ESSAYS ON IMMIGRANT ENTREPRENEURSHIP

By

Michael Edward Walz

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Chair of Committee: Chinhui Juhn, Ph.D.

Committee Member: Aimee Chin, Ph.D.

Committee Member: Fan Wang, Ph.D.

Committee Member: Yona Rubinstein, Ph.D. London School of Economics

University of Houston

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Abstract

This dissertation consists of two essays on immigrant entrepreneurship. In the first essay I examine the question "Are immigrants more entrepreneurial than natives?" While previous papers have equated self-employment with entrepreneurship, in this essay I make the important distinction between entrepreneurs and other self-employed individuals based on incorporation status. Similar to what has been found by Levine and Rubinstein (2017), I find that incorporated self-employed immigrants have much higher levels of education and higher earnings compared to unincorporated self-employed and wage earner immigrants. These patterns suggest that it is useful to distinguish between the two types of self-employed even among immigrants. Making this distinction, I find that immigrants are more likely than natives to be incorporated self-employed. I also find that it takes time for immigrants to catch-up and surpass natives, and there is an important process of entrepreneurial assimilation. Immigrants start below natives when they first arrive but catch up to natives in approximately 10 years. Finally, second generation immigrants are even more likely than first generation immigrants to be incorporated business owners.

In the second chapter I investigate the role of shocks to collateral and access to capital in accounting for this assimilation process. Using panel data constructed from March CPS I examine entry into entrepreneurship from wage employment and find evidence that collateral constraints are more important for immigrants than

natives. I estimate the effect of an exogenous increase to collateral on entry into incorporation using a difference-in-differences estimation strategy, comparing across home owners and renters in states which experienced larger and smaller increases in home prices. Exogenous shocks to collateral have a positive effect on entry into entrepreneurship for immigrants but not so much for natives.

In summary, this dissertation explores the entrepreneurship of immigrants relative to natives then investigates possible methods to entry into entrepreneurship in the United States.

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Chapter 1

Importing Entrepreneurs

1.1 Introduction

Despite more than 40 years of research on the economic impact of immigration, there is still active debate on whether immigrants compete with natives for jobs in the labor market. On one hand, Borjas (1987, 1995, 1999, 2003, 2006), Borjas et al. (1997), Borjas et al. (2008) find immigration reduces native wages and native employment. On the other hand, Card (1990, 2001, 2005, 2009), Cortes (2008) Ottaviano and Peri (2012) find that immigrants' impact on natives to be very small, and in some cases positive. This narrow view of immigrant participation in the economy, however, ignores the possibility immigrants bring dynamism to the host country by being entrepreneurs and by creating jobs. In this paper, I focus on this latter question and study immigrants' entrepreneurship in the US.

Previous work has documented that immigrants are more likely to be self-employed compared to natives (for example, Lofstrom (2002), Fairlie and Lofstrom (2014), Kerr and Kerr (2017)). These studies have examined self-employment overall, however, and not distinguished between different types of self-employed individuals — those who may be categorized as true entrepreneurs — and others who use self-employment

as a last resort in the absence of better job opportunities.[1] Levine and Rubinstein (2017) show that, separating the self-employed by incorporation status reveals two distinct types of people who select into self-employment. In this paper I follow their strategy and distinguish the non-incorporated self-employed from the incorporated self-employed – defining the latter as "entrepreneurs."

Using data on prime aged men (ages 25-55) from the March Current Population Surveys for 1994-2018, I address the following questions: Are immigrants more likely to be entrepreneurs compared to natives? Is there a process of assimilation where immigrants first start below and catch up to natives? Do they ever catch up to natives? I also analyze entrepreneurship among the children of immigrants—the second generation–and compare how they fare relative to natives who are third generation and above.

I first address whether distinguishing the self-employed by incorporation status is a useful distinction for immigrants as has been found for natives by Levine and Rubinstein (2017). I find that similar to natives, incorporated self-employed immigrants have much higher levels of education compared to unincorporated self-employed and wage earner immigrants. In terms of earnings, while immigrants earn less than natives in all employment types, incorporated self-employed immigrants have higher earnings relative to both unincorporated self-employed and wage earner immigrants. These patterns suggest that it is useful to distinguish between the two types of self-employed even among immigrants.

Are immigrants more entrepreneurial than natives? I find that when I do not control for observable characteristics such as education, immigrants are less likely to be entrepreneurs than natives. However, this is due to the fact they have worse observable characteristics than natives. Once I condition on observable characteristics such as education, age and other demographics, immigrants are 0.8 percentage points

[1]Some recent works include Dawson and Henley (2012) and Fairlie and Fossen (2018) who study self-employment as a last resort.

more likely than natives to be incorporated self-employed. Since approximately 3.5 of immigrant men and 4.6 percent of native men in my sample are categorized as incorporated self-employed, the immigrant effect is large.

Is there a process of entrepreneurial assimilation? I find that immigrants do indeed start below natives when they first arrive but catch up to natives at a pace of approximately 0.3 percentage points for every year in the U.S. These estimates suggest that it takes immigrants approximately 10 years to catch up to natives in terms of the probability of being incorporated self-employed. For unincorporated self-employed status, the catch up process is much faster with immigrants catching up to natives in approximately 4 years. Borjas (1985, 1995, 2015) has pointed out the importance of distinguishing between assimilation and declining cohort quality. I examine whether this is the case by examining how the effect of years in the U.S. is impacted if I control for immigrant arrival cohort. While the rate of assimilation is somewhat attenuated[2], I find each cohort is experiencing assimilation into entrepreneurship; however, it is the case that earliest cohorts assimilate in fewer years in the US.

Are the children of immigrants—the second generation—more entrepreneurial than natives who are third generation and above? I find that there is no distinction between the second generation and the native population (now defined as third generation and above) when it comes to unincorporated self-employment status. However, the second generation is 1.3 percentage points more likely to be incorporated self-employed compared to natives. Is there intergenerational mobility into entrepreneurship from the first-generation immigrants who are likely to be fathers of the second-generation? I find that children of immigrants are more likely to be entrepreneurs than their likely fathers, but there is heterogeneity by source country.

It is widely argued that entrepreneurs are the drivers of economic growth. My results show that immigrants contribute to the economy by engaging in entrepreneurial

[2]It drops by approximately 30%.

activity. While others have found that immigrants are more likely to be self-employed than natives, it is not immediately obvious that self-employment translates into entrepreneurship. My approach has been to take a very conservative definition of entrepreneurship—incorporated self-employed status. Even using this measure which isolates the very best among the self-employed, I find that immigrants catch up to natives in terms of the likelihood of being entrepreneurs. Regardless of what happens in the labor market in terms competing for native jobs, I find that immigrants contribute by creating jobs.

1.1.1 Previous Research

The 2017 study by the National Academies of Sciences, "The Economic and Fiscal Consequences of Immigration," provides a thorough review of the effects of immigration—both in terms of the fiscal impacts and the impacts on the labor market. With regards to the labor market there is still substantial disagreement on whether immigration is beneficial to the host country. On the one hand, various studies by George Borjas (Borjas, Freeman and Katz (1996) , Borjas (2003), and Borjas (2006)) argue that immigration has negative impacts on wages and employment of native workers. On the other hand, Grossman (1982) first documented small changes to native wages due to immigration. A much cited paper, Card (1990), which studies the arrival of Marielitos to Miami finds little negative impact relative to other comparison cities. There have been several other studies which also come to similar conclusions: Card (2001, 2009), and Friedberg and Hunt (1995). One source of disagreement is whether spatial studies which compare outcomes across areas properly capture the aggregate impact of immigration. Borjas (2006) in particular argues that native mobility across areas would bias estimates towards zero and therefore an aggregate approach is preferred. These issues are reviewed in Dustmann et al. (2016). Another strand in the literature highlights the potential benefits by emphasizing the complementarity of

immigrants with skilled natives (Ottaviano and Peri (2012), Cortes and Pan (2019)).

Immigrants have also been studied as business owners. Previous work generally show that immigrants are more likely than natives to be self-employed and own businesses. For example, Fairlie and Lofstrom (2014) offer a broad overview of immigrant business owners using the 2007 Survey of Business Owners.They find that immigrants are more likely than natives to be business owners and that immigrant owned firms are more likely to hire employees. Kerr and Kerr (2017) study immigrant entrepreneurship using the Longitudinal Employer Household Dynamics (LEHD) data. They find that the immigrant share of business founders has been increasing, and by 2008 had reached 25% of new businesses created. Additionally, they find that immigrant firms tend to grow faster than natives over the period of 1995 to 2008. These studies have examined self-employment overall, however, and do not distinguish between different types of self-employed individuals. There is a growing literature documenting that self-employment is a problematic proxy for entrepreneurship. Evans and Leighton (1989) find that a large fraction of wage workers who switch into self-employment can be classified as so-called "misfits" who are low wage workers cycling frequently in and out of jobs. Schoar (2010) also points out, in the developing country context, the difference between two very distinct sets of entrepreneurs: subsistence and transformational entrepreneurs. Hurst and Pugsley (2011) also highlight the difference between small businesses and entrepreneurs, pointing to the fact that small businesses rarely bring new innovations to market. Levine and Rubinstein (2017) introduce an empirical proxy—incorporation status—to distinguish between the self-employed who are typically the least productive salary workers and the "entrepreneurs" who are the true innovators and risk-takers. In this paper I adopt their empirically proxy and distinguish between different types of self-employment among immigrants and natives. Since the potential for immigrants to bring dynamism and create jobs are more likely associated with their being true entrepreneurs this distinction is critical

for assessing immigration policy. Thus my paper contributes to the literature on entrepreneurship as well as the literature on the economic impact of immigration on the host country. I also contribute to the literature on immigrant assimilation. Most of the literature on immigrant assimilation has focused on wage earnings. Chiswick (1978) first pioneered the research on immigrant wage assimilation. He found that despite immigrants arriving with less education, immigrants had the ability to achieve wage assim ilation over time. This was later challenged by Borjas (1985) who pointed out in cross sectional data what appeared to be wage assimilation could be driven by change in cohort quality over time. That is, immigrants arriving in 1960 were fundamentally different from those arriving in 1970 in terms of country of origin and levels of education. Accounting for cohort effects substantially reduces the rate of economic assimilation (Borjas 1985, 1995, 2015).4 Recent papers have also pointed to differential selection of return migrants as another source of bias in assessing immigrant wage assimilation (Borjas and Bratsberg (1996), Lubotsky (2007)). Lubotsky (2007) uses longitudinal administrative records of earnings and finds that return migrants are negatively selected on wages and the compositional changes of stayers upwardly bias rates of immigrant assimilation.

Relative to the literature on wage assimilation, there are relatively few studies on immigrant assimilation in entrepreneurship. Some outliers in this regard are the works by Fairlie and Lofstrom (2015) and Lofstrom (2002). Using 1980 and 1990 Census data, Lofstrom (2002) finds that immigrants' self-employment earnings converge to native earnings by age 40.

The paper is organized as follows: Section 2 presents the data and summary statistics. I study immigrants' entrepreneurship relative to natives in Section 3. I analyze entrepreneurial assimilation in Section 4. I study the entrepreneurship of the children of immigrants in Section 5. I perform robustness tests in Section 6. Section 7 concludes.

1.2 Data

March Current Population Surveys

The empirical analysis uses data drawn from the March Current Population Surveys (CPS) 1994 to 2018 [3]. Prior to 1994, the CPS did not ask about parents' birth place but began to include this question in the survey starting in 1994. This question is asked in the 1970 Census but is not asked in subsequent Decennial censuses. I restrict the analysis to men aged 25–55 but include those who are not in the labor force. I further restrict my sample to eliminate all persons living in group quarters, persons in the military, and those missing educational attainment data.

I define immigrants as individuals who were born abroad, regardless of citizenship status; I define natives as individuals who are U.S. born. I exclude individuals who are foreign born with either one or both U.S. born parents from my analysis. I define second generation immigrants as those individuals who are US born with at least 1 foreign born parent.

The CPS classifies workers into wage workers and self-employed, and if self-employed, further classifies them as incorporated or unincorporated. Incorporation offers legal benefits to the company and limited liability to the company's owners. To achieve and maintain incorporation status, the owners must bear direct costs such as fees, and indirect costs such as complicated control and ownership structure of the company. Thus, incorporation is a status that can only be sought after by those with enough capital to pay the costs in addition to normal business operating expenses. In keeping with Levine and Rubinstein, I define entrepreneurs as incorporated business owners.

Table 1 presents the summary statistics of my main CPS sample in Table 1. Hourly earnings are defined as annual earnings divided by annual hours worked. All dollar amounts are deflated using the Consumer Price Index to 2010 dollars. All

[3] I download the data from Integrated Public Use Microdata Series (IPUMS) website.

calculations are performed using the CPS person weights.

In total, there are 906,788 observations of men in the years 1994 to 2018, 164,247 (18 percent) of which are foreign born men. In Panel A, I find a similar pattern as Levine and Rubinstein (2017), in that aggregating self-employment masks substantial heterogeneity of earnings, hours worked, and education across incorporation status. Native men who are incorporated business owners are much more likely to have a bachelor's degree or higher. Native incorporated business owners also earn substantially more, as shown by higher median and average earnings. Native unincorporated business owners have lower earnings than wage earning natives, work fewer hours worked than wage workers, and are more likely to have their highest educational achievement be a high school diploma or less. Specifically, native unincorporated business owners have median hourly earnings of \$11.85 compared to \$20.42 of incorporated business owners. There appears to be a clear ordering in terms of earnings ability: the incorporated have the most positive selection, followed by wage workers, followed by the unincorporated.

In Panel B, I find a similar selection story for immigrant men. Incorporated immigrant business owners are more likely to possess a bachelor's degree and have higher levels of education compared to unincorporated business owners. Immigrants are different in terms of their education distribution, however. Immigrant men with less than a high school diploma make up substantial portions of wage workers and unincorporated business owners. This reflects the well-known bi-modal nature of immigrants' educational distribution in the US. A substantial fraction (more than 10 percent) of incorporated immigrant business owners are drawn from those with less than a high school education. As with native men, immigrant incorporated business owners have higher median earnings, work more hours, and are more educated than their unincorporated counterparts. The median hourly earnings of unincorporated immigrant men is \$9.95 compared to \$17.78 of incorporated immigrant men. The

ordering of earnings ability is the same as natives, with the incorporated being the most positively selected, followed by the wage workers, and then followed by the unincorporated.

In comparing natives to immigrants, the large number of men without a high school diploma stands out. However, after acknowledging the sizable number of less-educated immigrants, the patterns of education selection are similar among natives and immigrants. The real differences seem to lie in earnings and hours worked, with immigrant men having less of both compared to native men. Race, as expected, shows far fewer whites among immigrant men. The average age of immigrant men, across all categories is very close to native men in the sample. Incorporated immigrant men have an average 2 extra years spent in the US compared to unincorporated immigrant men. Interestingly, both have more years in the U.S. compared to immigrant wage workers.

1980 Census

I also draw data from the 1980 Decennial Census. For the census, I use the same sample selection criteria as outlined above with regards to the CPS. The 1980 census also asks specifically about incorporation status of the self-employed. Thus, this data is easily merged to the CPS for analysis.

