1984) estimated several specifications of wage equations for Hispanic men that included various language indicators (e.g., speaking deficiency, language usually spoken, and childhood language). Most of those indicators had statistically significant effects in his earnings equations, thereby providing evidence that language proficiency plays a role determining earnings.

Tainer (1988) estimated earnings regressions for foreign-born men. She used a simple measure of English deficiency and an index that incorporated English-speaking ability, language used at home, and the language an individual used most often. She found a significant positive effect of English language ability on earnings for Hispanics.

Kossoudji (1988) simultaneously modeled earnings and occupational choices for Hispanic and Asian immigrants, distinguishing between individuals on the basis of their fluency in English. She found that immigrants who did not speak English well tended to occupy lower positions on the occupational ladder.

Some more recent studies have used data sets other than the SIE to evaluate the effects of language skills on earnings. McManus (1990) used the 1980 U.S. census to examine the effects of English proficiency within and outside Hispanic enclaves. He found evidence that Hispanic men with limited English skills experience less of an earnings shortfall when they locate themselves in areas with a higher proportion of Hispanics.

Rivera-Batiz (1990) analyzed the 1985 National Assessment of Educational Progress, which includes a measure of English language proficiency based on scores from a reading test, in contrast to the self-assessed measure included in the SIE and most other large databases. He used a sample of first and second generation immigrants, mostly Spanish-

speaking, and found that English reading deficiency was a major factor limiting immigrants' earnings levels.

In addition, Rivera-Batiz (1991) found that, together with English reading deficiency, inadequate quantitative skills explain a substantial portion of the earnings gap between Hispanic and non-Hispanic White young adults in the United States. He also found that women were more negatively affected by English deficiency than men.

In subsequent work also based on the National Assessment of Educational Progress, Rivera-Batiz (1992) found that when self-assessed measures of English proficiency were used to predict wages, the link between the two variables was weaker than when test-based measures were used. He suggests that measurement error in self-assessed English proficiency may result in an understatement of the importance of language skills as a determinant of labor market outcomes.

Chiswick (1991) analyzed data from a survey of male illegal aliens apprehended in the Los Angeles area in 1986, most of them Hispanics. Analyzing measures of English speaking and reading ability at the time of the survey, as well as a measure of speaking ability before coming to the United States, he found that reading ability affects earnings more than speaking ability.

Bloom and Grenier (1992a) compared the earnings of Hispanic and non-Hispanic White men using data from the 1970 and 1980 U.S. censuses. They found evidence of a large earnings gap between Spanish- and English-speaking men in the United States in the 1970s. They also found evidence that the increasing supply of Spanish speakers in the United States, caused mainly by rapid immigration, was responsible for a slight deterioration in the relative wages of Hispanic workers during the 1970s.

Smith (1992) analyzed 1980 U.S. census data for Hispanic men and found

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that English language ability has a sizeable and significant effect on their wages. He concluded that English ability explains roughly half of the earnings differential between Hispanic immigrants and native-born Americans.

In sum, empirical economic analyses have established two key results: (1) that the earnings gap between Hispanics and non-Hispanics is caused partly by Hispanics having less human capital than non-Hispanics, and partly by Hispanics having a lower rate of return on their human capital than non-Hispanics; and (2) that English language proficiency is an important component of Hispanics' overall stock of human capital. These results are, however, generally based on earnings data for men only, with few studies based on data collected after 1980. The recent release of the public use samples of the 1990 U.S. census allows us to help fill both gaps in the literature.

Theoretical Framework

Our theoretical framework for studying the relative earnings of Spanish speakers is based on economists' standard model of supply and demand. We start by considering a local economy whose population consists of two language communities: Spanish speakers and English speakers. In the interest of efficient communication between workers, employers, and consumers, members of these language communities will tend to sort themselves so that most interactions take place among people who speak the same language, which they can do, for example, by forming enclaves in which either Spanish or English dominates.

The average wage and employment levels of individuals in each language community are determined in labor markets through the interaction of labor supply and labor demand. Labor supply is determined by the size of the

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community and the labor effort forthcoming from each member at different possible wage levels, which presumably depends in part on their skills. Labor demand refers to the amount of labor that employers wish to hire at different wage levels, which mainly reflects worker productivity and the value of the good or service being produced. In general, for a given labor demand schedule and set of institutional constraints (such as the minimum wage), increases in the supply of labor lead to some combination of increased employment, increased unemployment, and lower wages. Alternatively, for a given supply of labor and set of labor market constraints, increases in the demand for labor lead to some combination of increased employment, reduced unemployment, and higher wages.

