Preference vs Constraints: the Generational Transmission of Immigrant Entrepreneurship*

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Working Draft: October 2018

Abstract

Why are immigrants more likely to own businesses than natives? Some scholars emphasize immigrants' "preferences" for entrepreneurship, while others suggest "constraints" on non-entrepreneurial alternatives. I propose to disentangle these two accounts by leveraging differences in the "Immigrant-Native self-employment gap" across generations. Based on the assumption that labor market constraints are more readily alleviated by second-generation immigrants, while innate preferences are more inheritable, I argue that the relative influences of preferences and constraints can be inferred from comparisons of the gap between first- and second-generation immigrants. Analyses of nationally representative U.S. data reveal the following: i) the gap is smaller for second-generation immigrants, especially among ethnic groups that face greater labor market frictions; ii) these disadvantaged ethnic groups make greater investment in human capital of their children; and iii) conditional on entering self-employment, second-generation immigrants are more likely to incorporate their businesses relative to their parents. I discuss how these results can be interpreted as how immigrants facilitate upward socioeconomic mobility through investments in entrepreneurship and human capital.

* I would like to thank Bo Cowgill, Ross Levine, Chris Rider, Katalin Springel for their very helpful suggestions as well as seminar participants at the University of Maryland, École Polytechnique Fédérale de Lausanne, Universidad Carlos III de Madrid, Kyung Hee University, Shanghai University of Finance and Economics and conference participants at UPenn-Wharton and HBS.
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1 Introduction

Why are immigrants more likely to own businesses than natives? A large body of work documents that immigrants have stronger tendencies to enter self-employment relative to their U.S.-born counterparts (e.g., Borjas 1986, Clark and Drinkwater 2000, Fairlie and Meyer 1996, Fairlie and Lofstrom 2014; Kerr and Kerr 2018). Explanations for this phenomenon can be categorized into two general accounts. On the one hand, some scholars emphasize immigrants' "preferences" for entrepreneurship, as immigrants are a selected group of individuals with access to distinct ethnic and cultural resources (Light 1972, Aldrich et al. 1985, Borjas 1986, Borjas 1987, Kerr and Mandroff 2016, Vandor and Franke 2016, Choudhury and Kim 2018). On the other hand, others imply labor market "constraints" as main drivers of immigrant self-employment, where immigrants lack non-entrepreneurial alternatives owing to barriers such as language deficiency or discrimination (Becker 1957, Light 1972, Min 1984, Light and Gold 2000, Dávila and Mora 2004, Hedge and Tumlinson 2017, Kim and Morgan 2018).

Despite these explanations, we lack a clear understanding of whether preferences or constraints is the dominant force driving the immigrant-native self-employment gap ("the gap"). This is important, however, as the two accounts lead to different policy implications. The preferences account suggests potential gains from entrepreneurial training and resource provision—prior studies suggest that immigrants represent a substantial portion of the most innovative talent (Hunt 2010, Kahn et al. 2017, Kerr 2018) and positive motives enhance entrepreneurial productivity and innovativeness (Sauermann and Cohen 2010). The constraints account implies a need for friction-reducing interventions to integrate immigrants—immigrants' disproportionate selection into self-employment owing to market constraints is inconsistent with the prototypical notion of the self-made man living the American Dream (Paul 2014).

Disentangling preferences from constraints is difficult, however, partly because business rates vary significantly across ethnic subgroups (Fairlie and Meyer 1996, Hout and Rosen 2000). Existing studies suggest that self-employment rates reflect ethnic group characteristics that are correlated with the preferences or constraints accounts, such as

home country self-employment tendencies (Yuengert 1995), cultural values (Zinabou 2017), or ethnic group earnings (Fairlie and Meyer 1996). Nevertheless, it is also difficult to untangle the two accounts comparing racial and ethnic subgroups for a single generation, for two reasons. First, the context of immigration differs across ethnic groups and within groups over time given that immigration is shaped by changes in policy (e.g. the Bracero Program in 1942; the Immigration Act of 1965) and macro events (e.g. the Vietnam War; the Chinese economic reform; the collapse of the Soviet Union). Second, even with equal labor market disadvantages, ethnic groups face different opportunities structures as well as varying degrees of resource disadvantages (Waldinger et al. 1990, Light and Gold 2000), rendering it possible for groups with equivalent ex-ante motives to exhibit different ex-post entry into self-employment.

In this study, I propose to infer the relative influences of preferences and constraints by comparing the immigrant-native self-employment gap across generations. More specifically, we leverage the strong correlation in the employment choice between parents and child (e.g. Lentz and Laband 1983, 1989, Lindquest et al. 2015, Dunn and Holtz-Eakin 2000, Aldrich and Kim 2007, Sørensen 2007, Bell et al. 2016, Hvide and Oyer 2018) as well as immigrants' likelihood to assimilate with the native population over time (e.g. Kim & Morgan 2018, Bleakley and Chin 2010). The key underlying assumption is that factors that lead to preferences are more inheritable than are market constraints, which are more readily alleviated by assimilation. Hence, if the preference account dominates, then the gap will more likely be similar for second-generation immigrants, while if the constraints account dominates, the gap will be smaller.

Using nationally representative data from the U.S.—the March Supplements of the Current Population Survey ("CPS")—I find that second-generation immigrants are only 9% more likely, while first-generations are 36% more likely to self-employ than their respective native counterparts. Comparing this against the natural drop-off rate of the native population suggests that while both accounts are important, the constraints account is the more dominant driver for immigrant entrepreneurship.

Such gap comparison may lead to potential false inference, however, as different types of frictions are alleviated at different rates. I address this problem by making comparison across immigrant groups, who are exposed to frictions related to language facility at different rates. I operationalize this comparison employing a measure of linguistic distance (Fearon 2003, Wacziarg and Spolaore 2009). This measure based on the language of the father's origin country has been previously used to assess skill mismatch or the degree of labor market transferability immigrants face, which are mitigated with time spent in the U.S. (Chiswick and Miller 2012, Imai, Stacey and Warman 2014, Kim and Morgan 2018).

I find that, indeed, the smaller gap is driven by linguistically distant ethnic groups, even when comparing immigrants within the same continent of origin. These suggest that even among immigrants, groups that suffer from labor market constraints that are readily alleviated (e.g. language proficiency) are less likely to transmit entrepreneurship than those that suffer persistent constraints (e.g. racial bias).

I then assess how the dominance of the preference or constraints accounts relates to patterns of second-generation immigrants' educational attainment and labor market outcomes. I propose that there should be differences not just in investment in entrepreneurship but also in other forms of investments that would benefit from alleviation of labor market frictions, such as educational attainment. Investments in human capital are also known to vary across ethnic groups (Ross et al. 2012). I hypothesize that parental investment in education will be largest for ethnic groups whose second-generation immigrants face the largest wage skill premium relative to their parents and hence would gain the most from education. Consistent with this hypothesis, I find that second-generations are more educated overall, and moreover, that the education gap between first- and second-generation immigrants are largest among the more linguistically distant ethnic groups. Hence, I highlight investment in children's human capital as one channel through which immigrants achieve upward social mobility.

I then demonstrate how investment in human capital shape career paths for second-generation immigrants in both paid- and self-employment. While educational attainment crowds out the overall level of entrepreneurship, in paid-employment, I show that second-

generation immigrants i) sort into better paying occupations, and ii) also within occupations earn, on average, $1.80 higher hourly wage than their first-generation, reaching earnings parity with natives. Among entrepreneurs, I separate incorporated and unincorporated self-employed to assess the entrepreneurial nature of the ventures they create, per Levine & Rubinstein (2017, 2018). I find that, notably, linguistically distant second-generation immigrants are more likely to incorporate their businesses than the first-generation, conditional on entrepreneurship entry. This suggests that businesses created by second-generation immigrant entrepreneurs, will likely have higher growth potential, conditional on entry.

I address alternative channels that may bias my results. I consider how regression towards the mean of biological entrepreneurial dispositions, heterogeneity in future orientation of ethnic groups, or preference shifts across generation may affect my results. I aim to better identify immigration motives, which importantly determines immigrants' labor market outcomes, by exploiting variation in macroeconomic conditions of origin country at time of first-generation entry. (work in progress)

Overall, my findings imply that first generation immigrants that are most likely to be pushed into self-employment make investments in their children's human capital, which, unsurprisingly, pave a better career path for them. While I do not causally identify how different entrepreneurial motives of parents' affect educational attainment and entrepreneurship patterns of their children, I demonstrate how generational changes in entrepreneurial tendencies reflect immigrants' achievement of upward social mobility. To the extent that incorporated self-employment proxies for opportunity entrepreneurs, my findings also imply that entrepreneurship entry by disadvantaged ethnic minority groups shift from necessity- to opportunity-based entrepreneurship over time.

This study makes two important contributions. First, studying generational entrepreneurship patterns better explain immigrants' labor market experience. There are two reasons for this: one, studying a single generation's labor market outcome does not necessarily reflect how immigrants build a better future for their children, a motivation ranked among the top reasons for immigration; and two, investigating first-generation

immigrants' entry into self-employment confounds two competing forces—preference or market constraints that can be examined by comparing the gap for first- and second-generation immigrants.

Second, by examining the intersection between occupational transmission and immigrant entrepreneurship literature, I highlight which ethnic groups facilitate upward social mobility contingent upon the ex-ante motive for investing in entrepreneurship. Previous studies characterize entrepreneurship as a product of socioeconomic contexts (e.g., Aldrich 1990, Thornton 1999, Sørensen 2007, Roach and Sauermann 2015). If occupation is essential to one's socioeconomic status and income, then systematic patterns of intergenerational transmission of entrepreneurship may reflect different opportunities for upward social mobility. Uncovering generational patterns of immigrant entrepreneurship could inform us about the socioeconomic contexts within which immigrants operate across generations.

2 Conceptual framework

In this section, I first develop the preferences and the constraints accounts as drivers of immigrant entrepreneurship, more specifically immigrants' tendencies to disproportionately select into self-employment relative to natives (Clark and Drinkwater 2000; Hammarstedt 2004; Constant and Zimmermann 2006; Fairlie and Lofstrom 2014; Kerr and Kerr 2016). I then propose a multigenerational perspective on how one might compare the immigrant-native self-employment gap for the first- and second-generation to infer the relative dominance of the two accounts.

