

7-20-2012

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Recommended Citation

Brady, Mary Liz (2012) "Validating Foreign Language Issues: What are the Effects of Non-English or Bilingual Population on an MSA?," *Colgate Academic Review*: Vol. 7, Article 13.

Available at: <http://commons.colgate.edu/car/vol7/iss1/13>

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Validating Foreign Language Issues: What are the Effects of Non-English or Bilingual Population on an MSA?

Mary Liz Brady, Class of 2011

Increasing immigration, as well as globalization of the national economy, has put foreign language issues in the popular media spotlight. ProEnglish advocates support establishing English as the national language and diminishing bilingual education in favor of English immersion programs. On the other hand, several school systems are emphasizing the importance of foreign language classes in light of the increasing economic interdependence and importance of foreign diplomacy. This paper examines the effects of a non-English speaking population on the well-being of a metropolitan statistical area. Furthermore, it explores what effect a bilingual population has on the MSA. Results indicate that both a non-English and bilingual population are insignificant in determining average income across a city.

Introduction

This paper examines the effects of an MSA's collective English proficiency and bilingual ability on average earnings within the area. This question is particularly prevalent as immigration grows and international relationships gain importance. In data collected by the 2000 U.S. Census, 47 million Americans, or about 18%, reported speaking a language other than English inside the home. This figure has increased from 14% in the 1990 Census and further from 11% in the 1980 Census (Vistawide 2010). Combined with the continuing globalization of the national economy, the growing presence of foreign language within U.S. borders has inspired political and social issues that have captured public attention. Popular media has underscored two major, and in many ways ideologically opposite, concerns surrounding foreign language.

First, pro-English advocates assert the importance of immigrants learning proficient English in order to aptly

assimilate with the U.S. labor market. The ProEnglish organization, one of the major interest groups fighting to establish English as the official national language, argues that multilingualism is creating a growing lower class, walled off from the larger economy and segregated into enclaves (ProEnglish 2010). Advocates of this movement call for decreased bilingual education, and instead call for a replacement by an English immersion curriculum, such as the common English as a Second Language or ESL program. Most U.S. states have taken action to establish English as their official language (See Figure 1). Declaring English as the official language means "that official government business at all levels must be conducted solely in English. This includes all public documents, records, legislation and regulations, as well as hearings, official ceremonies and public meetings" (U.S. English Inc.).

