Entrepreneurship and Survival Dynamics of Foreign-Born and U.S.-Born Immigrants[1]

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Abstract

The paper analyses the survival dynamics of business ownership of first generation (foreign-born) and second or higher generation (U.S.-born) immigrants employing data from the Survey of Income and Program Participation (SIPP). While previous research has examined the determinants of entering into entrepreneurship for different racial and ethnic groups, very little is known on the survival probabilities and the transitions out of entrepreneurship and how these differ across generations. Using duration analysis which addresses the dynamic selection that takes place through duration dependence and unobserved heterogeneity, the findings suggest that first generation immigrants exhibit a lower survival probability in entrepreneurship, which is mainly due to higher exit rates for Mexicans and other Hispanics. However, these differences do not carry on to the second or higher generations.

JEL Classification: F22**,** J15, J82, C41

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1. Introduction

Self-employment rates across racial and ethnic groups differ substantially in the United States, where Hispanics and African-Americans exhibit lower rates compared to Whites and Asians (Fairlie and Meyer 1996). Self-employment can be an important determinant for migrants' success and well-being in the host country and may even offer an avenue for escaping poverty for the more disadvantaged groups. Recently, Hotz-Eakin, Rosen and Weathers (2000), have presented evidence of stronger upward mobility in the income distribution among low-income self-employed workers compared to low-income wage/salary workers, and Fairlie (2004) has documented faster earnings-growth for the former group. Looking at different racial and ethnic groups, Hispanics and African-Americans perform worse in terms of earnings compared to Whites and Asians (Fairlie, 2005). There is also evidence of heterogeneity in terms of asset holdings among immigrants, with Europeans and Asians having substantially more wealth than the average immigrant (Cobb-Clark and Hildebrand, 2006).

Recent attempts in explaining the low self-employment rates of minorities and disadvantaged groups have confined attention to the determinants of entry into and exit out of entrepreneurship, recognizing the importance of these transitions in understanding the observed differences. Fairlie (2005), using CPS data finds that disadvantaged groups have relatively low rates of entry into self-employment and high rates of exit from self-employment. Lofstrom and Wang (2006), focusing on the comparison between Mexican-Hispanics and Other Hispanics, find no significant differences in their entry rate, but lower survival probabilities for Mexican-Hispanics. This approach borrows from the extensive literature on the determinants of business ownership based on year to year transitions, which has emphasized the importance of wealth holdings.[2]

[2] For example, see Evans and Jovanovic (1989), Evans and Leighton (1989), Fairlie (1999), Quadrini (1999), Gentry and Hubbard (2004), who are documenting a positive effect of wealth on the probability of starting a business. This has mainly interpreted as an indirect evidence for the existence of liquidity constraints that impose

Given the importance of the exit rate from entrepreneurship in explaining the observed self-employment rate differences among racial and ethnic groups, this paper analyses the survival dynamics in entrepreneurship using duration analysis. This contributes to the existing literature as it provides a dynamic framework which allows addressing the shortcomings of the static approach based on standard binary choice models, namely, the dynamic selection that naturally takes place through duration dependence and unobserved heterogeneity. In particular, the stock of self-employed initially observed represents a selected sample of entrepreneurs successful enough to survive up to that point (left-truncation). Failing to take into account such a selection might lead to biased inference.

The other main contribution of the paper is the distinction between first generation (foreign-born) and second or higher generation (U.S-born) immigrants. Intergenerational mobility and differences in earnings between first and second or higher generations have been extensively analyzed (e.g. Borjas,1993; Chiswick, 1977; Trejo, 2003). However, very little is known on the differences in exit rates from entrepreneurship between foreign-born and U.S.-born immigrants. Understanding these differences is important for explaining the observed gap in self-employment rate and designing policies that target entrepreneurs from disadvantaged groups.

The analysis is based on data from the Survey of Income and Program Participation (SIPP) using the 1996 survey. SIPP is particularly well-suited for our purposes given that it is a panel which provides information on monthly basis, over-samples the low income households, and offers detailed information on immigrants. The main advantage is that the exact date of starting a business is known. This allows us to construct business ownership durations and adequately control for the left-truncated spells.

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barriers to new business formation. An exemption is Hurst and Lusardi (2004) who find a positive relationship between wealth and the propensity to start up a business only for the top five percent of the wealth distribution.

The rest of the paper is organized as follows. The details of the data are discussed in Section 2, while Section 3 describes the empirical hazard function based on the data. Section 4 presents the econometric model and Section 5 the empirical results. Section 6 concludes.

2. Data

The empirical analysis is based on the 1996 panel of the Survey of Income and Program Participation (SIPP). The 1996 survey is a rotating panel collected every four months for approximately 36,700 U.S. households spanning over a 4 year period. Since low-income households were over sampled according to the survey design, sampling weights are used in the analysis.

