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ABSTRACT

The Economics of Language: An Introduction and Overview¹

This paper provides an introduction and overview of my research on the Economics of Language. The approach is that language skills among immigrants and native-born linguistic minorities are a form of human capital. There are costs and benefits associated with this characteristic embodied in the person. The analysis focuses on the economic and demographic determinants of destination language proficiency among immigrants. This is based on Exposure, Efficiency and Economic Incentives (the three E's) for proficiency. It also focuses on the labor market consequences (earnings) of proficiency for immigrants and native-born bilinguals. The empirical testing for the US, Canada, Australia, Israel and Bolivia is supportive of the theoretical models.

JEL Classification: J15, J24, J31, J61

Keywords: immigrants, language, bilingualism, human capital, earnings

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“The Economics of Language: An Introduction and Overview”

Barry R. Chiswick

Introduction

This paper, based on my Julian Simon Lecture (IZA Annual Migration Meeting, Bonn, May 2007) and my European Society for Population Economics Presidential Address (Chicago, June 2007) is intended as an introduction and overview of my research on the Economics of Language, in particular the determinants and consequences of the destination language proficiency of immigrants. Language proficiency refers to one’s level of skill in speaking, hearing, reading, and writing a language, although most of the data, and hence most of the statistical analyses in the literature, are on speaking proficiency. The focus is on the determinants of proficiency in the primary language of the economy, including the labor market of an immigrant’s country of destination, although the model and methodology can, and have been, applied to non-migrants who are linguistic minorities and native-born bilingual speakers. A second concern is the labor market consequences for immigrants and the native born bilinguals of proficiency in the dominant language, and in particular, the effects on earnings.

Analyses of the determinants and consequences of the destination language proficiency of immigrants are important for understanding the economic, political and social adjustment of immigrants, and hence their impact on the host country.

The Economics of Language

The “Economics of Language” is the study of the determinants and consequences of

language proficiency using the methodology and tools of economics. The methodology of economics is the scientific method applied to maximizing behavior (Friedman, 1953).

The scientific method is based on using assumptions to build models that generate testable hypotheses. The principle of Occum's Razor is essential, that is, simple assumptions and models are preferred to more complex assumptions and models that have the same power for explaining behavior. The "realism" of the assumption is less relevant than its ability to explain observed behavior. To the extent that empirical analysis demonstrates that the hypothesis is found to be consistent with the data, the hypothesis (and implicitly, the model) is maintained. To the extent that the hypothesis is not supported by the data, one goes back to the drawing board and revises the assumption and/or the model to generate a new hypothesis, which is then tested with new and independent data.

Economics is the study of the allocation of "scarce" resources among competing ends. By scarcity, it is meant that the resources are not free, but rather something must be given up to acquire them. The resources may be goods and service purchased in the marketplace or they may be a person's time. Time is indeed scarce as there is a finite number of minutes in a year and a finite life, and time used in one activity cannot be used in another activity (opportunity cost).

The tools of economics are both theoretical and empirical. The theoretical tools include models of maximizing behavior, where individuals are assumed to maximize their well-being (referred to as "utility") and business firms are assumed to maximize their "profits." The empirical tools are a set of statistical techniques used by economists which taken together are referred to as "econometrics."

Most of the research in the economics of language focuses on what can be described as microeconomics, that is, the behavior of individuals. The approach taken has been to view

language skills as a form of “human capital.” Anything that is productive is a resource—sunlight, plows, and language skills. To be capital, however, there must be costs for it to be produced or acquired. Thus, sunlight is a natural resource, not capital, while plows and language skills are capital. Capital is of two types, physical and human, depending on whether it is embodied in the person. Thus, a plow is physical capital and language skills are human capital. Language skills are produced using scarce resources in terms of time and out-of-pocket expenses. These investments are made in anticipation of future benefits from doing so. These benefits may be in the form of higher earnings, lower costs of consumption, greater political involvement, and larger social/communication networks, to name a few.

The concept of human capital became important in the 1960s, with the emphasis on schooling, on-the-job training, health and information, all of which transform the person, and migration, which transforms the person’s location (Schultz, 1962). It was only since the 1980s that economists have viewed immigrant language skills as a form of human capital and analyzed it in this context (Carliner, 1981; McManus, Gould, & Welch, 1983; Tainer, 1988). This interest arose as a result of the rapid growth of the non-English speaking portion of the increasing immigrant flows into the United States, and the emerging interest among economists in the determinants of the adjustment of immigrants to the host society, as well as the interest in human capital theory. (Chiswick, 1978).

Language skills satisfy the three requirements for human capital, that it is productive, costly to produce, and embodied in the person.