1.3 Are Immigrants More Entrepreneurial than Natives?

I combine the methodologies of Fairlie and Lofstrom (2014), whom estimated immigrant self-employment probabilities using logit model, and Levine and Rubinstein, whom disaggregate self-employment into incorporated and unincorporated businesses and estimate a multinomial logit model.

For individual i, in employment category j = (unincorporated, incorporated, not

working), relative to employment category k = (wage earners), with years since migration in year t (zero for natives), living in US state s:

$$log\frac{P_{ijts}}{P_{ikts}} = \alpha_{jk} + \mathbf{X}_i\beta_j + Immigrant_i + \gamma_t + \eta_s + \epsilon_{it} \tag{1.1}$$

where $log\frac{P_{ijts}}{P_{ikts}}$ is the log-odds ratio of being in category j relative to category k, i.e., incorporated relative to wage earners,and $\mathbf{X}_i$ is a vector of quadratic age function, educational attainment, marital status, and race, and h(Years in US_{it}) is a quadratic function of years in the US (0 for natives).

Due to the functional form of the multinomial logit model, it is not immediately informative to examine the estimated coefficients. Thus, while I report the multinomial coefficients in the Appendix Table 1, I mainly report the marginal effects, which are the actual effect on the probability of a given variable. To better illustrate the concept, I present the calculation of a marginal effect for discrete variable x in the model:

$$\hat{p} = \frac{1}{N}\sum_{1}^{N}[f(z,\hat{\theta}|x=1) - f(z,\hat{\theta}|x=0)]$$

where N is the sample size, z is the data, $\hat{\theta}$ are the estimated coefficients from the multinomial logit, and $f(z,\theta)$ is the multinomial logit function. Thus, the marginal effect uses the data and the parameter estimate of the multinomial logit to calculate a change in probability for each observation. All of the probability differences for all observations, for a given $\mathbf{x}$, are averaged to given a single number – the marginal effect for variable $\mathbf{x}$.

I begin by presenting the marginal effects when estimating a simplified version of Equation (1) which only controls for state and year fixed effects. I first pool all self-employed workers in column 1 and disaggregate by incorporation status in columns 2 and 3. I find that when I pool all self-employed together, immigrants are

0.7 percent less likely to be self-employed than natives. Note that natives include the second generation (children of immigrants) in this specification. When I disaggregate self-employment by incorporation status, I find that the gap in self-employment rate relative to natives is entirely driven by the gap in incorporation status. Immigrants are roughly equally likely as natives to be unincorporated self-employed business owners. Thus, unconditionally, it appears immigrants are less likely to be entrepreneurs, and equally likely to be unincorporated self-employed. Column 1 again pools all self-employed workers while columns 2 and 3 disaggregate by incorporation status.

Beginning with Table 3, column (1), I find foreign born men are more likely to be self-employed when I control for observed demographic variables. This matches the findings of other studies (Fairlie and Meyer (1996), Fairlie and Lofstrom (2014), Kerr and Kerr (2017)). The education coefficients in column (1) reflect positive selection into self-employment with increasing likelihood of being self-employed with higher educational achievement. All racial minorities are less likely to be self-employed, relative to whites. Age increases the probability of self-employment by approximately 0.2 percent per year.

I disaggregate self-employment by incorporation status in columns (2) and (3). The results show that when we control for basic demographic controls, foreign born men are not only more likely to unincorporated business owners than natives, they are also more likely to incorporated business owners than natives. Foreign born men are approximately 1.6 percentage points more likely than natives to be unincorporated business owners, and they are 0.8 percentage points more likely to incorporated business owners. The coefficients on the demographic controls generally have the expected sign. Higher levels of educational attainment are negatively related to being an unincorporated business owner, with those with advanced degrees having the lowest probability to be unincorporated. I find the opposite relationship with education for incorporated business owners. That is, increasing educational attainment has a

positive relationship with the likelihood to be an incorporated business owner. This reflects the selection on education discussed earlier in regards to Table 1. As with self-employment overall, racial minorities are less likely to be both unincorporated and incorporated business owners. To summarize, after taking into account basic characteristics of immigrants, I find first generation immigrants are more entrepreneurial than natives.

1.4 Entrepreneurial Assimilation of Immigrants

I now investigate whether there is an assimilation process in which immigrants start below natives in terms of being incorporated and unincorporated business owners when they first arrive but catch up to natives over time. I estimate a modified version of equation 1 which now includes year in the U.S. Specifically, I estimate the following model via multinomial logit:

For individual i, in employment category j = (unincorporated, incorporated, not working), relative to employment category k = (wage earner), with years since migration in year t (zero for natives), living in US state s:

$$log\frac{P_{ijts}}{P_{ikts}} = \alpha_{jk} + \mathbf{X}_i\beta_j + Immigrant_i \times [1 + \boldsymbol{\tau}\ \text{h(Years in US}_{it})] + \gamma_t + \eta_s + \epsilon_{it} \tag{1.2}$$

Now, I explore the assimilation of first generation immigrants. Is it the case that entrepreneurship rates are set at arrival to the US, or does it take time? In table 4, I present the marginal effects of the multinomial logit estimation of equation 2, which controls for years in the United States since migration. Similar to Table 3 I first pool all self-employment in column (1), and disaggregate the unincorporated and incorporated in columns (2) and (3). As shown in column (1), immigrants are

roughly 3 percentage points less likely than natives to be self-employed when they first arrive. Each additional year in the US increases the probability of self-employed by 0.5 percentage points. Turning to the results in columns (2) and (3), I find that the gap in self-employment is mostly due to the gap in incorporated business ownership. Immigrant men are 0.9 percentage points less likely to be unincorporated self-employed upon arrival in the US, but 2.3 percentage points less likely to be entrepreneurs upon arrival.

In column (2), I find time in the US adds approximately 0.25 percentage points per year to the chance of being an unincorporated business owner. In column (3), I find that each year in the US adds 0.29 percentage points to the likelihood of being incorporated.

To illustrate the assimilation of first generation immigrants by employment type, I plot the time path of each employment type based on the coefficients reported in Table 4 in Figure 1. The top left quadrant illustrates the probability of being a wage worker, the top right quadrant shows the probability of being self-employed (pooled). The bottom quadrants show the probability of selecting into the two different self-employed categories. For wage work, immigrants have increasing probability of entry for the first 10 years after arrival after which it begins to decrease. When aggregating all self-employment together, the probability of being self-employed for immigrant men starts below natives, but surpasses natives after approximately 7 years in the US. When disaggregating self-employment by incorporation type, I find catch up by both types of self-employment, but at much different rates for the first generation. Among unincorporated business owners, I find that first generation immigrants catch up and overtake natives after approximately 4 years. In incorporated businesses, I find that first generation immigrants eventually catch up and surpass native incorporation rates after approximately 10 years in the US.[4]

[4]See Appendix C for plot of "assimilation" into not-working status.

1.4.1 Cohort Quality

As documented by Borjas (1985), it may be the case that economic assimilation of immigrants is overstated when using cross-sectional data due to changing in cohort quality. Could it be the case that older immigrants, more likely to be of European descent, are the drivers of entrepreneurial activity? To get an idea of what the cohort relationship looks like, I examine incorporation rates by arrival cohort using the CPS data.

To examine the importance of cohort quality I turn to examine the main question: the entrepreneurial activity of immigrants relative to natives measured by incorporation status, with and without including cohort controls. For this I use a simpler linear probability model although I also show results using the multinomial logit model in the appendix and find qualitatively similar results.

When analyzing cohort quality, I estimate a similar model as above but instead of an immigrant dummy, I replace it with a linear combination of cohort dummies spanning 10 year arrival cohorts. For individual i, belonging to year of arrival cohort j, with years since migration in year t (zero for natives), living in US state s:

$$Prob(Incorp)_{ist} = \alpha + \mathbf{X}_i\beta_j + \pi_c \text{Arrival Cohort}_i + \boldsymbol{\tau}\, h(\text{Years in US}_{it}) + \gamma_t + \eta_s + \epsilon_{it} \tag{1.3}$$

where $Prob(Incorp)_i$ is the probability individual i, who arrived in cohort c, is an incorporated business owner,and $\mathbf{X}_i$ is a vector of observable characteristics including quadratic age function, educational attainment, marital status, and race. h(Years in US_{it}) is a quadratic function of years in the US (0 for natives).

Column (1) shows the marginal effect of being immigrant based on the multinomial logit estimation previously reported in column (3), Table 4. I report these estimates

to compare to the results from the linear probability model which is reported in column (2).4 Comparing column (1) to column (2), I find that the linear probability implies a convergence in entrepreneurship rates after approximately nine years. This is close in comparison to the multinomial logit prediction of approximately 10 years. Thus, I report the effects of cohort quality using the linear probability model. Column (3) reports the results of the regression including the cohort arrival dummies. Comparing across the cohorts, the oldest cohorts—those who arrived before 1960 appear to be somewhat better than the more recent immigrants upon arrival. Indeed, those who immigrated to the US before 1960 are nearly 1 percentage point more likely to incorporate relative to those immigrating after year 2000; however, both groups begin below the native level. I conduct an F-test under the null hypothesis of all the π_c being equal and find I am unable to reject this null (p-value = 0.29). The results of this suggest the possibility of no cohort effects or small cohort effects. While I cannot reject the null of equal cohort intercepts, the point estimates do imply different time of convergence to native rates of entrepreneurship. The earliest cohorts, those arriving before the 1970s, will converge in less than 5 years; whereas later cohorts converge by 10 years or sooner (similar to the multinomial logit-derived time paths).

1.5 Are the Children of Immigrants More Entrepreneurial than Natives?

I now investigate second generation immigrant entrepreneurship. I further extend equation 2 allowing for a separate dummy for the second generation (children of the foreign born). Note here the omitted group is natives who are third generation and above.

For individual i, whose mother immigrated form country c, in employment category j = (unincorporated, incorporated, not working), relative to employment cate-

gory k = (wage earner), with years since migration in year t (zero for natives),living in US state s:

$$log\frac{P_{ijcts}}{P_{ikcts}} = \alpha_{jk} + \mathbf{X}_i\beta_{j1} + SecondGen_i + Immigrant_i + \gamma_t + \eta_s + \epsilon_{it} \tag{1.4}$$

where $log\frac{P_{ijts}}{P_{ikts}}$ is the log-odds ratio of being in category j relative to category k, i.e., incorporated relative to wage earners. The new variable of interest is the "SecondGen" dummy variable.

I present the marginal effects of equation (3) in Table 6. The previous set of results compared the first generation immigrants to all US born (2nd and 3rd+ generations of immigrants). In this section, I now distinguish between natives by separating out the second generation from the third generation and above. When combining incorporated and unincorporated together as in column (1), the second generation is more likely than natives (3rd+ generation) to be self-employed, but less likely than first generation immigrants. However, when I disaggregate the self-employed into unincorporated and incorporated, I find that this is driven entirely by the incorporated. The second generation is approximately similar to natives in terms of being unincorporated self-employed; however, they are considerably more likely to be incorporated self-employed. The second generation is approximately 1.3 percentage points likely to be incorporated compared to third generation and above. Note that the marginal effect of being first-generation immigrant also changes given that the comparison group is now third generation and above rather than all U.S. born. Compared to the foreign born dummy reported in column (3), Table 3, the coefficient is now larger at 1.1 percentage points. Thus, once the second generation is distinguished from the third generation and above, the first generation immigrants look even more entrepreneurial than natives, and their children look more entrepreneurial than the immigrant parents.

With the third generation and above now defined as natives, I present the rates of each employment type for first generation immigrants, second generation immigrants, relative to natives (3rd+ generation) in Figure 2. First generation immigrants now take less time to catch up in terms of incorporation status. While it was projected that first generation immigrants reach native levels of incorporation after 10 years, it now takes little more than 8 years to achieve the same when the second generation is removed from natives. On the second generation, I find that they are less likely to be wage-earners than natives (3rd+ generation), but more likely to be self-employed, unincorporated self-employed, and incorporated business owners than natives. Thus, second generation immigrants appear to be truly exceptional in entrepreneurship.

1.5.1 Intergenerational Assimilation of Entrepreneurship

It may be the case that there is direct intergenerational mobility of entrepreneurial ability as the above results may suggest. However, the results presented are not direct comparisons between fathers and sons. More importantly, it is not even a comparison between fathers and men who could be their sons. To see whether there is actual generational progress, I turn to the 1980 Decennial Census. I follow Smith (2003) by comparing synthetic cohorts. The process is as follows: First, I select immigrant men aged 35 to 45 from the 1980 census. Thus, each of these men would be born between 1935 and 1945. I find men who are 25 years apart in age who could potentially be sons in the CPS data when they are aged 35 to 45. I calculate the incorporation rates of each cohort. Thus the comparison I will be generating is minimally contaminated with age effects.

I present the incorporation rates of men 35 to 45 years old in 1980 and incorporation rates of men 35 to 45 years old in the CPS sample in Table 7. The result is three father-son groupings that can be matched. I see that for every immigrant father-son matching, incorporation rates increased across generations. Comparing this to natives

with similarly generated synthetic cohorts, I find that the average intergenerational progress of immigrants to be 1.05% and the average intergenerational progress for natives to be 0.61%. This comparison lends credence to the notion of intergenerational mobility of entrepreneurial ability. I now perform the same synthetic cohort procedure, applying it by country/region of father's birth. I present the results of select regions in Table 8. I find that among US neighbors, there is progress in both directions. Canada exhibits a decline in incorporation rates from synthetic fathers to second generation sons in each father-son pairing. In contrast, Mexico nearly doubles incorporation rates across the three father-son pairings. A group of immigrants commonly thought of as entrepreneurial, East Asians (Koreans, especially), show modest gains in 2 of the father-son pairings I match, and a lower incorporation rate in one of the father-son pairings. Europeans are an exceptional group in that they start relatively close to natives in incorporation rates, but nearly double incorporation rates across each father-son pairing.

1.6 Robustness

1.6.1 Return Migration

While the fundamental results of this paper establish that (1) immigrants have a higher probability of being incorporated business owners and (2) immigrants start below natives and catch up and surpass native incorporation rates, it could be the case that only successful immigrants stay in the US and unsuccessful immigrants leave (return migrate or migrate elsewhere.) If this is the case then estimates of immigrant business startup rates would be upward biased. An equally plausible problem could arise in bias in the opposite direction — if return migration is selected by successful immigrants and unsuccessful immigrants stay in the US. Then the incorporation rates would understate the rate of immigrant business entry. As Dustmann and Goerloch

(2015) have shown, it is not possible to correctly estimate immigrant wage growth under conditions of non-random return migration in repeated cross sectional data. This is also a limitation in this paper. At best, I can attempt to illuminate possible return migration biases by looking at groups likely to leave and compare them to groups unlikely to leave. I estimate equation (2) but separate immigrants into two groups: (1) Canada, Mexico, all Central American countries, all US territories, all Caribbean Islands (2) All other countries. My goal is to compare estimates of immigrants who come from nearby countries under the assumption that it would be "easier" to return migrate to immigrants who come from countries where it is more difficult to return.

I present the results of estimating Equation (2) over each group in Figure 4. I find that the set of countries for which return migration is more likely have a much slower assimilation profile than I found previously for all immigrants. Conversely, immigrants from countries where return migration is likely more difficult assimilate into entrepreneurship much faster than my previous finding in Figure 1 and Figure 2. It would seem return migration is not likely driving the results. If return migration were occurring with respect for business success it should inflate the rate of assimilation. That is, I would expect the assimilation profile to be higher than average for countries where return migration is relatively easy.