Employment, unemployment, and earnings may differ among each language community because of differences in their supply of labor or in the demand for their labor. In addition, these differences may vary over time in response to differential shifts in labor supply or labor demand. For example, an increase in the size of a particular language group caused by, for example, immigration, will tend to increase the group's supply of labor, and possibly also the demand for its labor, which implies increased employment levels at an average wage that may be higher or lower depending on the relative strength of the supply increase (wage-depressing) and the demand increase (wage-enhancing). This framework does not rule out the possibility that some workers will be employed in jobs in which their language proficiency limits their productivity (i.e., jobs in which their native tongue is not the primary language of communication). It also allows for the possibility that some workers will become bilingual in an attempt to expand their job opportunities and earning capacity.

Assuming that individuals derive social and cultural benefits from living in communities in which their mother tongue predominates, one might

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also expect the average wage of a linguistic minority to be relatively lower

in areas in which that community represents a larger share of the overall

population (because lower wages are required to induce individuals to locate

and work in such areas). Self-selection might reinforce this effect insofar

as out-migrants from regions with a high proportion of minority-language

speakers might place less value on these community characteristics or be

more ambitious and aggressive, and therefore more successful in the labor

market. Our empirical analysis examines these hypotheses through repeated

comparisons of regions with high and low proportions of Hispanics. Although

the nature of our data does not allow us to disentangle the effects of the

multiple forces possibly influencing earnings differentials between the two

groups, we can measure the net effect and isolate some of its components.

Data and Sample

We analyze the 1/1,000 public use samples of the 1970 and 1980 U.S.

censuses and a 2/1,000 sample from the 1990 U.S. census (drawn from a 1/100

sample tape). Ideally, we would have liked to define linguistic groups on

the basis of mother tongue, but we could not as this information is reported

only in the 1970 census. As an alternative, we used Hispanic ethnic origin

as a proxy in all the censuses. In Bloom and Grenier (1992a) we ran some

basic regressions using the 1976 SIE, which contains information on both

ethnic origin and mother tongue, and showed that the results are very

similar no matter which variable is used.

Our analysis focuses on two groups: individuals who reported a

Hispanic origin (without regard to their origin subgroup, as the definition

of these subgroups changed somewhat across censuses), and a control group of

non-Hispanic Whites. A key variable in the analysis is proficiency in

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English, for which census information is limited. While there is no information on that characteristic in our 1970 census sample, the 1980 and 1990 censuses include an identical question on English speaking proficiency. For the purpose of this study, individuals who reported that they can speak English well or very well are defined as bilingual, while those who reported that they do not speak English well or that they do not speak it at all are defined as monolingual.

Our sample includes individuals aged twenty-five to sixty-four. Men and women are considered separately. For men we also perform a separate analysis for those aged twenty-five to thirty-four, because we expect their labor market outcomes to be more sensitive to, and therefore more reflective of, changing supply and demand influences. By contrast, the employment and earnings of older workers may reflect decisions and understandings that were established long ago, for which it is difficult to account.

For the analysis of earnings we include individuals who reported positive wages and salaries (and no self-employment income). These earnings figures refer to the calendar year preceding the year in which the census was taken. Thus, the earnings data reported in the 1970, 1980, and 1990 censuses actually correspond to the years 1969, 1979, and 1989. We divide the United States into regions with high proportions of Hispanics and regions with low proportions. The distinction is made based on the relative size of the population of Hispanic origin in states and metropolitan areas in 1970. Arizona, California, Colorado, New Mexico, Texas, and the metropolitan areas of New York State and Florida are areas with a high proportion of people of Hispanic origin. All other regions of the United States have a low proportion of people of Hispanic origin. The regions are divided in the same way in all three censuses.

Some of the earnings comparisons are done with multiple regression

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analysis, using a standard set of control variables to account for differences in human capital and other productivity-related characteristics. All three censuses defined these in the same way, although some mild assumptions occasionally have to be made to permit comparisons. For instance, information on education is reported in a slightly different way in the 1990 census than it is in the 1970 and 1980 censuses.

