

The B.E. Journal of Economic Analysis & Policy

Contributions

Volume 10, Issue 1

2010

Article 10

Mexican-American Entrepreneurship

Robert Fairlie*

Christopher M. Woodruff[†]

*University of California, Santa Cruz, rfairlie@ucsc.edu

[†]University of California, San Diego, cwoodruff@ucsd.edu

Recommended Citation

Robert Fairlie and Christopher M. Woodruff (2010) "Mexican-American Entrepreneurship," *The B.E. Journal of Economic Analysis & Policy*: Vol. 10: Iss. 1 (Contributions), Article 10.
Available at: <http://www.bepress.com/bejeap/vol10/iss1/art10>

Copyright ©2010 The Berkeley Electronic Press. All rights reserved.

Mexican-American Entrepreneurship*

Robert Fairlie and Christopher M. Woodruff

Abstract

We conduct a comprehensive analysis of Mexican-American entrepreneurship. We find that low levels of education and wealth explain the entire gap between Mexican immigrants and non-Latino whites in business formation rates; together with language ability, these factors explain nearly the entire gap in business income. Legal status represents an additional barrier for Mexican immigrants, reducing business ownership rates by 0.7 percentage points. Human and financial capital deficiencies limit business ownership and business success among second and third-generation Mexican-Americans to a lesser extent. These findings have implications for the debates over the assimilation of Mexican-Americans in the United States.

KEYWORDS: entrepreneurship, immigration, Mexican-Americans, self-employment

*Fairlie is with the Department of Economics, University of California, Santa Cruz and Woodruff is with the Graduate School of International Relations and Pacific Studies, University of California, San Diego. This research was funded by the Kauffman Foundation. The views expressed here are solely the responsibility of the authors and should not be interpreted as necessarily reflecting the views of the Kauffman Foundation. We would like to thank Emma Aguila, Ken Couch, Raquel Fonseca-Benito, Amanda Harris, Magnus Lofstrom, three referees, the editor, and seminar and conference participants at the NBER, UC Berkeley, UC Davis, UNC, USC, RAND, University of Washington, Hitotsubashi University, Australian National University, University of Sydney, University of New South Wales, the 2007 Academy of Management Meetings, the 2005 Society of Labor Economists Meetings, and the All-UC Labor Workshop for helpful comments and suggestions. Daniel Beltran, Kuntal Das, and Jose Martinez provided excellent research assistance.

1. Introduction

Mexican-Americans represent almost 10 percent of the U.S. population, and if current trends continue will become the largest minority group in the United States within a decade. Roughly two-thirds of working-age Mexican-Americans were born in Mexico, representing 28 percent of all working age immigrants residing in the United States. The rate of assimilation of Mexican immigrants into the U.S. economy and society has been the subject of an active debate among economists. An emerging literature examines why Mexican-Americans have lower wages, incomes, wealth and other economic outcomes (see Trejo 1997, 2003, Blau and Kahn 2007, and Cobb-Clark and Hildebrand 2004 for example).

The economic assimilation question, however, has not previously been addressed through the lens of business ownership and performance, an area that has received little attention in the literature. Business ownership is the main alternative to wage and salary employment for making a living, and thus has important implications for earnings and wealth inequality. Self-employed business owners earn more on average than wage and salary workers (Borjas 1999). The pattern of higher average earnings among business owners than wage and salary workers also holds in almost every industry for both men and women (see Figures 1 and 2). Not only do business owners earn more, they also have higher saving rates and accumulate more wealth (Bradford 2003). Although self-employed business owners represent roughly one-tenth of the workforce, they hold nearly 40 percent of total U.S. wealth (Bucks, Kennickell, and Moore 2006).

Business ownership has been shown to be an important source of job creation and economic development in poor neighborhoods (Boston 1999, 2006). Firms owned by Mexican-Americans hire more than 700,000 employees in the United States, a disproportionate share of them minorities (U.S. Census Bureau 1997, 2006). Low-income business owners are found to have more upward income mobility than low-income wage and salary workers (Holtz-Eakin, Rosen and Weathers 2000), and business owners from some minority groups are found to experience faster earnings growth on average than wage and salary workers (Fairlie 2004). Business ownership is thus a critical path to economic advancement for many less-educated workers. Consistent with this, we find that business owners comprise nearly a three times higher share of the Mexican-immigrant workforce earning \$50,000 or more than the workforce earning less than \$50,000.¹ Understanding how liquidity constraints, informational barriers, lending discrimination, customer discrimination, or other barriers act as

¹ The economic success of earlier immigrant groups in the United States has been attributed to their ownership of small businesses (See Loewen 1971, Baron et al. 1975, and Bonacich and Modell 1980, Min 1996 for example).

constraints to business ownership is important because their existence suggests some efficiency loss. Although assigning a precise cost to these losses is difficult, barriers to entry and expansion faced by minority-owned businesses become especially important as minorities represent an increasing share of the total population.