The preferences account entails immigrants choosing to enter self-employment out of entrepreneurial tendencies or opportunities. This could be owing to inherent factors such as immigrants being a self-selected group of individuals (Borjas 1987), who may be more entrepreneurial with distinct ethnic backgrounds. Their backgrounds may also shape external factors such as having access to ethnic resources (e.g. ethnic capital (Light 1972) or social networks (Kerr and Mandroff 2016)), being exposed to ethnic group specific opportunity structures (e.g. serving as a middle-man to a segregated and protected ethnic market (Bonacich 1973, Borjas 1986)) and moreover the complex interaction between the

two (Aldrich et al. 1983; Waldinger et al. 1990; Light and Gold 2000; Volery 2007). Furthermore, immigrants' extensive cross-cultural experiences may further position them to better identify entrepreneurial opportunities (Vandor and Franke 2016).

The constraints account relates to contextual disadvantages immigrants face in the labor market. Sociologists have also well documented and framed 'blocked mobility' as a dominant explanation for higher immigrant self-employment rate than natives (e.g. Min 1984). This dates back to Weber (1958), who suggests how Protestant sectarians became business owners owing to religious discrimination (Light and Gold 2000). Along with encountering such discrimination based on taste (Becker 1957), immigrants may also face labor market signaling difficulties. Existing studies show how asymmetric information (Hegde and Tumlinson 2017) or linguistic-cultural differences (Kim and Morgan 2018) can lead immigrants to enter self-employment.

In this paper, I argue that the relative influences of the preferences and the constraints accounts in immigrant entrepreneurship can be inferred from generational patterns of the immigrant-native self-employment gap. On the one hand, the preference account would affect self-employment entry of both first- and second-generation immigrants as suggested by the literature on entrepreneurship transmission (Nicolaou and Shane 2010; Lindquest et al. 2015; Dunn and Holtz-Eakin 2000; Aldrich and Kim 2007; Sørensen 2007; Hvide and Oyer 2018). On the other hand, immigrant entrepreneurship owing to the constraints account may be less applicable to second-generation immigrants as they are better able to alleviate labor market frictions than the first (e.g. Bleakley and Chin 2010; Kim and Morgan 2018). We discuss each of these in turn.

First, the entrepreneurship transmission literature finds that individuals with entrepreneur parents are 60 – 200% more likely to become an entrepreneur than those without. (Nicolaou and Shane 2010; Lindquest et al. 2015; Dunn and Holtz-Eakin 2000; Aldrich and Kim 2007; Sørensen 2007; Hvide and Oyer 2018). Scholars have explored whether biological or environmental factors are the main drivers for such strong correlation. To assess the importance of genetics, Nicolaou and Shane (2010) compare self-employment entry rate between identical and fraternal twins to find that environmental factors as well as genetics

are important to consider. Lindquest et al. (2015) further compare biological and adopted children to show that post-birth factors account for twice as much as pre-birth factors in the choice to become entrepreneurs. Subsequently, studies have examined which environmental factors are the most influential and suggest that second-hand business exposure through transmission of industry knowledge across generation (Hvide and Oyer 2018) or role-modelling (Sørensen 2007, Bell et al. 2017 and Mishkin 2018) are more important than providing financial or social support (Dunn and Holtz-Eakin 2000).

These studies imply that the preferences account would similarly shape second-generation immigrants' entrepreneurial tendencies as the first for two reasons. One, the second-generation will be subject to the same inherent tendencies that expose first-generation to enter self-employment owing to genetics. Two, and more importantly, once a parent owns a business, a business familiar environment can transmit entrepreneurial tendencies through inheritance of managerial human capital. Hence, if preferences account dominantly shapes immigrant entrepreneurship, the immigrant-native self-employment gap would be similar between first- and second-generation immigrants.

Second, studies on immigrant assimilation suggest that labor market frictions will likely be alleviated for second-generation. Existing studies on immigrants' labor market outcomes highlight how first-generation immigrants face labor market barriers owing to their backgrounds. Dávila and Mora (2004) show how language deficiency accounts for a large part of the immigrant wage gap; Imai, Stacey and Warman (2014) show an incomplete transfer of immigrant skills, especially those that were in communication intensive jobs; Kim and Morgan (2018) show how cultural factors that are not necessarily related to language account for disproportionately high immigrant self-employment among highly skilled workers. Studies, however, also show that these frictions are alleviated over time—Kim and Morgan (2018) find that the disproportionate sorting of immigrants into self-employment is mitigated for immigrants who arrived at a younger age; Bleakley and Chin (2010) suggest similar findings for social outcomes as well showing, for example, that interracial marriage rates increase with time spent in the U.S.

These studies suggest that the constraints account would be less applicable for second-generation immigrants relative to the first. With exposure to host country institutions to acquire language and cultural proficiency, second-generation immigrants would be less subject to 'blocked mobility' as suggested by sociologists (e.g. Min 1984)—even though some aspects of discrimination (e.g. taste-based discrimination) may persist for second-generation immigrants, labor market barriers that disadvantage first-generation immigrants would, to a large degree, be alleviated for second-generation immigrants.

The above two arguments relating to the preferences and the constraints accounts lead to the following:

Hypothesis 1: The greater the constraints account, the smaller the gap will be for the second-generation immigrants relative to the first.

In other words, I propose an empirical test to disentangle which of the two accounts is more dominant by comparing the immigrant-native self-employment gap—self-employment rates of first-generation and second-generation immigrants to those of observationally-equivalent natives.

The proposed test may lead to false inference, however, because different types of frictions are alleviated at different rates. For example, while institutional barriers may be more readily alleviated, taste-based discrimination such as racial bias may likely persist for second-generation immigrants. Failing to distinguish between different types of labor market frictions may lead to false inference in the immigrant-native comparison—if frictions persist for the next generation and the gap remains similar across generations, one might conclude that the preferences account is more dominant, even when the constraints account may be more influential. It may also lead to false conclusion in comparing across different ethnic groups—when two groups face similar degrees of the constraints account but one group with more readily alleviated frictions, hypothetically speaking, I might falsely conclude that the constraints account is more dominant for that particular group.

One can further develop the test by comparing the generational differences in the gap across different ethnic groups as various groups may be subject to different mechanisms for self-employment entry. While intergenerational entrepreneurship transmission rate is also high

for immigrants (Anderson and Hammarstedt 2010), the degree is known to vary across different ethnic groups (Chaudhary 2014, Fairlie and Meyer 1996, Fairlie 1999, Hout and Rosen 2000, Fairlie and Robb 2007). By comparing across ethnic groups, one might gain clarity on whether the smaller gap (i.e. negative entrepreneurship transmission rate for immigrants) represents a stronger influence of the constraints account as proposed.

In particular, I propose that labor market frictions that will be alleviated with language acquisition should matter differentially depending on ethnic group. Language is evidently shown to be an important factor in immigrants' labor market outcomes (Dávila and Mora 2004). One potential proxy for the degree of language deficiency is linguistic distance (Wacziarg and Spolaore 2009, Fearon 2003). Studies show that measures of linguistic distance can more broadly proxy for the degree of labor market frictions such as skill transferability (e.g. Chiswick and Miller 2012, 2014, Imai et al. 2014) or linguistic-cultural differences (Kim and Morgan 2018). Given prior findings that such labor market frictions are alleviated over time (Bleakley and Chin 2010, Kim and Morgan 2018), I propose the following:

Hypothesis 2: The relative difference in the gap between first- and second-generation immigrants is largest among linguistically distant ethnic groups. (i.e. the linguistically distant ethnic groups are the least likely to transmit entrepreneurship.)

Hypothesis 2 suggests that the opportunities available to second-generation immigrants are not bounded by their ability to precisely signal their capabilities as they are more assimilated to the native population. As such possibilities would shape returns to human capital, it is important to consider the incentive to invest in education across ethnic groups.

If linguistic distance is a proxy for skill signaling abilities, a second-generation's likelihood to succeed in getting jobs relative to first-generation, conditional on the level of human capital, will be highest among the most linguistically distant ethnic groups. In other words, if we refer to the difference in wages with and without education as the "wage skill premium", the wage skill premium a second-generation immigrant face relative to his or her parents is greatest for the most linguistically distant ethnic groups. This suggests that the incentive to

invest in the human capital of next generation would be strongest among the linguistically distant ethnic groups, whose first-generation suffers the most from labor market frictions.

This leads to the following:

Hypothesis 3: The linguistically distant immigrants are most likely to invest in the human capital of their second-generation.

The above is consistent with Xie and Goyette (2003) who show how Asian Americans overcome disadvantages by choosing high status occupation which require educational credentials. There may be other forces that shape the human capital investment decision in the other direction, however. Besides the view that education enhances human capital a la Becker (1964), theories on education as a signaling device (e.g. Lang and Manove 2011) may suggest that second-generation obtain lower levels of education—educational attainment may be less valuable as a signal for second-generation as they can better signal their ability given same level of human capital. If Hypothesis 3 does not hold, such theories may provide the reason.

Understanding investment in human capital, in turn, has implications for intergenerational patterns of entrepreneurship. Previous studies on entrepreneurship in general find that the highly educated are more likely to self-employ (e.g. Fairlie and Meyer 1996, Aaronson 1991), but, moreover, human capital importantly interacts with the choice of business lines of new ventures set up by the next generation. In particular, Hvide & Oyer (2018) show how children of entrepreneurs with higher-IQs are less likely to follow the same industry as their parents. Anderson & Hammarstedt (2010) suggest that choosing another industry may reflect risk-taking as they will not have access to sector-specific knowledge of their entrepreneur parents. Levine & Rubinstein (2017, 2018) show how the degree of risky endeavors undertaken is reflected in the incorporation status of businesses.

Provided that the linguistically distant groups are more likely to invest in children's human capital as in Hypothesis 3, together these suggest that linguistically distant immigrants who obtain higher levels of human capital will less likely enter into the same industry as their self-employed parents'. This, in turn, implies that these immigrants will also be more likely to incorporate their businesses relative to their parents.

These imply the following:

Hypothesis 4: Among self-employed, second-generation immigrants, especially those who are highly educated and from the linguistically distant groups, will more likely be incorporated self-employed to the first-generation of their ethnic group.