Each wave of the SIPP contains both core questions common to each wave and topical questions that are not updated in each and every wave. The core questions provide information on business ownership for each person in the household above 16 years old and the exact starting date of the business. Knowing the exact starting date is important for constructing exact spell durations.[3] The additional advantage of using the SIPP is that it contains a migration module in wave 2 of the panel. Based on the information about the country of birth in the migration module we are able to distinguish between U.S. born and foreign-born individuals. For the latter group, we consider different groups of immigrants, namely, Mexicans, Central and South Americans, Europeans (including Australians and Canadians), and Asians. Furthermore, using the available information about the origin of individuals we also distinguish the U.S.-born in the following groups: Mexicans, Central and South Americans, African Americans, Asians, and white non-Hispanics. Those U.S.-born individuals with a foreign origin are considered as second or higher generation immigrants.

[3] The PSID, which also contains immigration history information and wealth data, does not provide the day of entering into business. Therefore, any analysis needs to be based on an inflow sample since 1998, when a representative sample of 491 immigrant families was included in the survey, which would lead to a very small sample.

SIPP data also provide information on wealth at the household level in waves 3, 6, 9, and 12. From the assets and liabilities module we use household's total net wealth which is equal to total assets minus liabilities. Although the SIPP contains detailed information on specific assets and liabilities, it does not gather information about assets held off-shore which may be particularly important for immigrant households, but this is a limitation shared by all other available data sources, such as the PSID (Cobb-Clark and Hildebrand, 2006).

We obtain an unbalanced panel for those who entered the sample in the first wave of 1996. We make this restriction as the migration module is only asked at wave 2.[4] Multiple spells (owning more than one business) for each individual are taken into account. The sample of business owners consists of the stock of those who are owners at the first wave of the panel, and the inflow into entrepreneurship since then.[5] The analysis focuses on males, in order to avoid the selectivity issues related to female employment, aged 20-65.

The resulting sample consists of 4567 business spells of which 4094 are owned by a U.S.-born and 473 by a foreign-born individual (10.4 per cent of the total sample). One-third of the spells (1375) end with an exit from entrepreneurship and the rest are right-censored. Table 1 contains some summary statistics. The first two columns show that foreign-born individuals are slightly younger, less educated, more likely to be married with more children, and have lower average wealth, income, and business equity, compared to the U.S-born. Considering foreign-born immigrants by origin, we observe that Mexicans have the highest proportion of high school drop-outs (about 60%), and the lowest wealth and income levels, followed by those from Central and South America.

[Table 1]

[4] The remaining sample represents about 90% of the total sample. We also exclude from the analysis individuals born in Puerto Rico on the basis that their unique legal position makes it difficult to sensibly include them in the foreign-born population, and American Indians as they differ from the Americans and are very few to be included in the analysis as a separate group.

[5] The way to deal with the bias that arises from stock sampling, since only those who have survived in entrepreneurship are observed in wave 1, is discussed in the next section.

3. Empirical Hazard Function and Survival Estimates

Figure 1 depicts the empirical hazard function based on the Kaplan-Meier estimators. Panel A shows the hazard function for foreign-born and U.S-born individuals, where the second group includes both immigrants and non-immigrants. The general pattern of the hazard function is non-linear with an increasing exit rate at the beginning of the spell, which declines with the elapsed time into entrepreneurship. The U.S.-born experience a faster initial increase in the hazard rate compared to their foreign-born counterparts which reaches about 1.5 per cent. After about the first year, the hazard rate of the foreign-born overtakes the U.S.-born until they converge. Panel B distinguishes between U.S.-born immigrants of second or higher generation and U.S.-born non-immigrants. The hazard rate for the second or higher generation immigrants exhibits an increase above 2 per cent around the first year of duration which converges thereafter to the level of the other two groups. In Panel C we break the group of foreign-born into the four main groups i.e. Mexican, Central and South American, Asian, and European, while we still report the hazard function for the U.S.-born immigrants and U.S.-born non-immigrants as in Panel B. Foreign-born Mexicans and C&S Americans exhibit the highest exit rates, with the Mexicans reaching the rate of 2.5 per cent in the first year. Finally, Panel D depicts the hazard function by group of U.S-born immigrants showing that the large increase on the hazard for the U.S.-born immigrants in Panel B and C is driven by the U.S-born Mexicans.

[Figure 1]

Figure 2 displays the survival function which is the percentage of spells surviving into entrepreneurship. Reflecting the overall higher hazard rate of foreign-born immigrants, their survival function, in Panel A, lies below that of U.S-born. Distinguishing between the four groups of immigrants, Panel C shows that foreign-born Mexicans have the lowest survival

probabilities followed by C&S Americans. Finally, in Panel D, it is the U.S-born Mexicans who exhibit the lowest survival among the U.S.-born immigrants.

[Figure 2]

However, this analysis based on the empirical estimates of the hazard and survival function can be biased. In particular, the observed differences between foreign-born and U.S.-born immigrants and across ethnic groups might be due to differences in characteristics, such as wealth or skills (see Table 1). Moreover, the negative duration dependence that is suggested by Figure 1 might be spurious. Households with less entrepreneurial ability, which is in most cases unobserved, are more likely to exit business faster, so that the remaining sample represents a selected group of households with higher ability. These observed and unobserved characteristics might affect the patterns in survival probabilities and duration dependence that we see in the data. To adequately take these differences into account we estimate an appropriately specified econometric model.