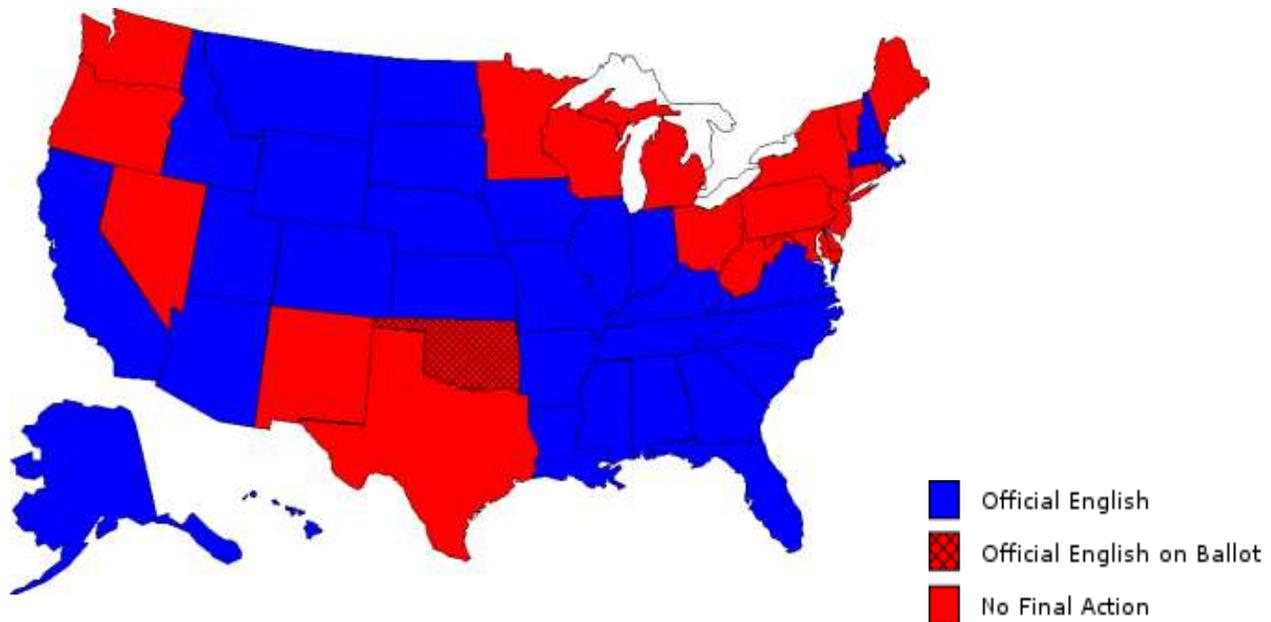


Figure 1

Research has demonstrated that immersion into the American labor force weakens mother tongue ability from first to second generation immigrants (Fry 2003). Certainly, the immersion programs proposed by pro-English supporters would exacerbate this issue. The weakening of foreign language ability among American immigrants falls into direct conflict with the second major issue emphasized by popular media: the recognition of foreign language classes as an essential piece of the American education. In the face of the budget cut backs, believers in foreign language education point to the increasing globalization of the American economy as a key reason to maintain these programs. Moreover, at a time when the United States is involved in two wars and other unstable foreign relationships, they argue that intelligence gathering, military planning, and diplomacy are as essential as ever (Holman 2010). Thus, it appears that while immigrants and

second generation Americans are often encouraged to weaken ties with non-English languages, the American education system is encouraging and requiring students to pursue bi- or multilingualism.

It is uncertain whether either of these assertions is economically sound. It seems logical to support the assimilation of new immigrants into the American labor market through learning English. Empirical studies provide mixed conclusions on the significance of English proficiency on the earnings of immigrants. However, in the study conducted by Park (1999) he makes a convincing argument suggesting a positive correlation between English fluency and earnings. Rather than examine a direct correlation, Park investigates the effect of English fluency on the parameters of other variables in the earning equation, (Park 1999). In particular, he observes the effects of English proficiency on immigrants'

return to education and experience obtained before and after immigration.

The results are largely in line with Park's hypothesis. Experience and education received outside of the United States are more valuable to English speakers who are able to transfer the benefits easily in to the American labor market. Furthermore, non-English speakers received a greater return to experience and education obtained within the United States as it is a comparably more significant acquisition of human capital. The non-English group is divided into those who speak English very well denoted "fluent" and all others denoted "nonfluent." In accordance with Park's hypothesis, the fluent group receives greater returns to education and experience abroad, while the non-fluent group receives greater returns from education and experience obtained domestically.

Settling on the conclusion that Americans are better off with increased English proficiency, the question remains whether this is a political or individual matter. In other words, it is worth exploring whether the individual immigrant's decision to speak his or her mother tongue will have a negative impact on an MSA as a whole. Again, empirical analysis points to mixed conclusions about the benefits of a homogenous civilization. Easterly and Levine (1997) demonstrate a negative relationship between per capital GDP growth and ethnolinguistic fractionalization across a large sample of countries (Easterly 1997). It is possible that preferential conflict, communication obstacles, or outright prejudice and

racism are responsible for curbing economic growth in these instances.

However, other empirical studies provide more optimistic results. In their 2005 investigation "Cities and Cultures," Ottaviano and Peri argue that linguistic diversity is associated with higher wages for natives in a city. This effect is strongest for high skilled workers, but remains present for the unskilled, as well. In addition, they find a positive association between employment and linguistic diversity within a city. Including several demographic controls such as schooling, experience, share of women, and share of blacks, they find that moving from a linguistically homogenous city like Pittsburgh, to a more linguistically diverse city like Los Angeles is associated with a 13% increase in the average wages of U.S. born workers. They contend that their results indicate that with linguistic diversity come distinct skills to production (Ottaviano 2005). They address the crucial issue of endogeneity by constructing instruments involving distance to borders and gateway cities, as well as using a shift-share methodology. These estimations support the proposed causation.