In the following sections I describe the data, test the above hypotheses and discuss implications of the results.

3 Description of data

The main data set used to test the above predictions is IPUMS March Supplements of the U.S. Current Population Survey ("CPS") for the years 1994 - 2012. The survey report information on individual baseline characteristics such as age, race, educational attainment, as well as those that relate to labor market outcomes, including occupation and industry choices as well as in the case of self-employed whether they choose to incorporate their business.

I restrict my sample to male; prior studies have shown that there are gender differences that are formed based on childhood environment (Chetty et al. 2016) and also studies highlight sibling dynamics that relate to the transmission of entrepreneurship (Mishkin 2018).

To categorize first- and second-generation immigrants and natives we use information about country of birth of individuals as well as their parents'. We identify first- and second-generation immigrants represented from over 150+ countries. While the data does not allow us to link parent to child, we use age groups to define first- and second-generation. Specifically, first-generation immigrants are defined as foreign-born individuals between the age of 50 - 65, who arrived in the U.S. after the age of 20 and lived in the U.S. for more than 25 years; second-generation immigrants are people between the ages of 25 - 40, with a foreign-born parent and are either U.S.-born or a foreign-born who arrived in the U.S. before the age of 5. The corresponding first- and second-generation natives are defined as U.S.-born individuals aged between 50 - 65 and 25 - 40, respectively.

Given that individuals will likely earn more as they age, for the purpose of comparing wages across occupations, I use Bureau of Labor Statistics ("BLS") estimates of occupational characteristics as of 12/19/2013 (Watson 2014) which characterizes occupational earnings profile by Standard Occupational Classification codes. This is different from the reported earnings of the survey[1] in that it informs whether an individual is in a high paying occupation, rather than how much an individual earned working in an occupation.

[Insert Table 1 Here]

Summary statistics of demographics and labor market outcomes of the sample for the study is shown in Table 1. As for racial composition, natives are mostly white-Americans. It is notable that native-Asians, in other words over 3rd-generation Asians, is less than 1%. This is because most Asian immigrants in the U.S. arrived after the passage of the 1965 Immigration Act.

For years of schooling, first-generation immigrants are the least educated and second-generation immigrants are the most educated group. The mean education level for second-generation natives and immigrants seems similar but this is driven by a larger group without a high school degree. When comparing % of college attended, second-generation immigrants is the most educated group.

The rate of self-employment for immigrants is higher than their comparable natives as prior literature suggests. Interestingly, the self-employment rate of second-generation immigrants is lower than that of their native counterparts.

Comparing reported and hourly earnings suggest that first-generation immigrants suffers a labor market discount relative to natives, while second-generation immigrants on the other hand report higher mean earnings than their native counterparts. The fact that the median earnings are similar suggests that while comparable natives are more present in the highest paying jobs, second-generation immigrants may work in better paying jobs on average.

[1] Reported earnings of the survey are CPI-adjusted to 2010 prices.

Occupation annual earnings based on the BLS report allow me to make earnings profile comparison between first- and second-generation within natives and immigrants: for natives, the occupational earnings distribution of first-generation is higher than that of second-generation across all reported percentile measures. Reports for immigrants, on the other hand, suggest that second-generation immigrants are in general in better occupations than the first-generation and furthermore, have a fatter right tail in the earnings distribution. This would be most relevant for the highly educated group.

The baseline comparison I make is intergenerational differences between immigrants and natives. Given that I define first- and second-generation based on the age groups, direct comparison across generations may capture age effects rather than second-generation specific outcomes of self-employment rates or wages.

To overcome this problem, I link a measure of linguistic distance, constructed by Wacziarg and Spolaore (2009), to an individual's father's country of birth. Wacziarg and Spolaore (2009) constructs the population weighted average of linguistic distance at the country level, based on Fearon (2003)'s approach tracing the number of branches two languages are apart in a language tree. The measure is normalized to a number between 0 and 1. De jure and de facto English speaking countries based on the World Fact Book are assigned a mid-value. All natives are assigned 0 for their linguistic distance. This measure has been used to proxy for cultural differences and in particular as a useful summary statistic to explain entrepreneurship patterns across ethnic groups (Kim & Morgan 2018). The linguistic distance measure for first- and second-generation immigrants along with their rate of self-employment is visually summarized in Figure 1.

[Insert Figure 1 Here]

Previous studies have demonstrated the importance of ethnic capital in forming skills of the next generation (Borjas 1992). Sociocultural drivers of entrepreneurship including group level characteristics such as moral values of cultural groups (Zinabou 2017), home-country levels self-employment tendencies (Yuengert 1995), herding behavior (Bernardo & Welch 2001) are known to shape entrepreneurial propensity. I build on these to make systematic comparisons across ethnic groups using the linguistic distance measure.

4 Empirical findings

In this section, I discuss the empirical methodology to test the main predictions regarding patterns of entrepreneurship transmission and investment in human capital. First, I test whether the preference or the constraint account dominates by documenting the native-immigrant self-employment gap difference between first- and second-generation immigrants. Second, I examine the legitimacy of this test by examining the gap difference across ethnic groups who face different degrees of labor market frictions. Third, I investigate patterns of intergenerational changes in investment in human capital depending on the degree of labor market frictions immigrants face. Last, I compare entrepreneurship patterns of immigrants across generations.

4.1 "Preference" vs "Constraints"?

We first test Hypothesis 1 to examine whether the "preference" or the "constraints" account dominate. Comparing immigrants' entrepreneurial tendencies relative to natives between first- and second-generations will suggest the relative influences of preferences and the constraints accounts.

I use linear probability models with an indicator for self-employment as the main dependent variable. I use the following empirical specification to make generational gap comparisons:

$$SelfEmp_i = \beta_0 + \beta_1 SecondGen_i + \beta_2 Immig_i + \beta_3 SecondGen_i \times Immig_i + \beta_4 X_i + \lambda_{FE} + \epsilon_{i,FE} \quad (1)$$

For individual *i*, $SelfEmp_i$ is an indicator for self-employment that takes a value of 1 for self-employment and 0 otherwise. All of the regressions using this dependent variable limits the sample to either salaried or self-employed workers who have worked full-time for the reported year. Hence, the results indicate the propensity to be self-employed rather than to be a salaried employee. $SecondGen_i$ is an indicator for whether the individual is categorized as a child or a parent, primarily based on the age of the individual[2]; $Immig_i$ identifies individuals who are either a first- or a second-generation immigrant; X_i includes individual-

[2] Hence, age is not included for as part of controls.

specific controls, such as race categories and years of education; λ_{FE} denotes major industry, major occupation, year and state fixed effects. Standard errors are clustered at the origin country levels.

In equation (1), the $\beta 1$ coefficient indicates the likelihood of the second-generation to self-employ relative to the first-generation for both natives and immigrant. Given that the data uses different age groups, and as people are more likely to enter self-employment with age (Dunn and Holtz-Eakin 2000), the direction of the coefficient will likely be negative. The $\beta 2$ coefficient suggests the propensity of immigrants to self-employ relative to natives; the direction of the coefficient will likely be positive, given prior studies on higher rate of self-employment among immigrants (Borjas 1986, Clark and Drinkwater 2000, Fairlie and Lofstrom 2014). The main coefficient of interest is $\beta 3$; $\beta 3$ suggests the immigrant-native self-employment gap difference between first- and second-generation immigrants.

[Insert Table 2 Here]

The results are reported in Table 2. Column (2) is the main specification with a full set of controls. Column (1) excludes controls for racial categories; while it is important to control for racial categories as self-employment rates vary significantly across racial groups (Fairlie and Robb 2008), controlling for a racial group such as Asian may leave only a few native comparisons left, hence I test it both with and without racial controls. Column (3) excludes major industry and major occupation controls; prior studies suggest that while entrepreneurs are most likely to follow the same industry group as their parents, Hvide and Oyer (2018) highlight an important role of human capital in sorting second-generation entrepreneurs into a different industry category.

Consistent with prior literature, younger generations (*Second Generation*) are less likely to self-employ and, overall immigrants (*Immigrant Group*) are more likely to self-employ.

The main test for assessing the relative influences of the preferences and constraints accounts is based on the coefficient of the interaction term (*Second Gen x Immigrant Group)*. In columns (1) and (2), the interaction term shows a negative coefficient suggesting that the gap is lower for second-generation immigrants.

The coefficient of the interaction term in column (3), excluding industry and occupation fixed effects, consistently show a negative coefficient, but loses significance. This result is meaningful in light of Andersson and Hammarstedt (2010) who suggest that assessing whether children become self-employed in the same business as their parents imply transfers of specific as well as general human capital for entrepreneurship. The lost in significance suggests that the lower entrepreneurial tendency of second-generation immigrants is more likely to be driven by lower transmission of specific human capital.

The results from column (2) show that first-generation immigrants are 4.8% more likely to self-employ while second-generation immigrants are 1.2% more likely to self-employ relative to their respective native counterparts—in order to assess second-generation immigrants' tendency relative to natives', the coefficients of the *Immigrant Group* term and the interaction term *Second Gen x Immigrant Group* needs to be combined. Considering the base rate of self-employment of 13% for the entire sample, the difference in entrepreneurship transmission rate between immigrant and natives is not trivial—immigrants are 20 – 28% less likely to transmit entrepreneurship relative to natives.

In interpreting the magnitude of these coefficients, it is important to consider the natural drop-off rate in entrepreneurial tendency across generations. Such consideration is necessary as, while the ideal comparison would be the entrepreneurship transmission rate in a parent-child linked sample between immigrants and natives, the gap comparison analysis we conduct is based on cross-sectional data using different age groups. Hence, as a benchmark comparison we use Table 1 from Dunn and Holtz-Eakin (2000), which shows that when a matched parent-child sample representative of the U.S. population is viewed in a cross-sectional manner, the overall rate of self-employment of sons is 18% while that of fathers is 30%. In other words, the natural drop-off rate in self-employment from parent to child is approximately 40%.

Applying the drop-off rate to the gap of first-generation immigrants, suggest that the gap for second-generation immigrants considering the natural gap should be $4.8\% \times 60\% = 2.88\%$. The fact that 1.2% is less than half (about 40%) of 2.88%, suggests that the constraints account dominates the preferences account. These results suggest that while there are views

that first-generation immigrants are more entrepreneurially inclined (Borjas 1986, Borjas 1987, Kerr and Mandroff 2016, Vandor and Franke 2016), when viewed through the proposed multigenerational perspective, immigrants select into self-employment due to lack of alternatives (Becker 1957, Light 1972, Min 1984).