1.7 Conclusion

In this paper, I documented entrepreneurial activity of first and second generation immigrants in the United States. My results are the first to step beyond classifying immigrants as entrepreneurs simply because they are self-employed. I uncovered evidence that immigrants are not only more entrepreneurial than natives, as measured by owning incorporated businesses, but their children are even more entrepreneurial than their parents and also more entrepreneurial compared to 3rd-plus generation

natives. The process of assimilation for first generation immigrants is remarkably fast, catching up to native incorporation rates by 10 years after arrival.

Table 1.1: Summary Statistics: CPS Men

	All	Wage Earner	Self-Employed	Unincorp	Incorp
Panel A: Natives, CPS 1994-2018					
Observations	742,541	584,418	87,717	53,496	34,221
	100.00%	78.71%	11.81%	7.20%	4.61%
Mean Earnings	44775	47490	56249	40400	81025
Median Earnings	34320	37214	35157	26549	52783
Median Hourly Earnings	16.35	16.52	14.87	11.85	20.42
Annual Hours Worked	1975	2158	2339	2230	2511
Full-time, Full-year	72.60%	80.83%	75.91%	69.30%	86.24%
Employs 10 or more			13.21%	5.63 %	25.06%
Age	41.1	40.61	43.31	43.02	43.75
White	78.53%	78.99%	88.24%	86.71%	90.612%
Hispanic	7.31 %	7.53%	4.50%	5.06%	3.61%
Less than HS Diploma	8.02%	6.40%	6.75%	8.95%	3.32%
High School Diploma	32.84%	32.11%	31.59%	36.03%	24.64%
Some College	28.16%	28.79%	27.31%	27.68%	26.73%
Bachelor's Degree	20.76%	21.98%	22.08%	18.04%	28.39%
Advanced Degree	10.22%	10.72%	12.27%	9.30%	16.92%
Panel B: Immigrants, CPS 1994-2018					
Observations	164,247	133,425	16,844	11,056	5,788
	100.00%	81.23%	10.26%	6.73%	3.52%
Mean Earnings	34749	36535	45444	32025	71078
Median Earnings	23220	24912	26550	20318	43490
Median Hourly Earnings	12.02	12.03	11.95	9.98	17.78
Annual Hours Worked	1894	2051	2221	2095	2462
Full-time, Full-year	69.67%	76.65%	72.11%	66.03%	83.74%
Employs 10 or more			11.73%	7.32%	20.15%
Age	39.96	39.52	42.49	42.00	43.43
White	68.40%	68.95%	68.85%	71.78%	63.25%
Hispanic	56.28 %	57.96%	46.75%	54.97%	31.03%
Less than HS Diploma	32.06%	32.51%	24.81%	32.06%	10.95%
High School Diploma	25.17%	24.80%	27.23%	29.18%	23.50%
Some College	15.28%	15.07%	16.49%	15.61%	18.16%
Bachelor's Degree	15.49%	15.22%	19.38%	15.57%	26.68%
Advanced Degree	11.99%	12.39%	12.09%	7.58%	20.72%
Years in US	17.10	16.77	19.58	18.82	21.02

Notes: This table presents the summary statistics from the Annual Social and Economic Supplement of the Current Population Survey (CPS) for the years 1994 through 2018 for men aged 25 to 55 years old. The CPS classifies workers in each year as either wage earners or self-employed, with self-employed persons separated by incorporation status. I exclude observations missing any of the following variables: age, race, gender, schooling, or birthplace. In addition, I further exclude those living in group quarters or in the military during the observed year.

Table 1.2: Mulitnomial Logit Marginal Effects: Self-employment and Unincorporated/Incorporated . All men aged 25-55.

	Self-employed	Unincorp	Incorp	Self-employed	Unincorp	Incorp
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Born	-0.00756**	0.000631	-0.00812***	0.0238***	0.0159***	0.00817***
	(0.00270)	(0.00224)	(0.00142)	(0.00272)	(0.00231)	(0.00113)
High School Diploma				0.0113***	-0.00077	0.0141***
				(0.00225)	(0.00185)	(0.000905)
Some College				0.00950***	-0.0104***	0.0219***
				(0.00234)	(0.00222)	(0.00109)
Bachelor's Degree				0.0187***	-0.0169***	0.0370***
				(0.00378)	(0.00365)	(0.00158)
Advanced Degree				0.0196***	-0.0193***	0.0393***
				(0.00380)	(0.00339)	(0.00213)
Married				0.0259***	0.00590***	0.0202***
				(0.00197)	(0.00129)	(0.00086)
Asian				-0.0371***	-0.0237***	-0.0133***
				(0.00366)	(0.00181)	(0.00233)
Black				-0.0657***	-0.0368***	-0.0292***
				(0.00129)	(0.00137)	(0.00084)
Hispanic				-0.0512***	-0.0281***	-0.0247***
				(0.00549)	(0.00346)	(0.00267)
Other Race				-0.0362***	-0.0194***	-0.0172***
				(0.00290)	(0.00252)	(0.00159)
Age				0.00265***	0.00154***	0.00108***
				(0.0000753)	(0.0000688)	(0.0000313)
Observations	906578	906578	906578	906578	906578	906578
State FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X

Notes: This table presents the marginal effects of the multinomial logit estimates of the log-odds ratio of an individual being self-employed rather than a wage worker (column 1, column 4), or unincorporated or incorporated rather than a wage worker (columns 2, 3, 5, 6) using the sample as described in Table 1. Columns 1, 2-3, 4, and 5-6 represent four different estimations of equation 1. The marginal effects of the estimates for being a wage-worker or not-working are not reported here but are available in the Appendix. All estimates control for state and year fixed effects. Standard errors, clustered at the state level, are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 1.3: Mulitnomial Logit Marginal Effects: Self-employment and Unincorporated/Incorporated (Years in US). All men aged 25-55.

	Self-employed	Unincorp	Incorp
	(1)	(2)	(3)
Foreign Born	-0.0303***	-0.00882*	-0.0229***
	(0.00531)	(0.00484)	(0.00242)
Years in US	0.00524***	0.00254***	0.00295***
	(0.000417)	(0.000297)	(0.000279)
Observations	906578	906578	906578
Demographics	X	X	X
State FE	X	X	X
Year FE	X	X	X

Notes: This table presents the marginal effects of the multinomial logit estimates of the log-odds ratio of an individual being self-employed rather than a wage worker (column 1), or unincorporated or incorporated rather than a wage worker (columns 2 and 3) using the sample as described in Table 1. The marginal effects of the estimates for being a wage-worker or not-working are not reported here but are available in the Appendix. Both sets of estimates (columns 1 and columns 2 and 3) control for demographics (educational attainment, age, race, and marital status) and state and year fixed effects. Standard errors clustered at the state level are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

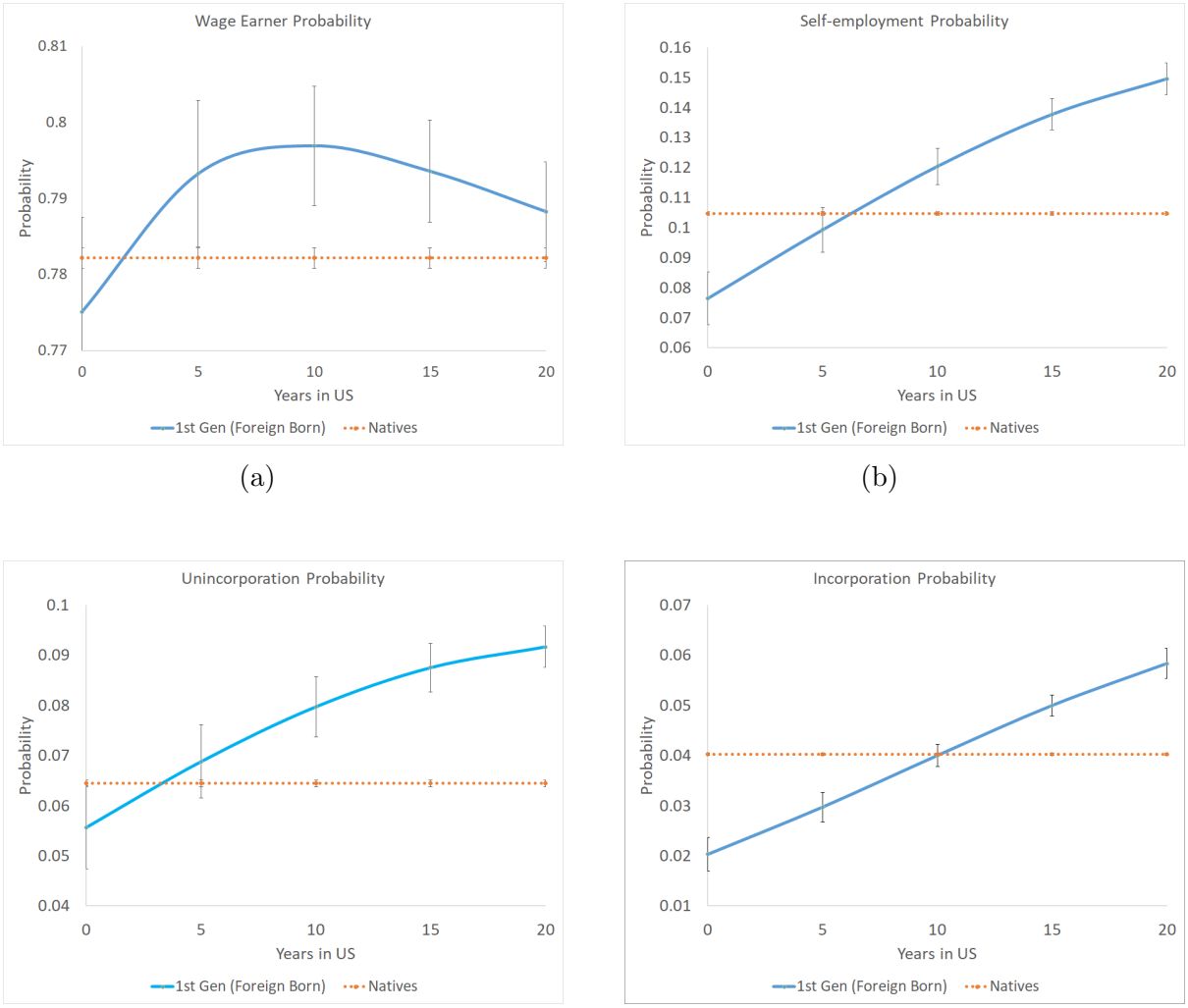

Figure 1.1: This figure plots the time path of assimilation into wage, self-employment, self-employed unincorporated, and self-employed incorporated business ownership of the foreign born men and natives men(sons of natives) for the years 1994-2018 using the CPS data as described in Table 1. The time paths are derived from the marginal effects of multinomial logit estimation of Equation 1 calculated at years in US = 0, 5, 10 ,15, and 20. Wage Earners, Unincorporated, and Incorporated are estimated in one multinomial logit; self-employment is estimated separately in another multinomial logit.

Table 1.4: Cohorts of Arrival. All men aged 25-55.

	Multinomial Logit	OLS	OLS
	(1)	(2)	(3)
Foreign Born	-0.0229***	-0.0166***	
	(0.00242)	(0.00262)	
Immigrated after 2000			-0.0168***
			(0.00262)
Immigrated 1990 to 2000			-0.0166***
			(0.00327)
Immigrated 1980 to 1989			-0.0135***
			(0.00372)
Immigrated 1970 to 1979			-0.0156***
			(0.00413)
Immigrated 1960 to 1969			-0.00863**
			(0.00416)
Immigrated before 1960			-0.00792
			(0.00649)
			(0.00037)
Years in US	0.00295***	0.00232***	0.00229***
	(0.000279)	(0.000320)	(0.000370)
Years in US Sq.		-0.0000399***	-0.0000423***
		(0.00000592)	(0.00000775)
Observations	910931	910931	910931
Demographics	X	X	X
State FE	X	X	X
Year FE	X	X	X
F-test of Equality of Cohort Dummies (p-value)			0.29

Notes: This table presents the linear regression estimates of Equation 2, regressing incorporation status (0 or 1 for incorporated) on the decade of arrival using the sample as described in Table 1 . In columns (1), (2), and (3) I control for state and year fixed effects, demographics (age,education, race, marital status), and length of time in the US. Standard errors clustered at the state level are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. I report the F-test of the equality of the coefficients of the estimates in column (3).

Table 1.5: Generational Comparison Across All Birth Cohorts

	Self-employed	Unincorporated	Incorporated
	(1)	(2)	(3)
2nd Gen Immigrant	0.0141***	0.00130	0.0129***
	(0.00255)	(0.00168)	(0.00156)
Foreign Born	0.0271***	0.0163***	0.0108***
	(0.00311)	(0.00238)	(0.00139)
Observations	906578	906578	906578
Demographics	X	X	X
State FE	X	X	X
Year FE	X	X	X

Notes: This table presents the marginal effects of the multinomial logit estimates of the log-odds ratio of an individual being self-employed rather than a wage worker (column 1), or unincorporated or incorporated rather than a wage worker (columns 2 and 3) using the sample as described in Table 1. The marginal effects of the estimates for being a wage-worker or not-working are not reported here but are available in the Appendix. Both sets of estimates (columns 1 and columns 2 and 3) control for demographics (age, educational attainment, race, marital status) state and year fixed effects. Second generation immigrants are defined as the children of the foreign born. Standard errors, clustered at the state level, are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