Ratna et al. (2009) build on Ottaviano and Peri's research. While the main argument in their study is the negative relationship between racial diversity and Gross State Product, their regressions consistently produce positive correlation between GSP and linguistic diversity. Oddly, this study also finds a positive relationship between the percentage of the population with insufficient English fluency and GSP but

they assume this is a simple endogeneity problem resulting from more productive states like California and Florida having a large number of Spanish speakers and non-native workers (Ratna et al 2009). In their discussion, Ratna et al. provide arguments against their counter-hypothesis language result. They insist that while enclaves such as “Chinatown” or “Little Italy” provide a springboard for newly arrived immigrants, the continual use of mother tongue as a business language is a huge barrier to economics success (Ratna et al 2009).

While both studies support arguments for linguistic diversity, neither refutes the importance of English proficiency. In fact, Ottaviano and Peri conclude that “benefits from immigrants who have integrated (i.e. have been in the US for a longer period of time and speak English well) are larger than those from new immigrants” (Ottaviano 2005). Thus it is fair to conclude that the cultural benefits captured in the linguistic diversity studies may be attributable to bilingual individuals who maintain distinct cultural and linguistic characteristics still overcoming communication obstacles with proficient English ability.

It is then reasonable to hypothesize that bilingualism has a significant value in the U.S. labor market. Fry and Lowell (2003) explore this avenue and reach unexpected results. They rationalize that in an increasingly global economy, multinational corporations need workers with ability to speak both English and another language. Furthermore, workers in supervisory service-provider positions

may need to speak another language. Finally, they argue that research finds bilinguals tend to perform better academically, and thus are probably more productive professionally (Fry 2003).

In analyzing their data collected from the National Adult Literacy Survey, Fry and Lowell find that workers who know a second language cluster at two extremes of the education distribution. Bilinguals are both more likely than monolinguals to have not completed high school and to have completed at least a bachelor’s degree. Their initial regression suggests that workers who know a second language in addition to English earn about 7% more than similar workers who only know English. However, once educational credentials are controlled for, there are no statistically significant wage gains from knowledge of a second language. The results are not altered when specific language or occupational categories are considered.

In summary, popular media topics about foreign language remain unsettled. While it is true that it is individually beneficial for an immigrant to be English proficient, it is not clear what indirect effects English-*only* assimilation may have on a particular labor market. Furthermore, while one study refutes popular opinion about the advantages to being bilingual, this matter can certainly be re-approached. Accordingly, I will focus my research on a two-fold topic:

- Do non-fluent English speakers lower average incomes within an MSA?

- How does the percentage of bilingual residents of a city affect average earnings? How does bilingualism impact cities with relatively low English proficiency?

Data

In order to capture the effects of non-English and bilingual speakers, this paper will measure the economic consequences they impose on a Metropolitan Statistical Area. I use MSAs rather than cities because they consider social and economic integration as well as geographic boundaries. There

are 567 total observations taken from 284 metropolitan areas in the 2000 US Census and the 2008 American Community Survey. In order to measure an MSA's general economic quality, I use the average wage and salary income for all residents over age 18 who have an income greater than 0. While not totally comprehensive, the income variable captures the relative well-being of a region for this analysis. In order to measure elasticity and diminish the effects of outliers, we use the natural logarithm of wage and salary income as the dependent variable in all regressions.

Table 1: General Summary Statistics

<i>Variable</i>	<i>N</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Min.</i>	<i>Max.</i>
Wage & Salary Income	567	\$31,790	\$6,025	\$19,741	\$89,160
Years of Education	567	13.24	.52	10.87	14.68
English-speaking Population	567	97.16%	0.04%	76.81%	100.00%
Bilingual Population	567	10.71%	10.54%	0.17%	73.93%
Population	567	770,250	1,588,433	96.493	17,500,000
Hispanic Population	567	9.74%	14.37%	0.27%	95.43%
Black Population	567	9.26%	9.41%	0.11%	46.73%
Foreign-born Population	567	9.99%	9.12%	0.69%	61.97%

To measure the English-speaking ability of a given MSA, we use the variable "ENG" that takes a value of 1 when the respondent claimed to speak only English, speak English very well, or speak English well. "ENG" takes a value of 0 otherwise. When the variable is averaged across a metropolitan area, it ranges from 0 to 1 and represents the population of proficient English speakers in the given MSA. Table 1 indicates "ENG" ranges from 76.81% to 100%.

