Community Determinants of Immigrant Self-Employment: Human Capital Spillovers and Ethnic Enclaves[1]

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Abstract
This paper considers the impact of community human capital externalities on the self-employment propensity of different immigrants. I find evidence of human capital spillover effects differentially affecting high and low human capital immigrants. Immigrants with low human capital (measured either by English-skills or education) are more likely to be self-employed if they reside in an ethnic community boasting higher human capital. On the other hand, immigrants with a college education do not show any changes in self-employment propensity based on the educational attainment of their co-ethnics. I find that, among immigrants from Spanish-speaking countries, immigrants are more likely to be self-employed when local co-ethics also speak English regardless of their own English-ability; this effect, however, is far more pronounced for immigrants who do not speak English. Overall, my results show that many immigrants are more likely to enter into self-employment because of the communities in which they reside. These spillover effects may represent an alternative for immigrants who face high costs to learning English and/or acquiring more education.

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Introduction

Self-employment plays an important role in the economic assimilation of immigrants by providing a potential income stream outside of the formal wage/salary market. This outside option is especially important for immigrants who may face barriers to entry in the formal labor market due to their foreign education[2] and potentially weak English skills. Self-employment has been shown to result in a steeper earnings growth for immigrants relative to wage/salary employment (Lofstrom 2002, 2009), though this may not result in greater take-home pay (Hamilton 2000). However, rates of self-employment vary dramatically between different immigrant groups. Less than 8% of the Mexican-born while nearly a quarter of the Korean-born in the U.S. report being self-employed. This paper shows that part of the explanation for these differences lies in the aggregate levels of human capital in immigrant communities in the U.S., not only in cultural differences and differences in selection into migration. It is well documented that immigrants geographically cluster in host countries (for example, see Bartel 1989 for immigrants in the U.S. and Edin, Fredriksson and Aslund 2003 for immigrants in Sweden), and are even willing to incur higher rents to live closer to co-ethnics (Gonzalez 1998; Cutler, Glaeser, and Vigdor 2008). I show that, in addition to social and familial ties, ethnic spillover effects produced by having access to a co-ethnic community and its combined human capital are another reason for immigrant clustering.

The interaction between an individual's self-employment choice and his or her ethnic community, particularly the size and concentration of this community, has been studied before. A positive enclave effect on self-employment among Hispanic immigrants has been found in several studies (Borjas 1986; Lofstrom 2002; Toussaint-Comeau 2005, 2008). These enclave effects are empirically defined as the size of the ethnic community in which an immigrant resides; this community serves both as a consumer of his goods as well as a source of information and inputs. Borjas (1986) finds that this effect is much stronger for the foreign-born Hispanic population than their U.S.-born counterparts. Similarly, Borjas and Bronars (1989), looking at racial groups rather than immigrant groups, find that the percent of the MSA that is black has a positive effect on black self-employment propensity. On the other hand, Clark and Drinkwater (2002) look at residential concentration of ethnic groups in England and Wales and find that self-employment

[2] Friedberg (2000) finds that foreign schooling is valued less by the labor market than similar domestic schooling.

falls with ethnic concentration. They also find that the educational attainment of a group does not affect self-employment, but does affect employment outcomes. Yuengert (1995) finds no evidence that self-employment rates are higher in cities with large immigrant populations.

Borjas (1992) argues that the production of human capital can be influenced, not just by family human capital, but also by externalities from the human capital of the ethnic group. He finds that the average educational level of an individual's ethnic group in the father's generation affects the individual's educational attainment. Toussaint-Comeau (2005, 2008) combines this notion of ethnic capital with the neighborhood effects methodology in Bertrand, Luttmer and Mullainathan (2000) to measure the impact of ethnic networks on self-employment. Specifically, she creates an ethnic network measure that combines the size and concentration of the ethnic community in which an immigrant resides with the entrepreneurial ethnic capital of the immigrant group (measured as the percent of the adult ethnic population that is self-employed in the U.S.). This measure, thus, captures the size of the potential ethnic network and the availability of entrepreneurial information in this network and measures its impact on individuals' self-employment propensity. She finds a positive effect from this measure, arguing that effective ethnic capital transmitted via ethnic networks facilitates self-employment for some groups. She further interacts this ethnic network variable with the individual's education and language skills and finds that immigrants with less than high school and those with a high school degree benefit from having access to more self-employed co-ethnics while those with a college education do not.

In this paper, I extend the previous research by considering how community English skills and educational attainment, two measures of human capital associated with increased self-employment, can impact individual self-employment. While the papers cited above focused on the size of the ethnic community or on the effective entrepreneurial capital available via ethnic networks, I consider how local ethnic capital, measured in English-skills and education, spills over to other members of the community, potentially providing them with self-employment possibilities. That is, do immigrants with low English-skills benefit from residing near co-ethnics who speak English? Do immigrants with little formal schooling benefit from access to highly educated co-ethnics?

Human capital spillover effects can work through a number of venues: lower transaction costs, lower capital costs, better job referral networks, and lower information costs, for example.

Transaction costs incurred by the self-employed can include interactions with suppliers, landlords, customers, and, in larger enterprises, employees. The ability to interact with co-ethnics in these different roles can decrease transaction costs through shared language and cultural and social connections (Lazear 1999). A high financial capital community can also serve as a source of informal lending, which is especially important for credit-constrained immigrants starting small enterprises. An economically successful community can serve as a conduit for local market and industry-specific information that can help self-employed individuals. Better work referral networks, however, can provide better wage opportunities resulting in higher opportunity costs to becoming self-employed. Finally, immigrants might demand services for which co-ethnics will have a comparative advantage. In order to test these theories, I consider the effect of the community's educational attainment, a good measure of human capital and a good proxy for financial capital stocks, and the effect of language skills on the self-employment propensities of immigrants with different levels of schooling and English-skills.

Since English language skills and formal schooling are also important in explaining self-employment (Borjas 1986, Borjas and Bronars 1989, Evans and Leighton 1989), I consider how these two types of human capital at the community-level interact with an individual's own human capital and impact self-employment. I find that immigrants with lower levels of human capital are more sensitive to ethnic spillover than immigrants with higher levels of human capital. I also find that, with the exception of college educated immigrants, immigrants are more likely to be self-employed if they reside in communities with higher educational attainment. Similarly, among Spanish-speaking immigrants, individuals opt into self-employment at greater rates if more of their co-ethnics speak English.

Speaking the host country language has been found to yield higher returns in the labor market (Chiswick and Miller 1995; Carliner 2000). However, learning a new language can represent formidable costs, particularly for individuals who immigrate as adults and for those with little schooling.[3] Similarly, increasing educational attainment as an adult can also be very expensive – often requiring at least a partial exit from the labor force and high monetary expenditures. The spillover effects identified in this paper may present a more efficient, or at least less expensive,

[3] Cognitive research has shown that languages are learned more easily by children than by adults (Johnson and Newport 1989). Rosenzweig (1995) finds that an increase in schooling results in an increased ability to absorb new knowledge and learn new skills.

option for accessing some of the benefits from human capital, specifically language skills and education, for immigrants who face prohibitively high costs to acquiring these skills for themselves.

Theoretical Framework

The decision to become self-employed is a choice between a relatively risky and unpredictable income stream through self-employment and a pre-determined and relatively predictable income stream through wage employment. Building on fundamental models of self-employment, particularly those presented by de Wit (1993), I assume a one-period game, where all individuals have preferences that can be represented by a utility function of the form $u_i(y)$, where y is individual income, u_i is continuous and concave. Assume that the degree of concavity varies by individual, but is symmetrically distributed within each group.[4]

All individuals, having already decided to enter the labor force, can choose between self-employment and wage employment. If the choice is wage employment, each receives wages w_i with certainty.[5] Self-employment income will depend on the investment made by the individual and on exogenous market factors. Prior to choosing between self-employment and employment, each individual will estimate his potential outcome from self-employment by choosing x_i, a vector of the amount of each good or service being provided, so as to maximize expected utility from self-employment. The individual solves the following problem to optimize his self-employment payoff:

$$\max_{x_i} \; Eu_i[\pi(x_i, \gamma_i, \theta)] = \int u_i[p(\theta)x_i - c(x_i, \gamma_i, \theta)]dF(\theta) \qquad \text{(I)}$$

where θ denotes different states of the world, $p(\theta)$ is an unknown vector of prices, of the produced and input goods, and γ_i is entrepreneurial capital. Researchers often define this abstract concept of entrepreneurial capital as an individual trait that can lead an individual to be successfully self-employed (de Wit 1993, Clark and Drinkwater 2000, Lazear 2005). The implied cost function, $c(x_i,\gamma_i,\theta)$, is assumed to be decreasing in γ_i.

[4] Note I am not assuming that the mean or variance of risk-aversion is equal between groups.
[5] This is clearly a simplifying assumption. Though uncertainty exists in the labor market, the important detail here is that wage is more easily predictable than returns to self-employment.

Define S_i as the net utility gain from self-employment for individual i. Suppose x_i^* is the solution to problem (I). An individual will choose to become self-employed if

$$S_i = Eu_i[\pi(x_i^*, \gamma_i, \theta)] - u_i(w_i) > 0 \qquad \text{(II)}$$

Now, I extend this basic model to include the question of how social networks can affect the decision to become self-employed. Suppose individuals are of *J* types, where $j \in \{1, 2, \ldots J\}$ represents county of birth. Let $k \in \{1, 2, \ldots K\}$ represent the location in the U.S. in which the individual resides. A pair *j,k* is an ethnic community born in country *j* residing in city *k*, to which I will refer as a COB-MSA group or enclave. An important and reasonable assumption that runs through this research is that immigrants from the same country residing in the same metropolitan area in the U.S. are more likely to have social ties to local co-ethnics than to the rest of the local population. Equations (I) and (II) imply that there are three general ways in which individual *i*'s self-employment likelihood can be increased: 1) higher expected revenue, 2) lower expected costs and 3) lower opportunity cost. All three of these can be affected by the COB-MSA group to which the individual belongs.

Higher expected revenue can be achieved through higher prices or higher production. An ethnic enclave can create higher prices by demanding goods that are not supplied outside of the ethnic group. Additionally, individuals might prefer doing business with co-ethnics (Borjas and Bronars 1989), creating a protected market for an ethnic business. To a large extent, the impact of the local community on prices is related to the size of this community – this is, in effect, the enclave results found by Borjas (1986) and others, as cited above. It is also related to the cultural distance (expressed through differences in preferences and tastes) and linguistic isolation between the community and the rest of the local residents. Since I do not measure cultural distance in this research, let Ω_{jk} be the size of the linguistically isolated ethnic community. We can expect the following relationship:

$$\frac{\partial p(\theta) x_i}{\partial \Omega_{jk}} > 0 \qquad \text{(III)}$$

That is, the size of the linguistically isolated ethnic community increases expected revenue through price effects, quantity effects, or both.