The control variables include education measured in years, education squared to allow for nonlinearities, age, age squared, four dummy variables for weeks worked during the previous year, six dummy variables for hours worked during the week preceding the census, dummy variables for region of residence (northeast, north central, south, and west), and dummy variables for years since migration for those born outside the United States (one to five years, five to ten years, and more than ten years).

Results

Table 1 reports descriptive statistics on the composition of the samples used to make earnings comparisons. The most striking fact is the extraordinary increase in the proportion of Hispanics between 1970 and 1990. For instance, in the heavily Hispanic regions, Hispanic men accounted for 12 percent of male workers in 1970, but 22 percent in 1990. This substantial change reflects annual growth rates in the number of working age Hispanic men that exceeded 5 percent during each intercensal period, more than three times the rate of increase among the non-Hispanic men. Hispanics also increased their relative presence in the labor market in regions with low proportions of Hispanics, but to a much smaller extent.

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Table 2 reports earnings comparisons between Hispanic workers and non-Hispanic White workers (which is interpreted, based on previous analyses described earlier, as a comparison between individuals with Spanish as their mother tongue and those with English as their mother tongue). For the sake of strict comparability with the multiple regression results reported below, which are based on logarithmic earnings equations, earnings differentials are measured in log points. These are calculated by taking the difference between groups in the mean of the natural logarithm of their earnings. These differences are roughly comparable to standard percentage differences in earnings between the groups, and are not affected by changes in the value of the U.S. dollar over time.

The results presented in table 2 reveal four noteworthy patterns. First, Spanish-English earnings differentials are sizeable and are larger for men than for women, a finding similar to that reported by Shapiro and Stelcner (1987) and Grenier (1988) in their studies of French-English earnings differentials in Quebec. Among the men, earnings differentials are slightly smaller for the group aged twenty-five to thirty-four than for the group aged twenty-five to sixty-four.

Second, Spanish-English earnings differentials are substantially larger in the heavily Hispanic regions than in the regions with a low proportion of Hispanics. This result is consistent with the view that labor markets with larger proportions of minority language speakers value language skills differently than markets with smaller proportions.

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Third, for men, Spanish-English earnings differentials tended to increase during the two decades under study. The increase is particularly sizeable in the heavily Hispanic regions, especially during the 1980s. The earnings gap also increased for women in those regions during the 1980s, after decreasing during the 1970s. For women in the regions with a low proportion of Hispanics, the earnings gap was stable in the 1970s and declined in the 1980s.

Fourth, earnings differentials are greater for monolingual Spanish speakers than for bilingual Hispanics. They also appear to have increased more during the 1980s for monolingual Spanish speakers than for bilingual Hispanics, especially in the heavily Hispanic regions.

To test whether these basic patterns and changes in raw earnings differentials can be accounted for by the underlying labor market characteristics of the broadly defined groups under study, we use multiple regression analysis to re-estimate these differentials for workers who are statistically comparable in terms of their marital status, region of residence, period of immigration, age, and education. We also standardize the results for differences in weeks worked per year and hours worked per week, so that the regression results may be interpreted as hourly earnings differentials.

The results of this analysis are reported in table 3, which shows that the pattern of regression-corrected differentials is not at all similar to that of the raw differentials. First, all the corrected differentials are smaller than the raw differentials. This change indicates that differences in education, age, marital status, and other control variables between the .Spanish and English comparison groups account for much (generally more than half) of the differences in their earnings. Indeed, many of the estimated earnings differentials for women are no longer significantly different from

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zero after one introduces regression controls.

The most important result in table 3 is the absence of any widening of Spanish-English earnings gaps in the 1980s. Given the substantial widening of the raw earnings differentials apparent in table 2, the results in table 3 provide a clear indication that the 1980s deterioration of Hispanics' relative earnings is associated with a deterioration in either the non-language components of their human capital or in the value assigned to that human capital in the labor market.

