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Cover Page Footnote
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THE VALUE OF BILINGUALISM IN THE U.S. LABOR MARKET

RICHARD FRY and B. LINDSAY LOWELL*

Much is surmised, but little is known about the value of bilingualism in today's U.S. economy. The authors use the National Adult Literacy Survey (NALS) to provide the first rigorous estimates of the wages of bilingual workers. Although the nominal wages of bilinguals exceed those of their monolingual peers, this pattern largely reflects the higher completed schooling of the bilinguals. In fact, regression analysis shows that bilingual skills do not make a statistically significant contribution to weekly wages, once all workers' human capital characteristics are held constant. Thus, the market little values foreign language proficiency and creates no incentive to acquire or maintain it, doubtless contributing to the relatively rapid shift to monolingualism across generations.

An established research literature finds that there are substantial labor market payoffs for foreign workers who speak English; yet, there is no research on the payoff for workers with abilities in English and another language. Even if English remains the dominant language of the U.S. populace, there are good *a priori* reasons to expect multiple language skills to provide an earnings advantage for workers and a competitive advantage for employers who hire those workers. In an increasingly global economy, multinational corporations and import/export businesses need those rare workers—about 7% of the U.S. work force in 1992, by our estimate—who can speak both English and another language. Decades of growing immigration have created diverse communities of non-native-English-speakers across the country, from Spanish speakers throughout the Southwest to Vietnamese in enclaves of major West and East coast cities. Workers often need to speak languages other than English in supervisory and middleman/professional service-provider occupations. Moreover, research finds that bilinguals tend to perform better in school, suggesting that bilingualism improves academic ability and, probably, productivity.

At least one analyst, however, has cast doubt on the supposition that bilingualism confers an earnings advantage. Carliner (1981) sketched a simple informal theory of language markets in his examination of

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The data set used in the analysis (in SAS form) and copies of the SAS programs used to generate the empirical results are available from Richard Fry, Pew Hispanic Center, 1919 M Street, N.W., Washington, D.C. 20036.

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Canadian language issues. Under the assumption that non-native speakers of the dominant language are indifferent between holding jobs solely using the dominant language and jobs requiring bilingualism, in equilibrium the wages of bilingual jobs and jobs only using the dominant language should be equal. Effectively, there should be no compensating wage differentials for either bilingual jobs or dominant language jobs if non-native speakers have no preference between them.

In this paper, using nationally representative data from the 1992 National Adult Literacy Survey, we investigate whether bilinguals enjoy an earnings premium. The validity of our methodology depends on the accuracy of individuals' self-reports of their English language proficiency. We present evidence on whether bilinguals and English monolingual workers self-assess their English language skills in the same or similar ways. The penultimate section examines whether the returns to second language and English skills differ in linguistic enclaves.

Data

Our analysis is based on the 1992 National Adult Literacy Survey (NALS) (NCES 1997). Funded by the U.S. Department of Education, the NALS has been used largely to understand the cognitive skills of the nation's work force (for example, Pryor and Schaeffer 1999). Designed to be nationally representative of the resident adult population, the NALS interviewed in person about 26,000 adults.[1] The interviewers, some of whom were bilingual in English and Spanish, administered a 20-minute background questionnaire that was available in English and Spanish versions.

In addition to questions on labor market status and educational attainment, the questionnaire asked a very detailed set of questions on language proficiencies, language use, reading and writing materials, and language habits. About 30 questions on language and literacy background and practice were included. By comparison, the 1990 Census asked 3 questions on language (Chiswick and Miller 1998). To our knowledge, the NALS is the most detailed survey of the English and foreign language skills of the U.S. population ever conducted.

While the Census does gauge English speaking proficiency, it sheds little light on foreign language skills. It has a single item on languages spoken at home, and hence measures foreign language use, rather than proficiency. Since many first- and second-generation adults use English at home, in spite of their non-English language background, the Census likely understates the number of individuals proficient in a foreign language (Stevens 1999).

The NALS questions on foreign language proficiencies are preceded by a streaming question: "What language or languages did you learn to speak before you started school?" Respondents who answered "English only" skipped the battery of questions assessing foreign language skills.[2] Respon-

[1]The Survey includes about 1,000 interviews with state and federal prison inmates. We excluded those interviews, and thus our analysis is representative of the adult population residing outside of prisons.