Another venue by which an ethnic enclave can affect self-employment is by lowering self-employment costs. Immigrants might face higher costs than the U.S.-born when attempting self-employment due to immigrant-specific obstacles such as language and cultural barriers, poor information regarding local regulations or preferences, limited financial knowledge/access, and a limited credit history (Bowles and Colton 2007). Ethnic communities can promote informal business arrangements and lending at relatively low search costs and information costs, and more effective monitoring and enforcement mechanisms (Bond and Townsend 1996). Additionally, consider the role of effective ethnic capital in acquiring new information (Borjas 1998; Toussaint-Comeau 2005, 2008). Knowing more individuals in your social network with self-employment experience or industry-specific employment experience results in increased access to information about running a business or industry-specific issues. This access might play an important role in explaining ethnic clustering by industry (for example, Ellis and Wright 1999). Having access to co-ethnics with high levels of human capital implies an increased number of potential trading partners and, thus, lower transaction costs. On the other hand, having access to a low human capital co-ethnic community could also imply access to a low-wage labor pool with low supervisory transaction costs.

Specifically, suppose γ_i captures differences in enclave ethnic capital, s_{jk}, in addition to personal differences in entrepreneurial ability. That is, s_{jk} is an input to the business that decreases production costs. Note that unlike the enclave effects on expected revenue, the enclave effects on expected costs are primarily driven by *quality* of co-ethnics (as measured by human capital and capital stocks) rather than quantity. We expect the following relationship:

$$\frac{\partial c(x_i, \gamma_i(s_{jk}), \theta)}{\partial s_{jk}} < 0 \qquad \text{(IV)}$$

Finally, the third way an enclave can impact the self-employment decisions of its members is through wages. Forgone wages are the opportunity cost incurred by the self-employed. Evans and Leighton (1989), for example, find that men with poor employment outcomes are more likely to become self-employed. If an enclave or locality can provide members of a certain group with

relatively high wage opportunities, then we can expect less self-employment in this group. Beaman (2007) finds empirical evidence that the social networks of refugees in the U.S. impact the wage draws of their members; communities with longer tenure yield higher wage draws to their new members than those with shorter tenure. Suppose that wages are a function of s_{jk}; that is, s_{jk} is determinant of the market wage rate for immigrants. We expect the following relationship:

$$\frac{\partial w(s_{jk})}{\partial s_{jk}} > 0 \qquad \text{(V)}$$

This paper focuses on the effects of Ω_{jk}, the size of the linguistically isolated population in an enclave, and s_{jk}, the group-specific supply of community human capital, on S_i. From (IV) and (V) above, we have two opposing effects from an increase in s_{jk}: community human capital decreases costs of self-employment while also increasing the opportunity cost of self-employment. The relative importance of these two effects is empirically tested below, using educational attainment of the community as a proxy for s_{jk}. More English skills, holding educational attainment constant, imply a decrease in Ω_{jk} and an increase in s_{jk}. The relative importance of equations (III), (IV) and (V) is tested using the English-acquisition of the community. The results, as detailed below, show that equation (IV), a decrease in self-employment production costs, dominates the effect of increased opportunity cost of regular employment. Some empirical evidence supporting the protected market shown in equation (III) is also found.

The impact of community human capital on individuals will vary by the level of human capital an individual possesses. A bilingual individual has a comparative advantage in providing goods and services to a linguistically isolated community—both relative to non-English speakers within the ethnic community and to English speakers outside of the community. Additionally, he or she might have access to cheaper labor, without incurring additional communication costs, by hiring co-ethnics who do not speak English. However, a community with less English speakers might also be poorer, resulting in 1) less opportunity for informal lending (thus resulting in higher self-employment costs), 2) less disposable income to spend on new goods and services (resulting in lower demand), and 3) weaker job referral networks (resulting in lower opportunity costs).

Part of an individual's benefit from higher education will spillover into the ethnic community, perhaps by providing better information or understanding of a local economy or industry to other

members of the ethnic community, resulting in decreased costs of self-employment. Thus, immigrants with little formal education would benefit more from having access to highly educated individuals. On the other hand, educated professionals residing near co-ethnics with lower educational attainment might be able to profit from unmet demands for goods or services demanded by their co-ethnics. Due to their cultural similarities, they have a comparative advantage in providing ethnic goods and services (for example, a local lawyer with roots in the ethnic community). Additionally, educational attainment is a good predictor of income opportunities: residing in low-education communities might hamper an individual's job search through restricted referral networks, implying lower expected wages which make self-employment more attractive.

Empirical Approach

The primary hypothesis of this paper is that the aggregate human capital within an immigrant community can have a direct impact on an individual's propensity to become self-employed – and that this effect will depend on the individual's own level of human capital. That is, I am interested in the interaction between individual *i* from country *j* living in MSA *k* and the aggregate levels of human capital, measured as English-acquisition rates and educational attainment, of other individuals born in country *j* who reside in MSA *k*.

The terms "enclave" and COB-MSA group are used interchangeably throughout this paper to refer to a community of co-ethnics (as defined by country of birth) living within the same primary metropolitan area in the U.S. Thus, Chinese-born immigrants distributed throughout a suburban MSA are as much part of an "enclave" in this paper as are those who actually live in a dense ethnic urban neighborhood, such as a Chinatown.[6] Though they may not live within the same concentrated neighborhood, an underlying assumption here is that social ties still connect many immigrant residents in the suburbs or spread throughout non-ethnic neighborhoods of cities. This is supported by research such as Alba *et al*. (1999), who find that the ability to speak English and years since migration have both become less important in explaining suburbanization patterns of immigrants, showing that suburbanization does not have to imply assimilation. Additionally, studying neighborhood-level data, as opposed to MSA-level data, can result in increased self-

[6] This empirical definition of "enclave" is often found in literature on U.S. immigrants, for example Borjas (1986).

selection bias due to sorting (Bertrand, Luttmer and Mullainathan 2000; Cutler, Glaeser and Vigdor 2007). Using MSA-level ethnic networks mitigates the effects of sorting.

In order to test the theoretical predictions above, I use a reduced-form regression (VI), where Z_i is a 0/1 indicator of self-employment and Y_i is the human capital measure being tested, either educational attainment or English language skills. I include the individual's level as Y_i and the aggregate level, measured as a percent within the co-ethnic local community, as Y_{jk}. I also consider how these effects may differ for different human capital levels by including an interaction term. X_i, is a vector of observable characteristics that have been shown to be correlated with self-employment: age, age squared, years since migration, years since migration squared, race, Hispanic ethnicity, the presence of a spouse in the household, and American naturalization status.[7] Depending on the regression, either educational attainment or English skills is also included in X_i;

$$Z_i = X_i\beta_1 + \beta_2 C_j + \beta_3 L_k + \beta_4 E_{jk} + \beta_5 E_{jk}^{90} + \beta_6 Y_i + \beta_7 Y_{jk} + \beta_8 (Y_i \times Y_{jk}) + \varepsilon_i \qquad \text{(VI)}$$

where the parameters of interest are β_6, β_7 and β_8.

Due to the interaction design of the logit regressions, marginal effects cannot be calculated using the usual straightforward approaches employed by similar research (Norton, Wange and Ai 2004). Rather than reporting marginal effects, I report the logit coefficients and then present graphed predicted probabilities of self-employment for some of the specifications.

Addressing Self-selection

Individuals make three, non-random choices to select into the universe of interest: whether to immigrate, where to live in the U.S., and whether to become self-employed. In order to control for self-selection and local conditions, four aggregate controls are included in every regression:

1. C_j (the percent of COB group *j* in the U.S. that is self-employed),
2. L_k (the MSA *k* self-employment demand index),
3. E_{jk} (the percent of the MSA population born in COB) and

[7] Regressions are limited to male immigrants since they have more homogeneous employment patterns across COB cells than female immigrants; hence gender is not included as a control.

4. E_{jk}^{90} (the share of the 1990 U.S. population born from COB who resided in the MSA in 1990).

Country of birth can be endogeneous in the self-employment decision since it is entirely plausible that different rates of individuals with high predisposition for self-employment will emigrate from different source countries. The distribution of entrepreneurial capital may vary dramatically by country of birth due to selection into immigration, source country development and cultural differences. As discussed in Borjas (1987), the population from each country that elects to immigrate to the United States is not randomly selected. Significant variation in skill-distribution among different immigrant groups can result from the income differentials between skill groups within the source and destination countries and the cost of immigration. Additionally, self-employment preferences and entrepreneurial skills might vary based on differences in source country characteristics (Light 1979).

To control for this endogeneity, I include C_j, the average self-employment rate of a COB group in the United States, as a control variable in the regression model. Note that this is not the self-employment rate in the individual's country of birth, but rather among the U.S. population who were born in that country. By using the immigrant-specific rate rather than the country of birth rate, I am implicitly controlling for the differences in the emigration mechanisms that create these immigrant groups. That is, since immigrants are not drawn randomly from their country of birth, I control not for the average of the people who did not emigrate, but rather, the average of those who *did* emigrate. After controlling for this group average, only the individual deviation from the COB mean is left as the unmeasured preference/entrepreneurial capital.

The choice of residence within the U.S. is also neither random nor fully explained by observables. Research on enclave effects has long struggled with just how to control for selection into enclaves. One approach, used by Altonji and Card (1991) and motivated by Bartel (1989), uses the co-ethnic concentration in the city from an earlier Census as a control for movement into this area. Immigrant location choices in the host country are largely determined by the location choices of previous waves of immigrants from the same country of birth (for example, Bartel 1989; Edin et al 2003). Adopting this approach, I include the percent of the country of birth's adult population in the U.S. that had been living in the individual's city in 1990, E_{jk}^{90}.

To address the potential selection of members of a COB group with high propensity for self-employment into areas with high demand for self-employment, I control for local demand. This can be disaggregated into two different demands: the demand of the ethnic community and the demand in the local market. The demand of the ethnic community results from a demand for ethnic goods in which co-ethnics have a comparative advantage and a potential bias to do business with co-ethnics (Borjas and Bronars 1989). I control for these this demand by using the concentration of the country of origin group in the MSA, E_{jk}. For non-ethnic demand, I use an MSA self-employment index, L_k. Certain industries, such as manufacturing, require heavy capital investment resulting in high costs to entry. Other industries require relatively little capital investment, making them more attractive to small business owners. In the spirit of Berman, Bound and Griliches (1994) who use a similar index to look at skill distributions within manufacturing, I create an MSA-index of demand for self-employment by multiplying the overall U.S. self-employment rates in each industry by the percent of the local labor force in MSA *k* employed within each industry. This MSA-level index allows for a comparison of local labor market demand for self-employment, taking the distribution of employment within local industries as exogenous. Due to the tendency of different immigrant groups to cluster in particular industries, one might be concerned that the high concentration of an immigrant group in a specific industry might impact the relative size of the labor force in that industry. Some of the largest COB-MSA cell groups, such as the Mexican-born in El Paso and the Cuban-born in Miami, represent over 25% of their MSA populations; however, the 90th percentile COB-MSA cell represents only 3.46% of the MSA population. Thus, for the vast majority of communities, this index will not suffer from COB endogeneity.