First, a person’s proficiency in the language of the area in which he or she lives is productive in the labor market. Those who speak/read the local language will find it easier to obtain a job and will generally be more productive on the job. In addition, language skills are productive in

consumption activities. Those proficient in the local language will be more efficient in finding higher quality goods and services and at lower prices. Any monolingual English speaker in the French countryside quickly learns this proposition. Immigrants who do not speak the language of the broader society also find that their social and information networks are confined to their immigrant/linguistic enclave, rather than having a wider range. These benefits provide economic and social incentives for immigrants to learn the host country's language.

Second, acquiring language proficiency is not without costs. Immigrants spend a considerable amount of their own time and money (for language training schools, books, etc.) to become proficient in their new country's language. Acquiring language skills is not costless even for infants. Even if their own time has no economic value, the time of their parents or other caregivers in speaking and reading to the child is not costless. The costs involved in an immigrant's learning a new language would be influenced by several factors, including the person's age, exposure to the language (as distinct from being able to avoid its use by living in a linguistic enclave), and the "distance" between the person's mother tongue and the language of the destination, among other factors.

Finally, language skills are embodied in the person. Unlike owning physical capital (such as a truck), but like learning to play a piano, language skills cannot be separated from the person.

The idea that language skills are both productive and costly to acquire is not new, but rather at least thousands of years old. See Box 1 which relates the story of the Tower of Babel from the Biblical book of Genesis (chapter 11, verses 1-9). The Tower of Babel provided a biblical explanation for the diversity of languages and the scattering of people. "If, as one people with one language... then nothing that they may propose to do will be out of their reach." When their

speech was “confounded” and they were scattered, they could no longer cooperate and they became less productive (Tanakh, 1985).

Tower of Babel

Everyone on earth had the same language and the same words. And as they migrated from the east, they came upon a valley in the land of Shinar and settled there.

They said to one another, “Come, let us make bricks and burn them hard.” –Brick served them as stone, and bitumen served them as mortar. –And they said, “Come let us build a city, and a tower with its top in the sky, to make a name for ourselves; else we shall be scattered all over the world.”

The LORD came down to look at the city and tower that man had built, and the LORD said, “If, as one people with one language for all, this is how they have begun to act, then nothing that they may propose to do will be out of their reach. Let us, then, go down and confound their speech there, so that they shall not understand one another’s speech.” Thus the LORD scattered them from there over the face of the whole earth; and they stopped building the city. That is why it was called Babel, because there the LORD confounded the speech of the whole earth; and from there the LORD scattered them over the face of the whole earth.

-- (Genesis, 11, 1-9)

Source: *Tanakh: The Holy Scriptures*, Philadelphia: Jewish Publication Society, 1985, pp.16-17

This raises an interesting yet unanswered question in the macroeconomics of language. To what extent has the common language in the 50 states of the United States facilitated economic exchange (trading in goods and services and the mobility of factors of production, including workers), and thereby increased U.S. incomes compared to Europe with its multiplicity of languages. Europe has been moving in the direction of reducing barriers to facilitate the mobility of goods and people. First came the reduction in tariff and non-tariff barriers to trading in goods. With the establishment of the European Union (EU), legal barriers to the mobility across EU countries of its citizens have been reduced. The “Euro zone” countries have adopted a common currency to reduce the cost of financial transactions. And, informally, English is becoming a very

common second language (a lingua franca) in Europe (Grimes & Grimes, 1993). To what extent will the spread of English as a lingua franca add to Europe's per capita GDP?

An important issue currently facing the United States, and most of the highly developed economies, is the inverse of the Tower of Babel story. Immigration is resulting in the coming together of diverse peoples originally speaking a variety of languages who then merge over time into a common culture and a common language, even if they may retain the languages of their origins.

Research Questions and Methodology

My research on the economics of language has focused on two basic questions: What determines dominant language acquisition or proficiency among immigrants and linguistic minorities? and What are the consequences of dominant language acquisition and proficiency?

The consequence of language proficiency that has received the most attention has been in the labor market, particularly earnings. There are, however, other consequences which have not received much attention from economists or other social scientists. Knowing the dominant language makes a person more efficient in the consumption of goods and services (higher quality and lower prices for goods and services). Investment in other forms of human capital, such as schooling and job training, are likely to be more productive if one can communicate in the dominant language in school and in the labor market. Knowing the dominant language of the destination can increase the efficiency of parenting. Parents who are proficient in the destination language can be more effective in teaching the language and culture of the destination to their children, which would be a benefit to them in school and later in the job market. Language skills also have social benefits as they can expand the range of friendship networks beyond one's

ethnic/linguistic enclave. Finally, civic involvement is enhanced with knowledge of the host country's language. Indeed, for the US, and many other countries, at least a basic knowledge of the destination language is required for immigrants to become citizens and acquire full political and economic rights. This brings about increased political empowerment.