Another major variable is bilingual ability "BILING" in a metropolitan area. It takes a value of 1 when the respondent spoke both proficient English and a second language inside the home. Like the "ENG" variable, it is averaged across a metropolitan area and represents the MSA's population of bilingual speakers. Although it successfully captures the foreign born population that also speaks English, its major shortfall is the failure to consider those who speak English as their first language but are proficient in another

language, as well. Although this skews the data, this study focuses mainly on the impacts of immigrants on a city.

Accordingly, this paper will consider the group irrelevant.

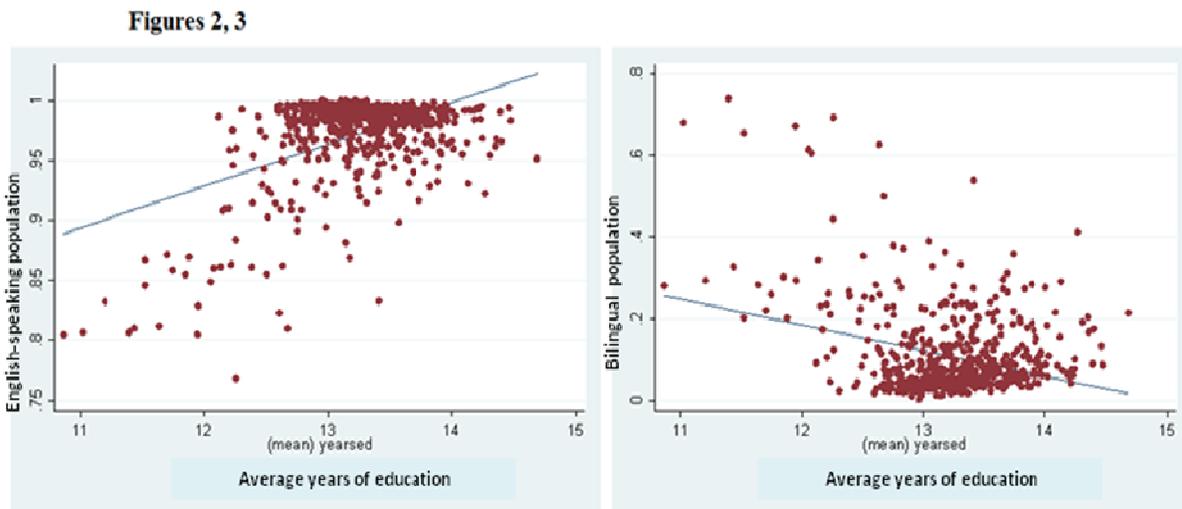


Table 2: Summary Statistics for Significant MSAs (2008)

MSAs with highest average incomes				MSAs with lowest average incomes			
<i>Metropolitan Area</i>	<i>Average Income</i>	<i>English-speaking Population</i>	<i>Bilingual Population</i>	<i>Metropolitan Area</i>	<i>Average Income</i>	<i>English-speaking Population</i>	<i>Bilingual Population</i>
Stamford, CT	\$89,161	95.12%	21.43%	Laredo, TX	\$22,663	76.82%	69.32%
Danbury, CT	\$58,620	96.54%	17.51%	Flint, MI	\$23,151	100.00%	3.11%
San Jose, CA	\$55,451	92.23%	41.14%	Johnstown, PA	\$23,167	99.79%	1.37%
Washington, DC/MD/VA	\$51,388	96.19%	20.37%	Muncie, IN	\$23,180	99.01%	2.50%
San Francisco-Oakland-Vallejo, CA	\$49,423	93.03%	29.12%	McAllen-Edinburg-Pharr, TX	\$23,284	80.51%	67.06%
Trenton, NJ	\$49,249	95.51%	21.52%	Joplin, MO	\$23,720	98.67%	3.52%
Bridgeport, CT	\$49,249	96.48%	19.15%	Brownsville-Harlingen-San Benito, TX	\$23,799	84.88%	61.44%
New York-Northeastern	\$47,053	93.21%	28.42%	Danville, VA	\$23,806	99.42%	1.94%

NJ							
Boston, MA-NH	\$47,008	96.76%	16.71%	Sharon, PA	\$23,827	100.00%	2.34%
Monmouth-Ocean, NJ	\$44,871	97.81%	11.30%	Yuma, AZ	\$24,355	86.09%	3.44%

Educational attainment level “YEARSEd” is an essential control variable. Education is arguably one of the most significant factors in wage and salary determination and should be accounted for in all regressions. Education level is likely correlated with the principal independent variables, English-speaking and bilingual ability, in addition to other race controls capturing black and Hispanic populations (See Figures 2, 3). The exclusion of “YEARSEd” from any regression will result in omitted variable bias.