4. Econometric Model

We investigate the transitions out of entrepreneurship in a multivariate setting by estimating a mixed proportional hazard model of business ownership. As discussed in Section 2, we observe individuals who own a business at their first interview (stock sample) and those who start-up a business after their first interview (flow sample). It is known that stock sampling might lead to sample selection bias as only those who have survived up to the current state are observed. This is referred as left truncation in the literature. To take into account this source of bias we modify the likelihood function conditioning on survival up to the time of the first interview. We can do so as the data provide the exact starting date for each particular

business. Those spells which last longer than the period covered by the data are treated as right censored.

We assume that the differences in transition rates out of entrepreneurship can be characterized by the observed characteristics X, the elapsed duration in entrepreneurship, and unobserved characteristics υ (random effect). Given the focus of the paper, we estimate models from different specifications that include a dummy for foreign-born D, or a set of dummies distinguishing between different immigrant groups. We also control for a rich array of characteristics including age, education, marital status, number of kids, as well as household's income and wealth. Heterogeneity regarding the type of business owned is controlled for by including a dummy which represents businesses with low start-up capital requirement.[6] Furthermore, we condition on the regional unemployment rate at the month entering into entrepreneurship in order to capture some economy wide effects.

The transition for a person i for a spell j is defined as follows:

$$\theta_{ij}(t \mid X_{ij}, D, \upsilon_i) = P[T_{ij} = t_{ij} \mid T_{ij} \geq t_{ij}, X_{ij}, D, \upsilon_i] = F(y_{ij}) \qquad (1)$$

where F is the complementary log-log transformation: $F(v) = 1 - \exp[-\exp(v)]$, and y_{ij} is defined as:

$$y_{ij} = \beta_0 + \beta_1 X_{ij} + \delta D + \sum_{k=1}^{K} \beta_2 I_d(t) + \upsilon_i \qquad (2)$$

The effect of duration dependence is modeled by using the time dummy variables $I_k(t)$, which are equal to one when duration t is within the duration intervals as denoted by the subscript $k = (1, ..., K)$. We allow for 12 duration intervals of 6 months each, which cover a duration period of up to 6 years, and an open interval of more than 72 months duration. For normalization purposes we impose the coefficient of the first interval to be zero.

[6] Low starting capital businesses include construction and services, while high starting capital businesses comprise manufacturing, transportation, communications, wholesale and retail trade. This is in line with Hurst and Lusardi (2004) and Lofstrom and Wang (2006).

The conditional density function of the completed duration, denoted by t_e, can be written as[7]:

$$f(t_e \mid X, D, \upsilon) = \lambda(t_e \mid X, D, \upsilon) \exp\left(-\int_0^{t_e} \lambda(s \mid X, D, \upsilon) ds\right) \quad (3)$$

Based on the density function, the likelihood function is as follows:

$$L = \int_{\upsilon} \left[f(t_e \mid X, D, \upsilon) \right]^{c_e} \left[1 - F(t_e \mid X, D, \upsilon)\right]^{1-c_e} \left(\left[1 - F(b-a \mid X, D, \upsilon)\right]^{lc} \right)^{-1} dG(\upsilon) \quad (4)$$

where c_e is a dummy variable with a value of 1 if the spell is completed and a value of 0 if it is censored, while lc is a dummy variable with a value of 1 if the spell is left truncated and a value of 0 if it is a inflow spell. For the fresh spells where $(lc = 0)$, the likelihood consists of the first two components in equation (4). For completed spells $(ce = 1)$ the likelihood contribution is the conditional density in (3), while for right censored spells $(ce = 0)$ the contribution in the likelihood is the survival function $(1 - F(t_e \mid .)$. The third part of equation (4) accounts for the left truncation which occurs because of the stock sampling. Individuals enter the current state at the known time *a*, but we observe them in the sample if and only if they are still at the initial state at time *b*, which is the first month in the panel. Therefore, the observed duration must be greater or at least equal to *b*-*a*. The correct conditioning likelihood function is obtained by dividing with the probability of duration to be greater than $b - a$, which can be written as $prob(t_e \geq b - a \mid .) = 1 - F(b - a \mid .)$.

Heterogeneity

The inclusion of household's wealth and income in the model might raise some concerns about endogeneity, as more able people are more likely to hold more wealth and income. But conditional on the average wealth and income of the household over time, the remaining

[7] In what follows the i and j subscripts are dropped.