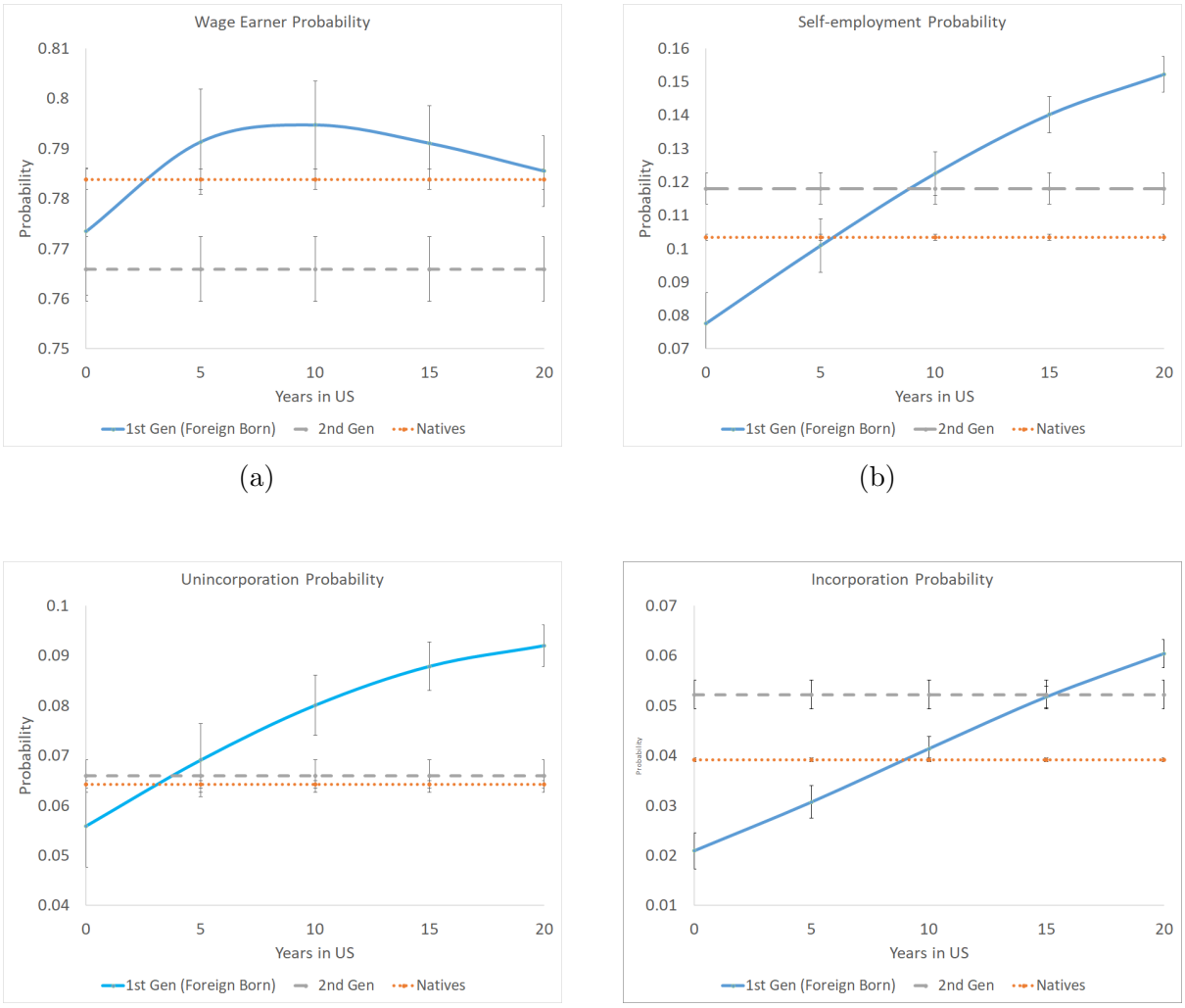

Figure 1.2: This figure plots the time path of assimilation into wage, self-employment, self-employed unincorporated, and self-employed incorporated business ownership of the foreign born men, second generation immigrants (children of the foreign born) and natives men(sons of natives) for the years 1994-2018 using the CPS data as described in Table 1. The time paths are derived from the marginal effects of multinomial logit estimation of Equation 1 calculated at years in US = 0, 5, 10 ,15, and 20. Wage Earners, Unincorporated, and Incorporated are estimated in one multinomial logit regression; self-employment is estimated separately in another multinomial logit regression.

Table 1.6: Native-Immigrant Generational Comparison by Birth Cohorts. Age 35 to 45 Men.

Panel A: Immigrants

Fathers (1st Gen)			Sons (2nd Gen)			
	(1)			(2)		(3)
Birth Cohort	Incorp Rate	N	Birth Cohort	Incorp Rate	N	(2) - (1)
1935-1939	5.24%	24255	1960-1964	5.55%	4104	0.31%
1940-1944	4.51%	27897	1965-1969	5.59%	4490	1.08%***
1945-1949	3.14%	6148	1970-1974	4.90%	4364	1.77%***
Average						1.05%

Panel B: Natives

Fathers (1st Gen)			Sons (2nd Gen)			
	(4)			(5)		(6)
Birth Cohort	Incorp Rate	N	Birth Cohort	Incorp Rate	N	(5) - (4)
1935-1939	4.21%	250150	1960-1964	4.65%	61582	0.44%***
1940-1944	4.51%	299285	1965-1969	4.80%	58321	0.28%***
1945-1949	3.31%	63763	1970-1974	4.41%	47963	1.10%***
Average						0.61%

Notes: This table presents the comparison of the incorporation rates of foreign born men aged 35 to 45 from the 1980 Decennial Census to their synthetic native-born sons aged 35 to 45, who are assumed to be born 25 years after their fathers. For example, an immigrant born in 1939 (aged 41 in 1980) is assumed to have had a son in 1964; the son is then observed when he is 35-45 (calendar years 1999-2009 in the CPS dataset). The data from the synthetic sons come from the CPS as described in Table 1. Column (3) is the difference in means, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively, of the t-test of difference in means.

Table 1.7: Immigrant Source Region Generational Comparison by Birth Cohorts.

	Fathers			Sons			
		(1)			(2)		(3)
Region	Birth Cohort	Incorp Rate	N	Birth Cohort	Incorp Rate	N	(2) - (1)
Canada	1935-1939	5.24%	1049	1960-1964	3.92%	220	-1.32%
Canada	1940-1944	6.46%	1052	1965-1969	4.20%	209	0.42%
Canada	1945-1949	4.63%	216	1970-1974	2.51%	159	-2.12%
East Asia	1935-1939	6.48%	3228	1960-1964	7.58%	215	1.11%
East Asia	1940-1944	5.44%	3949	1965-1969	4.07%	279	-1.37%
East Asia	1945-1949	3.29%	790	1970-1974	4.60%	349	1.30%
Europe	1935-1939	2.93%	341	1960-1964	8.75%	1016	5.82%***
Europe	1940-1944	4.85%	309	1965-1969	8.88%	990	4.02%***
Europe	1945-1949	3.84%	52	1970-1974	7.78%	725	3.92%
Mexico	1935-1939	1.12%	3283	1960-1964	2.44%	471	1.12%
Mexico	1940-1944	1.21%	4300	1965-1969	2.18%	673	0.97%*
Mexico	1945-1949	0.92%	1083	1970-1974	1.94%	911	1.02%*

Notes: This table presents the comparison of the incorporation rates of foreign born men aged 35 to 45 from the 1980 Decennial Census to their synthetic native-born sons aged 35 to 45, who are assumed to be born 25 years after their fathers. For example, an immigrant born in 1939 (aged 41 in 1980) is assumed to have had a son in 1964; the son is then observed when he is 35-45 (calendar years 1999-2009 in the CPS dataset). The data from the synthetic sons come from the CPS as described in Table 1. Column (3) is the difference in means, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively, of the t-test of difference in means.

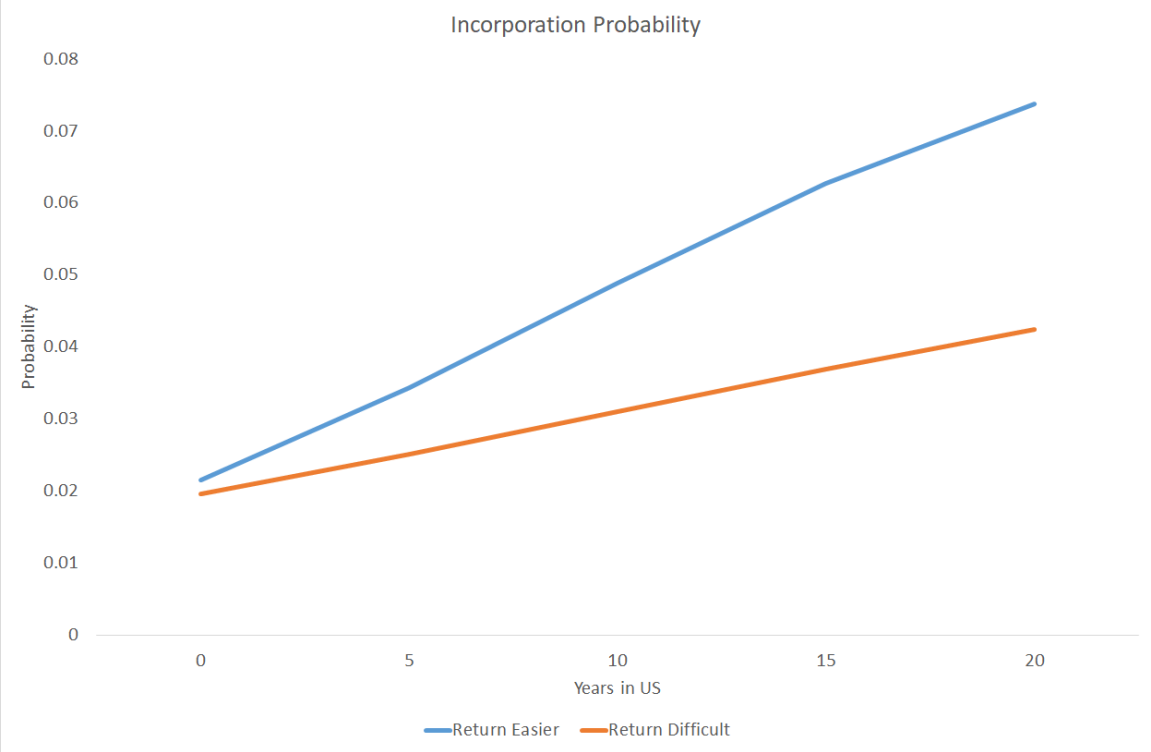

Figure 1.3: This figure plots the time path of assimilation into self-employed incorporated business ownership of two groups: (Return Easier) Canada, Mexico, all Central American countries, all US territories, all Caribbean Islands and (Return Difficult) all other countries for the years 1994-2018 using the CPS data as described in Table 1. The time paths are derived from the marginal effects of multinomial logit estimation of Equation 1 calculated at years in US = 0, 5, 10 ,15, and 20.

Chapter 2

Immigrant Assimilation in Entrepreneurship: The Role of Collateral

2.1 Introduction

Over the last 30 years, there has been considerable focus on immigrants propensity to be self-employed in the United States. Previous work generally agree that immigrants are more likely to be self-employed compared to natives (for example, Borjas (1986), Lofstrom (2002), Fairlie and Lofstrom (2014), Kerr and Kerr (2017))[1]. These studies have examined self-employment overall, however, without worrying about the considerable heterogeneity in self-employment. Walz (2020) follows the strategy used by Levine and Rubinstein (2017) and distinguish the unincorporated self-employed from the incorporated self-employed defining the latter as "entrepreneurs." Walz (2020) finds that even using this more restrictive and conservative measure, immigrants are more likely to be entrepreneurs than natives.

[1]For studies of immigrants' competition with natives in the labor makret, see Borjas et al. (1996), Borjas (2003), Card (1990), Ottaviano and Peri (2012))

There is however a process of entrepreneurial assimilation. Immigrants start below natives when they first arrive but catch up to natives in approximately 10 years. For the unincorporated self-employed, the catch up process is much faster with immigrants catching up to natives in approximately 4 years. In this paper I study the process of immigrant assimilation into entrepreneurship, focusing on the role of accumulation of host country skills (as proxied by wages) and the accumulation of collateral (as proxied by home ownership and housing wealth).

To study immigrant assimilation in entrepreneurship, I focus in particular on the immigrants' decision to start their own business—that is, I focus on the entry into incorporated self-employment from a salaried job. As a comparison and to further highlight differences across different categories of self-employment, I also examine entry into unincorporated self-employment. I find that wage income in the previous year is strongly positively related to starting incorporated businesses for both natives and immigrants but the effect is much larger for immigrants. Since immigrant wage income converges on native wage income (although it fails to quite catch up in 20 years), accumulation of host country skills (as proxied by wages) is one important channel for immigrant assimilation in entrepreneurship. On the other hand, collateral as measured by home ownership appears to be a less important determinant of entry into incorporated businesses for immigrants than natives. One issue with home-ownership is that it may reflect an individual's ability as well as access to capital. To address this issue, I follow Schmalz et al. (2017) and Levine and Rubinstein (2018) and exploit exogenous increases in collateral due to changing state-level home prices. I estimate the effect of an exogenous increase to collateral on entry into incorporation using a difference-in-differences estimation strategy, comparing across home owners and renters in states which experienced larger and smaller increases in home prices. Once I isolate the impact of exogenous shocks to collateral—the findings are reversed. Exogenous shocks to collateral have a positive effect on entry into entrepreneurship

for immigrants but not so much for natives. With regards to entry into unincorporated self-employment, I find that previous year's wage income is negatively related to entry for both natives and immigrants. This is not surprising given the evidence in Levine and Rubinstein (2017) that the unincorporated business owners are negatively selected on ability. With regards to collateral, I find that exogenous shocks to collateral have negligible impact on natives while having a positive and significant impact on immigrant entry into unincorporated self-employment. These results suggest that accumulation of wealth and access to US financial markets may be an important driver in immigrants' entrepreneurial assimilation.

The paper is organized as follows: Section 2 describes the data and presents summary statistics. I present the main results in Section 3. I offer tentative conclusions and avenues for further research in Section 4.

2.1.1 Previous Research

Immigration assimilation has been a core topic of economic research for more than 40 years. Chiswick (1978) first pioneered the research on immigrant wage assimilation. He found that despite immigrants arriving with less education, immigrants had the ability to achieve wage assimilation over time. This was later challenged by Borjas (1985) who pointed out in cross sectional data what appeared to be wage assimilation could be driven by change in cohort quality over time. That is, immigrants arriving in 1960 were fundamentally different from those arriving in 1970 in terms of country of origin and levels of education. Accounting for cohort effects substantially reduces the rate of economic assimilation (Borjas 1985, 1995, 2015).

Assimilation can also be considered in terms of culture and language. Trejo (2003) notes that decreasing skills of immigrants partially reflects larger shares of Latin American immigrants who tend to be not fluent in English upon arrival. Bleakley and Chin (2004) find that English language ability has a positive effect on earnings

and immigrants who arrive as children have an advantage due to language skills. Lazear (2007) finds that non-Hispanics may acquire more language skills due to the fact that they are less likely to live in ethnic enclaves. Borjas (2015) also finds that the geographic clustering of immigrants may reduce acquisition of English language skills.

Immigrants have also been studied as business owners. Fairlie and Lofstrom (2014) offer a broad overview of immigrant business owners using the 2007 Survey of Business Owners. They find that immigrants are more likely than natives to be business owners and that immigrant owned firms are more likely to hire employees. Kerr and Kerr (2017) study immigrant entrepreneurship using the Longitudinal Employer Household Dynamics (LEHD) data. They find that the immigrant share of business founders has been increasing, and by 2008 had reached 25%. Additionally, they find that immigrant firms tend to grow faster than natives over the period 1995 to 2008.

Relative to the literature on wage assimilation, there are relatively few studies on immigrant assimilation in entrepreneurship. Some exceptions in this regard are the works by Fairlie and Lofstrom (2015) and Lofstrom (2002). Using 1980 and 1990 Census data, Lofstrom (2002) finds that immigrants' self-employment earnings converge to native earnings by age 40.

The inputs into entrepreneurship have been typically modeled as the interaction of entrepreneurial ability and access to liquidity (Evans and Jovanovic (1989), Holtz-Eakin et al. (1994)). Hurst and Lusardi (2004) find that wealth has no effect for the majority of entrepreneurs. Schmalz et al. (2017) find that shocks to collateral lead to a higher probability of becoming an entrepreneur using French administrative data. Levine and Rubinstein (2018) adopt a similar methodology as Schmalz et al. (2017) and find collateral shocks predict entry into incorporated business ownership using US panel data.