[2]Some adults who only learned to speak English before starting school may have subsequently acquired high levels of foreign language proficiencies through their formal schooling. The NALS does not permit us to capture these adults. This is not a glaring omission. First, the number of U.S. students acquiring foreign language fluency through schooling does not seem large. Less than 13% of high school graduates complete 4 years of Spanish, French, German, or Latin (NCES 2001). More *apropos* is the extent of college foreign language studies. Of the 1.2 million bachelor's degrees granted annually, fewer than 15,000 were granted to foreign languages and literatures majors (NCES 2002). Second, from a methodological standpoint, for purposes of measuring the value of second language skills, it is probably preferable that such individuals cannot be captured. As a result of the streaming question, we can be confident that NALS bilinguals possess second language skills exogenously. They learned the second language before the onset of formal schooling, and thus they and their parents did not opt for them to acquire the foreign language skills. Bilinguals who chose to acquire foreign language fluency do not have such skills exogenously, and thus their inclusion would complicate the wage analysis.

dents who said they learned one or more foreign languages were asked to self-assess their proficiencies in the first foreign language they specified. The interview asked about their ability to understand, speak, read, and write the language, with four response categories provided in each case: "very well," "well," "not well," or "not at all." All NALS respondents self-assessed their English language proficiencies. We define our language skill categories solely on the basis of language proficiency responses and do not use the additional information available on language use and practices.

We define an adult to be "bilingual" if he or she knows English "very well" and a foreign language at least "well." "English monolinguals" are individuals who know English "very well" and whose preschool language was only English or who do not know a foreign language at least "well." "Second language monolinguals" are those that know a foreign language at least "well" but who do not know English. Finally, there is a nontrivial residual category of persons who are not fluent in any language. The NALS coding separately identifies 45 foreign language groups, including the 24 that account for the vast bulk of the foreign languages used.[3] We aggregate the foreign languages into four categories: Spanish language; European, non-Spanish language; Asian language; and other language.

Foreign Language Proficiency and Generation

The literature on use of and proficiency in foreign languages strongly suggests that foreign language fluency is highly dependent on generational status. America is described as a "veritable cemetery of foreign languages," wherein the immigrant (first) generation typically uses a foreign language, but by the third generation English is largely used in nearly all activities and knowledge of the foreign language has died (Portes and Hao 1998). While the proposition that the incidence of bilingualism declines sharply beyond the first generation seems self-evident, available U.S. research is unable to verify the relationship. This is largely due to data limitations. The Decennial Censuses since 1980 identify use of a non-English language at home, but do not allow one to identify the second generation (that is, a native-born individual of foreign or mixed parentage). The 1970 Census does ask about parents' birthplace and mother tongue. Using the 1970 and 1940 Censuses, it is possible to examine the extent of mother tongue change between immigrants (from the 1940 Census) and their native-born offspring (from the 1970 Census). To our knowledge, this longitudinal analysis of mother tongue has not previously been performed.

The most formal evidence we have found on foreign language proficiency and generational status is tabulated from a 1940 Census cross-section. Lieberson, Dalto, and Johnston (1975) reported that 53% of second generation whites named English as their mother tongue, whereas an estimated 25% of their immigrant parents had English as their mother tongue. While mother tongue is not synonymous with foreign language proficiency, and cross-sectional data can be used to draw longitudinal inferences only under restrictive conditions, these tabulations suggest that knowledge of foreign languages does decline with generational succession.

The high correlation between foreign language proficiency and generation will present no problem if generational status has no bearing on socioeconomic success. A growing literature on socioeconomic patterns across generations has mixed results. Borjas (1999) found that the second generation does not experience exceptional economic progress. Measured relative to third and higher generations, the second generation's earnings do not differ much from those of their immigrant parents. In

[3]The 24 most popular foreign languages are, in descending order, Spanish, German, Italian, French, Polish, Portuguese, Chinese, Greek, Korean, Vietnamese, Japanese, Russian, American Indian, Arabic, Philippine, Hungarian, Yiddish, Ukrainian, Slovak, Serbo-Croatian, Creole, Swedish, Dutch, and Czechoslovak.

short, "There is some advantage to being the first members of the immigrant household to be born in the United States, but not much." Card, DiNardo, and Estes (2000), however, found much larger differences between the outcomes of the second generation and those of their parents.

This discussion implies that identifying the advantages of bilingualism may be confounded by the effects of generation. Immigrants are more likely than their children and grandchildren to be bilingual, whereas second and higher generations are more likely to be proficient solely in English. Comparisons of bilinguals to English monolinguals will therefore tend to be comparisons of newcomers to the United States (immigrants) to descendants of immigrants. Unfortunately, in the NALS, we cannot identify the second generation, since the NALS does not ascertain parents' birthplace. The NALS does reveal the respondent's place of birth, so we can identify immigrants. In order to purge the possible effects of generational status from our analysis, we often investigate the effects of foreign language proficiency within a given generation, that is, among immigrants only. Restricting the sample to one generation assures that the measured effects of foreign language proficiency cannot be confounded by generational differences.