variation (deviations in wealth and income) is arguably less likely to depend on υ. This approach was first suggested by Mundlack (1978). We adopt the following specification for unobserved heterogeneity:

$$\upsilon = \vartheta_1 \overline{w} + \vartheta_2 \overline{m} + \eta \tag{5}$$

where $\overline{w}$ and $\overline{m}$ are the time means of household wealth and income, respectively.[8] The remaining unobservable η is assumed to be independent of the other regressors in X. Following a widely used approach of duration analysis in labor economics based on Heckman and Singer (1984), we do not impose a distributional assumption on η which allows the distribution to be asymmetric. The distribution of unobserved heterogeneity $G(\upsilon)$ is assumed to be discrete with two points of support p_1 and p_2, where:

$$\Pr(\upsilon = \upsilon_a) = p_1 \qquad \Pr(\upsilon = \upsilon_b) = p_2 = 1 - p1 \tag{6}$$

which is supposed to have a logit specification with $p_1 = \frac{e^{a_1}}{e^{a_1} + e^{a_2}}$, and $a_2 = 0$ is used for normalization. The unobserved effect is removed by taking expectations:

$$f(t \mid X) = E_\upsilon[\, f(t \mid X, \upsilon)] \tag{7}$$

5. Empirical Results

5.1 Estimates without Unobserved Heterogeneity

We estimate the model under three alternative specifications. The first allows for a dummy for foreign-born immigrants, while those born in the U.S., which includes both immigrants of second or higher generation and non-immigrants, are considered as the reference group. The second specification distinguishes the foreign-born into four groups (Mexicans, C&S

[8] Since both household income and wealth have a skewed distribution, we transform them using the inverse hyperbolic sine: $\log(x+(x^2+1)^{1/2})$, which is a log-like transformation defined over negative values.

Americans, Asians and Europeans). The third specification allows for ethnic group dummies both for the foreign-born and the U.S.-born immigrants (for those with an ethnic origin), so that the reference group comprises white non-Hispanics. Conditioning on the observed characteristics and ignoring for the moment unobserved heterogeneity, the coefficient estimates for the first specification, in the first column of Table 2, suggest that the foreign-born immigrants are more likely to exit entrepreneurship compared to the reference group of U.S-born individuals. The effect although it is positive it is not significant. The second specification presented in the second column indicates that there are differences in the hazard rates across different immigrant ethnic groups. In particular, foreign-born Mexican and Central and South Americans exhibit significantly higher exit rates, while Asians and Europeans do not differ significantly from the U.S.-born.

[Table 2]

The results from the third specification in column 3 of Table 2 show that the exit rate for foreign-born Mexican and C&S American immigrants is higher when white non-Hispanics are considered as the reference group. However, U.S.-born -second or higher generation- immigrants do not exhibit significantly different exit rates relative to the reference group. Finally, in line with previous studies (Fairlie, 2005) we find significantly higher exit rates for African Americans.

Regarding the effect of other characteristics, age, education, and being married have a significantly negative effect on the exit rate from entrepreneurship. In particular, an additional year of age lowers the hazard at a decreasing rate, while being a college graduate has the largest negative impact. Years since immigration also exhibit a significantly negative effect so that the hazard rate is lower for those immigrants with more years in the U.S., with a positive and significant effect for the quadratic term, suggesting an assimilation effect.

Finally, the duration dependence coefficients show a non-linear effect of the elapsed time in entrepreneurship on the exit rate. The hazard rate is increasing at the beginning of the spell and declines as the spell lasts longer.

5.2 Estimates with Unobserved Heterogeneity

Table 3 presents the coefficient estimates after controlling for unobserved heterogeneity. For all the three specifications unobserved heterogeneity is not significant. The second mass point is clearly zero and the estimated coefficients for the regressors are virtually the same.[9] The estimated coefficients in Table 3 for the mean wealth and income are negative and significant. Based on the discussion in Section 4, interpreting the effect of wealth and income should be done with caution as endogeneity might affect the estimated coefficients. This can arise since for the left truncated spells wealth and income is not observed before the entry into entrepreneurship, so that the level of wealth holdings and income might be correlated with the unobserved term. Indeed, in Table 2 the effect of wealth is shown to be negative and significant. Perhaps, a more convincing source of identification is to look at the effect of the transitory wealth and income on the exit rate. Table 3 shows a negative effect for transitory wealth and a positive effect for transitory income, but both are not significant.

[Table 3]

5.3 Sensitivity Analysis

We evaluate the sensitivity of our main results with respect to the way duration dependence is specified. So far we have allowed a flexible specification for duration dependence based on the piece-wise exponential form which was common for all groups. Since the effect of time

[9] For brevity, we only report in Table 3 the coefficients for the foreign-born and U.S.-born dummies and years since immigration.

on entrepreneurship for foreign-born immigrants might differ from U.S.-born immigrants and non-immigrants, we allow for specific-group duration dependence. The first column of Table 4 depicts the estimates for the immigrant group dummies and the group-specific duration dependence dummies without unobserved heterogeneity, which is comparable to column 3 of Table 2. We have re-defined the 6-month interval dummies to 12-month intervals in order to increase the cell size for this estimation. Allowing for group-specific duration dependence does not alter the main finding of significantly higher hazard rate for the two foreign-born immigrant groups (Mexican, C&S American) and for African-Americans, and no effect for the second or higher generation of immigrants. The only difference observed is a slightly lower effect for the foreign-born which makes the coefficient estimates significant at the 10% per cent level.[10] Interestingly also, capturing the spikes of the hazard for the U.S.-born immigrants which were shown in Figure 1, we also observe lower coefficients for this group.