Additional important variables include the foreign born population “FOREIGN,” and the percentage of a population identifying as Hispanic “HISP” in a specified MSA. Given the characteristics of U.S. immigration, a strong relationship exists between language ability, foreign birthplace, and the Hispanic ethnicity. It is likely that in a location that attracts large scale immigration, both significant bilingual and non-English speaking populations are prevalent. Perhaps a bilingual individual lives among non-English speaking family members or attracts new immigrants that have not adopted the language immediately. These controls help evade any bias related to their overlap. Similarly, I include a control for the percentage of a population which is black “BLACK,” due to the established

link between minorities and higher levels of poverty. General population is included as a control variable, as well.

Scatterplots of the data do not demonstrate an obvious relationship between income and English ability nor income and bilingual ability (See Appendix). In examining both the top ten richest and poorest MSAs in our study, a few notable trends emerge (Table 2). All of the rich cities have a percentage of English-proficient speakers between 92% and 98%. Their bilingual populations are all above the mean clustering in 20-30% range. These statistics are not especially surprising as one would equate a successful economy with strong ability to communicate. The data for the poor MSAs does not have the same uniformity. Laredo, Texas, the city with the lowest average income, has the smallest English-speaking population and one of the largest populations of bilingual inhabitants. However, the second poorest MSA, Flint, Michigan, has largely opposite characteristics. Flint boasts a population with 100% English proficiency but a comparatively low level of bilingual ability of 3.11%. Similar variation exists in the other highlighted poor MSAs. It is difficult to make any generalization in regard to the linguistic abilities of the lowest income cities in our study.

Hypothesis & Specification

Although the raw data does not demonstrate any clear correlation, this is not a complete representation. I hypothesize that English ability does not have any significant relationship with average income in a metropolitan area. While previous studies have asserted that English ability is an important factor in an individual's wage, I contend that there is no negative effect resulting from a high percentage of non-English speakers on other members of an MSA (Park 1999). I expect the inconvenience arising from inability to communicate is not large enough to impose a city-wide reduction in income. In order to test the hypothesis econometrically, the following regression is done:

$$\begin{aligned} \text{LWAGE} = & \beta_0 + \beta_1 * \text{ENG} + \\ & \beta_2 * \text{POP} + \beta_3 * \text{YEARSSED} + \\ & \beta_4 * \text{FOREIGN} + \beta_5 * \text{DYEAR} \\ & + \beta_6 * \text{BLACK} + \beta_7 * \text{HISP} \end{aligned}$$

"LWAGE" represents the log of wage and salary income, "ENG" is the percentage of proficient English speakers within the MSA, "FRACT," is a measure of linguistic fractionalization within the MSA, and "YEARSSED" accounts for the city-wide average education level. "FOREIGN," "BLACK" and "HISP" measure the percentage of foreign-born, black, and Hispanic populates, respectively. "DYEAR" is a dummy variable for 2000 data that control for

time-related variation, and "POP" represents an MSA's population.

In regard to bilingualism, I predict that a higher bilingual population will result in a higher average income across MSAs. According to the research conducted by Fry (2003) bilingual speakers perform superiorly in academics. Their strengths likely translate into work related activity. Moreover, in a bilingual society, constituents are better able to transfer skills and ideas across cultures. Benefits resulting from linguistic-- and thus cultural-- diversity across cities are established in the study of Ottaviano and Peri (2005). Bilingual ability will certainly only facilitate the distribution of these cultural elements. In order to test this hypothesis econometrically, the following regression is employed:

$$\begin{aligned} \text{LWAGE} = & \beta_0 + \beta_1 * \text{BILING} + \\ & \beta_2 * \text{POP} + \beta_3 * \text{YEARSSED} + \\ & \beta_4 * \text{FOREIGN} + \beta_5 * \text{DYEAR} \\ & + \beta_6 * \text{BLACK} + \beta_7 * \text{HISP} \end{aligned}$$

"BILING" represents the percentage of the population with bilingual ability. I also include "ENG" and "BILING" in the same specification, along with an interaction of the terms. The utility of bilingualism for translation and communication likely depends on the magnitude of non-English speakers within a given MSA.