Testing the Models

The following sections develop the theoretical framework I have used in addressing the two research questions of determinants and consequences, as well as summarize the empirical findings. The testing of the models, or the estimation of the equations, relies on multivariate statistical (econometric) techniques in which the dependent variable, for example, destination language proficiency or labor market earnings, is expressed as being determined by a set of explanatory variables. Thus, one of the several variables used to explain immigrant language proficiency is age at migration, where it is hypothesized that proficiency declines with a higher age at migration, other measured variables being the same. Also, one variable in the earnings analysis is a measure of destination language proficiency. Each explanatory variable can be examined while all other variables in the analysis are held constant statistically.

In general, many economists, myself included, believe in the importance of testing for the robustness of findings. One estimation for one data set may be insightful, but cannot determine whether the results are unique to that data, group, country or time period, or whether they are generalizable across these dimensions. A hypothesis or model that is not robust, but is valid for only a unique group, time, and place is clearly of very limited value. On the other hand, one has much greater confidence in a hypothesis or model that is robust, that is, supported by analyses of diverse data sets.

The analyses reported below represent a synthesis of the findings on immigrants for different types of data—censuses and surveys, cross-sectional (different people at a point in time) and longitudinal (following the same people over time). They are for immigrants who have legal status, as well as those in an illegal or unauthorized status. Although the data analyses reported below are for the late 20th and early 21st centuries, they are for different data sets in each of four countries, namely, the United States, Australia, Canada, and Israel, where the destination language is English in the first two, English and French in Canada, and Hebrew in Israel. The particular value of research on Israel in this context is that whereas English, and to a lesser extent French, is an international language of business and science, which is often learned in school in the origin as a second language, this is not the case for Hebrew. That the findings for Israel parallel those of the other countries is a test of the robustness of the model across destination languages (Chiswick, 1998; Chiswick & Repetto, 2001).

There are several dimensions of language skills—oral (speaking and hearing) and literacy (reading and writing). Survey and census data on the language skills of immigrants nearly always rely on self-reported responses, or responses provided by an adult household member. Although some data sets report responses to questions on speaking, reading and writing, most of the data are for speaking skills, either level of competency or language spoken on a regular basis. Analyses using literacy skills show the same patterns as those using speaking skills, in part because the two are so highly correlated (Chiswick, 1991; Chiswick & Repetto, 2001; Dustmann, 1994). The discussion here will be expressed in terms of speaking proficiency.

Determinants of Language Proficiency

My research on the determinants of dominant language proficiency among immigrants from a different linguistic background than the destination has focused on three concepts: the three “Es”—Exposure to the host country language, Efficiency in learning a new language, and Economic Incentives for learning the new language (Chiswick & Miller, 1995, 2007a). These are conceptual variables, but empirical research requires finding measurable dimensions.⁽²⁾

A. Exposure

Much of destination language learning among immigrants comes from exposure to the destination language. Exposure can be thought of as having two dimensions, that is, exposure in the origin and exposure after migration.

The data sets used to study the determinants of immigrant’s destination language skills generally indicate the country of origin, but provide no direct information on pre-immigration language learning. When conducting research on English-speaking destinations, a proxy measure for pre-migration exposure to English is whether the origin was a former colony of either the United Kingdom or the United States. Immigrants from former colonies of the UK and the US (e.g., Nigeria or India) are found to be more proficient in English than are immigrants from other (non-English-speaking) countries that were not UK or US colonies (e.g., Thailand or Algeria), other variables being the same (Chiswick & Miller, 2001, 2007a).

The most important aspect of exposure to the destination language occurs after migration. Exposure in the destination can be decomposed into time units of exposure and the intensity of exposure per unit of time. Most data that identify the foreign-born members of the population ask the respondents when they came to the destination. From this a variable for duration or “years since migration” can be computed. Duration has a very large positive and highly statistically significant impact on destination language proficiency, but the effect is not linear. Rather,

proficiency increases rapidly in the early years, but it increases at a decreasing rate, so that after a period of time a longer duration in the destination has a much smaller positive impact (Chiswick & Miller, 2001, 2007a, 2008b).

This time pattern for destination language proficiency is likely to be due to incentives for investment in language skills. An immigrant has an incentive to make greater investments shortly after arrival rather than delaying investments for three reasons: to take advantage sooner of the benefits of increased proficiency, to make the investments when the value of their time (destination wage rate), is lower, and to have a larger expected future duration in the destination.

Duration may effect language proficiency because a longer actual duration increases the amount of exposure to and practice using the destination language. It is found that interrupted stays, that is, when immigrants move back and forth (sojourners), reduce their language proficiency (Chiswick & Miller, 2001, 2007a, 2008b). The expectation of an interrupted stay reduces the incentive to invest, implicitly if not explicitly, in language learning, and the skills tend to depreciate during long periods of absence from the destination.