To explore this issue further, table 4 reports estimates of the rate of return to schooling for twenty-five to sixty-four year old men in the 1970, 1980, and 1990 U.S. censuses. The estimates declined slightly in both the high and low proportion Hispanic regions in the 1970s, and increased sharply in both regions in the 1980s. This pattern of results is consistent with other recent research on changes in the structure of wages in the United States during the past two decades (see, for example, Blackburn, Bloom, and Freeman 1990, 1991, 1993; Katz and Murphy 1992; and Bound and Johnson 1992). By and large, the estimated differences in the rates of return to schooling between people with Spanish and English mother tongues are small, insignificant, and show little trend over time. As the Spanish speakers have less average education than the English speakers, increased wage premiums associated with educational attainment clearly represented a labor market development of the 1980s with adverse implications for the Spanish speakers. Thus, an important factor that contributed to the deteriorating

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economic position of Spanish speakers in the 1980s appears to have been a
change in the overall structure of wages that hurt the Spanish speakers not
because of their mother tongue or country of origin, but rather because of
their relatively low levels of schooling. As noted earlier, DeFreitas
(1991) reached a similar conclusion in his analysis of the widening earnings
gaps between Hispanics and non-Hispanics.

Table 3 shows that the Spanish-English earnings gaps remain larger in
the heavily Hispanic regions than in regions with low proportions of
Hispanics even after controlling for individual labor market
characteristics. This result highlights the local nature of labor and
product markets and suggests that the degree to which Spanish speakers are
geographically concentrated may be an important determinant of their
economic position in the aggregate. It also suggests that a large supply of
minority-language speakers depresses wages more among those whose primary
language is not the dominant language of the labor market than it drives
their wages upward by creating demand for services in the minority language.
However, positive self-selection of Hispanics into low proportion Hispanic
regions may also account for lower earnings differentials in those regions,
a hypothesis that is supported by the observation that Spanish-English
education gaps are narrower in the low-proportion Hispanic regions than in
the heavily Hispanic regions. This hypothesis also derives support from the
fact that the difference in the Spanish-English earnings gap between the low
and high proportion Hispanic regions is smaller for women than for men,
presumably because the self-selection phenomenon operates primarily among

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men. In addition, the stability of the regression-corrected earnings differentials during the 1970s and 1980s, despite the sharp increases in the relative supply of Spanish speakers in the heavily Hispanic regions, suggests a more important role of demand shifts than is indicated by the simple comparison of earnings differentials across regions.

Turning now from the wage side of the labor market to the employment side, table 5 reports employment-to-population ratios (EPR), labor force participation rates (LFP), and unemployment rates (UR) for selected demographic groups and regions. These indicators of labor market activity and success are related, for each subgroup and time period, by the following identity: EPR = LFP*(1-UR). This formula allows us to decompose changes in employment-to-population ratios into changes in labor forces participation rates and unemployment rates.

For men, the employment-to-population ratio fell from 1970 to 1990, though by a larger amount for individuals of Spanish mother tongue than of English mother tongue. This difference is caused primarily by relatively larger increases in the unemployment rates of the Spanish speakers than by differential changes in their labor force participation rates. Indeed, by 1990 the unemployment rates of Spanish-speaking men were more than twice those of English-speaking men in the heavily Hispanic regions.

Spanish-speaking women also have lower employment-to-population ratios than English-speaking women, though these rates increased for both groups from 1970 to 1990. Unemployment rates for Spanish-speaking women were

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higher than for English-speaking women, and increased steadily throughout
the period under study.

Table 6 reports gross differentials in unemployment rates as well as
adjusted differentials that use multiple regression analysis to remove the
influence on unemployment of the following set of characteristics: marital
status, age, region, period of immigration, and education. In other words,
the differentials reported in the second panel of table 6 refer to
individuals who are statistically comparable in terms of this set of
characteristics.

Table 6 shows that unemployment rate differences between the Spanish
and English speakers are statistically explained by differentials in their
labor market characteristics, especially in 1970 and 1980. Nevertheless,
the portion of excess unemployment among Hispanic men (and women) that could
not be explained by their labor market characteristics was statistically
significant in (1980 and) 1990. The estimates also indicate that labor
market characteristics can account for increases in the relative
unemployment rates of Spanish speakers in the 1980s (upper panel of table 6)
without reference to mother tongue or ethnicity.