I contribute to the literature in two ways. On the one hand I contribute to the

literature on entrepreneurship and in particular on the varying influences of ability and collateral in entrepreneurship by comparing the experiences of immigrants vs. natives. My study also contributes to the relatively slim field of immigrant assimilation in entrepreneurship, making the important distinction between true entrepreneurs and the necessity self-employed who are often the least successful salaried workers.

2.2 Data

March Current Population Survey Matched Samples

The empirical analysis uses data drawn from the March Current Population Surveys (CPS) 1994 to 2018. Prior to 1994, the CPS did not ask about parents' birth place but began to include this question in the survey starting in 1994. This question is asked in the 1970 Census but is not asked in subsequent Decennial censuses. I restrict the analysis to men aged 25–55 but include those who are not in the labor force. I further restrict my sample to eliminate all persons living in group quarters, persons in the military, and those missing educational attainment data. I define immigrants as individuals who were born abroad, regardless of citizenship status; I define natives as individuals who are U.S. born. I exclude individuals who are foreign born with either one or both U.S. born parents from my analysis. I define second generation immigrants as those individuals who are US born with at least 1 foreign born parent.

The CPS classifies workers into salaried and self-employed, and if self-employed, further classifies them as incorporated or unincorporated. Incorporation offers legal benefits to the company and limited liability to the company's owners. To achieve and maintain incorporation status, the owners must bear direct costs such as fees, and indirect costs such as complicated control and ownership structure of the company. Thus, incorporation is a status that can only be sought after by those with enough capital to pay the costs in addition to normal business operating expenses. In keeping

with Levine and Rubinstein, I define entrepreneurs as incorporated business owners.

For the purposes of the analysis on entry, I construct a two-year matched panel data set of March Current Population survey respondents. The short two-year panel is constructed by exploiting the rotating interview structure of the CPS. The CPS interviews a household for four consecutive months, skips the next eight months, and re-interviews the household for the next 4 months. This allows for households to be potentially interviewed in two adjacent years. The interviewers return to the same location and housing structure. If the household has not moved then the household can be matched across adjacent years. Notably, however, the CPS does not follow households who have moved. Detailed matching algorithms are provided in Madrian and Lefren (2000). IPUMS-CPS uses a similar algorithm and provides a variable "CPSIDP" of matched individuals. I construct a panel using the CPS data by using the IPUMS created CPSIDP variable. I keep only observations which can be matched and for which basic demographic characteristics do not change (sex, birthplace, state of residence). I am able to successfully match 206,502 persons, 28,030 (13.5%) of whom are immigrants. [2]

Table 1 presents the summary statistics of the CPS matched panel dataset. As a comparison, Appendix Table A1 provides summary statistic of cross sectional March CPS data for 1994-2018. Hourly earnings are defined as annual earnings divided by annual hours worked. All dollar amounts are deflated using the Consumer Price Index to 2010 dollars. All calculations are performed using the CPS person weights.

In total, there are 177, 291 native men and 27,768 foreign-born men in the panel dataset. The fraction foreign-born is slightly lower in the matched data (13.5%) compared to cross-sectional data (18 percent) which most likely reflects the fact that there is greater mobility among foreign-born households. The rates of self-employment—both incorporated and un-incorporated are similar however to cross

[2]See Flood and Pacas (2016) for detailed information on linking CPS samples.

sectional data. For example, in the panel 4.9 percent of native men are incorporated while 4.6 percent incorporated in cross sectional data. Among immigrants, the rate of incorporation is slightly higher in the panel data (4.14 percent vs. 3.52 percent). As has been found by others, mean earnings and education levels are higher in the panel compared to cross sectional data. For example, mean earnings are $46,295 for native men in the panel and $44,775 in cross-sectional data. As has been found by Levine and Rubinstein (2017), there is similar patterns of selection into unincorporated and incorporated self-employment in the CPS panel data. As Levine and Rubinstein (2017) also found, aggregating self-employment masks substantial heterogeneity of earnings, hours worked, and education across incorporation status. Native men who are incorporated business owners are much more likely to have a bachelor's degree or higher. Native incorporated business owners also earn substantially more, as shown by higher median and average earnings. Native unincorporated business owners have lower earnings than salaried natives, work fewer hours worked than salaried workers, and are more likely to have their highest educational achievement be a high school diploma or less. In Panel B, I find a similar selection story for immigrant men. Incorporated immigrant business owners are more likely to possess a bachelor's degree and have higher levels of education compared to unincorporated business owners. As with native men, immigrant incorporated business owners have higher median earnings, work more hours, and are more educated than their unincorporated counterparts. The ordering of earnings ability is the same as natives, with the incorporated being the most positively selected, followed by the salaried, and then followed by the unincorporated.

Finally, I merge in Federal Housing Finance Agency state level housing price index data for all years into the matched CPS sample. I calculate growth in home prices as the simple growth rates between the fourth quarter of the previous year and the fourth quarter of the current year.

2.3 Entrepreneurial Assimilation of Immigrants

In this section I investigate the assimilation of immigrants in terms of both types of entrepreneurship. Specifically, I estimate the following model via multinomial logit:

For individual i, in employment category j = (unincorporated, incorporated, not working), relative to employment category k = (salaried), with years since migration in year t (zero for natives), living in US state s:

$$log\frac{P_{ijts}}{P_{ikts}} = \alpha_{jk} + \mathbf{X}_i\beta_j + Immigrant_i \times [1 + \boldsymbol{\tau}\ \mathrm{h}(\text{Years in US}_{it})] + \gamma_t + \eta_s + \epsilon_{it} \tag{2.1}$$

Table 2 presents the marginal effects of the multinomial logit estimation of equation (1), which controls for years in the United States since migration. As the table shows, immigrants first below natives in terms of self-employment but then catch up to natives. Table 2 first pools all self-employment in column (1), and disaggregates the unincorporated and incorporated in columns (2) and (3). Turning to the results in columns (2) and (3) immigrant men are 0.9 percentage points less likely to be unincorporated self-employed upon arrival in the US, but 2.3 percentage points less likely to be entrepreneurs upon arrival. Time in the US adds approximately 0.25 percentage points per year to the chance of being an unincorporated business owner while each year in the US adds 0.29 percentage points to the likelihood of being incorporated. Figure 1 plot the time path of each employment type based on the coefficients reported in Table 2. The top left quadrant illustrates the probability of being a wage worker, the top right quadrant shows the probability of being self-employed (pooled). The bottom quadrants show the probability of selecting into the two different self-employed categories. Among unincorporated business owners, I find that first generation immigrants catch up and overtake natives after approximately 4 years. In incorporated businesses, I find that first generation immigrants eventually

catch up and surpass native incorporation rates after approximately 10 years in the US.

2.4 What Explains the Catch-up of Immigrant Entrepreneurship Rates?

To this point, my analysis has focused on what explains the stock of immigrant entrepreneurs. I now turn to analyzing entry into entrepreneurship. Having seen that immigrants take time to converge and surpass native levels of entrepreneurship, a natural question is to ask which factors affect the process of assimilation. To answer this question, I study entry into incorporation. I match across two consecutive years of the March CPS to construct a two-year panel of individuals. I report the two-year transition rates across employment categories in Table 2. The table shows that there is a great deal of persistence in employment type across two years. As shown in Panel A, among natives, 96.9 percent of those who were wage workers last year are also wage workers in the current year. Among natives who were wage workers the previous year, 0.8 percent switch to incorporated self-employment status. Panel B shows the transition rates among immigrants. Of those who were wage and salary workers in the previous year, 0.7 percent switch to incorporated self-employment status. While these transition rates are low relative to the size of wage workers, given that incorporated self-employment rates are low (approximately 4 percent), entrants make a substantial portion of the pool of incorporated self-employed in any given year. This is illustrated in Panel C and D. Among natives, 12.7 percent of the incorporated self-employed were wage workers in the previous year. Among immigrants, 13.7 percent of current incorporated self-employed were wage workers in the previous year.

Notably, there is very little switching from unincorporated to incorporated for both natives and immigrants. With this in mind, I will focus on modeling the switch

from wage worker to incorporated business owner. There are many possible explanations for the time required to reach entrepreneurial convergence — language learning, furthering legal status, cultural assimilation, obtaining access to financial markets.

In the analysis below I focus on two measures which proxy for these factors. I examine wage earnings in the previous year which may be a summary measure of language skills, legal status, and economic assimilation. For access to financial markets and liquidity, I examine homeownership in the previous period. Home equity can be used as collateral to secure loans from lenders, with higher collateral being able to secure larger loans. I present statistics for home ownership and wage income of wage-workers in t-1 in Table4. I find that natives earn slightly less than $10,000 more than immigrants in wage income. Immigrants are much less like to own a home (22 percentage points less likely), and have less equity in their homes. I find that immigrants are more likely than natives to live in states where home prices are appreciating.

Figure 2 illustrates the immigrant assimilation in terms of wage income and home ownership. More specifically I estimate the following equation:

For individual i, who was a wage worker in t-1, in year t, living in US state s:

$$Prob(Incorp)_{ist} = \alpha + \mathbf{X}_{i,t-1}\beta_j + \delta HomeOwner_{i,t-1} + \rho WageEarnings_{i,t-2} + \gamma_t + \eta_s + \epsilon_{it} \tag{2.2}$$

where $Prob(Incorp)_{ist}$ is the probability individual i is an incorporated business owner, and $\mathbf{X}_i$ is a vector of quadratic age function, educational attainment, marital status, and race, $WageEarnings_{i,t-2}$ are the earnings from year t-2's wage job, and $HomeOwner_{i,t-1}$ is i's home ownership status in period t-1.

Based on the coefficients on the years in U.S. I predict home ownership and wage

income in the figure. Both figures show that there is a strong pattern of assimilation in both wage income and homeownership although interestingly, unlike entrepreneurship, immigrants do not quite catch up to natives twenty years after arrival. in terms of wage income, immigrants converge on natives but do not quite catch up even twenty years after arrival.

I next examine the effect of homeownership in the previous period and lagged wage income (lagged 2 periods) in determining the entry into incorporated self-employment from wage work. While this relationship cannot be interpreted as causal, it is still interest to see how homeownership and wage income correlate with entry into entrepreneurship. Both wage income and homeownership are strongly positively correlated with entry into incorporated self-employment for natives. For immigrants, column (6) indicates that while homeownership still has a positive sign, it is no longer statistically significant when wage income is also included. The positive effect of wage income is consistent with the positive selection of the most able entering incorporated self-employment. In the case of immigrants, wage income is likely to reflect both selection on ability as well as accumulation of host-country specific human capital over time.

One issue with homeownership is that it may reflect an individual's ability as well as access to capital. To address this issue, I follow Schmalz et al. (2017) and Levine and Rubinstein (2018) and exploit exogenous increases in collateral due to changing state-level home prices. I estimate the effect of an exogenous increase to collateral on entry into incorporation using a difference-in-differences estimation strategy, comparing across home owners and renters in states which experienced larger and smaller increases in home prices. I use the change in state home prices in periods t-3 to t-1 interacted with the person's home ownership status to identify the effect of collateral. Those who do not own homes, renters, serve as a control group, whose entry into incorporation should not aided by the possibility of additional collateral due to

home ownership. I control for demographic variables and the unemployment rate at time t-1 additionally. These controls should capture local economy conditions and individual characteristics, respectively, which could affect the decision to incorporate. I estimate the following reduced form model on the CPS panel data:

For individual i, who was a wage worker in t-1, in year t, living in US state s:

$$\begin{aligned} Prob(Incorp)_{ist} = \alpha + \mathbf{X}_{i,t-1}\beta_j + \kappa(HomeOwner_{i,t-1} \times \Delta StateHousingIndex_{s,t-3,t-1}) \\ + \delta HomeOwner_{i,t-1} + \omega \Delta StateHousingIndex_{s,t-3,t-1} \\ + \rho WageEarnings_{i,t-2} + \gamma_t + \eta_s + \epsilon_{it} \end{aligned} \tag{2.3}$$

where $Prob(Incorp)_{ist}$ is the probability individual i is an incorporated business owner, and $\mathbf{X}_i$ is a vector of quadratic age function, educational attainment, marital status, and race, $WageEarnings_{i,t-2}$ are the earnings from year t-2's wage job, $HomeOwner_{i,t-1}$ is i's home ownership status in period t-1, and $\Delta StateHousingIndex_{s,t-3,t-1}$ is the change in the state housing price index from t-3 to t-1.

I present the results of the estimation of equation (3) in Table 6 for native men and Table 7 for immigrant men. I find that US specific human capital, as proxied by wage income in t-2, is positively related to entry into incorporation for both natives and immigrants; though, the magnitude of the effect is larger for immigrants. Home ownership is strongly and positively associated with entry into incorporation from salaried work for natives. This relationship does not hold statistical significance for immigrants after controlling for other variables. I find both natives and immigrants renters to be unresponsive to housing price changes. However, immigrant homeowners have a generally positive, marginally significant increase in the probability of entry into incorporation when subjected to a housing price increase. These results suggest that both wage earnings which proxies for U.S. specific skills and access to collateral are important determinants of entry into entrepreneurship for immigrants and factors which account for the assimilation process over time.

To contrast entry into entrepreneurship from entry into unincorporated self-employment,

I also run the same set of regressions for the entry into unincorporated self-employment from wage work. Table 8 shows that home ownership is not strongly correlated with entry into unincorporated self-employment. Wage income is negatively related to entry, confirming the earlier findings in the literature that there is negative selection on ability into unincorporated self-employment. Interestingly, the coefficient on wage income is also negative for immigrants suggesting that accumulation of U.S. specific skills is not increasing the likelihood of entering unincorporated self-employment. Table 10 reports the results of the differences in differences specification where home-ownership in the previous period is interacted with state-level growth in housing prices. I find that for immigrants, housing collateral does contribute to immigrants' entry into unincorporated self-employment.

2.5 Conclusion

In this paper, I documented entrepreneurial activity of first and second generation immigrants in the United States. My results are the first to step beyond classifying immigrants as entrepreneurs simply because they are self-employed. I uncovered evidence that immigrants are not only more entrepreneurial than natives, as measured by owning incorporated businesses, but their children are even more entrepreneurial than their parents and also more entrepreneurial compared to 3rd-plus generation natives. The process of assimilation for first generation immigrants is remarkably fast, catching up to native incorporation rates by 10 years after arrival. This research is also the first to investigate the process of assimilation into entrepreneurship. While wage earnings which measures skills are important for natives in the entry into entrepreneurship, it is even more important for immigrants. Using a Bartik-style measure I examine the role of exogenous shocks to collateral and available capital. While the measure is not a significant factor for native entry into entrepreneurship in my

data, I find that it is a significant factor for immigrant entry into entrepreneurship.