Since random selection into self-employment seems particularly implausible, I do not evaluate the relative success of the self-employed in this paper. Such a comparison is subject to bias based on unobserved characteristics, for example the ambiguous notion of entrepreneurial capital and motivation. Additionally, Hamilton (2000) applies Rosen's (1981) super-star theory to self-employment, arguing that samples of self-employed individuals will be made up of a few high-earning long-term entrepreneurial super-stars and many low-earning, failure-prone, new comers to self-employment. This bimodal distribution results from the gradual exit of entrepreneurs who learn, through experience, that they are not super-stars. Instead, I consider a less biased variable

of interest: whether or not the individual reported being self-employed on the Census. This is, to some extent, affected by success of self-employment since longer spells are more likely to fall within the period of time being sampled than shorter spells, all else equal.

Specification Testing

To address the endogeneity of entrepreneurial ability and/or preferences, previous researchers have included country or region of birth dichotomous variables as controls (Borjas 1986, Lofstrom 2002, Toussaint-Comeau 2008). Borjas (1986) looks at racial/ethnic groups of immigrants and Lofstron (2002) collapsed country of origin groups into regional groups, arguing that these groups are relatively homogenous. However, as Toussaint-Comeau (2008) and Table 3 below show, there is significant variation in self-employment rates by COB group within aggregated immigrant/ethnic groups such as "Asians." Toussaint-Comeau (2008), adopting a similar approach to Bertrand, Luttmer and Mullainathan (2000), addresses this by using a linear probability model to predict self-employment, thus facilitating the inclusion of a large set of COB dummy variables. These are in addition to a continuous COB-level measure of self-employment at the U.S. level.

Though including a large array of dichotomous variables for each COB and MSA controls for COB and MSA-level unmeasured effects, it quickly consumes degrees of freedom, resulting in unreliable test statistics. [8] Furthermore, the coefficients on the COB and MSA variables are too numerous to be obviously informative. Instead of using this approach, I have opted for two continuous variables: the percentage of the COB population that is self-employed (C_j) and the MSA self-employment index (L_k). The validity of this alternative specification, relative to the inclusion of COB and MSA dichotomous variables, is explored in detail in Appendix A. These tests show that using the continuous variables results in slightly smaller effects for the education regressions. Thus, if anything, my approach underestimates the ethnic spillover effect. For immigrants from countries where neither Spanish nor English is spoken, the inclusion of the two dichotomous variables produces slightly larger coefficients on the impact of enclave English-skill on self-employment of both groups who speak English. The inclusion of just the COB dichotomous variables combined with L_k results in a change in the sign of the effect on

[8] It also introduces computational error from machine approximations of 0, a pertinent concern given the large sample sizes used.

immigrants who speak only English at home – though this effect remains insignificant. For immigrants from Spanish-speaking countries, these variables result in a smaller English-language enclave effect, though the interacted effects (i.e., the difference between the effect for non-English speakers and the effects of the other two groups) remain the same.

Data

This paper uses data from the 2000 U.S. Census 5% Public Use Microdata Sample. The sample of interest is restricted to foreign-born men between the ages of 25 and 65 who immigrated as adults, are in the labor force and have not been in school for at least 2 months as of April 2000. The sample is limited to those who immigrated as adults so as to minimize sample composition effects due to 1) selection into immigration since children typically do not make this decision for themselves and 2) differences in U.S.-specific capital accumulated by the two groups. This also simplifies the interpretation for years since migration and education (which will primarily be completed in the country of origin). Some additional sample restrictions were made limiting individuals to those who reside in a PMSA/MSA with a significant co-ethnic sampled population in the 1990 and 2000 U.S. Censuses. Only immigrants belonging to a COB-MSA group with more than 50 sampled adult men were included since the empirical specification relies heavily on variables measured at the COB-MSA level. This resulted in dropping about 20% of the sample. Appendix B shows that these immigrants look different from those who live in MSAs with larger co-ethnic samples. These restrictions limit the sample to 232,988 men,[9] representing 5.1 million immigrant men. Nearly 12% of these 5.1 million men are self-employed. Table 1 shows that, as expected, these men are highly clustered in traditional immigrant cities: half of this sample resides in only seven PMSAs.

Table 2 presents basic demographic information on the sample used in the analysis. The sample represents about 600,000 self-employed immigrant men and 4.5 million who are in the labor force and not self-employed. On average, these individuals are 41 years old, though the average self-employed individual is nearly 4 years older. White non-Hispanic men make up 23% of the self-employed in this sample, though they are only 14% of the sample. Non-Hispanic black and Hispanic immigrants are underrepresented in the self-employed category. All other races account

[9] Due to Census weights equal to 0, thirty-six of these are not included in the regressions or weighted tables. The sample used for weighted results is 232,952.

for the remaining quarter of the sample; this group is slightly overrepresented among the self-employed.

In line with previous research (Borjas 1986; Le 1999; Georgarakos and Tatsiramos 2009), nearly three-quarters of self-employed immigrant men have a spouse in the household compared to just over 60 percent of the employed immigrant men. Over thirty percent of the sample is naturalized; again, self-employed immigrant men are more likely than employed immigrant men to be naturalized. Overall, the average sampled individual has been in the United States for 14 years. Self-employed men have been in the U.S. for slightly longer. Self-employed immigrant men are less likely to have changed residences in the past 5 years. This residential stability might imply closer ties to the community.

Over a quarter of immigrant men in this sample have 8 years or less of schooling. This group is considerably less likely to be self-employed. Men who completed high school are overrepresented among the self-employed. About 10% of the immigrants in this sample speak only English at home. These are primarily immigrants from English-speaking countries. Roughly 60% who reported speaking a language other than English at home spoke English very well or well.[10] The remaining 30% reported speaking English poorly or not at all.

The average self-employed man in this sample reported total earnings of $42,000 in 1999 (from both self-employment income and wages) while the average wage/salary employee reported earnings of $31,400. Immigrant men who reported being self-employed reported over $21,200 in wage/salary earnings, almost the same as their average reported self-employment earnings. Those who did not report being self-employed yet reported some income from self-employment only reported an average of $300 in self-employment earnings. In this paper, self-employment is defined using the self-reported class of worker variable values for self-employed in own incorporated business and self-employed in own not incorporated business. This approach and these results reflect the fact that many self-employed men supplement their self-employment earnings with part-time or seasonal wage employment.

[10] Note that the 2000 US Census was provided in 5 languages, besides English. Furthermore, a guide in 49 languages was provided with both the long-form and short-form censuses.

Immigrants are a bimodal group in terms of educational attainment; they are far more likely to have either very low education or very high education when compared to the U.S. born population. Table 3 shows the educational distribution of the twenty largest immigrant groups in the 2000 Census and the native born population, clearly illustrating the drastic differences in educational attainment between COB groups in the United States. Nearly half of Mexican immigrants and two out of every five immigrants from El Salvador and Guatemala had 8 years or less of formal schooling. At the other extreme, over 30% of Indian and Taiwanese immigrants had an advanced degree.

In order to identify spillover effects of the local ethnic community independently of COB-specific differences in preferences and skills, the empirical identification strategy relies on the variation of aggregate human capital at the COB-MSA level. The varying levels of self-employment among immigrant communities in different MSAs but from the *same* country of birth can be seen in Table 4. In order to illustrate these differences along the spectrum of self-employment rates, these ten COB groups were selected by choosing the country of origin group with the largest population in the U.S. at differing self-employment levels.[11] They range in overall self-employment rates from 5.29% for Filipino immigrants to nearly 25% for Korean immigrants.

Although there is substantial variation between different COB groups, there is also significant variation *within* COB groups based on MSA of residence. For example, the average Filipino-born community (unweighted by population) in an MSA has a self-employment rate of 10.19%. This varies from a low of less than 1% in one community to a high of 64.7% in another. Average MSA level self-employment rates for Taiwanese, Italian and Korean immigrants are roughly 25%. Even these high self-employment groups have communities with self-employment rates below 4%. The three Latin American COB groups included in Table 3 show the lowest maximum level of MSA-level self-employment rates, though still showing significant variation between the minimum and maximum percent self-employed. It is exactly this variation *within* COB groups that this paper exploits to measure human capital spillover effects on self-employment.

[11] Countries of origin (one observation per country) were sorted by their overall self-employment rates in the U.S. They were then split into 10 equally sized groups. The country with the largest population in each group is reported in Table 3.

To get a better idea of the immigrant communities being analyzed and the variables used in the regressions, Table 5 displays information on the COB-MSA group whose members represented the 10^{th}, 25^{th}, 50^{th}, 75^{th}, and 90^{th} percentiles of self-employment.[12] The first two communities are Mexican-born: those residing in Orlando and those in the Phoenix/Mesa area. The first four variables reported are not community specific. Instead, they report COB and MSA values; about 7.7% of the Mexican-born in the U.S. are self-employed while distributions of local industries imply a higher expected demand for self-employment in Phoenix than in Orlando. The COB-MSA variables depict the differences between these two Mexican-born communities. There are only 16,000 Mexican-born adults in Orlando while there are over 220,000 in the Phoenix area. In 1990, 1.6% of all Mexican-born adults residing in the U.S. lived in Phoenix but less than 0.1% lived in Orlando. Mexican immigrants in Phoenix are also less likely to have at least a high school diploma or to speak English well. Mexican immigrants are slightly more likely to be self-employed in Phoenix (6.6%) than in Orlando (4.9%).

Another comparison to consider, for example, is between the Mexican-born in Phoenix and immigrants from the former Yugoslavia who also reside in Phoenix. Just over 5,000 adults born in Yugoslavia[13] live in Phoenix. They have a self-employment rate of over 9%, far higher than the local Mexican-born population. There are clear differences in these two communities' human capital levels: only a quarter of those born in Yugoslavia did not earn a high school degree while over 70% of their Mexican-born neighbors fall into this group. Additionally, though both groups are not likely to speak only English at home, the Yugoslav-born community is far more likely to report speaking English well or very well (62% versus 37%).