The Wage Payoffs to Bilingualism

Following convention, we restrict the sample to men between the ages of 18 to 64 with positive weekly wages. The analytical sample has 7,921 observations. Table 1 presents some basic descriptive statistics on English-proficient workers who do not know a foreign language (English monolinguals) and those who do know one or more foreign languages (bilinguals). By definition, "bilinguals" know a foreign language at least "well." Although cell size considerations come into play, we can distinguish between two gradations of bilingualism: level 1 bilinguals understand the foreign language "very well," and level 2 bilinguals self-report understanding the foreign language "well." Note that the English proficiency level of all language groups of interest is the same. Either type of bilingual, as well as English monolinguals, understands English "very well."[4]

Table 1 reveals that bilingual workers are much more likely than their English monolingual counterparts to be born abroad. It is therefore not surprising that bilinguals are less likely to be non-Hispanic white or black than Asian or Hispanic. Bilinguals tend to reside in metropolitan areas and live in the West or Northeast. A key respect in which bilingual and English monolingual workers differ is educational attainment. Workers who know a second language tend to cluster at the two extremes of the education distribution. Compared to monolinguals, bilinguals are both less likely to have completed high school and more likely to have completed at least a bachelor's degree.

Table 2 reports the mean average weekly wages of English monolingual and bilingual male workers. On average, bilingual workers earn slightly more than English monolingual workers. Since bilingual workers are disproportionately newcomers to the United States, separate tabulations by nativity are helpful. The mean earnings of immigrant bilingual workers substantially exceed those of their English monolingual counterparts. Within racial/ethnic groups, bilingualism is associated with much, much higher wages among Asian and Pacific Islanders and non-Hispanic whites than among other groups.[5] Among Hispanics,

[4]The results presented in the text are based on the respondent's self-reported ability to comprehend spoken English and comprehend the spoken second language. The questionnaire also inquired as to the respondent's ability to speak, read, and write languages. See the Appendix for results using these alternative proficiencies.

[5]Although it is difficult to capture "bilingualism" in the decennial Census, tabulations from the Census suggest that the earnings advantage of bilinguals holds for Asian subgroups. We can distinguish between Census respondents who "speak only English at home" and those who speak a language in addition to English at home and self-report speaking English "very well." Tabulations from the 1990 5% PUMS file

Table 1. Characteristics of Bilingual and English Monolingual Workers.

Characteristic	*Level 1 Bilingual*	*Level 2 Bilingual*	*English Monolingual*
Sample Size	436	124	5,742
Average Age	37	40	36
Percent Foreign-Born	54	31	2
Race/Ethnicity (in %)			
Non-Hispanic Asian	13	7	1
Non-Hispanic Black	3	6	10
Non-Hispanic White	33	51	85
Hispanic–Mexican	24	22	2
Other Hispanic	25	10	1
Other	2	4	1
Total	100	100	100
Average Years of Schooling	13.8	13.6	13.5
Educational Attainment (in %)			
Less than H.S./GED	18	15	13
H.S. grad/GED	20	26	32
Some college	27	35	29
College graduate	35	25	27
Total	100	100	100
Percent Metropolitan	90	89	78
Region of Residence (in %)			
Midwest	11	24	23
South	30	15	35
West	30	32	22
Northeast	29	29	20
Total	100	100	100

Source: 1992 National Adult Literacy Survey (NALS).

Notes: Results are for 18–64-year-old male workers who have positive weekly wages and know English "very well." Level 1 bilinguals understand a foreign language "very well." Level 2 bilinguals understand a foreign language "well."

no gain appears to be associated with being bilingual.

reveal the following average annual earnings levels for English monolingual and "bilingual" Asians:

Average Earnings for Non-Hispanic Asian Male Workers, Age 18 to 64 (in 1990 $).

Asian Racial Group	*Speaks only English at Home*	*"Bilingual"*
Chinese	19,600	22,500
Filipino	16,900	19,200
Japanese	18,300	20,300
Korean	23,000	26,200

("Bilingual" refers to respondents who speak a language other than English at home and self-report that they speak English "very well." Source: 1990 5% Decennial Census Public Use Micro Sample [PUMS].)