Finally, in the second column of Table 4 we allow also for group-specific unobserved heterogeneity which turns to be not-significant. Comparing the third column of Table 3 with the second of Table 4 the difference in the likelihood ratio is about 2 (-7,323.85 vs. -7.321.84).

[Table 4]

5.4 Simulations

Using the coefficient estimates of Table 2 (third column) we simulate the survival function for different ethnic groups keeping other characteristics at their mean values. The left panel of Figure 3 shows the simulated survival function of foreign-born immigrants by origin. Mexicans and Central and South Americans have the lowest survival probabilities in entrepreneurship. After 5 years (60 months) about 50-60 per cent of the entrepreneurs in these

[10] The coefficients of the other variables are not reported as they are similar with Table 2.

two groups still survived in business, while the corresponding figure for European foreign-born immigrants is close to 80 per cent. The right panel of Figure 3 depicts the simulated survival function of U.S.-born immigrants by ethnic origin. We observe that the differences across groups are vanished especially for the first 2 years of survival. Moreover, the survival functions for the U.S-born immigrants are shifted upwards compared to the foreign-born, so that at a given duration there is a higher survival rate.

[Figure 3]

6. Conclusions

This paper analyses the survival dynamics of business ownership among foreign-born and U.S.-born immigrants employing data from the Survey of Income and Program Participation (SIPP). Using the date of starting up a business we are able to construct the exact business ownership duration and adopt a modeling framework based on duration analysis, which is more appropriate in the current context compared to the static discrete choice models adopted by existing literature. The latter ignore the dynamic selection that takes place through duration dependence and the presence of unobserved heterogeneity. Our findings suggest that foreign-born immigrants have a higher exit rate from entrepreneurship compared to their U.S.-born counterparts. Distinguishing between different immigrant groups, we find lower survival probabilities for Mexican and Central and South American foreign-born immigrants compared to white non-Hispanics. However, these differences do not carry on to the U.S.-born immigrants of second or higher generations. These results contribute to our understanding of the low self-employment rates observed for Hispanics which are mainly driven by their higher exit rates. Although assimilation seems to play a role, as more years in the U.S. are associated with lower exit rates, we do also find a discrete change in survival probabilities for the U.S.-born immigrants.

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Figure 1. Empirical Hazard Estimates