The proposed empirical method is an easily applicable way to understand immigrants' self-employment tendencies. In the next section, I further compare across ethnic groups to investigate whether there are groups that are differentially exposed to the constraints account.

4.2 Labor market frictions and the "Constraints" account

In this section, I investigate heterogeneity in gap differences across ethnic groups. In particular, I test whether ethnic groups that face more readily alleviated constraints are the least likely to transmit entrepreneurship.

I operationalize the degree of labor market frictions ethnic groups face by using the linguistic distance measure constructed by Wacziarg and Spolaore (2009). Previous studies have shown how linguistic distance proxies for skill transferability (Chiswick and Miller 2012, Imai, Stacey and Warman 2014). Kim and Morgan (2018) in particular use the measure to proxy for the inability signal precisely and show how the most highly educated, linguistically distant first-generation immigrants are most likely to disproportionately sort into self-employment. As Kim and Morgan (2018), also suggest that such frictions are alleviated with time spent in the U.S., I use the measure to proxy for frictions that are readily alleviated for second-generation immigrants.

Hypothesis 2 proposes that the most linguistically distant ethnic groups are also the least likely to transmit entrepreneurship. To test this, I first use the same specification as in equation (1), but categorize the sample by subdividing the immigrant sample based on their linguistic distance. Specifically, in Table 3, I show results using all natives and immigrants divided into linguistic distance close and far in columns (1) and (2). Similar to Table 2, the results show that the first-generation immigrants are more likely to select into self-

employment but that the rate of entrepreneurship transmission to the second-generation is lower for immigrants.

[Insert Table 3 Here]

There are two important observations to make, however. First, the rate of entry into self-employment by first-generation immigrants correlates with linguistic distance. Consistent with Kim and Morgan (2018) this suggest that linguistic distance is a summary statistic predicting entry into self-employment across different immigrant groups. Second, the decrease in the immigrant-native self-employment gap in the second-generation is also primarily driven by the linguistically distant ethnic groups. Column (2) suggests that immigrant groups that face more readily alleviated labor market frictions are less likely to transmit entrepreneurship relative to natives.

[Insert Figure 1 Here]

Above analysis is represented in bubble chart form in Figure 1. The size of the bubble represents the size of the ethnic groups, and the self-employment rate is plotted against their linguistic distance. Figure 1.1 plots the first-generation immigrants' and Figure 1.2 plots the second-generation immigrants' self-employment tendencies. As is shown, self-employment tendencies more strongly correlate with linguistic distance for first-generation immigrants.

Figure 2 combines the two figures into one, plotting the marginal rate of self-employment entry by second-generation immigrants relative to the first. The chart plots coefficients of the interaction term between second-generation immigrant status and ethnic group identifiers in the following specification among immigrants:

$$SelfEmp_i = \beta_0 + \beta_1 SecondGen_i + \beta_2 \delta_{co} + \beta_3 SecondGen_i \times \delta_{co} + \beta_4 X_i + \lambda_{FE} + \epsilon_{i,FE} \quad (2)$$

Where δco indicates country level fixed effects and β3 suggests the marginal rate of entry for the respective ethnic groups. β3s for different ethnic groups are plotted in Figure 2:

[Insert Figure 2 Here]

In other words, Figure 2 plots the difference between the two respective bubble charts for first-generation (Figure 1.1) and second-generation immigrants (Figure 1.2). Consistent

with the table above, ethnic groups that are linguistically distant show a more negative marginal rate. This suggests that the more linguistically distant ethnic groups are less likely to transmit entrepreneurship.

I further assess the possibility of ethnicity or race driving this pattern by plotting Figure 2 by continents of origin—Asia, Africa, South American and Europe—in Appendix Figure 1. The negative correlation between linguistic distance and entrepreneurship transmission does not seem to be driven by any particular region, suggesting that linguistic distance proxies for labor market frictions that are not necessarily confined to or correlated with racial or ethnic group biases.

[Insert Appendix Figure 1 Here]

The above analysis across ethnic groups implies that greater labor market constraints leads to lower transmission of entrepreneurship, which is suggested by the decrease in the immigrant-native self-employment gap for second-generation immigrants relative to the first. Under the assumption that second-generation immigrants are less likely to inherit labor market constraints that are alleviated over time, the multigenerational perspective comparing the gap between first- and second-generation immigrants informs us the relative influences of the preferences and the constraints accounts.

4.3 How alleviating labor market constraints shape investment in human capital

Next, I test whether investment in human capital systematically vary with the degree of labor market constraints immigrants face. The above results confirm my assumption that labor market frictions are alleviated for second-generation immigrants. This further suggests that returns to education would be higher for the second-generation, especially for the most linguistically distant ethnic groups.

I run the following specification on a sample of first- and second-generation immigrants:

$$YrsEduc_i = \beta_0 + \beta_1 SecondGen_i + \beta_2 SecondGen \times Ling.Dist_c + \beta_3 X_i + \delta_c + \lambda_{FE} + \epsilon_{i,c,FE} \quad (3)$$

Variables are defined similarly as in equations (1) and (2). The main difference is that this specification includes ethnic group fixed effects, δ_c, and therefore a standalone term for *Ling.Dist.c* is not meaningful. The specification also includes year and state fixed effects.

The dependent variable is years of education; without the interaction term the $\beta 1$ coefficient will indicate the additional years of schooling second-generation immigrants obtain within ethnic groups. With the interaction term, the $\beta 2$ coefficient would suggest whether there are any differential effects with respect to linguistic distance. Regression results are shown in Table 4.1.

[Insert Table 4.1 Here]

Consistent with Hypothesis 3 we find that second-generations are more educated overall, and moreover, that the education gap between first- and second-generation immigrants are largest among the more linguistically distant ethnic groups. Column (1) suggests that in general, second-generation immigrants are likely to obtain ~1.7 more years of education. The interaction term in column (2) suggests that the additional years of schooling is primarily driven by the most linguistically distant groups, where the second-generation immigrants from the most linguistically distant ethnic groups are likely to obtain ~2.7 more years of education. Considering the mean education years of 13.1 years, with a standard deviation of 3.2, this is a nontrivial difference.

Above analysis is represented in bubble charts in Figure 2.2. I use the rate of college education Similar as in Figure 2.1, the chart represents the marginal difference in college education rate between second- and first-generation immigrants. Consistent with the table above, ethnic groups, represented by each bubble, that are linguistically distant show a more positive marginal rate. It is interesting to note how the pattern flips between marginal rate of self-employment and investment in human capital.

Now, then even without the linguistic distance measure we can plot each of the Y-axis from Figure 2.1 and Figure 2.2 against each other. This is shown in Figure 3. Consistent with what we were previously observing, the bubbles are showing a negative relationship between marginal changes in self-employment and marginal changes in education.

[Insert Figure 3 Here]

While I do not causally identify how different entrepreneurial motives of parents' affect educational attainment and entrepreneurship patterns of their children, the negative relationship shown in Figure 3 is consistent with the story that first-generation immigrants that are most likely to be pushed into self-employment make more investments in their children's human capital.

The rationale for a higher investment in human capital after removal of socio-cultural barriers by the most linguistically distant ethnic groups was that the relative "wage skill premium" is highest for the immigrant groups that suffer most from labor market frictions. I test this using BLS estimates of occupational characteristics as of December 2013. The specification is as follows:

$$OccCharac_i = \beta_0 + \beta_1\, SecondGen_i + \beta_2\, SecondGen \times Ling.Dist_c + \beta_3\, EducCat_i + \beta_4\, X_i + \delta_c + \lambda_{FE} + \epsilon_{i,c,FE} \quad (4)$$

The dependent variable is wage characteristics estimated for each standard occupation category by the BLS (Watson 2014), including mean wages and wages at different percentiles. These BLS estimates allow me to compare first- and second-generation immigrants' earnings profile based on the occupation that they are in rather than making comparison across different age groups. Similar to equation (3) I include ethnic group fixed effects, δ_c, control for five education categories—below high school, high school dropouts, high school graduates, some college and college and above, control for race categories and include year and state fixed effects as well.

Given that education categories are controlled for, comparison of intergenerational changes in wage skill premium across different ethnic group is captured by the $\beta 2$ coefficient. If investments in human capital were made in expectation of higher returns to education, $\beta 2$ would be positive. In other words, this allows me to test whether intergenerational changes in wage skill premium is larger for linguistically distant ethnic groups.

[Insert Table 4.2 Here]

The results are shown in Table 4.2; results using hourly wage estimates produce very similar results. As expected higher education lead individuals within the same ethnic group in to better paying jobs. The effects of being a second-generation immigrant relative to first-generation can be understood by combining coefficient $\beta 1$ and $\beta 2$. The opposite directions of the coefficients suggest that second-generation immigrants overall are not necessarily in better paying occupations relative to first-generation immigrants of the same ethnic groups. This is only suggestive, however, as the second-generation immigrants are of a younger age group and overtime workers get promoted to higher paying occupations and thus first- and second-generation earning profiles are not directly comparable. Hence, I use ethnic group fixed effects to compare the gap between first- and second-generation across ethnic groups.

Comparing across ethnic groups through the coefficient of the interaction term suggest that first- to second-generation changes in occupational earnings characteristics is different across ethnic groups and largest for the linguistically distant. In other words, intergenerational changes in wage skill premium and is highest for the most linguistically distant. Interestingly, the coefficient of the interaction term is strongest between the 25th and 75th percentile, while losing significance in the 90th percentile. These suggest that second-generation immigrants realize the highest wage skill premium in occupations that have higher average pay than those with highest earning potentials.

4.4 Immigrant entrepreneurship across generations

I now test Hypothesis 4 which questions whether investment in human capital shape intergenerational changes in the rate of business incorporation differently across ethnic groups. The prediction is that the highly educated linguistically distant second-generation immigrants will more likely incorporate their businesses relative to their parents. I run variations of the following specification for a sample of self-employed first- and second-generation immigrants:

$$Inc.SelfEmp_i = \beta_0 + \beta_1\, SecondGen_i + \beta_2\, LingDistCat_c + \beta_3\, SecondGen \times LingDistCat_c + \beta_4\, EducCat_i + \lambda_{FE} + \epsilon_{i,c,FE} \quad (5)$$

The dependent variable is an indicator that takes a value of 1 if the self-employed business is incorporated, 0 if unincorporated. Other variables are similar to previously defined

specifications. Our main coefficients of interest are whether second-generation immigrants are more likely to incorporate their businesses ($\beta 1$) and whether this effect is particularly larger for ethnic groups that are more linguistically distant ($\beta 3$) and among the more highly educated.

[Insert Table 5 Here]

Results are reported in Table 5. Columns (1) and (2) are based on all first- and second-generation immigrants who are self-employed; Columns (3) and (4) subsample the group to highly-educated.

Results suggest that while second-generation immigrants are not statistically more likely to incorporate their businesses, the highly-educated second-generation from linguistically distant ethnic groups are more likely to incorporate their businesses. One thing to note is that the results are similar but coefficients become insignificant when a continuous measure of linguistic distance is used instead of the linguistic distance categorical variable. This is primarily because Hispanics are the largest group driving the effect; their dominant presence weaken the positive effects with regards to linguistic distance. While results are only partially statistically robust, the results are directionally consistent with the predictions of hypothesis 4.

[Insert Figure 4 Here]

The results are also visually represented in Figure 4. I plot the rate of business incorporation for first- and second-generation immigrants across ethnic groups categorized by their linguistic distance. The top table uses all first- and second-generation immigrant self-employed, corresponding to columns (1) and (2) of Table 5; the middle table is based on a subsample of immigrants with college education, corresponding to columns (3) and (4) of Table 5; the bottom table is for a subsample of immigrants without college education.

Visual inspection verifies that the second-generation immigrants are more likely to incorporate their business than their first-generation, but more importantly, this relative increase is particularly large among the more highly educated.

These results suggest that entrepreneurship patterns shift across generation and depending on investment in human capital. Relative to Kim & Morgan (2018) who suggest that there is talent misallocation sorting highly educated first-generation into self-employment, my results are suggestive that perhaps a more informed matching between workers and jobs by alleviating frictions for the second-generation immigrants, making them less-likely to self-employ, but at the same time make them more prone to incorporate their businesses conditional on entering self-employment. To the extent that incorporated self-employed suggests the entrepreneurial nature of the businesses (Levine and Rubinstein 2017, 2018), these results suggest that the second-generation immigrants are more likely to be opportunity-based entrepreneurs relative to their first-generation parents who start businesses out of necessity owing to labor market constraints. This reinforces my view that the labor market constraints account for the dominant driver for first-generation immigrant entrepreneurship.

5 Alternative mechanisms

I proposed that the removal of socio-cultural barriers towards second generation lead to a negative transmission rate (relative to natives) and show how higher wage skill premium may drive different incentives to invest in human capital. In this section, I examine what potential alternative mechanisms may be driving the patterns I observe.

5.1 Regression towards the mean of biologically predisposed tendencies

I revisit the negative entrepreneurship transmission rate of immigrants and probe the possibility that this may be driven by regression towards the mean. One of the commonly discussed mechanism for occupational and entrepreneurial transmission is biological predisposition (Lindquist et al. 2015). If there is regression towards the mean of biologically predisposed entrepreneurial tendencies, however, it may not be feasible to disentangle the preference vs constraints accounts by viewing the immigrants' entrepreneurship transmission rate relative to natives', as preference account may very well dominate but perhaps not transmitted to the second-generation. In other words, if first-generation

immigrants are a more self-selected group of entrepreneurial people, the difference in the predisposition of entrepreneurial tendencies of second-generation may be larger relative to a native group. This, rather than labor market constraints, may be driving the lower entrepreneurship transmission rate for immigrants.

Previous studies have shown that regression towards the mean would affect the linguistically distant the least as distinct ethnic capital would slow the process of convergence (Borjas 1992). Nevertheless, if biologically inherited entrepreneurial tendencies are the main drivers of intergenerational entrepreneurship transmission, we should expect to see similarities in the occupational choices as well as employment status choices. Analyses from the previous section, however, show that the linguistically distant second-generation immigrants, who are the least subject to regression towards the mean, sort into higher paying occupations relative to their parents. This provides suggestive evidence that regression towards the mean is not a driving factor generating the negative entrepreneurship transmission among immigrants.

5.2 Heterogeneity in future orientation and investment in human capital

I probe alternative mechanisms that may drive higher relative investment in human capital among the linguistically distant. First-generation immigrants may be more willing to make intergenerational tradeoffs given their cultural beliefs or context of immigration. I discuss whether there are differences in future orientation that may drive investment in human capital differently, and also examine whether immigrants who were forced to migrate have different incentive to invest in education.

I first examine the possibility that immigrants' future orientation rather than alleviation of labor market frictions drive investment in human capital. Figlio et al. (2016) show how long-term orientation of country of origin could affect parental investment in education as well as student performance from that country. I use the GLOBE survey (Grove 2005) which provides a measure of Future Orientation for 62 countries to test this conjecture. High future orientation would suggest a lower discount rate for the future, suggesting that the first-generation parent may be willing to sacrifice more for his children.

To examine changes in investment in human capital across ethnic groups I rerun the specification in equation (3), including the Future Orientation measure in lieu of the linguistic distance measure. Results shown in Appendix Table 2, suggest that ethnic groups with future orientation are less likely to invest in education.

[Insert Appendix Table 2 Here]

Linguistic distance may correlate with differences in institutions or may proxy for genetic or geological difference (Wacziarg and Spolaore 2009). An ethnic group with higher linguistic distance may be willing to make more sacrifices for the future as they paid a higher cost to immigrate. My results show, however, that linguistic distance does not capture systematic differences in future discount that affects investment in human capital.

Second, diaspora hypothesis suggests how immigrants may be more willing to make investments in education, as it is a transferrable capital (Brenner and Kiefer 1981). If immigrants have different future orientation because of context of their immigration, the diaspora hypothesis would suggest that those whose parents were forced to migrate will likely have higher levels of education (Becker et al. 2018). I plan to examine this by comparing education levels of second-generation immigrants depending on the likelihood that their parents' generation was forced to migrate (e.g. Vietnamese boat people).

Also, to further investigate whether immigrants from the most linguistically distant ethnic groups have different risk preferences, I plan to potentially conduct an Amazon M-turk survey to examine whether risk preferences or tendencies to delay gratification vary across generations and across different ethnic groups, for example.

6 Discussion: Do immigrants achieve upward social mobility across generations?

In Section 4.3, I show how the relative occupational earnings profile between first- and second-generation immigrants is largest for the more linguistically distant ethnic groups.

This suggests that the returns to education by the linguistically distant ethnic groups are realized by sorting into better paying occupations.

I compare percentile groups of income between immigrants and natives and across first- and second-generation. Second-generation immigrants outperform their native counterparts as suggested by the statistically significant and positive coefficients of the interaction term. In particular, such outperformance is greater in the top earning percentiles. This is suggested in the summary statistics in Table 1, but I formally run the analysis in Appendix Table 1. The coefficients of the interaction term confirm the descriptive statistic from Table 1: the second-generation immigrants are more likely to sort into higher paying occupations than their native counterparts, and the differences are largest among occupations with the highest pay.

[Insert Appendix Table 1 Here]

Socioeconomic mobility, however, may also be achieved by decreasing the immigrant-native earnings gap within occupations. To examine this possibility, I conduct a residual wage gap analysis of immigrants relative to natives and compare the wage gap across generation, to assess whether immigrants are better paid within occupations across generations. The residual wage gap analysis predicts immigrants' hypothetical wage based on natives' predicted coefficients from a Mincerian regression with industry and occupation fixed effects.

The results are reported in Figure 5. Second generation immigrants reach earnings parity with their native counterparts.[3] Overall, they decrease the hourly wage gap that first-generation immigrants face by $1.80, on average.

[Insert Figure 5 Here]

The above results suggest that immigrants achieve upward social mobility by not only sorting into better occupations but also by reducing earnings disparity within occupations.

[3] Relative to native-whites, second-generation immigrants suffer an hourly earnings gap of ($1.30).

7 Conclusion

In this paper, I study the underlying tendencies for why immigrants are more likely to run businesses than natives. This study serves two purposes by studying generational patterns of entrepreneurship: 1) I assess whether preference or constraints is the dominant effect in immigrant entrepreneurship; and 2) I investigate investment in human capital as one channel with which immigrants achieve upward social mobility and highlight changes in employment choices of second-generation immigrants.

My results show that i) the self-employment gap is smaller for second-generation immigrants than first-generation; ii) the linguistically distant ethnic groups are the least likely to transmit entrepreneurship suggesting market frictions as the main source of constraints that is driving the pattern; iii) this group is also most likely to invest in their children's education leading second-generation immigrants to sort into higher paying jobs and perform better within occupations; and iv) while investment in education crowds out entrepreneurship, conditional on entry second-generation immigrants are more likely to own businesses with higher growth potential. The set of empirical results I find is consistent with the story that the first-generation immigrants who enter self-employment owing to disadvantages in the labor market, make investment in human capital of their children, to achieve upward social mobility over time.

Understanding the dominance between preference vs constraints would lead to different policy recommendations. My results suggest that there are more to benefit from policies that alleviate market frictions for firms to better identify foreign talent than those providing resources for potential entrepreneurs.

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Empirical Supplements

Table 1. Demographics and Labor Market Outcomes by nativity and generation status

	Natives		Immigrants	
	1st Gen (parents)	2nd Gen (child)	1st Gen (parents)	2nd Gen (child)
Observations	114,683	202,806	7,209	17,631
Demographics				
Average age	55	33	56	32
% White	89%	85%	27%	35%
% Black	8%	11%	8%	4%
% Hispanic	2%	4%	37%	47%
% Asian	0.5%	0.5%	29%	14%
Years of Schooling	14.0	13.9	13.0	13.9
% HS degree	31%	34%	25%	28%
% College degree	62%	61%	53%	64%
Labor Market Outcomes				
% Self-employed	18%	10%	19%	9%
% Incorporated	8%	4%	9%	4%
Mean earnings ($)	73,466	58,181	68,113	59,504
Median earnings ($)	55,000	46,348	45,738	46,181
Mean hourly earnings ($)	31.1	24.7	29.2	25.5
Median hourly earnings ($)	24.2	20.1	20.7	20.5
Occupation annual earnings ($)				
Mean	62,130	57,013	57,789	58,226
P10	32,997	30,986	31,561	31,571
P25	42,859	39,716	40,524	40,492
P50	57,109	52,391	52,831	53,294
P75	69,596	66,245	61,236	66,431
P90	83,024	78,013	74,094	78,250
Region of ethnic origin				
Latin America	-	-	10%	7%
Southeast Asia	-	-	12%	7%
Northeast Asia	-	-	9%	6%
Bangladesh, Pakistan, etc.	-	-	2%	0%
Middle East & Egypt	-	-	4%	2%
Western Europe & Canada	-	-	13%	21%
Eastern Europe & Russia	-	-	6%	6%
Caribbean + Cuba	-	-	13%	17%
Africa	-	-	2%	1%
Mexico	-	-	19%	27%
India	-	-	7%	2%
Other	-	-	3%	3%

Source: March Supplements of the Current Population Survey, 1994 - 2012, BLS estimates (Watson 2014)
Notes: Sample includes first- and second-gen, native and immigrant males, who worked full-time for the survey year.
First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Natives first-gen (second-gen) defined as US-born individuals aged between 25 - 40 (50 - 65).
Calculations weighted using the population weights provided.

Table 2. Immigrants' entrepreneurship transmission rate relative to natives'

	Self-employment (vs Salaried)		
	(1)	(2)	(3)
Second Generation	-0.081***	-0.079***	-0.081***
	(0.000)	(0.000)	(0.000)
Immigrant Group	0.033*	0.048***	0.045***
	(0.018)	(0.015)	(0.017)
Second Gen x Immigrant Group	-0.037**	-0.036**	-0.027
	(0.015)	(0.016)	(0.017)
Years of education	0.003***	0.002***	0.002***
	(0.001)	(0.000)	(0.000)
Controls for race		✓	✓
Control for major industry and occupation	✓	✓	
Fixed effects	✓	✓	✓
Number of Observations	341806	341806	341806
Base rate of self-employment		13%	
Selection effect into self-employment			
1st-gen immig relative to U.S.-born	25%	36%	34%
2nd-gen immig relative to U.S.-born	-3%	9%	14%

Source: March Supplements of the Current Population Survey, 1994 - 2012
Notes: Tests linear propensities to self-employ; Sample includes male, first- and second-generation immigrants and natives,who worked full-time full-year in the survey year.
First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Natives first-gen (second-gen) defined as US-born individuals aged between 25 - 40 (50 - 65).
Second Generation denotes generation category (based on age group), Immigrant Group is an indicator for either first- or second-generation immigrant; hence, Second Gen x Immigrant Group suggest immigrants' self-employment transmission rates relative to natives'.
Column (1) excludes four race categories -- (Non-hispanic) White, Black, Hispanic and Asian -- as controls.
Column (3) excludes major industry and major occupation fixed effects.
Fixed effects include year and state categories and industry and occupation categories for columns (1) and (2).
Standard errors, clustered at the origin country level, are reported in paranthesis.
*, **, and *** indicate significant at 10%, 5% and 1%, respectively.
Calculations weighted using the population weights provided.

Table 3. Immigrants' selection into self-employment relative to natives'

	Self-employment (vs Salaried)	
Immigrant subsample:	**Linguistically close**	**Linguistically distant**
	(1)	(2)
Second Generation	-0.079***	-0.079***
	(0.000)	(0.000)
Immigrant Group	0.015	0.097***
	(0.014)	(0.020)
Second Gen x Immigrant Group	-0.009	-0.080***
	(0.016)	(0.020)
Years of education	0.002***	0.001***
	(0.000)	(0.000)
Controls for race	✓	✓
Fixed effects	✓	✓
Number of Observations	333944	325266
Base rate of self-employment	13%	13%
Selection effect into self-employment		
1st-gen immig relative to U.S.-born	n/a	72%
2nd-gen immig relative to U.S.-born	n/a	13%

Source: March Supplements of the Current Population Survey, 1994 - 2012

Notes: Tests linear propensities to self-employ; Sample includes male, first- and second-generation immigrants and natives,who worked full-time full-year in the survey year. Column (1) uses a subsample of immigrant groups with linguistic distance less than the 50th perc., column (2) uses immigrant subsample with linguistic distance larger than the 50th perc. within immigrants.

First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.

Natives first-gen (second-gen) defined as US-born individuals aged between 25 - 40 (50 - 65).

Second Generation denotes generation category (based on age group), Immigrant Group is an indicator for either first- or second-generation immigrant; hence, Second Gen x Immigrant Group suggest immigrants' self-employment transmission rates relative to natives'.

Controls for race include four categories -- (Non-hispanic) White, Black, Hispanic and Asian. Fixed effects include year, state, industry and occupation categories. Standard errors, clustered at the origin country level, are reported in paranthesis. *, **, and *** indicate significant at 10%, 5% and 1%, respectively.

Calculations weighted using the population weights provided.

Table 4.1. Linguistic distance and investment in human capital among immigrants

	Years of education	
	(1)	(2)
SecondGen Immigrant	1.690***	-0.615***
	(0.041)	(0.227)
SecondGen x Linguistic Distance		2.700***
		(0.267)
Race controls (vs (Non-hispanic) White)		
Black	-0.538***	-0.585***
	(0.163)	(0.171)
Hispanic	-0.870***	-0.858***
	(0.095)	(0.095)
Asian	0.352***	0.344***
	(0.125)	(0.125)
Ethnic origin country fixed effects	✓	✓
Year and State fixed effects	✓	✓
Number of Observations	35088	34966
Education summary statistic		
Sample mean		13.1
Sampe standard deviation		3.2

Source: March Supplements of the Current Population Survey, 1994 - 2012
Notes: Tests educational attainment of second-generation immigrants relative to their parents' generation within the same ethnic groups; Sample includes male, first- and second-generation immigrants who worked full-time full-year. First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Dependent variable is years of education. Linguistic Distance is a continuous measure based on father's birthplace.
Standard errors clustered at the occupation level reported in paranthesis.
*, **, and *** indicate significant at 10%, 5% and 1%, respectively.
Calculations weighted using the population weights provided.

Table 4.2. Linguistic distance and intergenerational changes in occupational earnings characteristics

	Annual wage estimate of occupation ($)					
	Mean	**P10**	**P25**	**P50**	**P75**	**P90**
	(1)	(2)	(3)	(4)	(5)	(6)
SecondGen Immigrant	-6801*	-2250	-3807	-5772*	-2613	-1543
	(3998)	(1814)	(2643)	(3397)	(2666)	(3385)
SecondGen x Linguistic Distance	7984**	2493*	4129**	6662**	6723**	4284
	(3068)	(1414)	(2032)	(2694)	(2850)	(3639)
Education categories						
HS dropouts	1507	543	938	1354	402	1578
	(1089)	(482)	(698)	(922)	(920)	(1059)
HS grad	5367***	2420***	3638***	5014***	5053***	6801***
	(1074)	(471)	(689)	(881)	(806)	(1131)
Some college	13189***	5958***	8701***	12187***	13951***	15280***
	(1824)	(798)	(1171)	(1552)	(1667)	(2205)
College and above	38061***	17349***	24813***	34445***	36805***	41092***
	(4436)	(1953)	(2883)	(3658)	(2242)	(3105)
Ethnic origin country fixed effects	✓	✓	✓	✓	✓	✓
Year and State fixed effects	✓	✓	✓	✓	✓	✓
Controls for race	✓	✓	✓	✓	✓	✓
Number of Observations	30191	30182	30182	30182	29419	27779
Occupation earning characteristic summary statistic						
Sample mean	55177	30218	38573	50478	62013	74141
Sampe standard deviation	33019	15199	21687	29559	30797	34443

Source: March Supplements of the Current Population Survey, 1994 - 2012, BLS estimates (Watson 2014)
Notes: Compare relativeoccupational earning characteristics between first and second generation immigrants across linguistic distance; Sample includes male, first- and second-generation immigrants who worked full-time full-year. First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Dependent variables are occupational characteristics based on BLS estimates as of December 2013.
Linguistic Distance is a continuous measure based on father's birthplace. All specifications include year and state fixed effects as well as controls for four race categories -- (Non-hispanic) White, Black, Hispanic and Asian.
Standard errors clustered at the industry level reported in paranthesis.
*, **, and *** indicate significant at 10%, 5% and 1%, respectively.
Calculations weighted using the population weights provided.

Table 5. Rate of incorporation among self-employed first- and second-gen immigrants

	Incorporated (vs Unincorporated)			
	All		Highly educated	
	(1)	(2)	(3)	(4)
Second Generation	0.013	-0.073	0.052	-0.14
	(0.025)	(0.069)	(0.033)	(0.096)
Linguistic Distance far ("LD far")		0.030		-0.024
		(0.038)		(0.050)
Second Generation x LD far		0.061		0.125**
		(0.044)		(0.057)
Controls for education categories	✓	✓	✓	✓
Fixed effects	✓	✓	✓	✓
Number of Observations	3638	3629	2192	2190
Base rate of incorporation among SE	46%			

Source: March Supplements of the Current Population Survey, 1994 - 2012
Notes: Tests propensities to incorporate businesses among self-employed first- and second-generation immigrants; Sample includes male, first- and second-generation immigrants ,who worked full-time full-year in the survey year. First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Columns (3) and (4) compare among a subsample with college education.
LD far categorize ethnic groups with Ling. Dist. above the 50th percentile; Ling. Dist. based on father's birthplace
Fixed effects include year, state, major industry and occupatoin categories.
Standard errors clustered at the ethnic origin country reported in paranthesis.
*, **, and *** indicate significant at 10%, 5% and 1%, respectively.
Calculations weighted using the population weights provided.

Figure 1 Self-employment rate of first- and second-generation immgirants by ethnic group

Figure 1.1 First-generation % self-employed

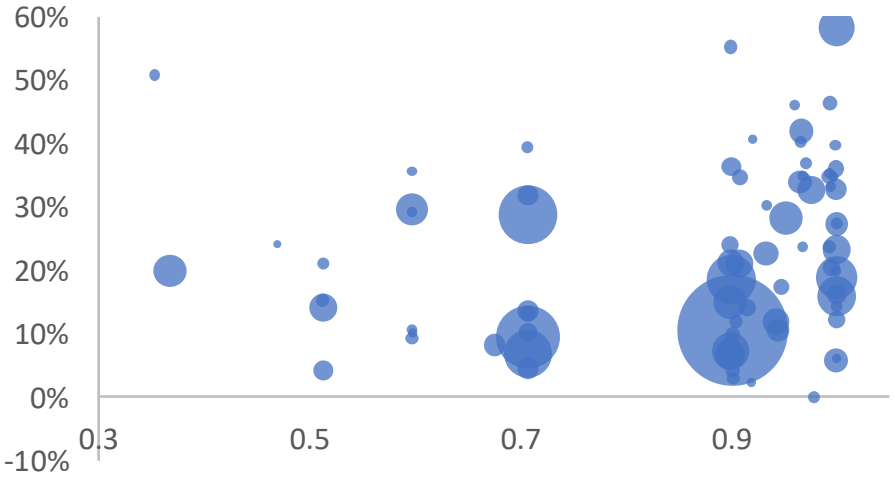
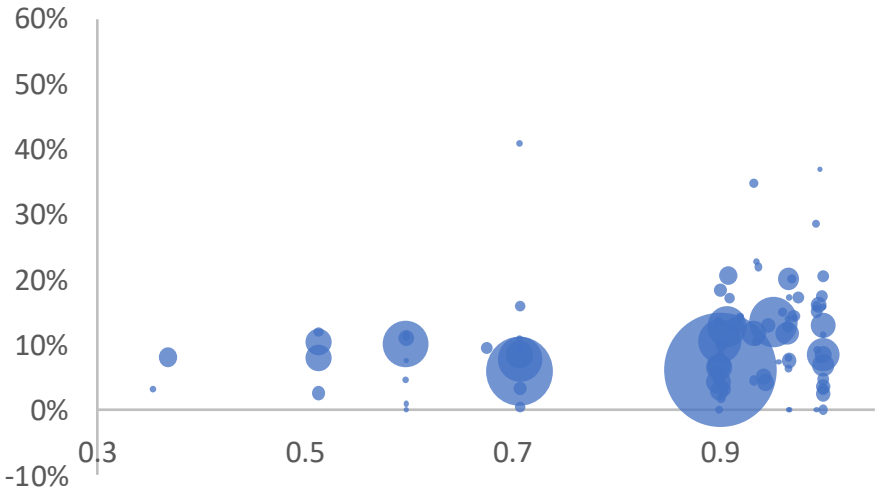


Figure 1.2 Second-generation's % self-employed



Source: March Supplements of the Current Population Survey, 1994 - 2012, Spolaore & Wacziarg (2009)
Notes: Standardized distance measures between 0 and 1; For linguistic distance, assigned mid-value for de jure English speaking countries, based on the Central Intelligence Agency's World Factbook.
Plots rate of self-employment for first-generation immigrants (Figure 1.1) and second-generation immigrants (Figure 1.2) by ethnic groups ordered by countries' linguistic distance .
Sample includes male, first- and second-generation immigrants ,who worked full-time full-year in the survey year.
First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Standard errors, clustered at the origin country level, are reported in paranthesis.
*, **, and *** indicate significant at 10%, 5% and 1%, respectively.
Calculations weighted using the population weights provided.

Figure 2 Generational comparison of educational attainment and linguistic distance by ethnic group

Figure 2.1 Second-generation's marginal rate (%) of self-employment relative to first-generation

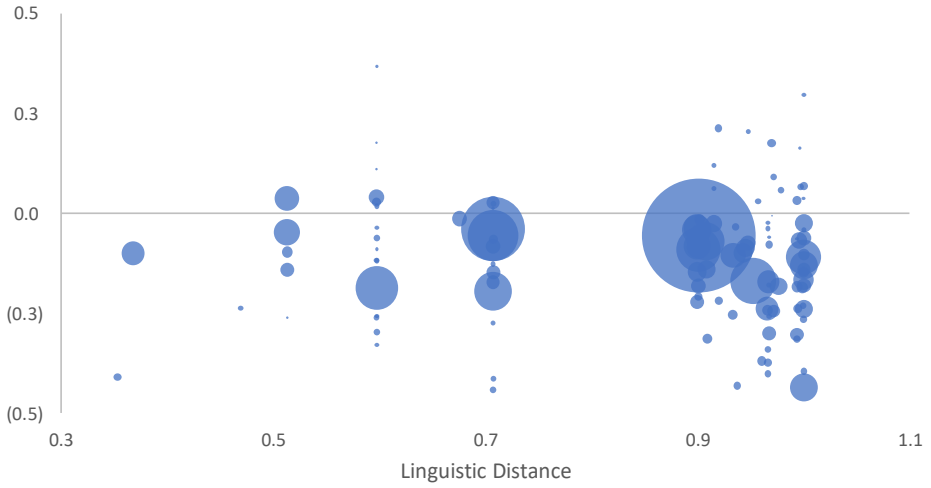
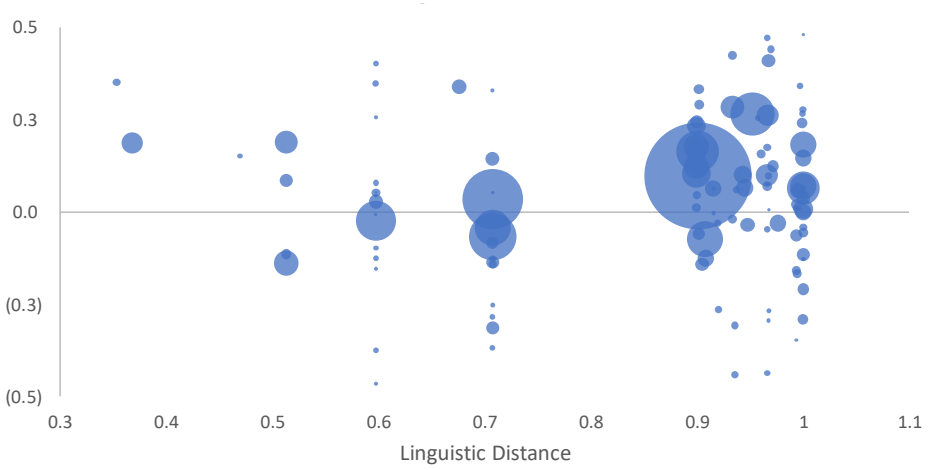


Figure 2.2 Second-generation's marginal rate (%) of college education relative to first-generation

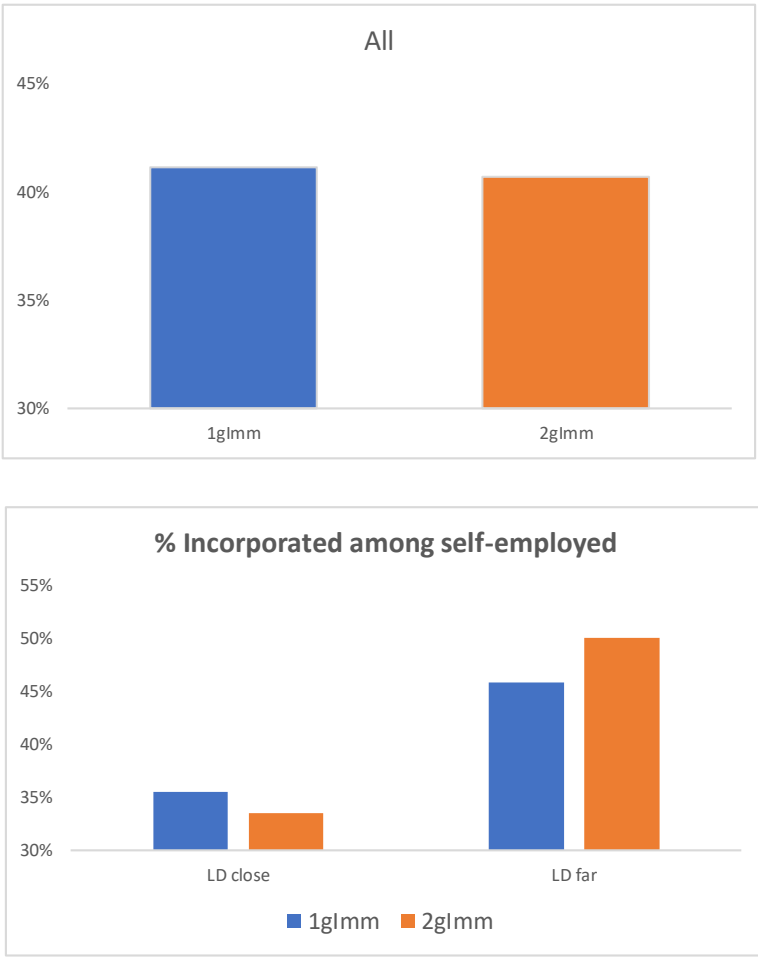


Source: March Supplements of the Current Population Survey, 1994 - 2012, Spolaore & Wacziarg (2009)
Notes: Standardized distance measures between 0 and 1; For linguistic distance, assigned mid-value for de jure English speaking countries, based on the Central Intelligence Agency's World Factbook.
Plots coefficient of regression analyses testing linear propensities to self-employ (Figure 2.1) against college education (Figure 2.2).
Regression includes ethnic group fixed effects, plotted bubble charts represent the marginal rate of second-generation immigrant over first-generation immgirant.
Sample includes male, first- and second-generation immigrants ,who worked full-time full-year in the survey year.
First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Standard errors, clustered at the origin country level, are reported in paranthesis.
*, **, and *** indicate significant at 10%, 5% and 1%, respectively.
Calculations weighted using the population weights provided.

Figure 3 Generational comparison of self-employment rate vs educational attainment by ethnic groups

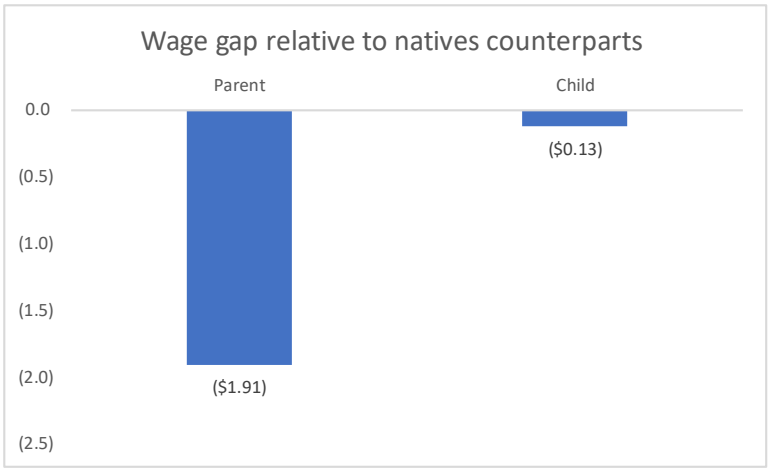
Source: March Supplements of the Current Population Survey, 1994 - 2012
Notes: Standardized distance measures between 0 and 1; For linguistic distance, assigned mid-value for de jure English speaking countries, based on the Central Intelligence Agency's World Factbook.
Plots coefficient of regression analyses testing linear propensities to self-employ (Figure 2.1) against college education (Figure 2.2).
Regression includes ethnic group fixed effects, plotted bubble charts represent the marginal rate of second-generation immigrant over first-generation immgirant.
Sample includes male, first- and second-generation immigrants ,who worked full-time full-year in the survey year.
First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Standard errors, clustered at the origin country level, are reported in paranthesis.
*, **, and *** indicate significant at 10%, 5% and 1%, respectively.
Calculations weighted using the population weights provided.

Figure 4 Rate of incorporation among self-employed



Source: Current Population Survey, 1994 - 2012
Notes: Tests propensities to incorporate businesses among self-employed first- and second-generation immigrants; Sample includes male, first- and second-generation immigrants ,who worked full-time full-year in the survey year.
Top figure summarizes the entire sample; bottom figure subsamples immigrants by lingusitic distance
First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
LD far categorize ethnic groups with Ling. Dist. above the 50th percentile; Ling. Dist. based on father's birthplace
Calculations weighted using the population weights provided.

Figure 5 Immigrants' wage gap relative to natives, within occupations



Source: Current Population Survey, 1994 - 2012
Notes: Plots residual wage gap between immigrants and natives by first- and second-generation immigrants. Residual wage gap analysis conducted by predicting immigrants' hypothetical wage based on natives' predicted coefficients from a Mincerian regression, which includes industry and occupation fixed effects.
Calculations weighted using the population weights provided.

Appendix

A.Table 1. Intergenerational changes in occupational earnings characteristics relative to natives

	Annual wage estimate of occupation ($)					
	Mean	**P10**	**P25**	**P50**	**P75**	**P90**
	(1)	(2)	(3)	(4)	(5)	(6)
SecondGen Immigrant	-10056***	-3320***	-5619***	-8883***	-6105***	-8353***
	(733)	(382)	(525)	(595)	(254)	(385)
Immigrant Group	-1538	-297	-598	-1604	-4057***	-4030***
	(1116)	(503)	(730)	(974)	(896)	(1222)
SecondGen x Immigrant Group	3552***	1218***	1937***	3366***	5445***	5715***
	(778)	(356)	(504)	(691)	(767)	(997)
Education categories (vs below HS)						
HS dropouts	1927***	854***	1300***	1741***	1207***	1621***
	(279)	(115)	(174)	(232)	(204)	(269)
HS graduates	7144***	3222***	4796***	6682***	7027***	7854***
	(268)	(121)	(178)	(228)	(213)	(277)
Some college	15072***	6900***	10056***	14074***	16235***	17604***
	(260)	(118)	(170)	(221)	(216)	(256)
College and above	36105***	16276***	23387***	33011***	37333***	40986***
	(386)	(193)	(270)	(328)	(231)	(346)
Race categories (vs White)						
Black	-10080***	-4291***	-6344***	-9241***	-10671***	-11494***
	(67)	(43)	(50)	(69)	(127)	(128)
Hispanic	-6328***	-2639***	-3917***	-5708***	-6334***	-6897***
	(640)	(288)	(423)	(568)	(587)	(741)
Asian	1187	1348	1643	1112	-1615	-1514
	(2071)	(975)	(1354)	(1805)	(1350)	(1576)
	✓	✓	✓	✓	✓	✓
Year and State fixed effects	✓	✓	✓	✓	✓	✓
Controls for race	✓	✓	✓	✓	✓	✓
Number of Observations	341188	341088	341088	341088	333627	308207
Occupation earning characteristic summary statistic						
Sample mean	59065	31825	41009	54290	67545	80170
Sampe standard deviation	31087	14231	20239	28359	30480	33942

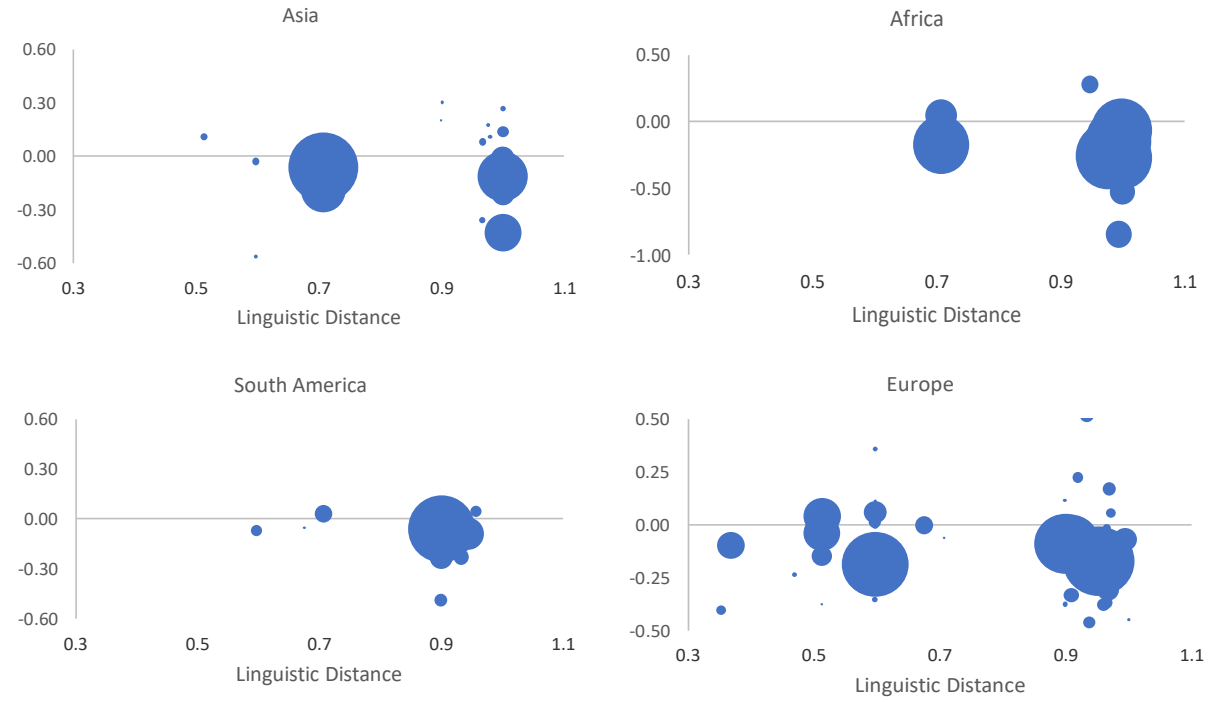
Source: March Supplements of the Current Population Survey, 1994 - 2012, BLS estimates (Watson 2014)
Notes: Compare occupational earning characteristics first- and second- generation immigrants against corresponding natives; Sample includes male, first- and second-generation immigrants and natives who worked full-time full-year. First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Natives first-gen (second-gen) defined as US-born individuals aged between 25 - 40 (50 - 65).
Dependent variables are occupational characteristics based on BLS estimates as of December 2013.
All specifications include age, year, state and industry fixed effects.
Standard errors clustered at the ethnic origin country level reported in paranthesis.
*, **, and *** indicate significant at 10%, 5% and 1%, respectively.
Calculations weighted using the population weights provided.

A.Table 2 . Future orientation and investment in human capital among immigrants

	Years of education	
	(1)	(2)
SecondGen Immigrant	1.847***	7.589***
	(0.173)	(0.670)
SecondGen x GLOBE Future Orientation		-1.487***
		(0.188)
Ethnic origin country fixed effects	✓	✓
Race category controls	✓	✓
Year and State fixed effects	✓	✓
Number of Observations	24180	24180
Education summary statistic		
Sample mean		13.1
Sampe standard deviation		3.4

Source: March Supplements of the Current Population Survey, 1994 - 2012
Notes: Tests educational attainment of second-generation immigrants relative to their parents' generation within the same ethnic groups; Sample includes male, first- and second-generation immigrants who worked full-time full-year. First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Dependent variable is years of education.
Standard errors clustered at the occupation level reported in paranthesis.
*, **, and *** indicate significant at 10%, 5% and 1%, respectively.
Calculations weighted using the population weights provided.

A. Figure 1. Self-employment rate of first- and second-generation immgirants by ethnic group, by continent of origin



Source: March Supplements of the Current Population Survey, 1994 - 2012, Spolaore & Wacziarg (2009)
Notes: Standardized distance measures between 0 and 1; For linguistic distance, assigned mid-value for de jure English speaking countries, based on the Central Intelligence Agency's World Factbook.
Plots marginal rate of self-employment entry by second-generation immigrants relative to first (Figure 2.1), by continent of origin.
Mexico in South American is scaled down to its 10% level, to make patterns more visible.
Sample includes male, first- and second-generation immigrants ,who worked full-time full-year in the survey year.
First-generation immigrants are foreign-born who arrived in the US after the age of 20 and lived in the US for more than 25 years aged between 50 - 65; second-generation immigrants are people aged between 25 - 40 with a foreign-born parent and are either US-born, or foreign-born who arrived in the US before the age of 5.
Standard errors, clustered at the origin country level, are reported in paranthesis.
*, **, and *** indicate significant at 10%, 5% and 1%, respectively.
Calculations weighted using the population weights provided.