Results[14]

This section reports the results of estimating equation VI. All reported regressions include a constant set of individual and community level controls, as described above. Most of these coefficients remain fairly constant as the specifications change to include different human and community capital measures. In line with previous research, age increases the likelihood of self-

[12] The data were sorted by self-employment rate of the COB-MSA group and the individual at each of the percentiles of interest was selected. Data on his COB-MSA are reported in Table 5.
[13] Country of origin groups are identified using 1990 US Census data, hence some countries that no longer exist are still used as COB identifiers. Future research should consider differences based on ethnic identification rather than country of birth, though this will result in smaller groups.
[14] Complete regression results available from author upon request. All regressions in this paper were based on weighted data, and clustered errors at the COB-MSA level.

employment, though this effect decreases with age. White non-Hispanic immigrants are more likely to be self-employed than all other racial/ethnic groups. Like age, years since migration (YSM) increases the propensity for self-employment, though this effect decreases with time spent in the country, becoming negative after about 28 years of residing in the U.S., depending on the specification. This indicates an initial acclimation period, perhaps in order to accumulate country-specific capital, prior to starting one's own business. Immigrant men with a spouse in the household are more likely to be self-employed. Being naturalized was not statistically significant in any of the regressions. I also included the average years since migration in the COB-MSA cell in order to control for the endogeneity that might arise from the impact of years since migration on language/educational acquisition and self-employment at the community level, but this coefficient was not significant.

English ability of the Community and Self-Employment

To test the effect of English skills of a community on its members' propensity to become self-employed, I estimated the impact of the percent of the adult COB-MSA population[15] who reported either strong English skills, limited English skills, or who spoke only English at home on an individual's propensity to self-employ.[16] Table 6 reports these results. Furthermore, the sample for this set of regressions is limited to men who emigrated from non-English speaking countries.[17] I consider three English ability levels for the individual: limited or no English (the omitted group), strong English skills but speak a different language at home, and those who speak only English at home. The last group represents linguistically assimilated individuals who, I expect, encounter lower transaction costs outside of their co-ethnic community.

I begin by examining the impact of the percent of the community that speaks English well or very well, but still speaks a different language at home. These are the community members who are best able to serve as conduits for information between the enclave, including those with limited English skills, and their English-speaking neighbors. Specification (I) shows that the simple proportion of the community who speak English well or very well does not have a statistically

[15] These were calculated using the language skills of all adults in the COB-MSA though the regressions are run only on a male subsample.
[16] See appendix C for a distribution of these three values at the COB-MSA level.
[17] English speaking COB is empirically defined as a COB with English as the official language and with over 50% of all adult immigrants in the 2000 Census speaking only English at home, as in Bleakley and Chin (2004) and Blau, Kahn and Papps (2010).

significant impact upon an individual's propensity to become self-employed. Specification (II), in which the proportion of the community that speaks English is interacted with the individual's ability to speak English, shows that the proportion of co-ethnics who speak English in a community has differing effects on individuals based on whether or not they themselves speak English. Immigrants with limited English skills are more likely to become self-employed as their COB-MSA group's English-speaking rate increases. In communities with few English speakers, immigrants who do not speak English are less likely to become self-employed than those who speak English. But, if these same immigrants reside in a community with a high level of English acquisition, they become as likely to be self-employed as immigrants with strong English skills. Interestingly, immigrants with more English skills show almost no sensitivity to their co-ethnics' English-skills when deciding whether or not to become self-employed.

Table 6 also reports the results for similar regressions using the percent of the COB-MSA with limited English skills and the percent of the COB-MSA that reports speaking only English at home. As expected from the previous results, I find that immigrants with weak English ability (the omitted group) are more likely to be self-employed when the percent of immigrants with weak English skills is low. I find no significant effect for immigrants who speak English well, but use a different language at home. The estimated net effect for immigrants who speak only English at home, however, decreases from -0.00005 in specification (II) to -0.00146 in specification (IV). That is, though the proportion of co-ethnics who spoke English well had no significant impact on immigrants who spoke only English at home, a decrease in the proportion of co-ethnics with limited English skills results in a sizeable *increase* in their likelihood of self-employment. For example, residing in a community in which 80% of co-ethnics do not speak English results in a human capital spillover marginal effect of -0.014; the marginal effect is only -0.005 in a community where 25% do not speak English. [18]

Since I have already excluded those from countries where English is the official or primary language, immigrants who speak only English at home represent the most assimilated immigrants in this sample. This is the group that is most likely to belong to social groups outside of their

[18] Marginal effects are calculated using the mean self-employment rate for immigrants who report speaking only English at home (14.5%) and the net effect of the enclave and interaction effects at the two levels of community limited English rates. As explained before, due to the interaction terms used in this logit framework, marginal effects cannot be calculated in this (Norton, Wange and Ai 2004); hence the effects reported here are illustrative approximations.

ethnic groups. Specifications (V) and (VI) show that the proportion of the enclave that only speaks English at home does not have a statistically significant impact on the likelihood of self-employment for any of the three language groups. This supports the hypothesis that the effect of the proportion of the enclave that speaks English well or very well is due to human capital spillover effects based on local ethnic interactions, and not due to some other unmeasured human capital effects that are not being captured at the COB-MSA level.

The fitted probability of self-employment as a function of the percent of the enclave that speaks a different language at home but reports speaking English well or very well is graphed in Figure 1.[19] According to Figure 1, in high fluency communities, people with limited English skills are the most likely to be self-employed. On the other hand, in low fluency communities, immigrants with limited English ability are far less likely to be self-employed than similar immigrants who speak English. Since Figure 1 displays fitted self-employment probabilities, it is fair to ask whether the results are relevant or in-sample. Appendix C contains human capital distributions to go along with each of the figures presented. In Table A5, we find that 5% of the sample who are not from Spanish or English-speaking countries fall into the group of immigrants who report limited English skills but reside in communities of over 70% English speakers. This cell is particularly sparse for immigrants from Spanish-speaking countries; only 500 (less than 0.5%) fall into this group. However, over 13,000 men from Spanish-speaking countries who report having limited English-skills reside in communities where between 50 and 70% of the adult population speak English well and use a different language at home. This is the region of Figures 1 and 2 where immigrants with the three different English-skills measure converge in roughly the same propensity for self-employment.

Overall, the picture that arises from the regressions in Table 6 and Figure 1 is one in which an individual who speaks a different language at home but has strong English skills is not affected by his co-ethnics' fluency rates. An immigrant who speaks English is more likely than someone with limited English to start a business if both reside in communities where under half report speaking English well or very well but use a different language at home. However, as the proportion of the community that speaks English increases past 50%, individuals with limited

[19] This and the other figures showing the fitted probability of self-employment are calculated for white, naturalized, college educated immigrants who reside with a spouse. All other controls in the regression are set to the sample averages. Note that these probabilities include own-language and own-education effects, thus enabling direct comparisons between different groups.

English ability experience a steep increase in the likelihood of becoming self-employed, showing the same propensity for self-employment as their fluent co-ethnics. Additionally, the proportion of the community that speaks only English at home does not impact self-employment, indicating that the language results stem from network effects based on social interactions within the co-ethnic community.

Since Spanish is widely spoken in the U.S., I also look separately at the impact of English skills on Spanish-speaking immigrant communities.[20] If social interactions are dictated by language rather than country of origin, a Spanish-speaking immigrant will be less reliant on his or her own COB-MSA group. Speaking Spanish would, for example, increase the number of potential trade partners in the area to include many individuals who are not from the same country. In fact, I find the opposite – Table 7 shows that Spanish-speaking immigrants, which make up 60% of the immigrant sample, drive the sensitivity to the enclave's language skills from the previous results. This indicates the importance of the COB-MSA social networks rather than a network based on a common language.

Table 7 details how these two groups of immigrants who are not from an English-speaking country differ in terms of enclave effects. The first important difference is that immigrants from Spanish-speaking countries who do not speak English are far less likely to be self-employed than their co-ethnics who speak English. On the other hand, neither the individual's English skills nor those of his enclave have a statistically significant impact on immigrants who are not from Spanish-speaking countries.[21] For immigrants from Spanish-speaking countries, the proportion of the COB-MSA that speaks English increases the self-employment likelihood for all three English-skills groups; the proportion with limited English skills decreases the self-employment likelihood only for immigrants who speak English but use a different language at home and for those with limited English skills. Further tests separate Mexican immigrants, the majority of the Spanish-speaking sample, from all other Spanish-speaking groups, revealing that these results hold for

[20] The following are included in the group "Spanish-speaking countries": Argentina, Bolivia, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Spain, Uruguay, and Venezuela. Mexican immigrants make up about two-thirds of all sampled immigrants from Spanish-speaking countries.

[21] The results presented in Appendix A show that the inclusion of country of origin dummy variables instead of a continuous self-employment control does not result in larger coefficients for language enclave effects.

both groups.[22] Another set of tests showed that controlling for the overall percent of the MSA population that spoke Spanish at home only slightly weakened the impact of COB-MSA English skills, but did not significantly change the results.[23]

Figure 2 shows the predicted self-employment probabilities as a function of the COB-MSA's English skills separately for immigrants from Spanish-speaking countries and those from countries where neither Spanish nor English are the dominant languages. Recall from the regression results that the coefficients for immigrants from non-Spanish speaking countries are not statistically different from zero. However, for the immigrants from Spanish-speaking countries, the propensity for self-employment of immigrants with limited English skills increases dramatically as the proportion of the enclave who reports having strong English skills increases. Interestingly, immigrants who did not have limited English skills also show a sizeable increase in self-employment propensity as the enclave's language skills increased. This is true even for those who only speak English at home, indicating the presence of a protected market in these communities, not only human capital externalities.

Enclave effects: Educational Attainment

As in the English skills analysis above, the individual's education level was interacted with the enclave's education levels, measured as the percent of the COB-MSA adult population with less than a high school degree for regressions (I) and (II) and the percent of the COB-MSA adult population with at least some post-secondary schooling for regression (III).[24] The regressions consider the impact of the enclave's education on five educational groups: those with eight or fewer years of schooling, those with some high school education but no degree, those with a high school degree, those with some post-secondary schooling, and those with a college degree or higher (the omitted group). Note that this set of regressions includes a control for the proportion that speaks English in the COB-MSA cell since English ability and education are highly correlated. Table 8 reports the logit coefficients from these regressions, again reporting the effect of each enclave-level education measure through separate regressions.

[22] Regression results available from author.
[23] The coefficient on the proportion of the MSA population that spoke Spanish at home was negative and significant; the negative coefficient was present for each of the three English-skills group when controlling for COB-MSA English skills.
[24] Note that the percent of the COB-MSA cell that has exactly a high school degree is excluded from both aggregate measures of education, thus they are not just inverse images of each other. See appendix C for a distribution of the enclave-level educational attainment variables.

The first two rows look at the impact of the proportion of the enclave that has not earned a high school degree. Regression (I) reports that individuals in enclaves with a greater share of immigrants who did not complete high school are less likely to be self-employed. Immigrants with fewer than eight years of schooling and those with a college degree or higher were the least likely to be self-employed. Column (II) disaggregates this enclave effect to consider the impact on each educational group separately. For immigrants without a college degree, an increase in the proportion of the enclave without a high school diploma results in a decrease in self-employment. This negative effect decreases as the individual's educational attainment increases. For those with a college degree, the educational attainment of the enclave does not impact self-employment.