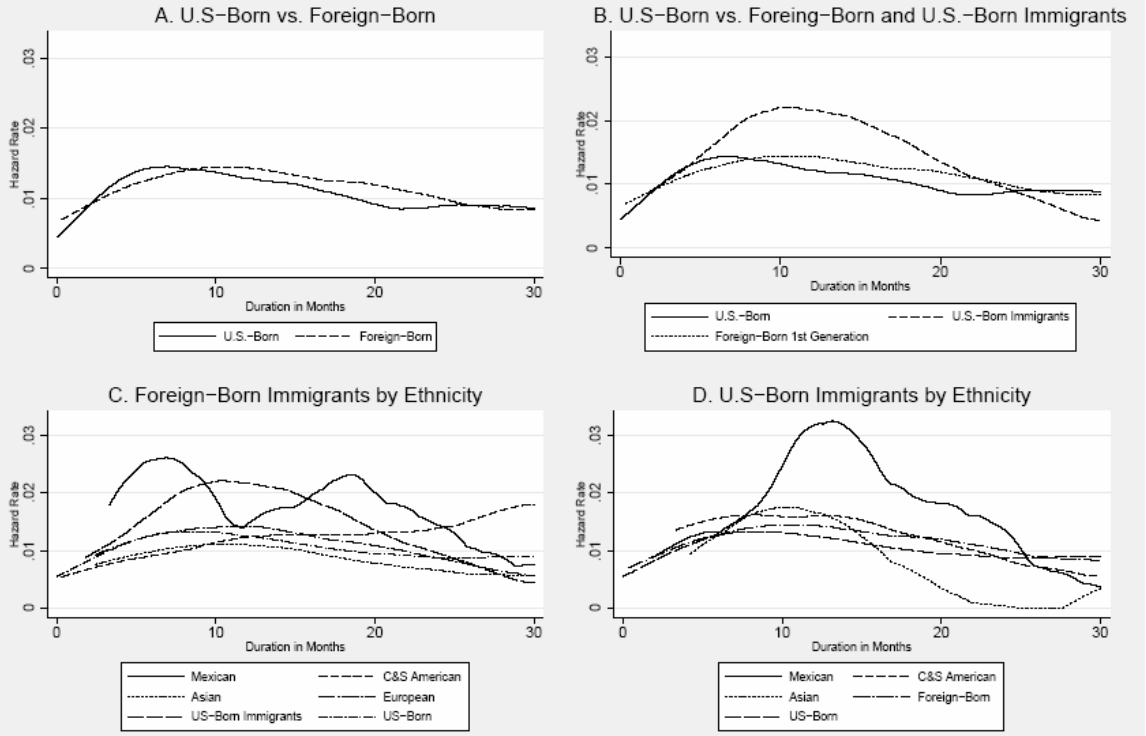

Figure 2. Empirical Survival Function

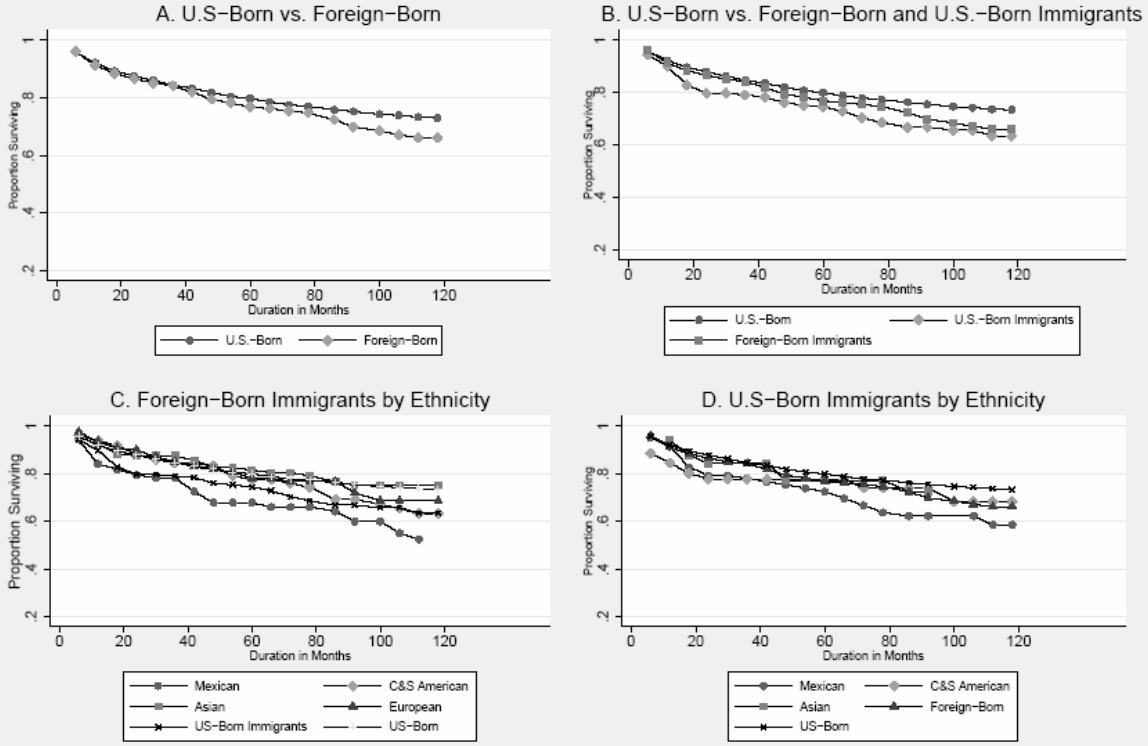

Figure 3. Estimated Survival Function

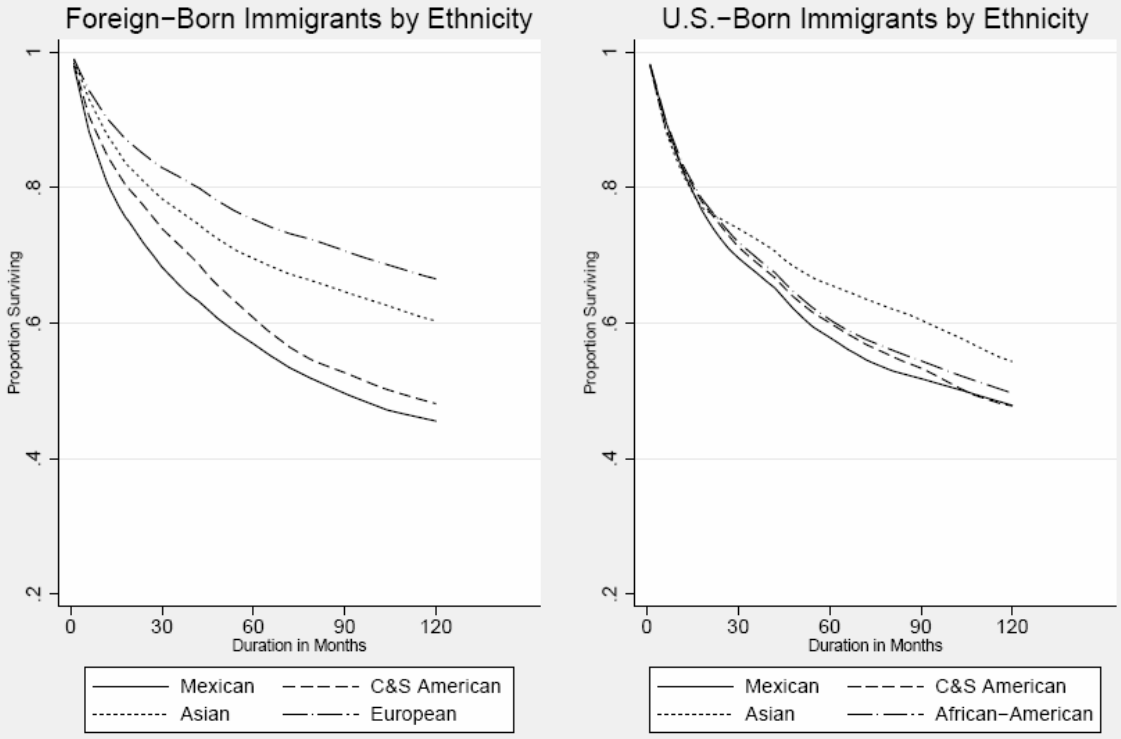

Table 1. Summary Statistics (Foreign-Born by Origin and U.S.-Born)