To estimate the wage return on foreign language skills in the U.S. labor market, we estimate the standard human capital wage equation augmented with language skill variables. The dependent variable is the natural logarithm of the average weekly wage. We control for age and geographic residence. Table 3 reports the coefficients on the battery of dummies capturing English and foreign language skills.[6] The omitted reference group is English monolinguals. Thus, for example, in column (2), the reported coefficient on the "level 1 bilingual" dummy variable suggests

[6]Regression results on all independent variables are available from the authors.

Table 2. Mean Weekly Wages of Bilingual and English Monolingual Workers, 1992 (in dollars).

	Nativity			*Race/Hispanic Origin*			
Language Skills	*All*	*Immigrants*	*Natives*	*Mexican*	*Other Hispanic*	*Non-Hispanic Asian/ Pac. Islander*	*Non-Hispanic White*
English Monolingual	578	550	579	400	636	434	607
	(5,742)	(137)	(5,605)	(106)	(77)	(38)	(4,631)
Level 1 Bilingual	621	705	521	442	505	768	816
	(436)	(222)	(214)	(128)	(112)	(54)	(108)
Level 2 Bilingual	596	633	580	299	—	—	782
	(124)	(35)	(89)	(34)			(56)

Notes: The sample consists of 18–64-year-old male workers with positive weekly wages. Unweighted sample sizes are in parentheses. Level 1 bilinguals understand a foreign language "very well." Level 2 bilinguals understand a foreign language "well."

that workers who know a second language (in addition to English) "very well" earn about 7% more than otherwise similar workers who know only English "very well."

The results on the value of English fluency derived from the NALS are consistent with estimates derived from Census data (see, for example, Chiswick and Miller 1999; Trejo 1997). Column (3) of Table 3 indicates that workers who do not know English "very well" earn about 7–11% less than English monolinguals. The penalty for not knowing English "very well" is statistically significant. This estimated penalty is a bit below Census-based estimates, but Census estimates are derived using samples of immigrant workers only. Column (4) of Table 3 reports a model specification that interacts immigrant status with the battery of language variables. The estimated penalty for lack of English fluency among immigrants derived from the NALS is on the order of 20–30%, similar to Census estimates.

The estimated returns to bilingualism are sensitive to the inclusion of other control variables. An estimation simply controlling for age and geographic residence (column 1) shows no gains from bilingualism. Once we control for the race/ethnicity of the worker (column 2), workers who know a second language "very well" seem to reap marginally significant gains from the additional language. However, the wage gains accruing to level 1 bilinguals can be fully explained by their educational advantages over their English monolingual counterparts. Once we control for educational credentials (column 3), there appear to be no statistically significant wage gains from knowledge of second languages.

A priori, our preferred estimates of the impact of second language skills derive from immigrant workers. Immigrant workers are all first-generation, and hence measuring the value of foreign language skills among immigrants is not confounded by the correlation of second language skills and generational status. Consideration of the possible biases in self-reports of English language proficiency might suggest that the bias would be less serious among native-born workers. The next section of the paper tackles this measurement issue explicitly. Column (4) of Table 3 reveals that empirically it does not make much difference whether the estimates are based on immigrant or native-born workers. There are no statistically significant gains to earnings from possessing second language skills for either group.

Table 4 reports the regression results using a more detailed set of variables to describe the worker's language skills. The worker's facility in a second language is disaggregated to yield four mutually exclu-

Table 3. Estimated Weekly Wage Returns of Language Proficiency.

Language Skills	*(1)*	*(2)*	*(3)*	*(4)*
Level 1 Bilingual	–0.02	0.07	0.04	–0.00
	(–0.6)	(1.8)	(0.9)	(–0.0)
Level 2 Bilingual	–0.05	0.01	0.00	–0.01
	(–0.8)	(0.2)	(0.0)	(–0.2)
2nd Language Monolingual	–0.43	–0.29	–0.11	–0.06
	(–13.6)	(–7.0)	(–2.6)	(–0.7)
No Language Proficiency	–0.20	–0.19	–0.07	–0.06
	(–8.4)	(8.0)	(–3.1)	(–2.7)
Level 1 Bilingual * Immigrant				–0.02
				(–0.2)
Level 2 Bilingual * Immigrant				–0.04
				(–0.3)
2nd Language Monolingual * Immigrant				–0.14
				(–1.4)
No Language Proficiency * Immigrant				–0.25
				(–2.2)
Race/Ethnicity Controls	no	yes	yes	yes
Education Controls	no	no	yes	yes
Adj. R-sq.	0.27	0.29	0.36	0.36
N	7,920	7,920	7,917	7,917