Results

Table 3: Estimated Income Returns of English & Bilingual Ability

<i>Specification:</i>	<i>Standard OLS</i>				
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Constant	6.53*** (0.31)	7.84*** (0.39)	7.75*** (0.16)	7.96*** (0.46)	9.93*** (0.52)
English-speaking population	1.14*** (0.41)	-0.14 (0.47)		-0.26 (0.52)	-2.31*** (0.58)
Bilingual population			0.06 (0.16)	0.09 (0.18)	-4.41*** (0.65)
English/bilingual interaction					5.12*** (0.72)
Average years of education	0.19*** (0.01)	0.19*** (0.01)	0.19*** (0.01)	0.19*** (0.01)	0.20*** (0.01)
Foreign-born population	1.05*** (0.15)	1.04*** (0.15)	1.05*** (0.10)	0.98*** (0.18)	0.48*** (0.19)
Year 2000 dummy	0.05*** (0.01)	0.04*** (0.01)	0.04*** (0.01)	0.04*** (0.01)	0.04*** (0.01)
Black population		0.02 (0.05)	0.01 (0.05)	0.02 (0.01)	0.07 (0.05)
Hispanic population		-0.35*** (0.07)	-0.38*** (0.11)	-0.42*** (0.14)	-0.49*** (0.13)
Population	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)	0.00*** (0.00)
Adjusted R ²	0.56	0.58	0.58	0.58	0.61

***1% significance level

**5% significance level

Table 3 displays the results of an econometric analysis measuring the effect of an English proficient population, as well as a bilingual population on average income of a metropolitan area. In a general OLS regression, population of proficient English speakers appeared to have a positive and significant relationship with income; however, once controls are added for black and Hispanic populations, the coefficient loses significance (See columns 1&2). Initially, the English-speaking population variable

was capturing the effect of Hispanic residents in a city. According to column 2, a 1% increase in the Hispanic makeup of an MSA is associated with a 35% decrease in the average income in this city. An explanation of general Hispanic/Latino demographic characteristics may explain this relationship. According to a study conducted by the US Census Bureau in 2002, Hispanics are more likely to have dropped out of high school and to be below the poverty line than non-

Hispanic whites (2000 US Census Report).

The specification in column 3 examines the effect of a bilingual population on the earnings in a metropolitan area. According to the regressions, it is an insignificant determinant of average earnings. The final column considers the interaction effect of an English speaking and bilingual population on a city. Intuitively, an area with low-English proficiency would benefit from having a large bilingual population in order to overcome communication barriers; however, the regression points to different results. The English-speaking population has a significant and negative relationship with average earnings. Likely this result captures some endogeneity due to greater immigration in cities that have relative economic success as concluded by Ratna et al (2009). It may also indicate that cities with less diversity are worse off, a finding established by Ottaviano and Peri (2005). In either case, it does not lend itself well to the Pro-English argument. The bilingual variable also has a negative and significant relationship with income. This result is also counterintuitive and probably reveals a lack of assimilation in cities that have a lot of people who speaks their native tongue with their families inside the home. In addition, bilingual speakers generally cluster at extreme ends of the education spectrum (Fry 2003). It is possible that by eliminating native born bilinguals I am capturing only the less-educated. The interaction term is positive and large in magnitude. Again, this outcome is unexpected. It may demonstrate that

when a metropolitan area has abundant English proficient speakers, the setbacks of failure to assimilate are offset. In this environment, it is possible that diversity benefits are better able to emerge.

In all regressions, average years of education, foreign-born population, and the year 2000 dummy are all significant. According to the results, a 1 year increase in the average education level across a city is associated with a 0.19% increase in average income. The foreign-born percentage of the population is positive and captures the endogeneity effects of a successful city attracting foreign-born immigrants.