	Foreign-Born		U.S.-Born		Mexican	
No of Spells	473		4094		107	
Variables	Mean	S.D	Mean	S.D	Mean	S.D
Age	41.21	10.61	41.55	10.77	38.32	9.99
High School Drop out	0.219	0.414	0.087	0.281	0.611	0.490
High School	0.263	0.441	0.284	0.451	0.136	0.344
College beyond HS	0.252	0.434	0.290	0.454	0.203	0.404
College Graduate	0.267	0.443	0.340	0.474	0.050	0.219
Married	0.705	0.457	0.672	0.469	0.742	0.440
No of Kids	1.359	1.189	1.062	1.214	2.026	1.362
Business Equity	3.967	12.918	6.359	18.707	1.231	4.418
	Median		Median		Median	
Wealth	6.627		12.455		1.630	
Income	0.477		0.561		0.307	
	Central & South Amer.		Europeans		Asians	
No of Spells	104		127		135	
Variables	Mean	S.D	Mean	S.D	Mean	S.D
Age	40.20	10.06	43.53	10.94	42.11	10.70
High School Drop out	0.211	0.410	0.095	0.294	0.047	0.213
High School	0.350	0.479	0.237	0.427	0.310	0.464
College beyond HS	0.264	0.443	0.328	0.471	0.200	0.402
College Graduate	0.175	0.381	0.341	0.476	0.443	0.499
Married	0.620	0.488	0.749	0.435	0.698	0.461
No of Kids	1.116	1.098	1.077	1.045	1.325	1.051
Business Equity	3.146	11.524	3.866	8.597	6.243	17.853
	Median		Median		Median	
Wealth	3.152		16.217		12.484	
Income	0.396		0.578		0.557	

Source: SIPP 1996. Wealth, Income and Business Equity are measured in 10,000's dollars in 1996 prices.

Table 2. Hazard Estimates without Unobserved Heterogeneity

	(1)			(2)			(3)		
	Coef.	S.E		Coef.	S.E		Coef.	S.E	
Foreign-Born	0.369	0.266							
Mexican				0.524	0.303	*	0.578	0.304	**
C&S American				0.587	0.308	*	0.631	0.308	**
Asian				0.348	0.315		0.385	0.316	
European				0.169	0.307		0.208	0.308	
U.S.-Born									
Mexican							0.231	0.165	
C&S American							0.201	0.253	
Asian							-0.022	0.336	
African American							0.315	0.107	***
Yrs since Immigration	-0.062	0.033	*	-0.072	0.034	**	-0.072	0.034	**
Yrs since Immigration^2/100	0.170	0.082	**	0.206	0.086	**	0.206	0.086	**
Age	-0.134	0.018	***	-0.134	0.018	***	-0.137	0.018	***
Age^2/100	0.157	0.021	***	0.157	0.021	***	0.160	0.021	***
High School	-0.232	0.092	**	-0.211	0.095	**	-0.203	0.095	**
College beyond HS	-0.225	0.093	**	-0.203	0.095	**	-0.197	0.096	**
College Graduate	-0.392	0.096	***	-0.367	0.098	***	-0.348	0.099	***
Married	-0.175	0.065	***	-0.172	0.065	***	-0.156	0.065	**
No of Kids	0.009	0.025		0.007	0.025		0.002	0.025	
HH Wealth	-0.014	0.003	***	-0.014	0.003	***	-0.014	0.003	***
HH Income	-0.013	0.016		-0.013	0.016		-0.008	0.017	
Low Capital Sector	-0.067	0.056		-0.070	0.056		-0.068	0.056	
State Unem. Rate	-0.013	0.020		-0.013	0.020		-0.018	0.020	
Duration Dependence									
Month 6-12	-0.297	0.104	***	-0.296	0.104	***	-0.297	0.104	***
Month 13-18	-0.581	0.119	***	-0.580	0.119	***	-0.580	0.119	***
Month 19-24	-0.885	0.136	***	-0.884	0.136	***	-0.883	0.136	***
Month 25-30	-0.914	0.148	***	-0.915	0.148	***	-0.911	0.148	***
Month 31-36	-1.145	0.159	***	-1.146	0.159	***	-1.138	0.159	***
Month 37-42	-1.084	0.169	***	-1.086	0.169	***	-1.077	0.169	***
Month 43-48	-0.806	0.151	***	-0.809	0.151	***	-0.803	0.151	***
Month 49-54	-0.973	0.175	***	-0.975	0.175	***	-0.967	0.175	***
Month 55-60	-1.131	0.185	***	-1.134	0.185	***	-1.124	0.185	***
Month 61-66	-1.093	0.194	***	-1.097	0.194	***	-1.086	0.195	***
Month 67-72	-1.285	0.203	***	-1.289	0.203	***	-1.281	0.203	***
Month 73+	-1.521	0.091	***	-1.525	0.091	***	-1.514	0.091	***
Constant	-1.093	0.416	**	-1.111	0.418	***	-1.134	0.419	***
No of Spells	4,573			4,573			4,573		
Log-Likelihood	-7,339.04			-7,337.25			-7,332.32		
No of Month Spells	131,879			131,879			131,879		

Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%. The reference group in (1) and (2) is U.S.-born immigrants and non-immigrants, and in (3) white non-Hispanics.