Table 2.1: Summary Statistics: CPS Panel Men

	All	Wage Earner	Unincorp	Incorp
Panel A: Natives, CPS 1996-2018				
Observations	177,291	138,481	13,713	8,717
	100.00%	78.11%	7.73%	4.92%
Mean Earnings	46295	48360	43031	77378
Median Earnings	35771	38385	28616	50000
Median Hourly Earnings	16.74	16.97	12.82	19.60
Annual Hours Worked	2023	2162	2219	2484
Full-time, Full-year	75%	82%	70%	86%
Age	42	41	43	44
White	88%	89%	84%	.95%
Hispanic	5%	5%	4%	3%
Less than HS Diploma	7%	6%	8%	3%
High School Diploma	33%	32%	37%	26%
Some College	28%	28%	27%	26%
Bachelor's Degree	21%	22%	19%	28%
Advanced Degree	10%	11%	10%	17%
Panel B: Immigrants, CPS 1996-2018				
Observations	27,768	22,465	1985	1,161
	100.00%	80.93%	7.15%	4.14%
Mean Earnings	38030	38728	37314	69024
Median Earnings	25640	27090	23150	43051
Median Hourly Earnings	13.00	13.06	11.16	17.79
Annual Hours Worked	1954	2037	2088	2432
Full-time, Full-year	72%	77%	68%	83%
Age	40	40	42	43
White	66%	67%	68%	63%
Hispanic	48%	50%	46%	24%
Less than HS Diploma	28%	28%	28%	10%
High School Diploma	25%	25%	29%	22%
Some College	16%	16%	17%	17%
Bachelor's Degree	17%	17%	17%	27%
Advanced Degree	13%	14%	9%	23%

Notes: This table presents the summary statistics from a panel of year-to-year matched persons in the Annual Social and Economic Supplement of the Current Population Survey (CPS) for the years 1996 through 2018 for men aged 25 to 55 years old. The CPS classifies workers in each year as either salaried or self-employed, with self-employed persons separated by incorporation status. I exclude observations missing any of the following variables: age, race, gender, schooling, or birthplace. In addition, I further exclude those living in group quarters or in the military during the observed year. Men who are not working in the last period of their respective CPS rotation are not listed.

Table 2.2: Mulitnomial Logit Marginal Effects: Self-employment and Unincorporated/Incorporated (Years in US). All men aged 25-55.

	Self-employed	Unincorp	Incorp
	(1)	(2)	(3)
Foreign Born	-0.0303***	-0.00882*	-0.0229***
	(0.00531)	(0.00484)	(0.00242)
Years in US	0.00524***	0.00254***	0.00295***
	(0.000417)	(0.000297)	(0.000279)
Observations	906578	906578	906578
Demographics	X	X	X
State FE	X	X	X
Year FE	X	X	X

Notes: This table presents the marginal effects of the multinomial logit estimates of the log-odds ratio of an individual being self-employed rather than a salaried worker (column 1), or unincorporated or incorporated rather than a salaried worker (columns 2 and 3) using the sample as described in Table 1. Both sets of estimates (columns 1 and columns 2 and 3) control for demographics (educational attainment, age, race, and marital status) and state and year fixed effects. Standard errors clustered at the state level are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 2.3: One Year Employment Transitions. Age 25 to 55 Men. 1996-2018

Panel A: Natives (Row Sums)					
		Current Year Employment			
		Wage Worker	Unincorp	Incorp	Not Working
Last Year Employment	Wage Worker	96.85	0.51	0.81	1.83
	Unincorp	2.97	94.76	0.10	2.17
	Incorp	9.31	2.08	88.16	0.46
	Not Working	14.37	1.77	0.30	83.55
Panel B: Immigrants (Row Sums)					
		Current Year Employment			
		Wage Worker	Unincorp	Incorp	Not Working
Last Year Employment	Wage Worker	97.12	0.45	0.73	1.71
	Unincorp	2.62	95.92	0.05	1.41
	Incorp	10.16	2.15	87.34	0.34
	Not Working	22.91	2.89	0.47	73.73
Panel C: Natives (Column Sums)					
		Current Year Employment			
		Wage Worker	Unincorp	Incorp	Not Working
Last Year Employment	Wage Worker	97.41	5.03	12.68	15.30
	Unincorp	0.30	91.63	0.16	1.79
	Incorp	0.59	1.29	86.61	0.24
	Not Working	1.71	2.05	0.55	82.67
Panel D: Immigrants (Column Sums)					
		Current Year Employment			
		Wage Worker	Unincorp	Incorp	Not Working
Last Year Employment	Wage Worker	97.06	4.87	13.72	19.20
	Unincorp	0.23	90.97	0.08	1.40
	Incorp	0.53	1.19	85.35	0.20
	Not Working	2.18	2.96	0.84	79.20

Notes: This table presents the transition matrices for natives (2nd generation immigrants included) and foreign born men aged 25 to 55 from a panel of year-to-year matched persons in the Annual Social and Economic Supplement of the Current Population Survey (CPS) for the years 1996 through 2018 . In the CPS, each respondent is asked about his job during the previous week and longest tenured job in the previous year.This table plots the row percentages of each type of Current Year Employment in panels C and D. Thus, each row sums to 1 in panels A an B. This table also plots the column percentages of each type of Current Year Employment in panels C and D. Thus, each column sums to 1 in panels C an D. Each cell is a percentage of workers coming (or staying) from one employment type last year, i.e., 13.72% of current-year incorporated immigrants were wage workers the previous year.

Table 2.4: Summary Statistics: Previous Year Wage-Workers

	Natives	Immigrants
Mean Wage Income in t-2 ($10,000s)	4.50	3.65
Home Ownership	80.76%	58.30%
Mean State HPI growth t-3 to t-1	7.86%	8.27%

Notes: This table presents the summary statistics from a panel of year-to-year matched persons in the Annual Social and Economic Supplement of the Current Population Survey (CPS) for the years 1996 through 2018 for men aged 25 to 55 years old. I exclude observations missing any of the following variables: age, race, gender, schooling, or birthplace. In addition, I further exclude those living in group quarters or in the military during the observed year. Each statistic is conditioned on persons who were classified as working last year, but not self-employed.

Table 2.5: Entry into Incorporation from Wage Work. CPS Panel. Native and Immigrant men aged 25-55. 1996-2018.

	Natives			Immigrants		
	(1)	(2)	(3)	(4)	(5)	(6)
Homeowner	0.00511***	0.00424***	0.00396***	0.00420**	0.00409**	0.00306
	(0.000625)	(0.000672)	(0.000667)	(0.00200)	(0.00188)	(0.00185)
Wage Income (t-2)			0.000292**			0.00106***
			(0.000106)			(0.000279)
Observations	138481	138481	138481	21680	21680	21680
Age		X	X		X	X
Race	X	X	X	X	X	X
Education	X	X	X	X	X	X
State FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X

Notes: This table presents the regression results of Equation 2. The dependent variable is a dummy if the individual is incorporated in period t. All persons in this estimation are wage-workers in period t-1. State HPI growth is calculated from the Federal Housing Finance Agency's Housing Price Index data. All estimates control for state and year fixed effects. Standard errors, clustered at the state level, are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 2.6: Entry into Incorporation from Wage Work. CPS Panel. Native men aged 25-55. 1996-2018.

	(1)	(2)	(3)	(4)	(5)
Homeowner	0.00555***	0.00493***	0.00457***	0.00375***	0.00589**
	(0.000798)	(0.000750)	(0.000750)	(0.000808)	(0.00250)
State HPI growth t-3 to t-1	-0.00278	-0.0162	-0.0170	0.00353	0.00564
	(0.00466)	(0.00991)	(0.0107)	(0.0531)	(0.0529)
Homeowner × State HPI growth t-3 to t-1	0.00232	0.00244	0.00164	0.00285	-0.000472
	(0.00385)	(0.00383)	(0.00357)	(0.00402)	(0.00416)
Wage Income (t-2)			0.000304**	0.000244*	0.000244*
			(0.000120)	(0.000122)	(0.000122)
Observations	138481	138481	138481	138481	138481
Unemployment Rate in t-1					X
Age				X	X
Race		X	X	X	X
Education		X	X	X	X
State FE	X	X	X	X	X
Year FE	X	X	X	X	X

Notes: This table presents the regression results of Equation 3. The dependent variable is a dummy if the individual is incorporated in period t. All persons in this estimation are wage-workers in period t-1. State HPI growth is calculated from the Federal Housing Finance Agency's Housing Price Index data. All estimates control for state and year fixed effects. Standard errors, clustered at the state level, are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 2.7: Entry into Incorporation from Wage Work. CPS Panel. Immigrant men aged 25-55. 1996-2018.

	(1)	(2)	(3)	(4)	(5)
Homeowner	0.00479**	0.00284	0.00152	0.00164	0.00471
	(0.00210)	(0.00249)	(0.00262)	(0.00241)	(0.00442)
State HPI growth t-3 to t-1	-0.0216	-0.0199	-0.0162	-0.0245	-0.0132
	(0.0161)	(0.0202)	(0.0216)	(0.105)	(0.107)
Homeowner × State HPI growth t-3 to t-1	0.0175*	0.0181*	0.0196*	0.0187*	0.0146
	(0.00942)	(0.0106)	(0.0107)	(0.0106)	(0.00917)
Wage Income (t-2)			0.00124***	0.00123***	0.00123***
			(0.000234)	(0.000243)	(0.000243)
Observations	21647	21647	21647	21647	21647
Unemployment Rate in t-1					X
Age				X	X
Race		X	X	X	X
Education		X	X	X	X
State FE	X	X	X	X	X
Year FE	X	X	X	X	X

Notes: This table presents the regression results of Equation 3. The dependent variable is a dummy if the individual is incorporated in period t. All persons in this estimation are wage-workers in period t-1. State HPI growth is calculated from the Federal Housing Finance Agency's Housing Price Index data. All estimates control for state and year fixed effects. Standard errors, clustered at the state level, are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 2.8: Entry into Unincorporation from Wage Work. CPS Panel. Native and Immigrant men aged 25-55. 1996-2018.

	Natives			Immigrants		
	(1)	(2)	(3)	(4)	(5)	(6)
Homeowner	-0.000323	-0.000128	0.0000953	-0.000664	-0.000493	-0.000234
	(0.000713)	(0.000692)	(0.000677)	(0.00113)	(0.000988)	(0.000971)
Wage Income (t-2)			-0.000228**			-0.000265**
			(0.0000696)			(0.000112)
Observations	138481	138481	138481	21680	21680	21680
Age		X	X		X	X
Race	X	X	X	X	X	X
Education	X	X	X	X	X	X
State FE	X	X	X	X	X	X
Year FE	X	X	X	X	X	X

Notes: This table presents the regression results of Equation 2. The dependent variable is a dummy if the individual is incorporated in period t. All persons in this estimation are wage-workers in period t-1. State HPI growth is calculated from the Federal Housing Finance Agency's Housing Price Index data. All estimates control for state and year fixed effects. Standard errors, clustered at the state level, are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 2.9: Entry into Unincorporated Business Ownership from Wage Work. CPS Panel. Native men aged 25-55. 1996-2018.

	(1)	(2)	(3)	(4)	(5)
Homeowner	-0.000551	-0.000659	-0.000325	-0.000211	0.00149
	(0.000968)	(0.000968)	(0.000901)	(0.000914)	(0.00251)
State HPI growth t-3 to t-1	-0.00501	-0.00277	-0.00414	0.0529	0.0566*
	(0.00566)	(0.0145)	(0.0154)	(0.0327)	(0.0318)
Homeowner × State HPI growth t-3 to t-1	0.00414	0.00471	0.00411	0.00424	0.00164
	(0.00671)	(0.00662)	(0.00582)	(0.00552)	(0.00699)
Wage Income (t-2)			-0.000281**	-0.000274**	-0.000272**
			(0.000103)	(0.000101)	(0.000101)
Observations	138481	138481	138481	138481	138481
Unemployment Rate in t-1					X
Age			X	X	X
Race		X	X	X	X
Education		X	X	X	X
State FE	X	X	X	X	X
Year FE	X	X	X	X	X

Notes: This table presents the regression results of Equation 3. The dependent variable is a dummy if the individual is unincorporated in period t. All persons in this estimation are wage-workers in period t-1. State HPI growth is calculated from the Federal Housing Finance Agency's Housing Price Index data. All estimates control for state and year fixed effects. Standard errors, clustered at the state level, are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table 2.10: Entry into Unincorporated Business Ownership from Wage Work. CPS Panel. Immigrant men aged 25-55. 1996-2018.

	(1)	(2)	(3)	(4)	(5)
Homeowner	-0.00110	-0.00118	-0.000922	-0.000986	-0.00188
	(0.00164)	(0.00140)	(0.00139)	(0.00123)	(0.00494)
State HPI growth t-3 to t-1	-0.0137*	-0.0203*	-0.0194	0.117	0.119
	(0.00758)	(0.0121)	(0.0122)	(0.0706)	(0.0723)
Homeowner × State HPI growth t-3 to t-1	0.00853	0.00763	0.00797	0.0105**	0.0116**
	(0.00643)	(0.00527)	(0.00552)	(0.00512)	(0.00555)
Wage Income (t-2)			-0.000241**	-0.000253**	-0.000253**
			(0.000111)	(0.000110)	(0.000110)
Observations	21680	21680	21680	21680	21680
Unemployment Rate in t-1					X
Age				X	X
Race		X	X	X	X
Education		X	X	X	X
State FE	X	X	X	X	X
Year FE	X	X	X	X	X

Notes: This table presents the regression results of Equation 3. The dependent variable is a dummy if the individual is unincorporated in period t. All persons in this estimation are wage-workers in period t-1. State HPI growth is calculated from the Federal Housing Finance Agency's Housing Price Index data. All estimates control for state and year fixed effects. Standard errors, clustered at the state level, are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