Notes: t-ratio in parentheses. The dependent variable is the natural logarithm of the average weekly wage. The omitted reference group is English monolinguals. The sample consists of 18–64-year-old male workers. All regressions include age and age squared, a metropolitan residence dummy, and census region dummies.

sive language categories: Spanish language, European language, Asian language, and other language. Again, the omitted category is English monolinguals. Not controlling for educational attainment, level 1 bilinguals fluent in an Asian language appear to receive significant wage returns on their second language skills (column 1). Level 1 bilingual workers who know an Asian language are estimated to receive about 33% higher pay than otherwise similar monolingual workers. This reflects Asian language bilinguals' higher educational attainment. Once we control for education (column 2), there does not appear to be a statistically significant return to fluency in any second languages, including Asian languages. Finally, examining the returns to bilingualism within samples of workers defined by race/ethnicity (columns 5–8), there are no statistically significant returns to facility in a second language.[7]

In short, knowledge of a foreign language appears to make very little independent contribution to earnings. As best we can tell, U.S. employers in the broad national labor market place little premium on having workers who know second languages.

Measuring the Value of Bilingualism Using Self-Reported Language Abilities

In our analysis we capture the value of bilingualism by comparing "bilingual" workers to "English monolingual" workers. By definition, both groups of workers self-report that they understand spoken English "very well." We thus assume that the workers have the same level of English proficiency. Bilinguals self-report understanding a second language at least "well," whereas "English monolingual" workers either have no second language exposure or self-report understanding a second language less than "well." We interpret the comparison of the two groups as reflecting differences due to second language abilities, since the workers are "apples-to-apples"

[7]The results are unchanged if we limit the sample to foreign-born workers.

in terms of self-reported English ability.

A reviewer noted that our comparison only captures the value of second language skills if "bilinguals" and "English monolinguals" indeed have the same level of English proficiency. Though these two groups of workers both *self-report* the same level of English ability, perhaps bilinguals over-report their true, unobserved level of English ability. This is a point that merits consideration. If self-reports of English ability do not adequately capture unobserved English ability, then not only does our methodology fail to provide an unbiased measure of the value of second language skills, but also the sizable literature on the labor market value of English language abilities fails to adequately measure English language proficiency. Nearly all empirical research on the returns to English in the United States is based on self-reported language proficiency.

The NALS does not possess an objective measure of English language ability, so we do not have direct evidence on the accuracy of self-reported English ability.[8] But the NALS does have other information on the acquisition of English and English language use. This information strongly suggests that "bilinguals" do adequately report their English language abilities.

All the workers in the sample are adults, 16 years of age or older. At what age did bilingual workers learn to speak English? Most bilinguals learned English during their childhood.[9] More than 80% of bilingual workers learned to speak English before age 16. More than half of level 2 bilinguals learned English before age 5. Thirty percent of level 1 bilinguals learned English before age 5. It is hard to believe that persons with such long exposure to English cannot adequately assess their English skills.

The NALS asked respondents extensive questions on English reading and writing activities. The survey reveals how frequently workers read various sorts of English materials on the job. For example, respondents were asked how frequently they read or used information from "letters or memos" on the job. Seventy-three percent of level 1 bilingual workers reported reading letters or memos either every day or a few times a week—identical to the percentage of English monolingual workers reporting the same.[10] In regard to the use of more technical English reading materials on the job, "schematics or diagrams," level 1 bilinguals reported higher frequencies of use than did English monolinguals.

Respondents reported how frequently they received help from family members or friends with reading, writing, and basic arithmetic activities. In regard to "reading or explaining newspaper articles or other written information," about 75% of bilingual workers reported receiving no help from family members or friends. About 75% of English monolingual workers, too, reported receiving no help.

In short, consideration of the English language development and reading practices of bilingual workers provides no evidence that bilingual workers fell short of

[8]The International Adult Literacy Survey (IALS) includes self-reported language proficiencies and test-based measures of literacy. Kahn (forthcoming) examined the relationship between self-assessed English language skills and test scores for U.S. and Canadian immigrants and found that they were strongly correlated. This indicates that self-reported language proficiency at least proxies for a set of productive traits. It is not clear that the IALS test scores are an objective measure of English language ability. The objective literacy measures are designed to capture the ability to understand and use printed information. Kahn interpreted them as measuring "cognitive skills."

[9]The age at which English is learned is also relevant to assessing the likelihood of "accent discrimination." It can be argued that even if bilinguals have the same level of English ability as English monolinguals, they speak English with an accent, and thus our methodology confounds second language skills with accent discrimination. Accent discrimination is likely of little import for our analysis. First, bilinguals who learned English during childhood likely do not speak English with a noticeable accent. Second, our analysis uses the ability to understand spoken English, not speaking ability.

[10]Not all workers report a relatively high frequency of reading letters or memos. Only 37% of non-English monolingual workers report reading letters or memos either every day or a few times a week.

Table 4. Estimated Weekly Wage Returns of Language Proficiency—Detailed Language Taxonomy.

Language Skills	*(1)* *All Workers*	*(2)* *All Workers*	*(3)* *Immigrant Workers*	*(4)* *Native Workers*	*(5)* *Mexican*	*(6)* *Other Hispanic*	*(7)* *Non-Hispanic Asian/Pac. Isl.*	*(8)* *Non-Hispanic White*
Level 1 Bilingual–Spanish Language	–0.04	–0.00	–0.04	0.00	0.00	0.02	–0.85	–0.04
	(–0.7)	(–0.1)	(–0.3)	(0.1)	(0.0)	(0.2)	(–1.1)	(–0.1)
Level 1 Bilingual–European Language	0.11	0.07	0.17	–0.04	—	0.53	—	0.08
	(1.5)	(1.0)	(1.3)	(–0.4)		(0.8)		(1.0)
Level 1 Bilingual–Asian Language	0.33	0.18	0.13	0.15	—	0.67	0.18	—
	(2.2)	(1.2)	(0.8)	(0.3)		(1.0)	(0.6)	
Level 1 Bilingual–Other Language	0.11	0.01	–0.04	0.03	—	–0.65	0.24	–0.04
	(1.4)	(0.1)	(–0.4)	(0.2)		(–2.4)	(0.9)	(–0.3)
Level 2 Bilingual–Spanish Language	–0.18	–0.12	–0.16	–0.13	–0.09	–0.15	—	0.52
	(–1.8)	(–1.2)	(–0.7)	(–1.2)	(–0.7)	(–0.8)		(1.4)
Level 2 Bilingual–European Language	0.13	0.12	0.21	0.08	—	—	—	0.12
	(1.3)	(1.2)	(0.9)	(0.7)				(1.2)
Level 2 Bilingual–Asian Language	–0.78	–0.51	–0.58	—	—	—	–0.60	—
	(–1.6)	(–1.1)	(–1.2)				(–1.0)	
Level 2 Bilingual–Other Language	0.21	0.07	–0.02	0.16	—	—	–0.02	0.20
	(1.3)	(0.5)	(–0.1)	(0.7)			(–0.0)	(0.9)
Monolingual–Spanish Language	–0.37	–0.10	–0.20	–0.12	–0.14	–0.17	—	0.13
	(–6.8)	(–1.8)	(–1.6)	(–1.2)	(–1.5)	(–1.3)		(0.3)
Monolingual–European Language	–0.23	–0.14	–0.30	0.20	—	–0.19	–1.7	–0.10
	(–1.9)	(–1.2)	(–2.1)	(0.9)		(–0.3)	(–2.2)	(–0.8)
Monolingual–Asian Language	–0.30	–0.23	–0.32	—	—	—	–0.37	—
	(–2.2)	(–1.8)	(–2.1)				(–1.5)	
Monolingual–Other Language	–0.20	–0.17	–0.29	0.04	—	—	–0.27	0.06
	(–2.0)	(–1.8)	(–2.4)	(0.1)			(–1.0)	(0.3)
No Language Proficiency	–0.19	–0.07	–0.30	–0.06	–0.15	–0.25	–0.77	–0.06
	(–8.1)	(–3.2)	(–2.4)	(–2.4)	(–1.3)	(–1.2)	(–1.9)	(–2.3)
Education Controls	no	yes	yes	yes	yes	yes	yes	yes
Adj. R-sq.	0.30	0.36	0.36	0.36	0.21	0.32	0.41	0.36
N	7,920	7,917	932	6,984	580	367	168	5,659

Notes: t-ratio in parentheses. The dependent variable is the natural logarithm of the average weekly wage. The omitted reference group is English monolinguals. The sample consists of 18–64-year-old male workers. All regressions include age and age squared, a metropolitan residence dummy, and census region dummies. Regression model results reported in cols. (1)–(4) include race/ethnicity dummies. Regression model results reported in cols. (5)–(8) include a foreign-born dummy.

English monolingual workers in English language ability. We believe the evidence supports our operative assumption that bilingual workers self-reported their English language abilities as accurately as did English monolingual workers.