These results are supported by the impact of the proportion of the enclave with some post-secondary education (III). Consistent with the hypothesis, the lower an individual's educational attainment is, the more the enclave's ethnic capital affects his propensity to become self-employed. Comparing the coefficients from column (III) with those from column (II) shows that the propensity to become self-employed for immigrants with less than a high school degree is more sensitive to the proportion of their enclave with some post-secondary education than it is to the proportion of their enclave without a high school degree. Specifically, low education immigrants benefit more from residing among college educated co-ethnics (in terms of self-employment opportunities) than they suffer from residing among other low education co-ethnics.[25]

The fitted probabilities of self-employment are graphed for each educational group by both the proportion of the COB-MSA group that had less than a high school diploma and the proportion with more than a high school diploma. As the regression results showed, in high education COB-MSA communities, immigrants with low education are more likely to become self-employed than immigrants with a college education or more.[26] As the proportion of the COB-MSA with more education falls, so does the likelihood of immigrants without a college degree of becoming self-

[25] Additionally, this regression was run for immigrants from Spanish-speaking countries separately from all other immigrants. The results, though slightly weaker for the Spanish-speaking COBs, were still statistically significant and in the same direction. Results available from author upon request.

[26] As is shown in Appendix C, less than 1,000 immigrants with less than a high school degree reside in an enclave where over 80% of the community has more than a high school diploma. This extreme part of the results is, in essence, out of sample.

employed. When about 40% of the enclave has less than a high school education, then immigrants of all educational attainments have about the same self-employment propensity. As the proportion of immigrants without high school diplomas continues to increase, the probability that an immigrant with less than a college degree becomes self-employed continues to decrease, falling below the probability of self-employment for immigrants with a college degree. Additionally, the flat probability of self-employment for college educated immigrants supports the hypothesis that the changes in probability of self-employment are due to access to information and capital brought about by human capital externalities, not by catering to ethnic demand. Immigrants with a college degree should be, and empirically are shown to be, making the decision to become self-employed based on their own human capital and abilities and not on the human capital of their communities.

Conclusion

This paper extends the research already done on ethnic capital and neighborhood effects by considering the impact of human capital externalities, measured as community-level English skills and formal schooling, on the likelihood of self-employment for different groups of immigrants. Both of the community human capital measures tested above support the hypothesis that immigrants with low levels of human capital benefit from the human capital externalities of their co-ethnics. Furthermore, they show greater reliance on their co-ethnic communities than immigrants with either a college education or those who speak English. The empirical results support the existence of protected markets among Spanish-speaking immigrants, as shown in the increased propensity for self-employment even among those who only speak English at home. The language results also indicate the presence of human capital externalities among immigrants from Latin America. I also find that the educational attainment of a community favors self-employment by reducing self-employment costs; this effect is far stronger than the potential increase in opportunity costs of self-employment resulting from the educational attainment of the community.

I did not find significant evidence of language-skills externalities outside of Spanish-speaking country of origin groups. But, among immigrants from Spanish-speaking countries, residing in a COB-MSA group with more English-speakers results in a significantly higher probability of self-employment for immigrants with limited English. This positive effect, though weaker, is also found for immigrants who speak English. This is evidence for human capital externalities

playing a large role for those with limited English skills, and the presence of protected markets for ethnic goods and services for those with strong English-skills. When considering the role of education of the enclave and self-employment, I find that college educated immigrants seek self-employment independently of what their enclaves look like. On the other hand, those with less than a college degree show a higher probability of self-employment as the overall human capital of their community increases (measured as the percent of the COB-MSA that has higher education). This effect is stronger for immigrants from non-Spanish speaking countries, though still significant for those from these countries.

Both enclave tests, the English skills and educational attainment of a COB-MSA group, indicate the presence of strong human capital externalities at play within ethnic communities in the United States. These externalities play an important role in the economic assimilation of low human capital immigrants by potentially offsetting some of the economic costs associated with low education and limited English skills. Since acquiring these skills might be prohibitively expensive for some groups, primarily immigrants with the lowest levels of education, having access to a co-ethnic community with higher human capital might serve as an affordable alternative. To the extent that self-employment can serve as a vehicle for economic assimilation for immigrants in the U.S., human capital externalities from co-ethnics can serve as a social tool for economic assimilation as well.

References

Alba, Richard D., John R. Logan, Brian J. Stults, Gilbert Marzan, and Wenquan Zhang. 1999. Immigrant Groups in the Suburbs: A Reexamination of Suburbanization and Spatial Assimilation. *American Sociological Review* 64:3.

Altonji, Joseph G and David Card. 1991. The Effects of Immigration on the Labor Market Outcomes of Less-Skilled Natives. in John Abowd and Richard Freeman (eds) Immigration, Trade, and the Labor Market. University of Chicago Press: 201-234.

Bartel, Ann P. 1989. Where do the new U.S. immigrants live? *Journal of Labor Economics* 7:4.

Beaman, Lori A., 2009. Social Networks and the Dynamics of Labor Market Outcomes: Evidence from Refugees Resettled in the U.S. (Revise and Resubmit) *Review of Economic Studies*.

Berman, Eli, John Bound and Zvi Griliches. 1994. Changes in the Demand for Skilled Labor within U.S. Manufacturing: Evidence from the Annual Survey of Manufacturers. *The Quarterly Journal of Economics* 109:2.

Bertrand, Marianne, Erzo Luttmer, and Sendhil Mullainathan. 2000. Network Effects and Welfare Cultures. *The Quarterly Journal of Economics* 115:3.

Blau, Francine D., Lawrence M. Khan, and Kerry L. Papps. 2010. Gender, Source Country Characteristics and Labor Market Assimilation Among Immigrants: 1980 - 2000. *The Review of Economics and Statistics,* forthcoming.

Bleakley, Hoyt and Aimee Chin. 2004. Language Skills and Earnings: Evidence from Childhood Immigrants. *The Review of Economics and Statistics* 86:2.

Borjas, George J., 1986. The Self-Employment Experience of Immigrants. *The Journal of Human Resources* 21:4.

--- 1987. Self-Selection and the Earnings of Immigrants. *The American Economic Review* 77:4.

--- 1992. Ethnic Capital and Intergenerational Mobility. *The Quarterly Journal of Economics* 107:1.

Borjas, George J., and Stephen G. Bronars. 1989. Consumer Discrimination and Self-Employment. *The Journal of Political Economy* 97:3.

Bowles, Jonathan and Tara Colton. 2007. *A World of Opportunity*. Center for an Urban Future. New York, NY.

Bureau of the Census. Data User Services Division. 1983. *Census of Population and Housing, 1980: Public-Use Microdata Samples Technical Documentation.* Washington, DC.

Carliner, Geoffrey. 2000. The Language Ability of U.S. Immigrants: Assimilation and Cohort

Effects. *International Migration Review* 34:1.

Chiswick, Barry R. and Paul W. Miller. 1995. The Endogeneity Between Language and Earnings: International Analyses. *Journal of Labor Economics* 13:2.

Cutler, David M., Edward L. Glaeser, and Jacob L. Vigdor. 2007. When are Ghettos Bad? Lessons from Immigrant Segregation in the United States. NBER Working Paper Series, WP 13082.

--- 2008. Is the Melting Pot Still Hot? Explaining the Resurgence of Immigrant Segregation. *Review of Economics and Statistics*.

Edin, Per-Anders, Peter Fredriksson, and Olof Aslund. 2003. Ethnic Enclaves and the Economics Success of Immigrants – Evidence From a Natural Experiment. *The Quarterly Journal of Economics* 118:1.

Ellis, Mark and Richard Wright. 1999. The Industrial Division of Labor Among Immigrants and Internal Migrants to the Los Angeles Economy. *International Migration Review* 33:1.

Evans, David S. and Linda S. Leighton. 1989. Some Empirical Aspects of Entrepreneurship. *The American Economic Review* 79:3.

Friedberg, Rachel M. 2000. You Can't Take It With You? Immigrant Assimilation and the Portability of Human Capital. *Journal of Labor Economics* 18:2.

Georgarakos, Dimitris and Konstantinos Tatsiramos. 2009. Immigrant Self-Employment: Does Intermarriage Matter? Working Paper 4350, IZA Discussion Paper.

Gonzalez, Arturo. 1998. Mexican enclaves and the price of culture. *Journal of Urban Economics* 43:2.

Hamilton, Barton H. 2000. Does Entrepreneurship Pay? An Empirical Analysis of the Returns to Self-Employment. *The Journal of Political Economy* 108:3.

Johnson, Jacqueline S. and Elissa L. Newport. 1989. Critical Period Effects in Second Language Learning: The Influence of Maturational State on the Acquisition of English as a Second Language. *Cognitive Psychology* 21.

Lazear, Edward P. 1999. Culture and Language. *The Journal of Political Economy* 107:6, part II.

--- 2005. Entrepreneurship. *Journal of Labor Economics* 23:4.

Le, Anh T. 1999. Empirical Studies of Self-Employment. *Journal of Economic Surveys* 13:4.

Lofstrom, Magnus. 2002. Labor Market Assimilation and the Self-Employment Decision of Immigrant Entrepreneurs. *Journal of Population Economics* 15:1.

--- 2009. Low-skilled Immigrant Entrepreneurship. Working Paper 4560, IZA Discussion Paper.

Norton, Edward C., Hua Wang and Chunrong Ai. 2004. Computing Interaction Effects and Standard Errors in Logit and Probit Models. *The Stata Journal* 4:2.

Rosenzweig, Mark R. 1995. Why Are There Returns to Schooling? *American Economic Review* 85:2.

Toussaint-Comeau, Maude. 2005. Do Enclaves Matter in Immigrants' Self-Employment Decision? Working Paper 2005-23, Federal Reserve Bank of Chicago.

--- 2008. Do Ethnic Enclaves and Networks Promote Immigrant Self-Employment? *Economic Perspectives* IV.

de Wit, Gerrit. 1993. Models of Self-Employment in a Competitive Market. *Journal of Economic Surveys* 7:4.

Yuengert, Andrew. 1995. Testing Hypotheses of Immigrant Self-Employment. *The Journal of Human Resources* 30:1.

Appendix A: Specification Testing

In order to test the validity of the specifications containing only continuous variables for C_j and L_k, I ran the regressions presented in this paper with four different specifications: I) using only the continuous controls, II) using only the two sets of dummy variable controls, III) using continuous MSA control with the COB dummy variables, and IV) using the continuous COB control with the MSA dummy variables. Note that the standard errors in specifications (II) through (IV) are not reliable due to insufficient degrees of freedom.

Table A1 shows the results of this test for the impact of a community's educational attainment on self-employment. Column (I) is the results presented in this paper. Column (II) is the results if I had used only dichotomous variables to control for COB and MSA. The test shows that, if anything, the specification used in this paper underestimates the enclave effects.