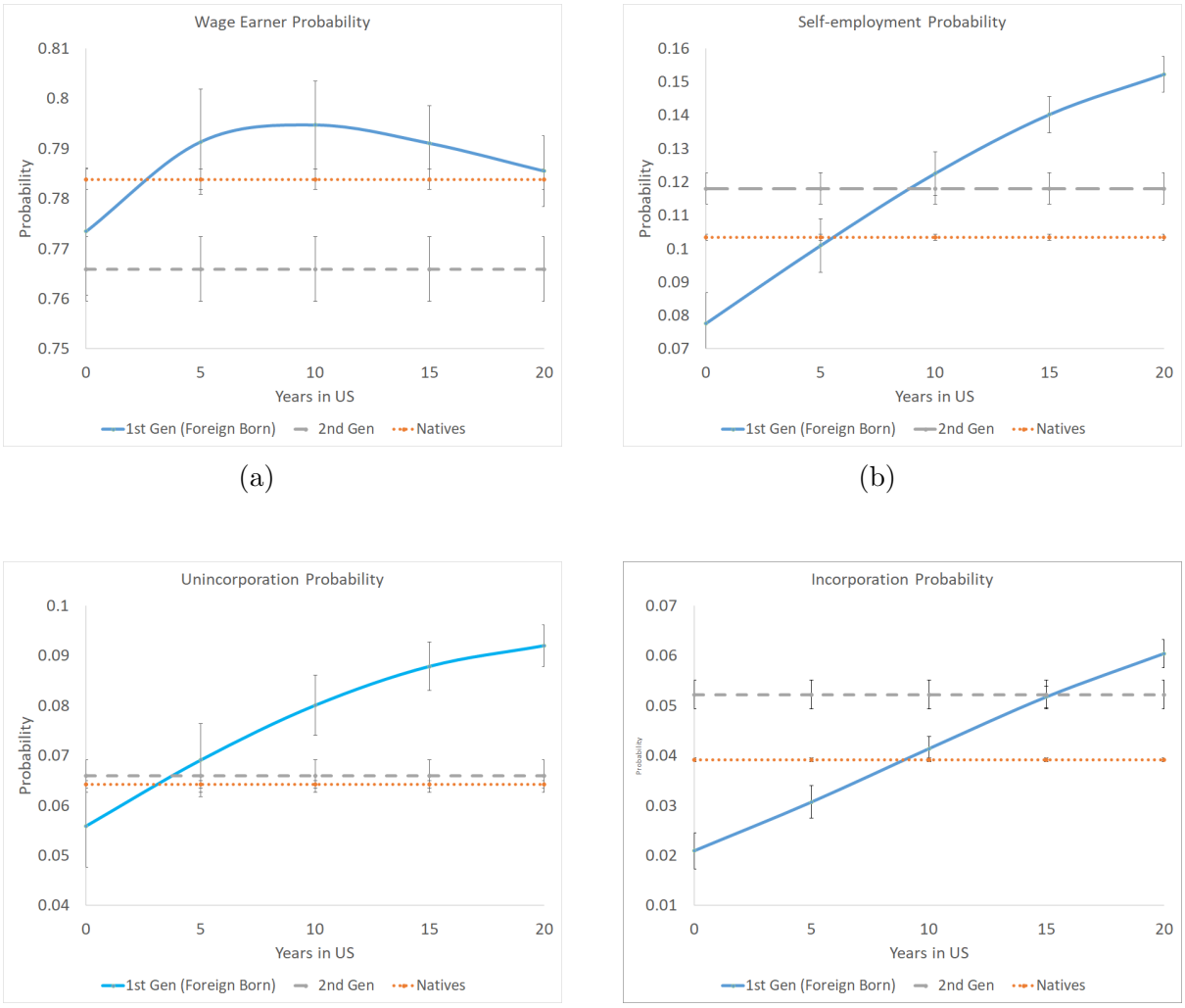

Figure 2.1: This figure plots the time path of assimilation into wage, self-employment, self-employed unincorporated, and self-employed incorporated business ownership of the foreign born men, second generation immigrants (children of the foreign born) and natives men(sons of natives) for the years 1994-2018 using the CPS data as described in Table 1. The time paths are derived from the marginal effects of multinomial logit estimation of Equation 1 calculated at years in US = 0, 5, 10 ,15, and 20. Wage Earners, Unincorporated, and Incorporated are estimated in one multinomial logit regression; self-employment is estimated separately in another multinomial logit regression.

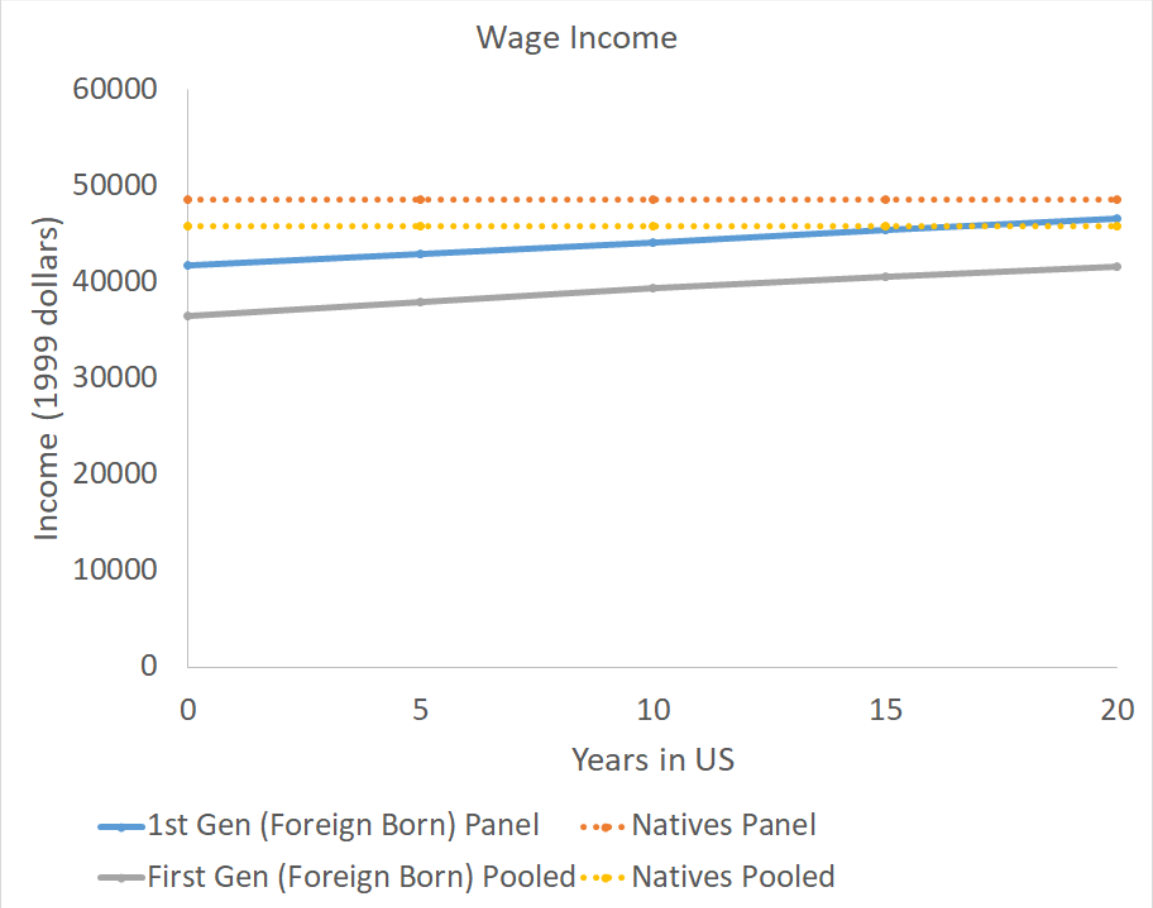

Figure 2.2: This figure plots the time path of wage income for immigrant (foreign-born) and native men for the years 1996-2018 using the CPS data as described in Table 1.

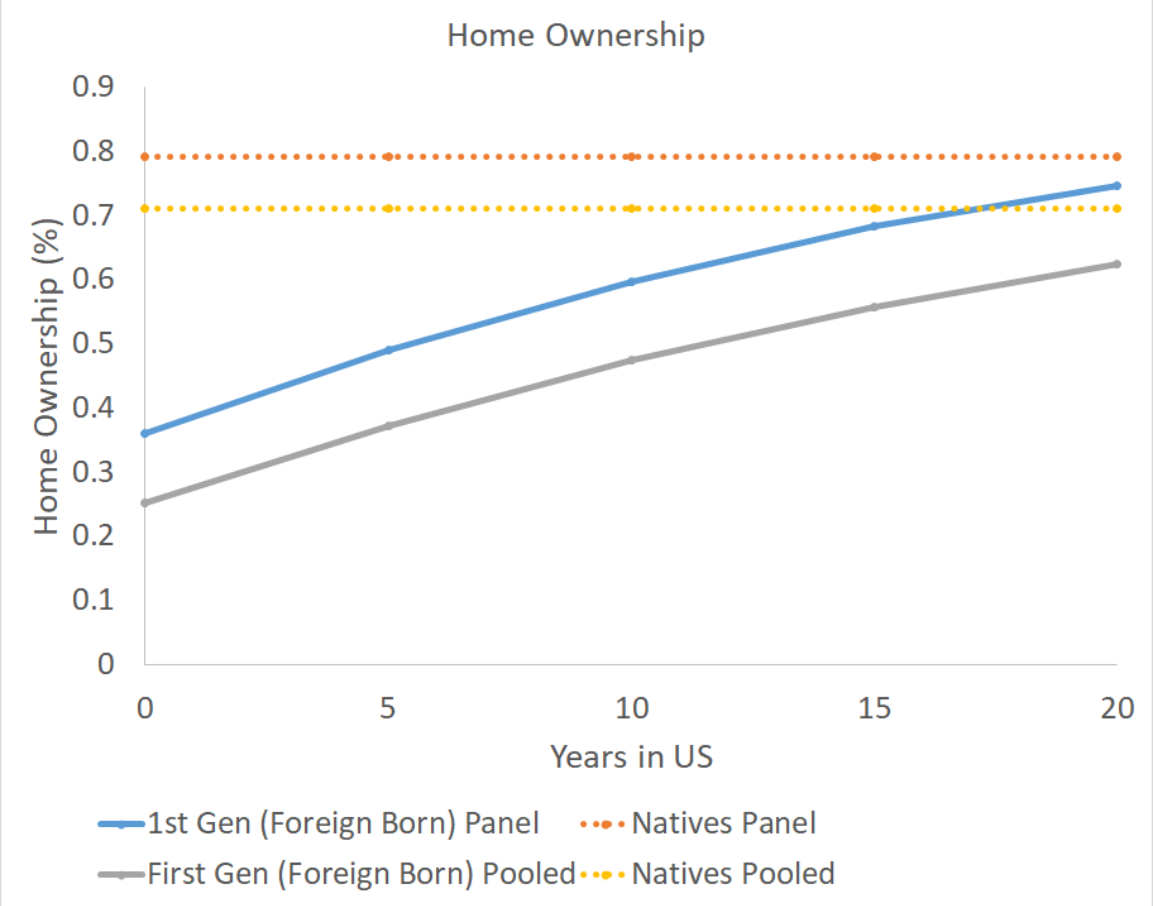

Figure 2.3: This figure plots the time path of home ownership for immigrant (foreign-born) and native men for the years 1996-2018 using the CPS data as described in Table 1.

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Appendix A

A.1 Multinomial Logit Estimates

Table A.1: Mulitnomial Logit Estimates: Equation 1. All men aged 25-55.

	Self-employed	Not Working
	(1)	(2)
Foreign Born	-0.107***	-0.242***
	(0.0299)	(0.0407)
Observations	906578	906578
State FE	X	X
Year FE	X	X

Notes: This table presents the multinomial logit estimates of Equation 1 using the sample as described in Table 1 . I control for state and year fixed effects. Standard errors clustered at the state level are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.2: Mulitnomial Logit Estimates: Equation 1. All men aged 25-55.

	Unincorp	Incorp	Not Working
	(1)	(2)	(3)
Foreign Born	-0.0255	-0.246***	-0.242***
	(0.0373)	(0.0432)	(0.0407)
Observations	906578	906578	906578
State FE	X	X	X
Year FE	X	X	X

Notes: This table presents the multinomial logit estimates of Equation 1 using the sample as described in Table 1 . I control for state and year fixed effects. Standard errors clustered at the state level are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.3: Mulitnomial Logit Estimates: Equation 1. All men aged 25-55.

	Self-employed	Not Working
	(1)	(2)
Foreign Born	0.204***	-0.347***
	(0.0261)	(0.0334)
High School Diploma	-0.00297	-0.758***
	(0.0330)	(0.0602)
Some College	-0.0610*	-1.111***
	(0.0335)	(0.0577)
Bachelor's Degree	-0.00644	-1.641***
	(0.0469)	(0.0683)
Advanced Degree	-0.00716	-1.820***
	(0.0455)	(0.0630)
Married	0.160***	-1.036***
	(0.0220)	(0.0253)
Asian	-0.319***	0.612***
	(0.0468)	(0.0533)
Black	-0.744***	0.622***
	(0.0222)	(0.0415)
Hispanic	-0.605***	-0.169**
	(0.0788)	(0.0730)
Other Race	-0.323***	0.509***
	(0.0344)	(0.0395)
Age	0.157***	-0.0929***
	(0.00612)	(0.00684)
Age × Age	-0.00144***	0.00160***
	(0.0000752)	(0.0000792)
Observations	906578	906578
State FE	X	X
Year FE	X	X

Notes: This table presents the multinomial logit estimates of Equation 1 using the sample as described in Table 1 . I control for state and year fixed effects. Standard errors clustered at the state level are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.4: Mulitnomial Logit Estimates: Equation 1. All men aged 25-55.

	Unincorp	Incorp	Not Working
Foreign Born	0.216***	0.192***	-0.347***
	(0.0339)	(0.0263)	(0.0334)
High School Diploma	-0.124***	0.460***	-0.758***
	(0.0355)	(0.0595)	(0.0605)
Some College	-0.304***	0.637***	-1.112***
	(0.0402)	(0.0639)	(0.0580)
Bachelor's Degree	-0.440***	0.928***	-1.643***
	(0.0661)	(0.0742)	(0.0686)
Advanced Degree	-0.492***	0.960***	-1.822***
	(0.0614)	(0.0795)	(0.0633)
Married	-0.00860	0.478***	-1.038***
	(0.0206)	(0.0283)	(0.0253)
Asian	-0.325***	-0.304***	0.612***
	(0.0380)	(0.0712)	(0.0532)
Black	-0.636***	-0.955***	0.623***
	(0.0321)	(0.0442)	(0.0416)
Hispanic	-0.533***	-0.808***	-0.168**
	(0.0773)	(0.116)	(0.0731)
Other Race	-0.266***	-0.440***	0.510***
	(0.0449)	(0.0531)	(0.0396)
Age	0.120***	0.228***	-0.0932***
	(0.00528)	(0.00961)	(0.00684)
Age × Age	-0.00104***	-0.00222***	0.00160***
	(0.0000633)	(0.000113)	(0.0000793)
Observations	906578	906578	906578
State FE	X	X	X
Year FE	X	X	X

Notes: This table presents the multinomial logit estimates of Equation 1 using the sample as described in Table 1 . I control for state and year fixed effects. Standard errors clustered at the state level are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.5: Mulitnomial Logit Estimates: Equation 1. All men aged 25-55.

	Self-employed	Not Working
	(1)	(2)
Foreign Born	-0.313***	0.320***
	(0.0675)	(0.0443)
Years in US	0.0544***	-0.0858***
	(0.00498)	(0.00494)
Years in US × Years in US	-0.00103***	0.00180***
	(0.0000860)	(0.0000891)
High School Diploma	0.000549	-0.762***
	(0.0339)	(0.0595)
Some College	-0.0583*	-1.115***
	(0.0344)	(0.0572)
Bachelor's Degree	0.000263	-1.651***
	(0.0480)	(0.0678)
Advanced	0.00403	-1.837***
	(0.0464)	(0.0637)
Married	0.160***	-1.031***
	(0.0222)	(0.0253)
Asian	-0.325***	0.619***
	(0.0493)	(0.0529)
Black	-0.747***	0.627***
	(0.0221)	(0.0414)
Hispanic	-0.622***	-0.155**
	(0.0836)	(0.0690)
Other Race	-0.325***	0.510***
	(0.0342)	(0.0397)
Age	0.151***	-0.0828***
	(0.00647)	(0.00687)
Age × Age	-0.00138***	0.00149***
	(0.0000789)	(0.0000796)
Observations	906578	906578
State FE	X	X
Year FE	X	X

Notes: This table presents the multinomial logit estimates of Equation 1 using the sample as described in Table 1 . I control for state and year fixed effects. Standard errors clustered at the state level are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.6: Mulitnomial Logit Estimates: Equation 2. All men aged 25-55.