The Value of Second Language Skills in Language Enclaves and Specific Occupations

Although we can find no strong evidence that the national U.S. labor market highly values second language skills, clearly second language skills could boost earnings in particular geographic areas and occupations. Economists have actively investigated the role of "language enclaves" in the acquisition of English language proficiency and whether linguistic/immigrant concentrations depress earnings (for example, Chiswick and Miller 2002; McManus 1990). Bloom and Grenier (1993) hypothesized that the value of second language skills might depend on the proportion of the local community that has the same linguistic characteristics. While language enclaves have been found to reduce the earnings penalty for poor spoken English ability, to our knowledge the relationship between residence in a language enclave and the value of second language skills has not been empirically examined.

We attempted to measure residence in a language enclave using two different measures. Investigators often construct ethnic or linguistic concentration ratios at either the county, SMSA, or state level. Our first measure simply captures whether the worker resides in a state that has a high level of second language speakers. Nationally, 14% of persons speak a language in addition to English at home. In twelve states, the proportion of second language speakers exceeds 14% (New Mexico, with nearly 36% of state residents speaking a language in addition to English, has the greatest concentration). The first measure is simply a dummy variable for residence in one of the high second language states. Using the NALS information on English language use in various settings, we construct a second, and we believe superior, measure of residence in a language enclave. The NALS asks for the individual's self-report of the extent to which he resides in a linguistically isolated setting or language enclave. We report the results of a measure that taps the effects of a non-English work environment *cum* work-language enclave. It reflects the extent to which the individual uses non-English at his current place of work: a binary variable that equals one if he reports using the non-English language "always" or "more than English," and zero otherwise.

We find no strong evidence that residence in a linguistic enclave alters the returns to language skills. Column (1) of Table 5 reports the results of using the self-report of language enclave status. Column (2) uses the measure of residence in a high second language state. Interactions of the enclave measure with the battery of language variables generate no statistically significant effects. Command of a second language seems to receive no premia regardless of residence. Interestingly, proficiency in English is as highly rewarded in non–English-dominated workplaces as elsewhere. Language enclaves may lower the earnings and English abilities of workers, but there is no strong evidence that they reduce the earnings penalty for poor English skills, much less reward second language skills.

Finally, it is conceivable that within certain occupations and labor market sectors there are significant premiums to skills in second languages. One can readily imagine such jobs held by educators, executives in multinational corporations, service providers servicing foreign markets, or foreign language media in the United States. Given the NALS sample size, it is not possible to investigate the determinants of wages among workers in finely detailed occupations. We estimated wage equations separately for eleven major occupational categories that account for all workers. In no major occupational category did second language skills have a statistically significant impact on average weekly wages. At a high level of occupational aggregation, no

Table 5. Estimated Weekly Wage Returns of Language Proficiency in a "Language Enclave."

Language Skills	*(1)*	*(2)*
Level 1 Bilingual	0.03	0.08
	(0.8)	(1.1)
Level 2 Bilingual	0.01	0.03
	(0.1)	(0.3)
2nd Language Monolingual	–0.08	–0.04
	(–1.8)	(–0.5)
No Language Proficiency	–0.07	–0.07
	(–3.2)	(–2.7)
Enclave	0.18	0.10
	(0.3)	(5.2)
Level 1 Bilingual * Enclave	–0.13	–0.07
	(–0.2)	(–0.9)
Level 2 Bilingual * Enclave	–0.44	–0.07
	(–0.6)	(–0.5)
2nd Language Monolingual * Enclave	–0.28	–0.10
	(–0.4)	(–1.2)
No Language Proficiency * Enclave	–0.12	0.02
	(–0.2)	(0.5)
Race/ethnicity controls	yes	yes
Education controls	yes	yes
Adj. R-sq.	0.36	0.36
N	7,917	7,917

Notes: t-ratio in parentheses. The dependent variable is the natural logarithm of the average weekly wage. The omitted reference group is English monolinguals. The sample consists of 18–64-year-old male workers. All regressions include age and age squared, a metropolitan residence dummy, and census region dummies. See the text for the definition of the "enclave measures."

strong evidence suggests that second language skills are valuable in and of themselves.

Conclusion

Our analysis reveals that in the United States in 1992, male workers facile in a second language were paid more than workers who only knew English. However, employers do not appear to have valued the second language skills bilingual workers possessed. Rather, the higher pay of bilingual workers reflects the higher educational attainment they brought to the labor market. Once one controls for observable characteristics, there do not appear to have been any statistically significant wage payoffs to competency in second languages. Across the nation and the broad swath of U.S. employers, there is no strong evidence that second language skills were highly rewarded. There does not appear to have been a prevalent need for bilingualism. English too seems to remain a preferred language of international commerce. For example, over half of U.S. exports of goods are to industrialized countries in which English is widely used, though French and German play a role (Graddol 1997).