Table A2 shows the results for the English-skill enclave test for immigrants who are not from Spanish or English-speaking countries. The results show no significant difference for the enclave effects.

Table A3 shows the results for the same set of tests performed as in Table A2 for immigrants from Spanish-speaking countries. Again, the results presented above seem to be robust to different specifications. I find that using COB and MSA dichotomous controls result in a smaller language enclave effect for immigrants from Spanish-speaking countries. These controls result in an effect that is roughly half the size of the effect calculated with the COB and MSA continuous variables. Since the standard errors are not reliable, it is impossible to say if this effect remains statistically significant. It does imply, however, that the overall self-employment rates of the COB groups and the industrial distribution between MSA's is less informative for Latin American/Spanish immigrants than it is for other immigrants from non-English speaking countries. Since the results in specification (IV) differ most dramatically from those in specification (I), Spanish-speaking immigrants seem to enter self-employment based more on MSA than on the industrial-distribution of the MSA.

Appendix B: Sample selection

Table A4 illustrates the differences between the immigrants who were dropped from the analysis due to COB-MSA cell size. By dropping those who lived in communities of less than 50 sampled individuals, I excluded a disproportionate number of white or Asian immigrants with education exceeding a high school degree. The excluded group was also more likely to be self-employed.

Appendix C: Distribution of Enclave Human Capital Measures

Tables A5, A6 and A7 illustrate the sampled and estimated number of people who fall into groups of interest based on the fitted probabilities presented in Figures 1, 2 and 3. Particularly thin cells exist for immigrants from Spanish-speaking countries with limited English skills who reside in communities where over 70% of immigrants speak English well and for immigrants with less than a high school diploma who reside in enclaves where over 80% have more than a high school diploma.

Table 1. Top 20 Primary Metropolitan Statisical Areas, by Sampled Population

U: Male Immigrants in the Labor Force, Not in School and Between the ages of 25 and 65 who immigrated as adults

Primary Metropolitan Statistical Area	Weighted N	%	Sample Size	%
Los Angeles-Long Beach, CA PMSA	767,745	15.1	37,638	16.2
New York, NY PMSA	717,073	14.1	29,421	12.6
Chicago, IL PMSA	326,346	6.4	13,110	5.6
Miami, FL PMSA	223,077	4.4	10,365	4.5
Houston, TX PMSA	191,629	3.8	8,067	3.5
Washington, DC-MD-VA-WV PMSA	188,297	3.7	8,836	3.8
Orange County, CA PMSA	172,060	3.4	9,041	3.9
Dallas, TX PMSA	136,098	2.7	5,957	2.6
San Jose, CA PMSA	129,630	2.5	6,220	2.7
Oakland, CA PMSA	119,093	2.3	5,815	2.5
Riverside-San Bernardino, CA PMSA	113,690	2.2	5,186	2.2
San Diego, CA MSA	103,708	2.0	4,994	2.1
San Francisco, CA PMSA	102,773	2.0	4,867	2.1
Boston, MA-NH PMSA	92,491	1.8	4,279	1.8
Atlanta, GA MSA	90,347	1.8	3,710	1.6
Phoenix-Mesa, AZ MSA	83,713	1.6	4,115	1.8
Newark, NJ PMSA	81,614	1.6	3,812	1.6
Nassau-Suffolk, NY PMSA	77,461	1.5	3,759	1.6
Fort Lauderdale, FL PMSA	67,315	1.3	3,069	1.3
Bergen-Passaic, NJ PMSA	67,078	1.3	3,189	1.4
Total Top 20	3,851,238	75.5	175,450	75.3

Source: Author's calculations based on US Census PUMS 5% sample.

Table 2: Foreign Born Men, in the Labor Force and not in School, Ages 25-65, who Immigrated as adults

	Total	Not Self-Employed	Self-Employed
Sample Size	232,988	205,577	27,411
Weighted Total	5,100,024	4,504,342	595,682
Average Age	41.5	41.0	44.7
White (%)	13.9	12.7	22.6
Black (%)	6.2	6.3	5.3
Hispanic (%)	54.5	56.1	42.5
Other Race (%)	25.4	24.8	29.7
Spouse in Household (%)	64.1	62.7	74.7
Average N of Children in HH	1.2	1.2	1.2
Naturalized (%)	34.3	32.8	45.6
Years since migration	13.8	13.4	16.8
Did not move in past 5 years (%)	41.2	39.9	51.4
No High School	27.8	28.7	21.3
Some High School	17.2	17.4	15.6
High School	17.5	17.4	18.6
Some College	14.2	13.8	17.0
College	12.2	11.9	14.5
Advanced Degree	11.1	10.8	13.1
Speaks English at home	10.3	10.1	11.1
Speaks English very well	25.4	25.0	28.0
Speaks English well	26.7	26.1	30.9
Limited English ability	37.7	38.7	30.1
Speaks Spanish at home	52.5	54.0	41.0
Average Personal Income	32,658	31,409	42,101
Median	22,000	22,000	23,200
Average Wage Income	29,974	31,133	21,209
Average Self-Employed Income	2,684	276	20,892

Source: Author's calculations based on US Census PUMS 5% sample.
All monetary values reported in 1999 dollars.

Table 3. Distribution of Educational Attainment for the US-Born and the 20 Largest Country-of-Origin Groups

Universe: All individuals in the labor force in 2000, who were between the ages of 18-70

		Highest Education Achieved (%)					
Country of Birth	**Estimated US Population**	**Less than 9 years**	**Some High School**	**High School**	**Some College**	**College**	**Advanced Degree**
United States	157,471,246	3.0	11.6	29.6	32.2	15.7	7.9
Mexico	7,635,686	44.5	24.6	17.3	9.9	2.3	1.4
Philippines	1,170,239	4.9	5.8	15.0	29.9	36.7	7.7
India	910,668	3.5	7.0	8.8	13.0	32.1	35.7
Vietnam	873,266	16.0	19.3	19.2	26.6	14.4	4.4
China	804,648	15.9	11.5	14.9	14.7	18.5	24.5
El Salvador	733,096	38.2	25.7	18.6	13.2	3.0	1.4
Cuba	676,855	14.8	20.8	21.9	23.0	10.5	9.0
Korea	602,408	4.6	7.1	22.3	24.7	28.3	13.0
Canada	591,563	2.8	9.3	18.0	32.2	22.2	15.4
Russia	581,378	4.1	8.0	18.7	23.3	24.0	21.9
Dominican Rep.	577,948	24.5	24.6	21.9	20.0	5.5	3.5
Germany	524,861	2.8	9.3	28.4	30.2	14.8	14.4
Jamaica	470,427	6.1	19.0	27.7	29.7	11.8	5.7
Colombia	433,861	11.1	14.8	26.7	26.5	12.1	8.8
Guatemala	418,047	41.8	21.4	18.2	13.5	3.4	1.7
Haiti	360,647	12.7	23.3	24.7	26.6	8.7	4.1
Poland	348,854	6.1	12.7	30.7	26.8	10.6	13.1
Italy	333,833	23.9	13.6	28.5	16.8	9.0	8.3
England	329,000	0.8	6.4	22.3	33.8	22.0	14.9
Taiwan	300,495	2.3	3.5	11.4	20.8	28.8	33.1

Source: Author's calculations based on US Census PUMS 5% sample.

Table 4. Percent Self-Employed at the COB-MSA Level for Ten of the Largest Country of Origin Groups

Universe: All individuals in the labor force in 2000, who were between the ages of 18-70

Country of Birth	Overall	Minimum	Maximum	Average MSA
Phillipines	5.29	0.83	64.71	10.19
Mexico	7.69	0.77	37.85	7.88
El Salvador	9.28	1.34	40.84	10.70
Guatemala	9.81	0.47	47.76	14.25
India	10.93	2.24	59.15	16.90
Vietnam	11.33	0.88	74.42	15.26
Canada	13.65	3.37	55.26	14.73
Taiwan	15.27	2.04	87.37	24.55
Italy	18.02	3.44	76.09	24.35
Korea	24.61	2.94	76.00	26.20

Source: Author's calculations based on US Census PUMS 5% sample. Overall reports the overall percent of the COB population that is self-employed. Minimum, Maximum and Average MSA report COB-MSA cell values.

Table 5: Five Representative COB-MSA groups and their Human Capital Measures

Percentile	10	25	50	75	90
Country of Birth	Mexico	Mexico	Yugoslavia	France	Colombia
MSA of residence	Orlando, FL MSA	Phoenix-Mesa, AZ MSA	Phoenix-Mesa, AZ MSA	New York, NY PMSA	Fort Lauderdale, FL PMSA
COB characteristics					
Population	7,635,686	7,635,686	197,632	115,824	433,861
C_j	7.694	7.694	9.448	13.798	12.237
MSA self-employment index					
L_k	9.9445	10.0961	10.0961	10.4237	10.6028
COB-MSA characteristics					
Population	16,220	226,450	5,155	12,060	27,364
Self-employed (%)	4.923	6.628	9.160	11.973	16.600
E_{jk}^{90}	0.076	1.609	0.756	11.179	3.503
E_{jk}	1.484	11.382	0.259	0.193	2.618
Schooling (%)					
Less than 9 years	43.545	42.219	13.230	1.700	5.997
Some High Sschool	24.353	27.819	13.715	5.141	12.308
High School	17.121	17.335	36.605	12.081	27.379
Some College	10.216	9.244	27.507	16.667	28.910
College	2.762	2.142	5.509	22.653	16.142
Advanced Degree	2.004	1.241	3.434	41.758	9.264
English Skills (%)					
Only English at home	6.134	5.743	3.453	17.272	2.796
Strong English	38.853	37.354	62.367	81.061	66.818
Limited English	55.012	56.903	34.180	1.667	30.387

Source: Author's calculations based on US Census PUMS 5% sample.