Summary

This study has analyzed differential labor market outcomes between
Spanish speakers and English speakers residing in the United States.
Consistent with most previous studies' conclusions, the results presented
here show that the earnings of Spanish speakers fall short of those of

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English speakers, even controlling for cross-group differences in non-language dimensions of human capital. Language-earnings differentials are wider among men than among women, and are also quite wide in the more heavily Hispanic regions of the United States, an indication either that the return to language skills varies according to the linguistic composition of local labor and product markets, or that there is considerable self-selection in the location decisions of Spanish speakers. Earnings differences between monolingual Spanish and English speakers are larger than those between bilingual Spanish and English speakers.

This study also extends previous studies of language-earnings differentials by analyzing 1990 census data, by focusing on labor market outcomes among women as well as among men, and by examining labor market outcomes on the quantity side of the market (i.e., employment, labor force participation, and unemployment) in addition to earnings differentials.

The results reveal rapid growth in the number of Spanish speakers and slight increases in Spanish-English earnings and unemployment differentials in the 1970s. By contrast, these differentials increased sharply in the 1980s, also a period of rapidly increasing supply. However, there is no evidence that these widening differentials reflect an increase in the labor market rewards to English language proficiency. Rather, they appear to be the result of Spanish speakers having relatively little of those labor market characteristics, most notably education, whose market value increased dramatically during the 1980s.

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Table 1. Composition of Samples for Earnings Comparisons, Hispanic Origin and Non-Hispanic Origin White Men and Women, by Region, 1970-90

	Men						Women, age group 25-64		
	Age group 25-64			Age group 25-34					
Census dataset	1970	1980	1990	1970	1980	1990	1970	1980	1990
High proportion Hispanic regions[a]									
Sample size[b]	8,826	10,752	26,887	2,660	4,199	10,202	5,853	8,478	23,432
Proportions									
White	.882	.836	.782	.853	.804	.731	.902	.849	.812
Hispanic	.118	.164	.218	.147	.196	.269	.098	.151	.188
Monolingual	NA	.038	.055	NA	NR	.067	NA	.035	.040
Bilingual	NA	.125	.163	NA	NR	.203	NA	.116	.149
Low proportion Hispanic regions[a]									
Sample size[b]	21,892	24,314	55,865	6,675	9,199	19,538	14,651	19,399	50,759
Proportions									
White	.980	.979	.971	.977	.976	.963	.983	.981	.975
Hispanic	.019	.021	.029	.023	.024	.037	.017	.019	.025
Monolingual	NA	.004	.006	NA	NR	.007	NA	.004	.005
Bilingual	NA	.017	.023	NA	NR	.030	NA	.016	.020

NA   Information not available for that year.
NR   Results not reported because sample size is too small (less than 100 observations in that category).
a.   High proportion Hispanic regions include the states of Arizona, California, Colorado, New Mexico, and Texas and the metropolitan areas of the states of Florida and New York. All other regions constitute the low proportion Hispanic regions.
b.   Sample proportion is 1/1,000 in 1970 and 1980 and 2/1,000 in 1990.
Source: U.S. censuses 1970, 1980, and 1990, public use samples.

Table 2. Earnings Differentials, Hispanic Origin and
Non-Hispanic Origin White Men and Women, by Region, 1970-90
(earnings differentials in log points)

| | Men | | | | | | Women, age group 25-64 | | |
| | Age group 25-64 | | | Age group 25-34 | | | | | |
Census dataset	1970	1980	1990	1970	1980	1990	1970	1980	1990
High proportion Hispanic regions[a]									
H to W	-.48	-.50	-.61	-.35	-.38	-.55	-.32	-.23	-.39
HM to W	NA	-.81	-.98	NA	NR	-.86	NA	-.43	-.80
HB to W	NA	-.40	-.49	NA	NR	-.44	NA	-.17	-.28
Low proportion Hispanic regions[a]									
H to W	-.26	-.36	-.36	-.18	-.29	-.28	-.11*	-.11	-.07
HM to W	NA	-.68	-.75	NA	NR	-.62	NA	-.36	-.34
HB to W	NA	-.26	-.26	NA	NR	-.20	NA	-.05*	-.01*

* Not significantly different from zero at the 5 percent level of significance.
NA   Information not available for that year.
NR   Results not reported because sample size is too small (less than 100 observations in at least one
     relevant category).