Table 3. Hazard Estimates with Unobserved Heterogeneity

	(1)			(2)			(3)		
	Coef.	S.E		Coef.	S.E		Coef.	S.E	
Foreign-Born	0.368	0.266							
Mexican				0.499	0.304	*	0.555	0.305	*
C&S American				0.600	0.309	*	0.644	0.309	**
Asian				0.362	0.315		0.400	0.315	
European				0.193	0.306		0.232	0.306	
U.S.-Born									
Mexican							0.227	0.165	
C&S American							0.184	0.253	
Asian							-0.031	0.336	
African American							0.300	0.107	***
Yrs since Immigration	-0.063	0.033	*	-0.074	0.034	**	-0.074	0.034	**
Yrs since Immigration^2/100	0.173	0.082	**	0.210	0.087	**	0.210	0.087	**
HH Wealth (Mean)	-0.021	0.004	***	-0.020	0.004	***	-0.020	0.004	***
HH Wealth (Deviation)	-0.004	0.004		-0.004	0.004		-0.004	0.004	
HH Income (Mean)	-0.100	0.041	**	-0.100	0.041	**	-0.086	0.042	**
HH Income (Deviation)	0.014	0.020		0.013	0.020		0.015	0.020	
Unobserved Hetereogeneity									
Mass Point 1	-0.328	0.560		-0.347	0.555		-0.445	0.556	
Mass Point 2	-0.004	0.504		-0.006	0.454		0.0003	0.448	
No of Spells	4,573			4,573			4,573		
Log-Likelihood	-7,329.93			-7,328.35			-7,323.85		
No of Month Spells	131,879			131,879			131,879		

See also notes in Table 2. The estimation distinguishes between mean and transitory wealth and income. The coefficients for the other variables are similar to Table 2.

Table 4. Hazard Estimates with Group-Speficic Duration Dependence

	Without UH		With UH	
	Coef.	S.E	Coef.	S.E
Foreign-Born				
Mexican	0.542	0.313 *	0.542	0.311 *
C&S American	0.566	0.338 *	0.607	0.313 *
Asian	0.294	0.344	0.332	0.316
European	0.191	0.340	0.239	0.308
U.S.-Born				
Mexican	0.098	0.224	0.024	0.226
C&S American	0.049	0.315	-0.040	0.320
Asian	-0.167	0.345	-0.248	0.347
African American	0.309	0.106 ***	0.294	0.107 ***
Duration Dependence				
Foreign-Born				
Month 12-24	-0.506	0.286 *	-0.514	0.277 *
Month 25-36	-1.066	0.364 ***	-1.065	0.368 ***
Month 37-48	-0.420	0.315	-0.427	0.313
Month 49-60	-0.538	0.369	-0.558	0.371
Month 61-72	-1.622	0.595 ***	-1.631	0.601 ***
Month 73+	-0.855	0.234 ***	-0.835	0.226 ***
U.S-Born Immigrants				
Month 12-24	0.098	0.334	0.117	0.345
Month 25-36	-1.979	1.001 **	-1.959	1.026 **
Month 37-48	-0.412	0.526	-0.370	0.544
Month 49-60	-1.236	0.727 *	-1.209	0.737 *
Month 61-72	-0.422	0.504	-0.392	0.497
Month 73+	-1.436	0.334 ***	-1.429	0.334 ***
U.S.-Born				
Month 12-24	-0.641	0.104 ***	-0.632	0.101 ***
Month 25-36	-0.850	0.115 ***	-0.840	0.117 ***
Month 37-48	-0.858	0.125 ***	-0.844	0.126 ***
Month 49-60	-0.941	0.140 ***	-0.927	0.140 ***
Month 61-72	-1.047	0.153 ***	-1.032	0.140 ***
Month 73+	-1.432	0.084 ***	-1.412	0.085 ***
Unobserved Hetereogeneity				
Mass Point 1	-1.198	0.430 ***	-0.458	0.527
Mass Point 2 (Foreign-Born)			-0.115	0.459
Mass Point 2 (U.S.-Born Immigr.)			-0.146	1.449
Mass Point 2 (U.S.-Born Non-Immigr.)			-0.036	0.653
No of Spells	4,573		4,573	
Log-Likelihood	-7,329.93		-7,321.84	
No of Month Spells	131,879		131,879	

See notes also in Table 2 and Table 3.