Moreover, those in the destination who report that they expect to return to their origin are also less proficient, other variables being the same (Chiswick & Miller, 2006). This might arise from those having a more difficult adjustment to the new country being more inclined to leave. Or, it might reflect the reduced incentive to invest in destination language skills if the expected future duration (i.e., the payoff period) is short.

The intensity of exposure per unit of time in the destination is more difficult to measure. The focus here is on the environment in which one lives, both the area and the family. In terms of the area, it is useful to have a proxy measure of the ability to avoid using the destination language. Various measures have been used in the different studies. Most often a minority language

concentration measure has been employed. This is typically constructed as the percentage of the population, whether native-born or foreign-born, in the area (measured by the state/province, region or metropolitan area) where the respondent lives who speak the same non-English language as the respondent. For example, the concentration measure for an Italian speaker living in Chicago would be the proportion of the population of Chicago who speak Italian. In other instances, newspapers (Australia) or radio broadcasting (United States) in the origin language have been used in addition to the minority language concentration measure. The effects on language proficiency of these area based measures of the ability to avoid using the destination language are quite strong. Destination language proficiency is significantly lower among individuals who have greater ease in avoiding using the destination language (Chiswick 1998; Chiswick & Miller, 2007a, 2008b; Lazear 1999).

A key role in language learning is played by the family or household in the destination in which the immigrant lives. Both the spouse, if married, and the children matter. Those who married their current spouse before immigrating are likely to be married to someone with the same language background. They are more likely to speak that language to each other at home, thereby limiting opportunities for practicing the destination language at home. On the other hand, those who marry after immigration are more likely to marry someone proficient in the destination language, perhaps because of their own proficiency, and are more likely to practice the destination language at home. Where the data permit a study of this issue, it is found that, other measured variables the same, the most proficient are those who married after migration, followed by those who are not married, with those who married before migration being the least proficient (Chiswick, Lee & Miller, 2005a, b; Chiswick & Miller, 2005b, 2007a, 2008b).

Children can have offsetting effects on their parents' proficiency (Chiswick, 1998; Chiswick *et al.*, 2005a, b; Chiswick & Miller, 2007a, 2008b). For example, children can serve, wittingly or unwittingly, as "teachers." Whether they themselves are immigrants or not, children learn languages quickly because of their youth, and because of their exposure to the destination language in school. They can, therefore, bring it home to their parents.

Yet, the presence of children can also have negative effects on their parents' proficiency. Parents may speak the origin language at home to transmit the origin culture to their children or so that their children may be able to communicate with the grandparents and other relatives who did not migrate. Children may also serve as translators for their immigrant parents. The translator role may be more effective in consumption activities and in dealings with the government bureaucracy, than in the workplace. Finally, children tend to reduce the labor supply of their mothers who stay at home to provide child care. To the extent that adults invest in improving their language skills in anticipation of labor market activities, and benefit from doing so, and to the extent that practice using the destination language at work enhances proficiency, children would tend to be associated with lower proficiency among their mothers.

Taken as a whole, the four hypotheses regarding children suggest an ambiguous effect on their parents' proficiency, but due to the latter two, their effect would be less positive or more negative for their mothers than their fathers. Empirically this is in fact what is found. While there is no clear effect of the presence of children on their fathers' proficiency, in the same data it is always less positive or more negative for their mothers (Chiswick & Miller, 2007a; Chiswick *et al.*, 2005a,b; Chiswick & Repetto, 2001).

There is language learning in the home. Research has shown that the proficiency of one family member is positively associated with that of other family members (Chiswick, Lee &

Miller, 2005b). The children's proficiency is more highly correlated with that of their mothers than with that of their fathers. This makes sense since mothers are more directly involved in the raising of children than are the fathers.

As a result, particularly due to a weaker attachment to the labor force, immigrant women with children have a lower level of destination language proficiency than do men and women without children (Chiswick *et al.*, 2005a, b; Stevens, 1986).