H=Hispanic, W=Non-Hispanic white, HM=Hispanic monolingual, HB=Hispanic bilingual.
a.   See corresponding note in table 1.
Source: Calculations are based on U.S. censuses 1970, 1980, and 1990, public use samples.

Table 3. Regression-Corrected Earnings Differentials for Hispanic Origin and Non-Hispanic Origin White Men and Women, by Region, 1970-90
(earnings differentials in log points)

| | Men | | | | | | Women, age group 25-64 | | |
| | Age group 25-64 | | | Age group 25-34 | | | | | |
Census dataset	1970	1980	1990	1970	1980	1990	1970	1980	1990
High proportion Hispanic regions[a]									
H to W	-.21	-.20	-.17	-.13	-.16	-.17	-.05*	-.02*	-.07
HM to W	NA	-.29	-.28	NA	NR	-.24	NA	-.004*	-.09
HB to W	NA	-.19	-.15	NA	NR	-.17	NA	-.02*	-.06
Low proportion Hispanic regions[a]									
H to W	-.13	-.14	-.08	-.08	-.12	-.004*	-.02*	-.02*	.06
HM to W	NA	-.26	-.10	NA	NR	.09*	NA	-.06*	.11
HB to W	NA	-.12	-.08	NA	NR	-.02*	NA	-.02*	.06

* Not significantly different from zero at the 5 percent level of significance.
NA   Information not available for that year.
NR   Results not reported because sample size is too small (less than 100 observations in category)
H=Hispanic, W=Non-Hispanic White, HM=Hispanic monolingual, HB=Hispanic bilingual
Note: Variables included in the regression are as follows: four dummies for weeks worked during the previous year, six dummies for hours worked during the week preceding the census, two marital status dummies, three regional dummies, three period of immigration dummies, age, age squared, education, and education squared.
a.   See corresponding note in table 1.
Source: Calculations are based on U.S. censuses 1970, 1980, and 1990, public use samples.

Table 4. Return to Education, Differences in Return to Education, and Differences in Years of Education between White and Hispanic Origin White Men, Age Group twenty-five to sixty-four, by Region, 1970-90

Census dataset	1970	1980	1990
High proportion Hispanic regions[a]			
Return to education(W)[b]	.509	.054	.101
Difference in return to education (H-W)[c]	-.007*	-.007*	-.004*
Difference in years of education (H-W)	3.3	-3.5	-3.5
Low proportion Hipanic regions[a]			
Return to education(W)[b]	.066	.054	.097
Difference in return to education (H-W)[c]	-.020	-.007*	-.014
Difference in years of education (H-W)	-1.4	-2.2	-2.1

* Not significantly different from zero at the 5 percent level of significance.

a. See corresponding note in table 1.

b. The derivative of log earnings with respect to years of education evaluated at the sample mean in a regression where the independent variables are education, education squared, four dummies for weeks worked in the previous year, six dummies for hours worked in the week preceding the census, two marital status dummies, three regional dummies, three period of immigration dummies, age, age squared, a dummy for Hispanic origin, and Hispanic origin interacted with years of education.

c. Coefficient of Hispanic origin interacted with years of education in an earning regression where the other independent variables are four dummies for weeks worked in the previous year, six dummies for hours worked in the week preceding the census, two marital status dummies, three regional dummies, three period of immigration dummies, age, age squared, education, education squared, and a dummy for Hispanic origin.

Source: Calculations are based on U.S. censuses 1970, 1980, and 1990 public use samples.

Table 5. Employment-Population Ratios, Labor Force Participation Rates, and Unemployment Rates for Hispanic Origin and Non-Hispanic Origin White Men and Women, by Region, 1970-90