Table 6: Testing COB-MSA English-skills Effects: Logit Regression results

Universe: Men in the labor force, between 25 and 65, who immigrated as adults from a non-English speaking country

	Type of English-skill COB-MSA Measure					
	% Speak English Well		% Limited English		% Speak Only English at home	
	(I)	(II)	(III)	(IV)	(V)	(VI)
Speaks English	0.107***	0.618***	0.107***	-0.276***	0.111***	0.144**
	[0.0267]	[0.0985]	[0.0267]	[0.0739]	[0.0270]	[0.0604]
Speaks Only English at home	0.153***	0.609***	0.150***	-0.180*	0.151***	0.146*
	[0.0433]	[0.147]	[0.0433]	[0.0971]	[0.0424]	[0.0817]
English-skill COB-MSA Measure	0.00104	0.00892***	-0.00120	-0.00879***	0.00167	0.00531
	[0.00159]	[0.00214]	[0.00160]	[0.00210]	[0.00386]	[0.00997]
Interaction: Speaks English		-0.00972***		-0.00919***		-0.00544
		[0.00178]		[0.00164]		[0.00916]
Interaction: Speaks only English at home		-0.00897***		-0.00733***		-0.000993
		[0.00250]		[0.00224]		[0.0103]
COB % Self-Employed	0.0963***	0.0952***	0.0965***	0.0952***	0.0963***	0.0961***
	[0.00379]	[0.00370]	[0.00381]	[0.00373]	[0.00377]	[0.00375]
MSA Self-Employment Index	0.116***	0.122***	0.116***	0.121***	0.114***	0.114***
	[0.0353]	[0.0345]	[0.0352]	[0.0346]	[0.0353]	[0.0352]
%COB 1990 population in MSA	0.00473***	0.00435***	0.00478***	0.00446***	0.00486***	0.00485***
	[0.00133]	[0.00138]	[0.00132]	[0.00135]	[0.00132]	[0.00132]
%MSA from COB	1.024**	1.098**	1.035**	1.098**	0.995**	0.988**
	[0.487]	[0.486]	[0.487]	[0.484]	[0.478]	[0.474]
Observations	218885	218885	218885	218885	218885	218885
Pseudo R-squared	0.0691	0.0696	0.0691	0.0696	0.0691	0.0691

Robust clustered standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Controlled for age, age-squared, ethnicity, race, five education groups, years since migration, years since migration squared, spouse in household, naturalized, and the median years since migration in MSA-COB.

Table 7: Testing COB-MSA English-skills Effects for Immigrants from Spanish-speaking Countries and those From other Non-English Speaking Countries: Logit Regression results

Universe: Men in the labor force, between 25 and 65, who immigrated as adults from a non-English speaking country

	Type of English-skill Enclave Measure			
	% Speak English Well		% Limited English	
	Spanish-speaking	Other Non-English	Spanish-speaking	Other Non-English
Speaks English	0.632***	0.406	-0.409***	-0.0618
	[0.147]	[0.276]	[0.150]	[0.126]
Speaks Only English at home	0.956***	-0.0162	-0.852***	0.129
	[0.222]	[0.369]	[0.204]	[0.147]
English-skill Enclave Measure	0.0217***	-0.000861	0.0216***	0.000440
	[0.00459]	[0.00489]	[0.00484]	[0.00439]
Interaction: Speaks English	-0.0101***	-0.00526	0.0119***	0.00431
	[0.00306]	[0.00432]	[0.00303]	[0.00391]
Interaction: Speaks only English at home	-0.0167***	0.000733	0.0215***	-0.00639
	[0.00487]	[0.00546]	[0.00397]	[0.00495]
COB % Self-Employed	0.0670***	0.0869***	0.0755***	0.0871***
	[0.0169]	[0.00398]	[0.0152]	[0.00413]
MSA Self-Employment Index	0.0795*	0.161***	0.0703	0.166***
	[0.0456]	[0.0321]	[0.0453]	[0.0325]
%COB 1990 population in MSA	0.00405**	0.00237	0.00403**	0.00216
	[0.00188]	[0.00252]	[0.00182]	[0.00251]
%MSA from COB	1.609***	-7.556***	1.559***	-7.589***
	[0.506]	[1.941]	[0.521]	[2.011]
Observations	131711	88783	131711	88783
Pseudo R-squared	0.0410	0.0848	0.0410	0.0847

Robust clustered standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Controlled for age, age-squared, ethnicity, race, five education groups, years since migration, years since migration squared, spouse in household, naturalized, and median years since migration in MSA-COB.

Table 8: Testing Enclave Schooling Effects: Logit Regression results for Five Educational Groups

Universe: Men in the labor force, between 25 and 65, who immigrated as adults

	Educational Attainment of Enclave Measure		
	% with less than HS diploma		**% with more than HS diploma**
Educational attainment	**(I)**	**(II)**	**(III)**
8 years or less	0.0185	0.407***	-0.699***
	[0.0372]	[0.0843]	[0.0804]
Some HS	0.139***	0.472***	-0.587***
	[0.0408]	[0.0639]	[0.0756]
HS diploma	0.141***	0.379***	-0.531***
	[0.0346]	[0.0545]	[0.0725]
Some college	0.141***	0.278***	-0.358***
	[0.0330]	[0.0515]	[0.0768]
Enclave measure	-0.00894***	7.07E-06	-0.00031
	[0.00167]	[0.00188]	[0.00160]
Interaction: 8 years or less		-0.0127***	0.0154***
		[0.00177]	[0.00175]
Interaction: some HS		-0.0124***	0.0142***
		[0.00153]	[0.00146]
Interaction: HS diploma		-0.0109***	0.0120***
		[0.00142]	[0.00139]
Interaction: Some college		-0.00799***	0.00782***
		[0.00146]	[0.00142]
COB % Self-Employed	0.0865***	0.0868***	0.0875***
	[0.00451]	[0.00451]	[0.00417]
MSA Self-Employment Index	0.122***	0.126***	0.113***
	[0.0327]	[0.0312]	[0.0310]
%COB 1990 population in MSA	0.00280**	0.00193	0.00246*
	[0.00141]	[0.00156]	[0.00143]
%MSA from COB	1.195**	1.369***	1.166**
	[0.480]	[0.489]	[0.475]
Observations	232,952	232,952	232,952
Pseudo R-squared	0.0673	0.0683	0.0687

Robust clustered standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Controlled for age, age-squared, ethnicity, race, English ability, years since migration, years since migration squared, spouse in household, naturalized, median years since migration in MSA-COB, percent of COB-MSA who speak English fluently or only English at home, percent self-employed in COB, MSA Self-employment index, percent of MSA who was born in COB, and percent of COB 1990 population in the US who was residing in MSA.

Table A1. Specification Testing of Impact of Educational Attainment of Community on Individual's Propensity for Self-Employment

Community education measure is the percent of adults who have less than a high school degree

Specification	I	II	III	IV
8 years or less	0.407***	0.422***	0.495***	0.372***
	[0.0843]	[0.0831]	[0.0863]	[0.0814]
Some HS	0.472***	0.526***	0.559***	0.474***
	[0.0639]	[0.0616]	[0.0621]	[0.0606]
HS diploma	0.379***	0.417***	0.449***	0.364***
	[0.0545]	[0.0518]	[0.0532]	[0.0523]
Some college	0.278***	0.328***	0.359***	0.257***
	[0.0515]	[0.0488]	[0.0491]	[0.0509]
Enclave measure	7.07E-06	0.00789**	-0.00198	0.000488
	[0.00188]	[0.00342]	[0.00401]	[0.00169]
Interaction: 8 years or less	-0.0127***	-0.0126***	-0.0147***	-0.0115***
	[0.00177]	[0.00157]	[0.00170]	[0.00152]
Interaction: some HS	-0.0124***	-0.0130***	-0.0143***	-0.0119***
	[0.00153]	[0.00142]	[0.00145]	[0.00139]
Interaction: HS diploma	-0.0109***	-0.0109***	-0.0122***	-0.00991***
	[0.00142]	[0.00129]	[0.00135]	[0.00128]
Interaction: Some college	-0.00799***	-0.00851***	-0.00969***	-0.00720***
	[0.00146]	[0.00143]	[0.00143]	[0.00144]
Constant	-6.491***	-4.910***	-5.564***	-4.976***
	[0.399]	[0.593]	[0.402]	[0.480]
Observations	232952	232794	232952	232794
Pseudo R-squared	0.0683	0.0772	0.072	0.074

Robust clustered standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Controlled for age, age-squared, ethnicity, race, English ability, years since migration, years since migration squared, spouse in household, naturalized, median years since migration in MSA-COB, percent of COB-MSA who speak English fluently or only English at home, percent of MSA who was born in COB, and percent of COB 1990 population in the US who was residing in MSA.

Specification (I) also includes percent self-employed in COB and MSA Self-employment index. Specification (II) replaces these two continous variables with dichotomous MSA and COB variables. Specification (III) includes a vector of COB dichotomous variables with the MSA Self-Employment index. Specification (IV) includes the percent self-employed in COB and the vector of MSA dichotomous variables.

Table A2. Specification Testing of Impact of English Language Skill of Community on Individual's Propensity for Self-Employment, for Immigrants from Non-Spanish and Non-English Speaking Countries

Community English-skill measure is the percent of adults who speak English well or very well, but speak a different language at home

Specification	I	II	III	IV
Speaks English	0.406	0.401*	0.449*	0.405*
	[0.276]	[0.206]	[0.237]	[0.220]
Speaks Only English at home	-0.0162	-0.0358	0.0333	-0.0717
	[0.369]	[0.304]	[0.315]	[0.306]
English-skill Enclave Measure	-0.000861	-0.000557	-0.00072	-0.0014
	[0.00489]	[0.00418]	[0.00538]	[0.00366]
Interaction: Speaks English	-0.00526	-0.00515	-0.00595	-0.00508
	[0.00432]	[0.00318]	[0.00366]	[0.00344]
Interaction: Only English at home	0.000733	0.00063	-0.00047	0.00157
	[0.00546]	[0.00437]	[0.00459]	[0.00449]
Observations	88783	88783	88783	88783
Pseudo R-squared	0.0848	0.0941	0.0899	0.0899

Robust clustered standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Controlled for age, age-squared, ethnicity, race, five education groups, years since migration, years since migration squared, spouse in household, naturalized, median years since migration in MSA-COB, percent of MSA who was born in COB, and percent of COB 1990 population in the US who was residing in MSA.

Specification (I) also includes percent self-employed in COB and MSA Self-employment index. Specification (II) replaces these two continous variables with dichotomous MSA and COB variables. Specification (III) includes a vector of COB dichotomous variables with the MSA Self-Employment index. Specification (IV) includes the percent self-employed in COB and the vector of MSA dichotomous variables.

Table A3. Specification Testing of Impact of English Language Skill of Community on Individual's Propensity for Self-Employment, for Immigrants from Spanish Speaking Countries

Community English-skill measure is the percent of adults who speak English well or very well, but speak a different language at home

Specification	I	II	III	IV
Speaks English	0.632***	0.670***	0.660***	0.673***
	[0.147]	[0.135]	[0.143]	[0.137]
Speaks Only English at home	0.956***	0.972***	0.988***	0.816***
	[0.222]	[0.217]	[0.221]	[0.211]
English-skill Enclave Measure	0.0217***	0.0142***	0.0189***	0.0146***
	[0.00459]	[0.00521]	[0.00627]	[0.00381]
Interaction: Speaks English	-0.0101***	-0.0108***	-0.0107***	-0.0109***
	[0.00306]	[0.00287]	[0.00303]	[0.00289]
Interaction: Speaks only English at home	-0.0167***	-0.0171***	-0.0174***	-0.0138***
	[0.00487]	[0.00472]	[0.00478]	[0.00455]
Observations	131711	131553	131711	131553
Pseudo R-squared	0.041	0.0511	0.0423	0.0501

Robust clustered standard errors in brackets

*** p<0.01, ** p<0.05, * p<0.1

Controlled for age, age-squared, ethnicity, race, five education groups, years since migration, years since migration squared, spouse in household, naturalized, median years since migration in MSA-COB, percent of MSA who was born in COB, and percent of COB 1990 population in the US who was residing in MSA. Specification (I) also includes percent self-employed in COB and MSA Self-employment index. Specification (II) replaces these two continous variables with dichotomous MSA and COB variables. Specification (III) includes a vector of COB dichotomous variables with the MSA Self-Employment index. Specification (IV) includes the percent self-employed in COB and the vector of MSA dichotomous variables.