B. Efficiency

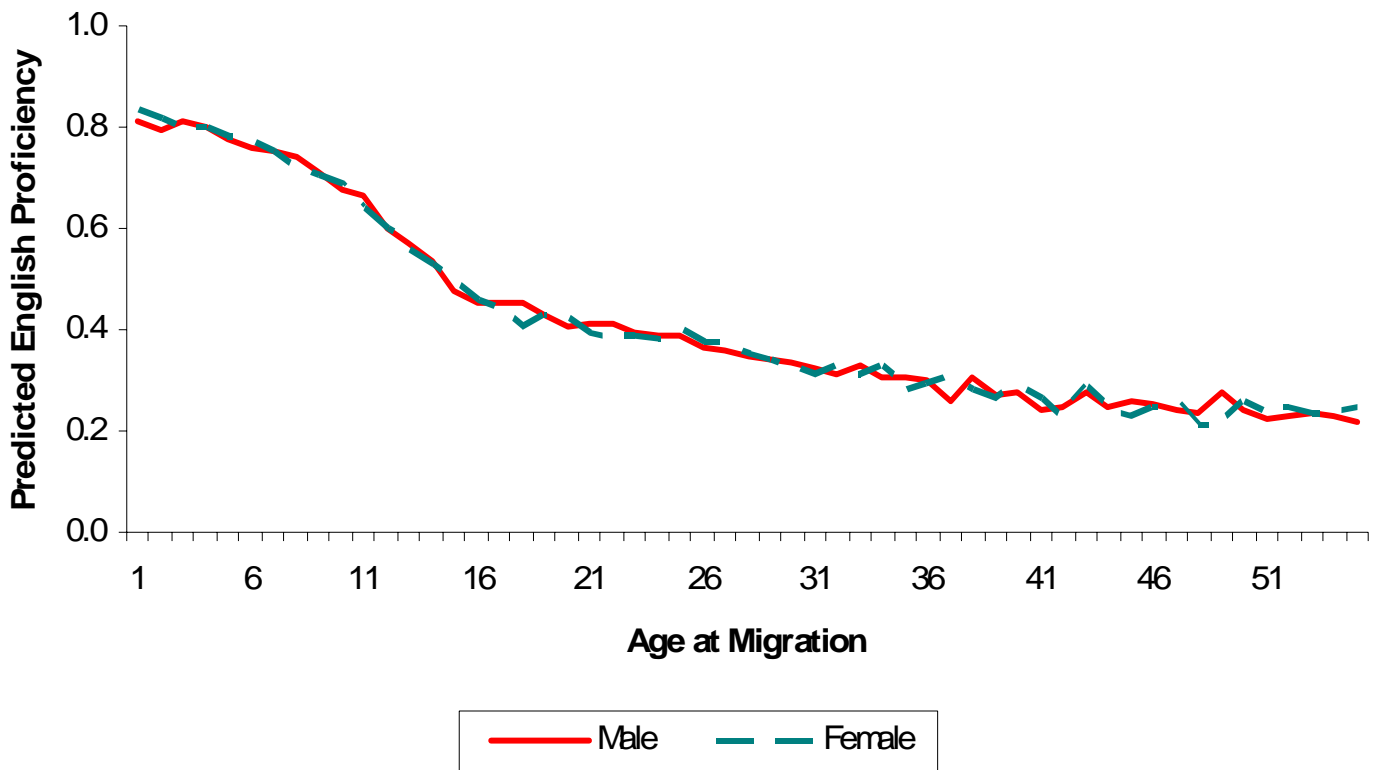
The second "E," efficiency, refers to the ability to convert exposure into language learning. Age at migration is an important efficiency variable. Because of the greater plasticity of the brain, which decreases with age, language learning decreases significantly with a greater age at migration (Long, 1990). There is a debate in the linguistics literature regarding the "critical period hypothesis," that there is a critical age beyond which an immigrant's learning a second language becomes much too difficult. The chart in Figure 1, based on data on speaking proficiency from the U.S. 2000 Census of Population for foreign-born males and females, shows the negative relation between proficiency and age at migration. These data do not suggest any particular "critical" age at migration for speaking proficiency (Chiswick & Miller, 2008a).

Education is considered another efficiency variable. Other variables the same, those with more schooling are more proficient in the destination language. This could arise because those with higher levels of schooling are more efficient learners, either inherently (higher ability people) or because they acquire learning skills in school. To some extent this effect for the U. S., Canada and Australia might be due to immigrants being exposed to English as they advance up the educational system in the origin (Chiswick & Miller, 1995, 2007a, 2008b). It should be noted, however, that this is not likely to be a dominant factor since there is a similar relationship

between schooling and Hebrew language skills in Israel, but there would not be an exposure to Hebrew in the secular schools in the countries of origin. (Chiswick, 1998; Chiswick & Repetto, 2001).

Figure 1

Effects of Age at Migration on English Proficiency, United States, 2000^(a)



^(a) Immigrants from non-English speaking countries
 Source: Chiswick and Miller (2008a)

Some languages share many similarities with English (e.g., Dutch), while others are very different (e.g., Korean) and hence more difficult to learn. Language trees have been used by linguists to map out the evolution or historic relations among languages (Crystal, 1987; Grimes & Grimes, 1993). But what is needed for a statistical analysis of the determinants of the effect of linguistic distance on English language proficiency is a quantitative measure of the difficulties

non-English speakers have in learning English. Such a measure has been developed and tested (Chiswick & Miller, 2005a) using a measure of the difficulty Americans have learning other languages and the assumption of symmetry (i.e., if Americans have difficulty learning Korean, then Korean speakers would have difficulty learning English). This measure of linguistic distance has been shown to be important for understanding the English language proficiency of immigrants to the U.S., Canada, and Australia (Chiswick & Miller, 2005a). In principle, the methodology could be applied to develop measures of linguistic distance for other languages.

The final efficiency variable is motive for migrating. Three broad categories can be distinguished: employment migrants, refugees, and family migrants (often referred to as “tied movers”). The employment migrants are the most favorably self-selected for labor market success in the destination since this is their primary motivation. The refugees, on the other hand, include many who would not have moved except for their political problems in their origin. As a result, they tend to have the lowest degree of selectivity for success in the destination, and would be expected to have the least transferability of their skills (Chiswick & Miller, 2007a, 2008b). Lawyers and judges, for example, are very rare among employment motivated migrants, but are not uncommon among refugees. Family migrants fall in between employment migrants and refugees as they are attracted by economic opportunities as well as family ties, but are not responding to the same forces as refugees.

In some data motive for migration or the visa used to gain entry can be identified. When this has been possible, it is found that the employment motivated immigrants have the highest level of proficiency, followed by the family based immigrants, with the refugees showing the lowest proficiency (Chiswick & Miller, 2006, 2007a). When Australia increased the language proficiency requirements for employment based independent immigrant visas, but not for other

visas, the English language proficiency of the skills-tested migrants increased, with no significant change for the other groups (Chiswick & Miller, 2006).

C. Economic Incentives

The economic incentives for acquiring destination language proficiency also play an important role. The returns to becoming proficient are greater the longer the expected duration in the destination, whether as a worker or as a consumer. Various proxy measures of the expected future length of stay in the destination have been employed, depending on the data available. These include self-reported expectations of the duration of stay (Australia), emigration rates of immigrants from the respondent's country of origin (U.S. and Israel), and the distance from the origin (U.S., Australia, Canada) since return migration propensities decline with distance. Regardless of the measure, the longer the expected duration of stay, the greater is the investment in destination language proficiency (Chiswick & Miller, 2006, 2007a, 2007b, 2008b).

The most problematic aspect of the research on the determinants of destination language skills is estimating the impact on proficiency of the expected increase in earnings from becoming more proficient. That is, using the individual's expected increase in earnings as an explanatory variable. Data are not available on this on an individual basis. It is likely that those with higher levels of skill, for example, professionals as distinct from laborers, gain more in earnings from proficiency (Chiswick & Miller, 2003, 2007a). If so, the education variable would reflect some of this effect.

The findings reported here for the determinants of destination language proficiency among immigrants are remarkably robust across types of data (census or survey, cross-sectional or longitudinal), countries of destination (U.S., Canada, Australia, and Israel), and countries of origin (Chiswick & Miller, 2007a). The analyses also shed light on what appears to be a very low

level of English language proficiency among Mexican immigrants in the United States. The Mexican immigrants:

- a.) have a very low level of schooling (an average of about 8 years for adult men),
- b.) have a high propensity to be sojourners, with substantial to and fro migration and a short expected duration of stay,
- c.) have low costs of migration because they come from an origin adjacent to the U.S.,
- d.) are relatively recent immigrants compared to Europeans,
- e.) tend to live in large Hispanic enclaves where they can live and even work in a Spanish language environment and,
- f.) finally, are not skill tested for an immigration visa as they tend to enter under a visa for family reunification, under a formal or informal amnesty for illegal aliens, or are in an illegal or unauthorized status.

Effects of Language on Earnings

The analyses of the consequences for immigrants of destination language proficiency have focused on labor market earnings (Carliner, 1981; Chiswick, 1991, 1998; Chiswick & Miller, 2001, 2005b, 2007a; Dustmann, 1994; Dustmann & Soest, 2001; Grenier, 1987; Kossoudji, 1988; McManus *et al.*, 1983; Tainer, 1988). The focus on earnings has arisen for two reasons. One is the interest in earnings per se as it is a key determinant of economic status and poverty. The other is the general availability in censuses and surveys that include information on immigrants' destination language proficiency of data on earnings, but not of many other outcome measures.

The analyses of earnings are performed primarily for adult (but non-aged) men because of the technical difficulties in estimating earnings equations for groups, such as women and aged men, who have relatively low labor force participation rates. The equations are estimated using the “human capital earnings function,” a standard statistical technique in labor economics that regresses the natural logarithm of earnings on a set of explanatory variables, typically including years of schooling, years of labor market experience (and its square), and a variable for marital status. In analyses for the study of the impact of immigrant language proficiency, additional variables include duration in the destination, destination language proficiency, and, sometimes, residence in a linguistic concentration (enclave) area (Chiswick & Miller, 1995, 2005b).

When the equation is computed, destination language skills are found to be important determinants of earnings among immigrants.⁽³⁾ If the language variable is treated as dichotomous, that is, it takes one of two values, proficient and not proficient, the proficient group has about 15 percent higher earnings (Chiswick & Miller, 1995, 2005b, 2007b). When fuller information about different levels of proficiency are considered, there is a clear pattern that greater proficiency is associated with higher earnings, other variables being the same (Chiswick & Miller, 1995, 2005b, 2007a). For example, Table 1 reports a regression analysis for the earnings of adult men in Australia in 2001, by nativity. Among the foreign born, those who speak another language at home but who speak English “very well” earn about 10 percent less than those who speak only English, while those who speak it only “well” earn nearly 25 percent less (Chiswick & Miller, 2007b).

Table 1

Earnings Functions by Nativity for Adult Males, Australia 2001

<u>Variables</u>	Total Sample	Australian Born	Foreign Born
Constant	4.942 (220.29)	4.812 (186.64)	5.226 (5.226)
Education	0.087 (56.27)	0.095 (52.49)	0.068 (23.25)
Experience	0.041 (33.42)	0.044 (32.00)	0.031 (10.98)
Experience squared/100	-0.071 (28.37)	-0.075 (26.46)	-0.055 (10.40)
Married	0.164 (20.81)	0.164 (18.26)	0.167 (10.00)
Uses Computer	0.087 (12.09)	0.074 (9.08)	0.118 (7.83)
Foreign Born	-0.082 (3.85)	--	--
Years Since Migration	0.004 (3.70)	--	0.004 (3.59)
Speak English			
(Very Well)	-0.079 (6.37)	-0.042 (2.43)	-0.105 (5.97)
(Well)	-0.227 (11.17)	-0.249 (3.31)	-0.242 (11.34)
(Not Well)	-0.218 (7.47)	-0.266 (1.84)	-0.249 (8.48)
(Not at All)	-0.459 (6.71)	-0.275 (38.24)	-0.519 (7.59)
Adjusted R²	0.205	0.214	0.187
Sample Size	29,888	22,274	7,614

Dependent variable: National Logarithm of annual earnings.

- variables not entered. t-ratios in parentheses

Source: Chiswick and Miller (2007b) Computed from data from the Australian Census of Population, 2001, Household Sample File, 1/100 sample.

Is investment in destination language proficiency profitable for immigrants? Considering only the labor market impacts, a 15 percent increase in earnings per year from going from “not proficient” to “proficient” would imply a 30 percent rate of return on the investment if it involved a half of a year of full-time language training, a 15 percent rate of return if it required a full year, and a 7.5 percent rate of return if it required two full years. Even if it required two full years, this is a high rate of return on the investment. Yet, this computation does not take into account the consumption, social and civic benefits, or the lowering of the costs of other investments in human capital. Thus, it appears that the investment in destination language proficiency is a profitable investment for immigrants and for society.

Even controlling statistically for the respondent’s own destination language proficiency, other variables held constant, those who live in an ethnic/linguistic enclave receive lower earnings than those who live outside an enclave area. This may arise from immigrants being willing to sacrifice some earnings to live among others who speak their mother tongue and share their cultural characteristics (ethnic goods). Indeed, for many ethnic goods (e.g., ethnic church, friendship networks) the cost is lower if one lives in a larger ethnic/linguistic enclave (Chiswick & Miller, 1995, 2005b). Thus, only a high wage offer would induce the immigrant to live outside the enclave. This gives the appearance of higher nominal wages outside the enclave, although perhaps the same real wages when adjusted for the higher cost of ethnic goods.

Research has also been conducted, and is still in progress, on the effect on earnings of the English language proficiency of the native born in the United States and Australia who are bilingual, that is, those who report that they speak another language in addition to English at home (Chiswick & Miller, 1998, 2007b). Using Census data, it is found that among these

individuals, those with a lower self-reported proficiency in English have lower earnings, other measured variables, including schooling, being the same. This is not surprising.

What is surprising, however, is that in the U.S. and Australia, among native-born adult men, those who report they speak another language at home but speak English “very well” (the highest proficiency category) earn about 4 percent less than otherwise statistically similar men who are monolingual English speakers. This is shown in the second column of Table 1 for Australia. Unfortunately, while the data identify the other language spoken, the level of proficiency in that language, or whether it is used at work, is not known. ⁽⁴⁾