	Men						Women, age group 25-64		
	Age group 25-64			Age group 25-34					
Census dataset	1970	1980	1990	1970	1980	1990	1970	1980	1990
Employment-population ratios									
High proportion Hispanic regions									
White	.897	.857	.853	.913	.904	.894	.468	.565	.668
Hispanic	.862	.846*	.795	.876	.875	.817	.358	.472	.553
Monolingual	NA	.794	.770	NA	NR	.812	NA	.380	.407
Bilingual	NA	.863*	.804	NA	NR	.819	NA	.510	.608
Low proportion Hispanic regions									
White	.895	.858	.849	.927	.894	.893	.451	.549	.661
Hispanic	.892*	.776	.821	.910*	.754	.839	.448*	.502	.595
Monolingual	NA	.777	.778	NA	NR	.839	NA	.363	.477
Bilingual	NA	.776	.832*	NA	NR	.839	NA	.547*	.629
Labor force participation									
High proportion Hispanic regions									
White	.921	.889	.887	.939	.945	.935	.487	.588	.696
Hispanic	.903	.895*	.871	.918*	.929*	.900	.384	.517	.616
Monolingual	NA	.864*	.863	NA	NR	.907	NA	.424	.499
Bilingual	NA	.905	.872	NA	NR	.898	NA	.555	.661
Low proportion Hispanic regions									
White	.918	.899	.889	.952	.949	.943	.469	.577	.690
Hispanic	.923*	.847	.883*	.946*	.838	.901	.473*	.555*	.672*
Monolingual	NA	.844	.853	NA	NR	.916*	NA	.415	.574
Bilingual	NA	.847	.891*	NA	NR	.897	NA	.600*	.701*

Unemployment rates

High proportion Hispanic regions[a]

White	.025	.036	.039	.026	.043	.044	.039	.038	.040
Hispanic	.045	.055	.086	.046	.059	.092	.067	.086	.104
Monolingual	NA	.081	.109	NA	NR	.105	NA	.105	.185
Bilingual	NA	.047	.079	NA	NR	.088	NA	.081	.080

Low proportion Hispanic regions[a]

White	.025	.046	.044	.026	.057	.053	.038	.048	.042
Hispanic	.033*	.083	.070	.038*	.101	.068*	.054*	.095	.116
Monolingual	NA	.080*	.088	NA	NR	.085*	NA	.127	.169
Bilingual	NA	.084	.066	NA	NR	.065*	NA	.088	.103

* Not statistically different from White at the 5 percent level.
NA Information not available for that year.
NR Results not reported because sample size is too small (less than 100 observations in category).
a. See corresponding note in table 1.
Source: Calculations are based on U.S. censuses 1970, 1980, and 1990, public use samples.

Table 6. Gaps in Unemployment Rates, Gross and Regression-Corrected, for Hispanic Origin and Non-Hispanic Origin White Men and Women, by Region, 1970-90

	Men						Women, age group 25-64		
	Age group 25-64			Age group 25-34					
Census dataset	1970	1980	1990	1970	1980	1990	1970	1980	1990
Gross unemployment rate gaps									
High proportion Hispanic regions[a]									
H to W	.020	.019	.047	.019	.016	.049	.029	.048	.063
HM to W	NA	.045	.070	NA	NR	.061	NA	.067	.114
HB to W	NA	.011	.040	NA	NR	.044	NA	.043	.040
Low proportion Hispanic regions[a]									
H to W	.088*	.037	.026	.012*	.043	.016*	.016*	.047	.073
HM to W	NA	.034*	.044	NA	NR	.032*	NA	.079	.127
HB to W	NA	.038	.022	NA	NR	.012*	NA	.040	.061
Regression-corrected unemployment gaps[b]									
High Proportion Hispanic regions[a]									
H to W	.013	.011*	.028	.022	.011	.031	.012*	.028	.023
HM to W	NA	.014*	.034	NA	NR	.032	NA	.012*	.068
HB to W	NA	-.011*	.027	NA	NR	.031	NA	.030	.019
Low proportion Hispanic regions[a]									
H to W	.004*	.016*	.008*	.008*	.017	.010*	.008*	.034	.050
HM to W	NA	-.009*	-.044	NA	NR	.035	NA	.046*	.069
HB to W	NA	.021	.010*	NA	NR	.005*	NA	.032	.046

* Not statistically different from zero at the 5 percent level of significance.
NA   Information not available for that year.
NR   Results not reported because sample size is too small (less than 100 observations in category).
H=Hispanic, W=Non-Hispanic White, HM=Hispanic monolingual, HB=Hispanic bilingual

a. See corresponding note in table 1.
b. Variables included in regression: two marital status dummies, three regional dummies, three period of immigration dummies, age, age squared, education, and education squared.

Source: Calculations are based on U.S. censuses 1970, 1980, and 1990, public use samples.