	Unincorp	Incorp	Not Working
Foreign Born	-0.139	-0.694***	0.324***
	(0.0860)	(0.0913)	(0.0442)
Years in US	0.0425***	0.0818***	-0.0860***
	(0.00521)	(0.00852)	(0.00491)
Years in US × Years in US	-0.000902***	-0.00137***	0.00181***
	(0.0000828)	(0.000162)	(0.0000889)
High School Diploma	-0.120**	0.463***	-0.761***
	(0.0367)	(0.0601)	(0.0598)
Some College	-0.299***	0.637***	-1.115***
	(0.0416)	(0.0645)	(0.0575)
Bachelor's Degree	-0.433***	0.936***	-1.652***
	(0.0677)	(0.0754)	(0.0681)
Advanced Degree	-0.482***	0.974***	-1.838***
	(0.0627)	(0.0817)	(0.0640)
Married	-0.0105	0.480***	-1.033***
	(0.0208)	(0.0280)	(0.0253)
Asian	-0.335***	-0.302***	0.619***
	(0.0394)	(0.0742)	(0.0528)
Black	-0.639***	-0.959***	0.628***
	(0.0313)	(0.0462)	(0.0414)
Hispanic	-0.548***	-0.834***	-0.154**
	(0.0807)	(0.124)	(0.0691)
Other Race	-0.266***	-0.445***	0.511***
	(0.0450)	(0.0529)	(0.0397)
Age	0.115***	0.220***	-0.0832***
	(0.00556)	(0.00978)	(0.00687)
Age × Age	-0.000981***	-0.00215***	0.00149***
	(0.0000673)	(0.000114)	(0.0000797)
Observations	906578	906578	906578
State FE	X	X	X
Year FE	X	X	X

Notes: This table presents the multinomial logit estimates of Equation 1 using the sample as described in Table 1 . I control for state and year fixed effects. Standard errors clustered at the state level are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table A.7: Mulitnomial Logit Estimates: Equation 4. All men aged 25-55.

	Unincorp	Incorp	Not Working
2nd Gen Immigrant	0.0457*	0.314***	0.0585
	(0.0277)	(0.0342)	(0.0462)
1st Gen Immigrant	0.227***	0.257***	-0.329***
	(0.0357)	(0.0324)	(0.0417)
High School Diploma or Equivalent	-0.125***	0.454***	-0.758***
	(0.0353)	(0.0583)	(0.0605)
Some College or Associates Degree	-0.305***	0.627***	-1.113***
	(0.0400)	(0.0621)	(0.0580)
Bachelor's Degree	-0.441***	0.915***	-1.645***
	(0.0657)	(0.0722)	(0.0685)
Advanced or Professional Degree	-0.494***	0.942***	-1.825***
	(0.0610)	(0.0770)	(0.0628)
Married=1	-0.00828	0.481***	-1.038***
	(0.0205)	(0.0277)	(0.0254)
Asian	-0.335***	-0.359***	0.594***
	(0.0395)	(0.0747)	(0.0621)
Black	-0.636***	-0.954***	0.623***
	(0.0320)	(0.0455)	(0.0416)
Hispanic	-0.544***	-0.879***	-0.185**
	(0.0811)	(0.117)	(0.0689)
Other Race	-0.268***	-0.461***	0.506***
	(0.0456)	(0.0508)	(0.0394)
Age	0.120***	0.230***	-0.0928***
	(0.00533)	(0.00971)	(0.00683)
Age × Age	-0.00104***	-0.00224***	0.00160***
	(0.0000636)	(0.000114)	(0.0000795)
0.00160***			
	(0.0000755)	(0.0000794)	
Observations	906578	906578	906578
State FE	X	X	X
Year FE	X	X	X

Notes: This table presents the multinomial logit estimates of Equation 1 using the sample as described in Table 1 . I control for state and year fixed effects. Standard errors clustered at the state level are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

A.2 Not Working Time Profile

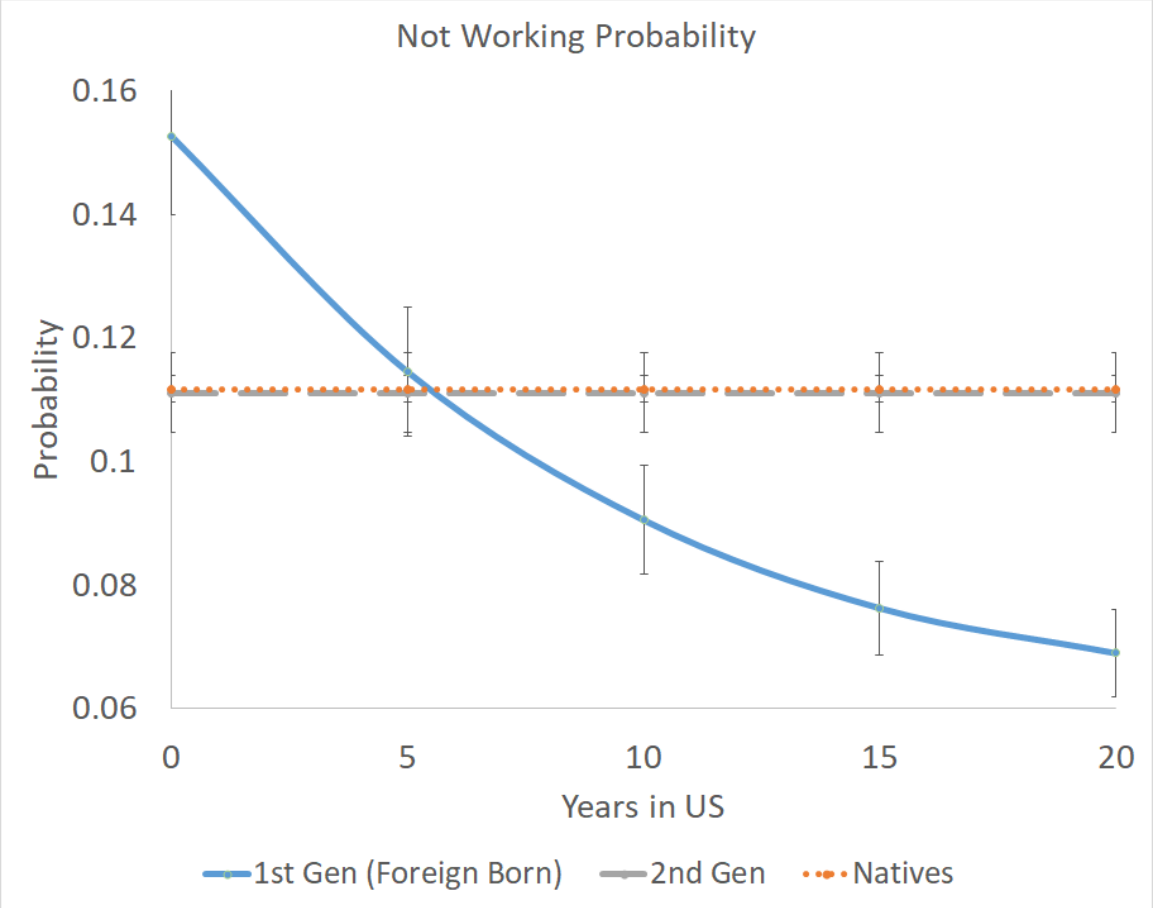

Figure A.1: This figure plots the time path of assimilation into not-working status of the foreign born men, second generation immigrants (children of the foreign born) and natives men(sons of natives) for the years 1994-2018 using the CPS data as described in Table 1. The time paths are derived from the marginal effects of multinomial logit estimation of Equation 1 calculated at years in US = 0, 5, 10 ,15, and 20.

Appendix B

B.1 Pooled CPS Summary Statistics

Table A2.1: Summary Statistics: CPS Men

	All	Wage Earner	Self-Employed	Unincorp	Incorp
Panel A: Natives, CPS 1994-2018					
Observations	742,541	584,418	87,717	53,496	34,221
	100.00%	78.71%	11.81%	7.20%	4.61%
Mean Earnings	44775	47490	56249	40400	81025
Median Earnings	34320	37214	35157	26549	52783
Median Hourly Earnings	16.35	16.52	14.87	11.85	20.42
Annual Hours Worked	1975	2158	2339	2230	2511
Full-time, Full-year	72.60%	80.83%	75.91%	69.30%	86.24%
Employs 10 or more			13.21%	5.63 %	25.06%
Full-time, Full-year	72.59%	80.83%	75.91%	69.30%	86.24%
Age	41.164	40.61	43.31	43.02	43.75
White	78.53%	78.99%	88.24%	86.71%	90.612%
Hispanic	7.31 %	7.53%	4.50%	5.06%	3.61%
Less than HS Diploma	8.02%	6.40%	6.75%	8.95%	3.32%
High School Diploma	32.84%	32.11%	31.59%	36.03%	24.64%
Some College	28.16%	28.79%	27.31%	27.68%	26.73%
Bachelor's Degree	20.76%	21.98%	22.08%	18.04%	28.39%
Advanced Degree	10.22%	10.72%	12.27%	9.30%	16.92%
Panel B: Immigrants, CPS 1994-2018					
Observations	164,247	133,425	16,844	11,056	5,788
	100.00%	81.23%	10.26%	6.73%	3.52%
Mean Earnings	34749	36535	45444	32025	71078
Median Earnings	23220	24912	26550	20318	43490
Median Hourly Earnings	12.02	12.03	11.95	9.98	17.78
Annual Hours Worked	1894	2051	2221	2095	2462
Full-time, Full-year	69.67%	76.65%	72.11%	66.03%	83.74%
Employs 10 or more			11.73%	7.32%	20.15%
Age	39.96	39.52	42.49	42.00	43.43
White	68.40%	68.95%	68.85%	71.78%	63.251%
Hispanic	56.28 %	57.96%	46.75%	54.97%	31.03%
Less than HS Diploma	32.06%	32.51%	24.81%	32.06%	10.95%
High School Diploma	25.17%	24.80%	27.23%	29.18%	23.50%
Some College	15.28%	15.07%	16.49%	15.61%	18.16%
Bachelor's Degree	15.49%	15.22%	19.38%	15.57%	26.68%
Advanced Degree	11.99%	12.39%	12.09%	7.58%	20.72%
Years in US	17.10	16.77	19.58	18.82	21.02

Notes: This table presents the summary statistics from the Annual Social and Economic Supplement of the Current Population Survey (CPS) for the years 1994 through 2018 for men aged 25 to 55 years old. The CPS classifies workers in each year as either salaried or self-employed, with self-employed persons separated by incorporation status. I exclude observations missing any of the following variables: age, race, gender, schooling, or birthplace. In addition, I further exclude those living in group quarters or in the military during the observed year.

B.2 Fully Interacted Models

Table B1: Entry into Incorporation from Wage Work. CPS Panel. All Men 25-55 . 1996-2018.

	(1)	(2)	(3)	(4)	(5)
Foreign Born	0.000510	0.00289	0.000192	-0.000225	-0.00250
	(0.00142)	(0.00187)	(0.00171)	(0.00174)	(0.00385)
Homeowner	0.00549***	0.00473***	0.00445***	0.00374***	0.00603**
	(0.000790)	(0.000749)	(0.000745)	(0.000802)	(0.00248)
State HPI growth t-3 to t-1	-0.00396	-0.00586	-0.00886	0.0110	0.0136
	(0.00512)	(0.00827)	(0.00864)	(0.0573)	(0.0578)
Homeowner × State HPI growth t-3 to t-1	0.00219	0.00307	0.00184	0.00273	-0.000829
	(0.00383)	(0.00393)	(0.00367)	(0.00425)	(0.00430)
Foreign Born × Homeowner	-0.000122	-0.000908	-0.00234	-0.00226	-0.000189
	(0.00212)	(0.00228)	(0.00243)	(0.00247)	(0.00494)
Foreign Born × Homeowner × State HPI growth t-3 to t-1	0.0140	0.0123	0.0166	0.0164	0.0142*
	(0.00931)	(0.00948)	(0.0108)	(0.0108)	(0.00745)
Wage Income (t-2)			0.000297**	0.000246**	0.000246**
			(0.000117)	(0.000121)	(0.000121)
Wage Income (t-2) × State HPI growth t-3 to t-1			0.000589	0.000668	0.000673
			(0.000646)	(0.000686)	(0.000688)
Foreign Born × Wage Income (t-2)			0.000948***	0.000964***	0.000965***
			(0.000261)	(0.000262)	(0.000261)
Foreign Born × Wage Income (t-2) × State HPI growth t-3 to t-1			-0.00277	-0.00276	-0.00277
			(0.00226)	(0.00226)	(0.00225)
Observations	160161	160161	160161	160161	160161
Unemployment Rate in t-1					X
Age				X	X
Race, Education		X	X	X	X
State FE, Year FR	X	X	X	X	X

Notes: This table presents the regression results of Equation 2. The dependent variable is a dummy if the individual is incorporated in period t. All persons in this estimation are wage-workers in period t-1. State HPI growth is calculated from the Federal Housing Finance Agency's Housing Price Index data. All estimates control for state and year fixed effects. Standard errors, clustered at the state level, are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.

Table B2: Entry into Unincorporated Business Ownership from Wage Work. CPS Panel. All Men 25-55 . 1996-2018.

	(1)	(2)	(3)	(4)	(5)
Foreign Born	-0.00103	-0.000519	-0.000701	-0.000692	0.00653*
	(0.00195)	(0.00190)	(0.00225)	(0.00226)	(0.00387)
Homeowner	-0.000624	-0.000723	-0.000385	-0.000300	0.00159
	(0.000980)	(0.00100)	(0.000925)	(0.000951)	(0.00247)
State HPI growth t-3 to t-1	-0.00623	-0.00460	-0.00604	0.0658**	0.0717**
	(0.00529)	(0.0107)	(0.0123)	(0.0277)	(0.0269)
Homeowner × State HPI growth t-3 to t-1	0.00398	0.00431	0.00376	0.00442	0.00166
	(0.00662)	(0.00665)	(0.00578)	(0.00569)	(0.00715)
Foreign Born × Homeowner	-0.000242	-0.000532	-0.000626	-0.000621	-0.00366
	(0.00214)	(0.00212)	(0.00192)	(0.00191)	(0.00500)
Foreign Born × Homeowner × State HPI growth t-3 to t-1	0.00515	0.00638	0.00694	0.00684	0.0111
	(0.0121)	(0.0119)	(0.0106)	(0.0106)	(0.00977)
Wage Income (t-2)			-0.000282**	-0.000277**	-0.000275**
			(0.000107)	(0.000106)	(0.000106)
Wage Income (t-2) × State HPI growth t-3 to t-1			0.000508	0.000555	0.000538
			(0.000890)	(0.000892)	(0.000889)
Foreign Born × Wage Income (t-2)			0.0000468	0.0000410	0.0000354
			(0.000161)	(0.000162)	(0.000162)
Foreign Born × Wage Income (t-2) × State HPI growth t-3 to t-1			-0.000361	-0.000363	-0.000331
			(0.000927)	(0.000929)	(0.000931)
Observations	160161	160161	160161	160161	160161
Unemployment Rate in t-1					X
Age				X	X
Race, Education		X	X	X	X
State FE, Year FR	X	X	X	X	X

Notes: This table presents the regression results of Equation 2. The dependent variable is a dummy if the individual is unincorporated in period t. All persons in this estimation are wage-workers in period t-1. State HPI growth is calculated from the Federal Housing Finance Agency's Housing Price Index data. All estimates control for state and year fixed effects. Standard errors, clustered at the state level, are in parentheses, where *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively.