

# **The Economics of Language**

International analyses

**Barry R. Chiswick and  
Paul W. Miller**

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**To our spouses, Carmel and Tram  
and our children,  
Abraham and Benjamin  
and  
Erin and Andrew**

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# Preface

The papers included in this volume range in publication date from 1988 to 2005. We are indebted to many individuals who served as research assistants and who provided us with helpful comments (including journal editors and anonymous journal referees), to numerous funding sources, to statistical agencies for generously making data available to the research community, and to our institutional affiliations (both regular and visiting) over these two decades. The specific acknowledgements are reported in each of the separate essays. We would, however, like to thank here IZA—Institute for the Study of Labor (Bonn), the Smith-Richardson Foundation, and the Institute of Government and Public Affairs, University of Illinois for the funding that made this volume possible, Derby Voon who assisted us in the preparation of this volume for publication, and our co-authors on some of these papers: Michael Beenstock, Michael Hurst, Yew Liang Lee, Harry A. Patrinos, Gaston L. Repetto, and Michael Wenz.

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*August 2006*

# Introduction

Genesis, Chapter 11, begins:<sup>1</sup>

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)

## The economics of language

The story of the Tower of Babel in Genesis provides an explanation of the diversity of languages. It also underlines the power of language and the consequences of the multiplicity of languages that are not mutually intelligible. The linguistic heterogeneity reduced communication and work efficiency, thwarting attempts to build a tower to reach into the Heavens.

While the Tower of Babel story tells of the determinants and consequences of linguistic heterogeneity, the approach taken here is the reverse. In the Biblical story a common language becomes many, and the people are scattered across the face of the globe. In most of the essays that follow the reverse is considered. 'Scattered' peoples are brought together as immigrants in a destination or host country, and the process by which they acquire the common language of the destination is studied. In addition, the labor market consequences of acquiring the primary language of the host country is also



studied. These two issues are inter-related since the incentive to acquire the host language, and hence the speed and completeness of doing so, is greater if the benefits from doing so are greater.

In the 20 essays presented in this volume the theoretical and quantitative (empirical) tools that are the standard stock and trade of economics are applied to increase our understanding of the determinants and consequences of language proficiency. The two fundamental questions addressed in these chapters are: What are the *determinants* of language proficiency, especially among immigrant and other linguistic minorities? What are the *consequences* of language proficiency for labor market outcomes, such as earnings and employment?

The approach taken is derived from economics. It is assumed that people have scarce resources (including time) and that they want to maximize their economic wellbeing, subject to the constraints imposed by these scarce resources. It is also assumed that language skills are a form of 'human capital'. Language skills satisfy the three requirements for something to be considered human capital. First, it must be productive. The essays that follow will demonstrate the productivity of language skills in the labor market through enhancing earnings and employment. Presumably, better destination language skills make it easier to find a job that is a good match to one's skills, and improved proficiency in the destination language makes a person more productive on the job, both in doing the job *per se* and in interacting with others. Although we have not found appropriate data to test the hypothesis, it is reasonable to assume that language skills are also productive in consumption and social activities. Just ask anyone who has been a tourist in a country in which they cannot speak the local language.

Second, language skills are acquired at a cost. The cost may be the time and effort the immigrant puts into learning the language, whether in school, by watching soap operas on television, by struggling to communicate with locals or merely learning-by-listening. The cost also includes formal institutional costs for classroom learning (teacher salaries, classrooms, etc.), as well as books and newspapers used to improve skills. Indeed, even the acquisition of language skills among infants is not without cost since it is crucially dependent on parents or other caregivers devoting their time and energy to talking with and otherwise interacting with the infants.

Finally, and most crucially for a resource to be 'human capital', it must be embodied in the person. A person can be separated from the land, truck or IBM stock that he or she owns, but this cannot be done for skills, such as language skills. Moreover, with the abolition of slavery, people cannot be bought and sold, even though nearly all of us 'rent' our labor resources to our employers.

In addressing the issue of the determinants of host country or destination language skills we have found that a useful approach is to consider three fundamental variables. Our three 'E's of language proficiency are *Exposure* to the destination language, *Efficiency* in the acquisition of the destination

language, and *Economic Incentives* to acquire the language. Many empirical variables are used to represent the three E fundamental concepts.

Greater detail on these is provided in the separate essays, and so an example of each will suffice here. An important exposure variable is how long the person has lived in the destination. Efficiency refers to the ability to convert exposure into language proficiency. An efficiency variable is age at the onset of learning the language: a four-year-old can learn a 'foreign' language much faster than a forty-four-year-old with the same exposure. Finally, economic variables are the costs and benefits from learning the language. For example, someone would be much more willing to put the time, energy and other resources into learning another language if the person expects to be in the destination for two decades rather than for two weeks.

### Structure of the book

The essays in this volume were selected from a larger set of our research papers on the economics of language.<sup>2</sup> The selection criteria included our desire to present a broad range of topics and countries studied.

Theory can tell us what might be, but empirical analysis is needed to tell us what is, to test hypotheses, and to measure the magnitude of effects. Each of the 20 essays in this volume involves both theory and measurement (empirical analysis). The data analyses support the hypotheses developed in the theoretical discussions. When this is not the case it is so indicated and the analysis is pushed further to try to provide a better understanding of what is happening and why. Yet, a reader not well versed in the statistical techniques can still profit from the flavor of the analysis by focusing on the discussion in prose.

The subtitle of this volume is 'International Analyses'. The analyses reported here are for five countries on four continents: the United States, Canada, Australia, Israel and Bolivia. There are several reasons for this range of countries. One is that no data set is ideal. Some have a richer set of questions on some issues related to language, while others have a richer set for other issues. Thus, the studies included here use a wide variety of data sets, crossing international boundaries. Moreover, if all of the studies were limited to one country, we would not know if the findings were specific to that country or whether they were robust findings that transcend national boundaries and institutions. Are the findings sensitive to institutions that are specific to a country or are they generalizable? One such institution is destination country language. For example, are findings for the U.S., Australia and English Canada obtained because of the unique role of English as an international language? The analyses for French Canada, Israel and Bolivia suggest that the patterns are largely universal rather than country specific.

Although many of the essays were originally published in economics journals, others were published in journals in other disciplines, including demography, immigration, linguistics and sociology. Most of the analyses are for speaking skills because this seems to be the favorite language question

in censuses and surveys. Yet, literacy (reading and writing) and numeracy (literacy in mathematics) are studied where possible. Most of the analyses are for an economy in which a single language dominates the labor market, although Canada is an exception and the role of linguistic enclaves is studied in several essays. Most of the analyses focus on the individual, but in one the focus is on the linguistic consequences of the interactions between and among parents and children. Most of the studies are based on samples of the population as a whole or of immigrants as a whole, although some focus on specific segments of the population (e.g., illegal aliens, Soviet immigrants, indigenous people). Although many of the studies focus on adult men, several are concerned with women and children as well. Some of the studies are exclusively on immigrants, but many others include the native born.

### **Thumbnail sketch of findings**

Part I includes five papers under the theme 'The Determinants of Language Proficiency'. A theoretical model is developed to explain destination language proficiency among immigrants based on human capital theory and the immigrant adjustment process. The model is found to be very robust for explaining destination language proficiency among immigrants across destinations. Using data for the U.S. and Canada and the model based on the three fundamental variables, *Exposure*, *Efficiency* and *Economic Incentives*, the analyses show that among immigrants destination language proficiency increases with: duration in the destination, educational attainment, living in an area where few speak the origin language, coming from a country that is more distant geographically and linguistically, and a younger age at immigration among both immigrants in general, and for the U.S. the low-skilled illegal aliens who were the beneficiaries of the 1986 amnesty. Proficiency is greater among immigrants from a former British or American colony or dependency, and is lower among refugees. Immigrants to Canada tend to settle in Quebec and adopt French if they come from a Romance language country, otherwise they tend to settle elsewhere in Canada and speak English.

An analysis of linguistic patterns within the family reveals that, other things being equal, greater proficiency by one parent or one child for unmeasured reasons enhances the proficiency of all other family members. The effect of the mother's proficiency on children's proficiency is greater than that of the father's proficiency.

Part II includes five essays on 'The Effects of Language Proficiency on Labor Market Outcomes'. The analyses are for males and females, for speaking, literacy and numeracy skills and for the United States, Australia, and Israel. The labor market outcomes considered are earnings, employment, unemployment and labor force participation. The findings reported above on the determinants of language proficiency are reconfirmed in the papers that include this analysis.

In addition to the usual findings regarding the determinants of earnings,

there is a highly significant and large effect of language proficiency (fluency, literacy and numeracy) on both earnings and employment for both men and women. Arriving in a destination during a period of high unemployment is associated with lower earnings, but this 'scarring' effect diminishes with duration in the destination. Earnings are found to be lower among immigrants living in areas with many others from their country or language of origin. Earnings are also lower for those with interrupted stays in the destination.

In the three essays in Part III there is a greater focus on 'The Interaction of Language and Earnings Among Immigrants'. Alternative statistical techniques are employed to disentangle the joint effects of earnings and language on each other. The first essay focuses on Australia, and then compares these results to findings for the U.S., Canada and Israel. Other variables being equal, earnings are over 15 percent greater when those proficient in the destination language are compared to those who are not proficient. The estimates imply a high rate of return on an investment in destination language proficiency, especially for more highly educated immigrants who receive a larger than average increase in earnings.

Two studies in this section focus on specific immigrant groups in the U.S. at opposite ends of the educational spectrum. One is low-skilled (low education) illegal aliens apprehended in the interior of the U.S. The other is the highly-educated Soviet Jewish refugees. Both groups experience improvements in English language skills with duration in the U.S., although the effect is larger for the Soviet Jews, and among both groups education is associated with greater proficiency. The low level of schooling and low English language proficiency retards the earnings progress of the illegal aliens. The data suggest that for the illegal aliens English reading proficiency has a larger impact on earnings than English speaking skills, and as was found in studies of the general population, other variables being equal, Hispanic immigrants are less proficient in English than other immigrants. Soviet Jews experience very rapid improvements in English skills and in earnings from an initially very low base that is consistent with their being highly-educated refugees.

'Language and Earnings Among the Native Born' is the primary theme in the three studies in Part IV, using data on the U.S., Canada and Bolivia. Proficiency in the dominant language in the labor market, English in the U.S., English/French in Canada, Spanish in Bolivia, enhances earnings even among the native born. Bilingualism offers mixed results. Proficiency in an immigrant language as well as English is associated with lower earnings among the native born in the U.S. In Canada, proficiency in an immigrant language is also associated with lower earnings, but English-French bilingualism is associated with higher earnings. The research on Bolivia focuses on indigenous (Indian) language speakers who live in the city and the significant return to them from Spanish language proficiency.

Part V is 'Language, Networks and Enclaves' and includes two studies of immigrant adaptation in the U.S. and Australia. Enclaves and ethnic networks are both a blessing and a curse for immigrants. They facilitate the

initial adjustment, both social and in the labor market. They retard, however, linguistic (speaking, reading and writing) and labor market upward mobility. Using the concept of 'ethnic goods' (goods, services and networks that are particularly valued by an ethnic/immigrant group), the analysis shows why ethnic enclaves or ethnic concentrations are formed, why they can persist for a long time, and their adverse effect on improvements in language proficiency and earnings. Indeed, even controlling for the person's own characteristics, including their own language proficiency, living in an ethnic enclave is associated with lower earnings.

The two essays in the final section, Part VI, 'Linguistic Distance', return to a theme developed and discussed in earlier chapters in this volume, namely an efficiency variable in the model for the determination of destination language proficiency—the 'distance' between the immigrant's origin language and the language of the destination. Korean and Japanese are clearly more 'distant' from English than are French and German.

The analysis for Israel shows that there are separate effects of country of origin and language of origin on immigrant's Hebrew language proficiency. The English-mother tongue speakers have lower proficiency in Hebrew, other variables being equal, perhaps because it is an international language for business and science and it is an important second language in Israel. The Arabic-mother tongue speakers have greater proficiency in Hebrew, perhaps because Arabic is linguistically close to Hebrew. Immigrants from dual-language countries of origin are more proficient in Hebrew than those from single language countries.

The last chapter in the volume develops and tests a quantitative measure of the linguistic distance between English and nearly all of the languages coded in the U.S. decennial census, except for American Indian languages. The tests performed in this chapter indicate that linguistic distance is very important for explaining immigrant English language proficiency in the U.S. This measure has also been successfully applied in Australia and Canada. The methodology could be applied to the development of measures of linguistic distance for other languages.

In summary, taken as a whole, these studies for the U.S, Australia, Canada, Israel and Bolivia indicate that human capital, demographic, linguistic and other factors representing exposure, efficiency and economic incentive concepts can go far to explain the destination language proficiency of immigrants. Dominant language proficiency, whether measured by fluency or literacy skills (as well as numeracy skills) is an important determinant of labor market outcomes for immigrants and the native born. Among whom one lives is important—both the family and the local environment (enclave or linguistic concentration) matter for language skills and labor market outcomes. Considering the favorable effects on employment and earnings, there appears to be a high rate of return to investments in dominant language skills, especially for younger and more highly educated immigrants.

The analyses also demonstrate the importance of testing for robustness

through analyses of a variety of data sets, using different questions on language, for different countries, and for both the population as a whole and for selected demographic groups.

## Note

- 1 *Tanakh: The Holy Scriptures*, Philadelphia: Jewish Publication Society, 1985, pp. 16–17.
- 2 All chapters were co-authored by Chiswick and Miller (and others as indicated in the Contents), except for Chapters 10, 12, 13, 16 and 19, which were written by Barry Chiswick as a sole author or with the collaborators listed where relevant in the Contents.

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