Table A4. Characteristics of Sample, By Sample Size within Enclave, in Percentages

Universe: Male Immigrants in the Labor Force, Not in School and Between the ages of 25 and 65 who immigrated as adults

Sample size of Enclave	Overall	Self-Employed	White	Black	Other Race	Hispanic
1000+	34.88	10.37	4.75	2.89	15.06	77.29
100-999	35.16	12.54	17.25	8.28	35.22	39.26
50-100	8.06	14.56	35.14	10.06	31.71	23.09
<50	21.90	15.18	42.37	10.03	28.65	18.95
Total	100.00	12.49	19.83	6.93	26.47	46.77

	Less than HS	HS diploma	More than HS	Speaks English	Only English at home	Limited English
1000+	59.67	15.97	24.36	44.23	7.00	48.76
100-999	33.35	17.75	48.90	59.34	10.84	29.82
50-100	24.45	18.43	57.12	60.57	18.75	20.69
<50	19.05	17.30	63.65	63.08	21.85	15.07
Total	38.68	17.08	44.24	54.99	12.55	32.46

Source: Author's calculations based on US Census PUMS 5% sample.

Table A5: Distribution of English Language Skills, by the Percent of the COB-MSA Cell That Speaks English Well, But Speaks a Different Language at Home

% of MSA-COB Cell That Speaks English Well, but Different Language at Home		COB's predominant language is not English or Spanish		
		Limited	**Strong**	**Only Engl**
Under 50	Sample Size	2,887	2,021	290
	Estimated N	67,403	46,678	6,595
	Estimated %	3.12	2.16	0.3
50 - 70	Sample Size	11,966	23,278	1,471
	Estimated N	263,293	514,760	32,692
	Estimated %	12.17	23.8	1.51
70+	Sample Size	4,661	47,137	3,327
	Estimated N	101,949	1,054,475	74,828
	Estimated %	4.71	48.76	3.46
% of MSA-COB Cell That Speaks English Well, but Different Language at Home		**COB's predominant language is Spanish**		
		Limited	**Strong**	**Only Engl**
Under 50	Sample Size	59,313	39,894	5,155
	Estimated N	1,267,249	868,451	110,816
	Estimated %	43.05	29.51	3.76
50 - 70	Sample Size	13,314	15,278	1,199
	Estimated N	285,028	331,775	25,945
	Estimated %	9.68	11.27	0.88
70+	Sample Size	561	1,794	101
	Estimated N	12,003	39,787	2,343
	Estimated %	0.41	1.35	0.08

Source: Author's calculations based on U.S. Census PUMS 5% sample.
Estimated N is the weighted total population in each cell and Estimated % is the percent of the total estimation population represented by that cell.

Table A6: Distribution of Educational Attainment, by the Percent of the COB-MSA Cell That Has Less Than a High School Degree

% of MSA-COB Cell with less than HS		Individual's Educational Attainment				
		<9 years	9-12 years	HS	Some College	College
0-20	Sample Size	1,670	3,560	9,255	13,897	41,630
	Estimated N	36,129	78,829	204,314	304,036	926,438
	Estimated %	0.66	1.45	3.75	5.58	17
20-40	Sample Size	6,072	9,217	12,558	11,122	10,573
	Estimated N	132,461	205,039	283,728	250,830	240,495
	Estimated %	2.43	3.76	5.21	4.6	4.41
40-60	Sample Size	7,784	5,693	5,503	3,798	2,850
	Estimated N	175,369	129,432	126,507	87,666	67,018
	Estimated %	3.22	2.38	2.32	1.61	1.23
60+	Sample Size	52,369	23,473	15,000	8,616	3,943
	Estimated N	1,098,918	502,749	325,575	186,509	87,005
	Estimated %	20.17	9.23	5.97	3.42	1.6

Source: Author's calculations based on U.S. Census PUMS 5% sample.

Estimated N is the weighted total population in each cell and Estimated % is the percent of the total estimation population represented by that cell.

Table A7: Distribution of Educational Attainment, by the Percent of the COB-MSA Cell That HasMore Than a High School Degree

% of MSA-COB Cell with more than HS		Individual's Educational Attainment				
		<9 years	9-12 years	HS	Some College	College
0-20	Sample Size	51,297	22,970	14,765	8,308	3,756
	Estimated N	1,078,111	493,381	321,354	180,465	83,335
	Estimated %	19.79	9.05	5.9	3.31	1.53
20-40	Sample Size	12,459	11,976	13,683	9,714	7,521
	Estimated N	276,533	270,036	316,505	222,885	174,214
	Estimated %	5.07	4.96	5.81	4.09	3.2
40-60	Sample Size	3,802	6,315	12,104	15,529	28,442
	Estimated N	80,753	137,632	267,905	341,019	636,651
	Estimated %	1.48	2.53	4.92	6.26	11.68
60+	Sample Size	337	682	1,584	3,882	19,277
	Estimated N	7,480	15,000	34,360	84,662	426,756
	Estimated %	0.14	0.28	0.63	1.55	7.83

Source: Author's calculations based on U.S. Census PUMS 5% sample.

Estimated N is the weighted total population in each cell and Estimated % is the percent of the total estimation population represented by that cell.

Figure 1. Predicted Probability of Self-Employment

Limited to Immigrants From non English-Speaking countries

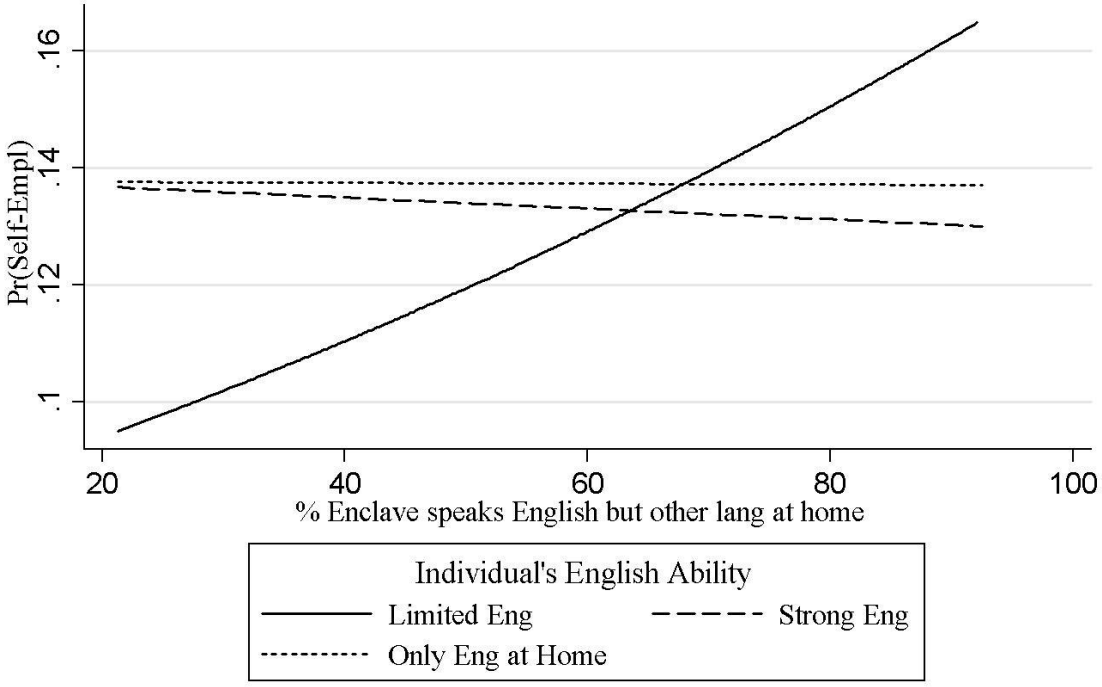

Figure 2. Predicted Probability of Self-Employment

By English Skills of Enclave

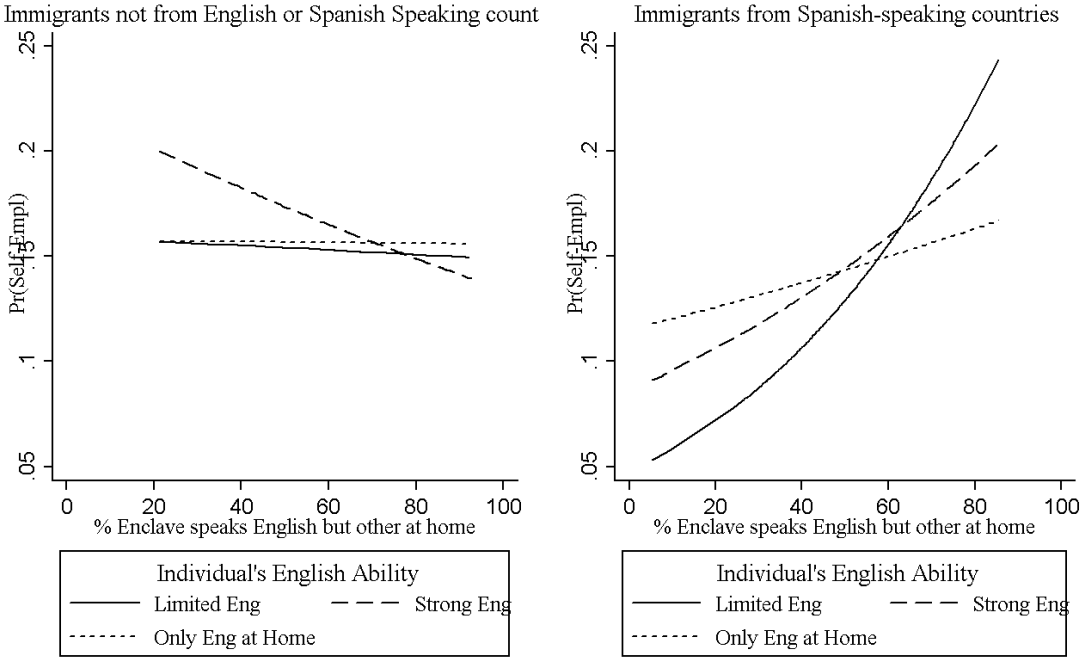

Figure 3: Predicted Probability of Self-Employment