The fixed effects regressions employed in Table 4 aim to reduce omitted variable bias by controlling for random variation across metropolitan areas. The results do not vary greatly. Both English-speaking ability and bilingual ability prove largely insignificant in determining average earnings within a city. Again, the English language variable probably captures some endogeneity as well as disadvantages from a homogenous community. The negative sign on the bilingual variable may indicate a resistance to assimilation by people maintaining their language within the home or living in isolated enclaves. In column 5, both variables as well as their interaction term are highly insignificant. Nonetheless, the education, foreign-born, and year 2000 dummy variables are all positive and significant across specifications. According to these results, a 1 year increase in the city-wide average education is associated with a 0.13% increase in average earnings.

In accord with my hypothesis, the aggregate English speaking ability of a city has no effect on average earnings. Any private or externality effect imposed by barriers to communication are not large enough to affect an MSA as a whole. On the other hand, bilingual ability does not appear to increase the

economic well-being of an MSA. Despite convincing literature on the subject, the results are counter-intuitive. Rather than indicate communication facilitation and cultural exchange, the variable may capture resistance to assimilation through preservation of one's native tongue.

Table 4: Estimated Income Returns of English & Bilingual Ability

<i>Specification:</i>	<i>Fixed Effects</i>				
	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
Constant	7.77*** (0.58)	7.71*** (0.60)	8.32*** (0.35)	7.29*** (0.63)	7.46*** (0.88)
English-speaking population	0.72 (0.55)	0.76 (0.57)		1.19 (0.61)	1.02 (0.89)
Bilingual population			-0.35 (0.28)	-0.58 (0.18)	-1.19 (2.39)
English/bilingual interaction					0.67 (2.47)
Average years of education	0.13*** (0.03)	0.13*** (0.03)	0.15*** (0.03)	0.13*** (0.03)	0.13*** (0.03)
Foreign-born population	0.78*** (0.29)	0.70*** (0.29)	0.68*** (0.29)	1.02*** (0.34)	1.01*** (0.34)
Year 2000 dummy	0.02*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)	0.03*** (0.01)
Black population		0.07 (0.22)	0.14 (0.21)	0.07 (0.22)	0.08 (0.22)
Hispanic population		0.20 (0.30)	0.25 (0.31)	0.45 (0.33)	0.45 (0.33)
Population	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
Adjusted R ²	0.54	0.47	0.47	0.48	0.50

***1% significance level

**5% significance level

Conclusion

Foreign language issues have pervaded popular media spotlight due to concerns about immigrant assimilation through learning English and increased

globalization that encourages multilingual ability. This paper aims to uncover any economic legitimacy of these issues. In examining the effect of an MSA's population of English proficient speakers, I find that there is no

clear link to average earnings within that MSA. Once fixed effects were accounted for, any association disappeared. Furthermore, this paper finds that the bilingual-able population of an MSA has no effect on average income. Some specifications provided contrary results, but once fixed effects were eliminated, the coefficients are largely insignificant.

Language proficiency is a major barrier to success for immigrants hailing from non-English speaking countries. Previous literature has established a link between English fluency and higher wages for immigrants. However, if an individual is unable or choose not to become proficient, any resulting disadvantage is exclusive to the personal level. This result is largely expected as it is difficult to imagine a non-English speaking population becoming so pronounced that trading and economic relations are strained. Furthermore, it is possible that despite communication barriers, the general public benefits from cultural diversity and new skills introduced by a non-native (Ottaviano & Peri 2005).

The results of the bilingual ability analysis are much less intuitive. All research indicates that bilingual ability should increase income. However, this was proven incorrect on the individual and now MSA level. This result may be explained by the skill quality of most new settlers in the United States. As most immigrants are considered to be of the "low skill" quality, becoming bilingual may not have the capability of moving them to a higher income bracket. Fry's findings about education levels underscore this issue. Since the study

does not account for native born bilinguals, it is possible that the variable represents a largely uneducated population (2003).

In light of this paper's results, it is possible to reexamine political concerns. While other issues certainly factor into legislation, these findings indicate that while promoting English may be beneficial on the individual level, setting a national language is unnecessary as the majority of the population is largely unaffected by immigrants' language proficiency. Furthermore, foreign language education may be readdressed. Although this study does not demonstrate any clear benefits of bilingual ability, it is possible that by eliminating American born bilinguals the results have been skewed. In addition, most of the bilinguals likely speak Spanish and English. Perhaps knowledge of a more obscure language has stronger advantages. Despite the regression results, it is probable that there is something to be gained from bilingual ability.

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Appendix