Likewise, there may be little to the presumption that growing foreign-born enclaves are becoming English-free zones. Such enclaves were well established by the 1990s, and a small body of research has examined the role of English in communities with concentrations of foreign-born workers. Language enclaves may directly retard the acquisition of English language proficiency. However, we find no evidence that linguistic enclaves altered the returns to language skills. English skills improved earnings even in non–English-dominated workplaces. And second language skills did not markedly improve earnings inside the enclave or outside it.

As of 1992, then, English seems to have retained its prevalence in the U.S. labor market. The fact that the market neither greatly valued foreign language proficiency nor created an incentive for its acquisition or maintenance doubtless contributed to the relatively rapid shift to monolingualism across generations.

We believe it is unlikely that these findings for 1992 will change when data from a more contemporary survey are used. Bilingualism as a labor market advantage will likely continue to be restricted to specialized jobs dealing with international actors. How much longer such patterns will persist—assuming we are correct that they persist today, a hypothesis that can soon be tested using the 2002 replication of the NALS—is open to debate. Our best guess, however, is that fundamental changes in these patterns will occur only in conjunction with structural changes in the U.S. economy beyond those felt in the recent past.

Appendix
Results Using Alternative Proficiencies

Appendix Table A1
Correlation Among Second Language Proficiencies

	How well do you understand other language?	*How well do you speak other language?*	*How well do you read other language?*	*How well do you write other language?*
How well do you understand other language?	1.000	0.785	0.593	0.563
How well do you speak other language?	0.785	1.000	0.694	0.685
How well do you read other language?	0.593	0.694	1.000	0.917
How well do you write other language?	0.563	0.684	0.917	1.000

Source: 1992 National Adult Literacy Survey (NALS)

Notes: Results are for 3,327 18–64-year-old adults who responded with at least one non-English language to the question, "What language or languages did you learn to speak before you started school?" Language proficiencies are categorical questions. Correlation coefficients are computed by coding "very well" as 1.0, "well" as 2.0, "not well" as 3.0, and "not at all" as 4.0.

The NALS questionnaire asked respondents to self-assess their abilities to speak, read, and write English and the second language, as well as understand the languages when they are spoken to them. In regard to English proficiencies, prior research emphasizes the importance of understanding spoken English (Carnevale, Fry, and Lowell 2001). But in regard to second language abilities, there has been a dearth of data available on non-English abilities, and thus there is little prior presumption in favor of analyzing the returns to understanding the second language as opposed to other second language abilities.

Among individuals who learned a second language before starting school, proficiencies in the second language seemed to be highly correlated. Appendix Table A1 reports the Pearson correlation estimates between proficiencies in the second language. Understanding is highly correlated with the ability to speak the second language, as well as with the ability to write it.

Our results on the value of bilingualism are not dependent on the language proficiency chosen. Appendix Table A2 replicates the column (3) specification of Table 3 using the ability to speak, read, and write English and the second language, rather than the ability to understand them. The results are little changed. Workers lacking proficiency in English are penalized, whereas there appears to be no statistically significant wage premium to being facile in a second language, regardless of which proficiency is used for analysis.

Appendix Table A2
Estimated Weekly Wage Returns of Language Proficiency Using Alternative Language Proficiencies

Language Skills	*Defining Language Skills Using Speaking Proficiencies*	*Defining Language Skills Using Reading Proficiencies*	*Defining Language Skills Using Writing Proficiencies*
Level 1 Bilingual	0.04	0.03	0.04
	(0.8)	(0.7)	(0.8)
Level 2 Bilingual	–0.02	–0.04	0.01
	(–0.4)	(–0.6)	(0.2)
2nd Language Monolingual	–0.11	–0.10	–0.12
	(–2.7)	(–2.6)	(–3.2)
No Language Proficiency	–0.05	–0.08	–0.07
	(–2.6)	(–4.1)	(–4.0)
Race/Ethnicity Controls	yes	yes	yes
Education Controls	yes	yes	yes
Adj. R-sq.	0.36	0.36	0.36
N	7,917	7,917	7,917

Notes: t-ratio in parentheses. The dependent variable is the natural logarithm of the average weekly wage. The omitted reference group is English monolinguals. The sample consists of 18–64-year-old male workers. All regressions include age and age squared, a metropolitan residence dummy, and census region dummies. A level 1 bilingual indicates that he speaks, reads, or writes both English and a second language "very well"; a level 2 bilingual, that he speaks, reads, or writes English "very well" and speaks, reads, or writes a second language "well."

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