This is a puzzle. One would have thought that bilingualism might be an advantage in the labor market, or that if it was a disadvantage, one could hide from actual or potential employers the language one speaks at home. Bilinguals born in Australia and the US are primarily the children of immigrants (Portes & Schauffler, 1994; Rumbaut, 2007). Being primarily second generation per se is not likely to be the cause of the lower earnings as the sons of immigrants tend to earn the same or more than the sons of native-born parents (third and higher generation people) (Chiswick, 1977). Perhaps native-born bilinguals who report they speak English “very well” are in fact less proficient than monolingual English speakers, and that this is the cause of the lower earnings. Alternatively, there may be no difference in English proficiency, but by accent, intonation or another speech pattern the bilinguals in a subtle way reveal their ethnic or immigrant origins and are subject to discrimination. The explanation may reside in whom among the native born in the U.S. and Australia speaks a language in addition to English at home. These are likely to be individuals more closely attached to their immigrant/ethnic origins and living in the ethnic/linguistic enclave. If so, their lower earnings may reflect a sacrifice of better job opportunities for the comfort and lower cost of ethnic goods in the enclave.

On the other hand, there is evidence that bilingualism may have a large payoff for indigenous people. A study of Bolivia looked at the effects of Spanish language proficiency on earnings in the major cities among indigenous people for who the indigenous language is their mother tongue (Chiswick, Patrinos and Hurst, 2000). Other variables the same, Spanish language proficiency was found to have a large positive effect on meanings. These indigenous people may be reflecting patterns that more closely resemble those of migrants from less developed to more highly developed economies where a non-indigenous language is the dominant language in the labor market and economy, rather than the phenomenon of bilingualism observed among the native born in the US and Australia.

Summary and Conclusions

This paper is intended to introduce to those who are not specialists the “economics of language,” that is, the study of the allocation of scarce resources for immigrants acquiring destination language proficiency, and the labor market and other consequences of that proficiency.

Language proficiency among immigrants is modeled as related to the three “E”s, Exposure to the destination language, Efficiency in acquiring destination language skills, and the Economic incentives for investing in proficiency. Proficiency in the destination language among immigrants increases with their schooling level and their duration of residence in the destination, but decreases with a greater age at migration, if the immigrant was married before migration, and if the migrant lives in a linguistic concentration (enclave) area. Among women, but not men, proficiency is lower the larger the number of children in the family. The proficiency of a family member is greater if other members of the family are more proficient. In particular, mother’s

proficiency is more important than that of the father for the English language proficiency of their children.

Among immigrants, other variables being the same, earnings are greater for those more proficient in the destination language.. The implied payoff to proficiency in terms of labor market earnings for adult males suggests it is a profitable investment. Yet this underestimates the benefits to acquiring proficiency as it does not include the gains from consumption, social, and civic activities and other human capital investment activities. The computation of benefits also does not take into account the gains from the enhanced English language proficiency of other family members (language learning in the home) when one family member makes investments in destination language training.

An important implication of this analysis for immigration policy is that immigrants either proficient in the destination language, or with characteristics that enhance proficiency, will be more successful in adjusting to the destination labor market. Australia, Canada and New Zealand, but not the United States, have skill-based immigration policies that give significant emphasis to these characteristics, including English language skills (plus French in Canada) educational attainment, and age at migration, when issuing permanent resident visas.

Another important policy implication derives from the high rate of return from investments in language proficiency to the individual and to society. This suggests the encouragement of immigrants to invest in language training, as is done intensely in Israel, through subsidies, access to training programs, and other mechanisms.

Encouraging immigrants to become proficient in the destination language does not imply a denigration of their origin culture or language. It does imply a welcoming of them to the full

range of opportunities in the educational, economic, social and civic (political) life of their new home.

Notes

1. This paper is based on my Julian Simon Lecture, IZA Annual Migration Meeting, Bonn, May 2007, on my lecture delivered at the Conference on Immigration, Education and Language, Arizona State University, Phoenix, Arizona, May 2007, and my European Society for Population Economics Presidential Address, Chicago, June 2007. A modified version with the same title is being published in T. Wiley, J.S. Lee and R Rumberger, (eds). The Education of Language Minority Student in the United States, Clevedon, UK: Multilingual Matters (forthcoming). It synthesizes the technical development presented in my research papers and in my book co-authored with Paul W. Miller, The Economics of Language: International Analyses (Routledge, 2007).
2. For an analysis for the United States, based on sociological models, that is consistent with the analyses reported here, see Expenshade and Fu (1997).
3. Nearly all the data on language proficiency refer to the language spoken in the home or the language used on a regular or daily basis. While it would be desirable to have data on the language used in the immigrants' workplace, these data are generally not available. Moreover, immigrants may choose (or be chosen for) jobs that match their language skills, rather than the workplace causing language proficiency.
4. Analysis of data for the US in the General Social Survey (GSS) for 2000 reveals that among the native born the ability to speak a language other than English, and the proficiency in that other language, have no significant effect on earnings. The small sample size of foreign language speakers in the GSS makes the interpretation of this

finding problematic. The 2000 survey was the only instance in which the GSS asked these questions.

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