Figure 1
Mean Self-Employed Business Earnings vs Mean Wage and Salary Earnings by Industry - Men
Census 2000

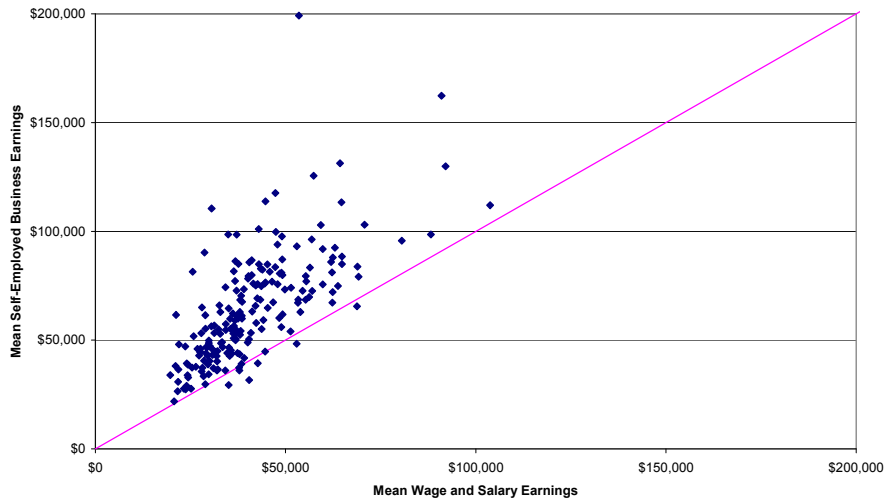
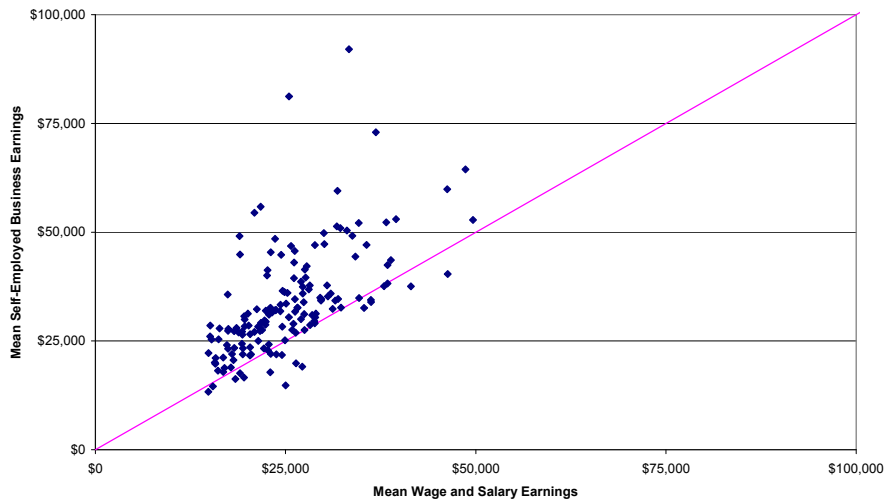


Figure 2
Mean Self-Employed Business Earnings vs Wage and Salary Earnings by Industry - Women
Census 2000



The scarce literature on business ownership among Mexican-Americans contrasts with a much more extensive literature focusing on why African-Americans have low business formation rates and own less successful businesses on average.² This difference is surprising given that Mexican-American business ownership rates and performance are only slightly better than African-American rates and performance. Estimates reported below indicate that only 5.1 percent of Mexican-American men are business owners, compared to 4.4 percent of African-American men and 12.6 percent of non-Latino white men. Perhaps of more concern, the businesses owned by Mexican-Americans tend to be much smaller and less successful than either African-American or white-owned businesses. For example, Mexican-American immigrant men earn \$32,251 annually on average, half the level of non-Latino white men (\$64,138) and well below the mean earnings of African-American men in business (\$42,499). Average sales are less than one third of those of white owned businesses, \$137,980 annually compared to \$437,870 (U.S. Census Bureau 2006b).

We test three hypotheses related to business formation and performance. First, we examine whether human capital constraints explain why Mexican-Americans form fewer and lower-performing businesses. Lower education levels and English language ability have been shown to be the main explanatory factors for the lower earnings of Mexican wage and salary workers (Trejo 1999). Do these same factors affect business formation and performance? Second, financial capital is needed for starting the vast majority of businesses in the United States (U.S. Census Bureau 1997). Does limited access to financial capital constrain Mexican-Americans from starting businesses? The median net worth of Mexican-Americans is only slightly more than \$6,000 which is similar to blacks, for whom capital constraints are one of the most important factors limiting the ability to start successful businesses (Bates 1997 and Fairlie and Robb 2007, 2008). Finally, it is estimated that more than 50 percent of the Mexican immigrant population residing in the United States is undocumented (Costanzo et al 2001, U.S. Immigration and Naturalization Service 2003; Passel, Capps, and Fix 2004). The high percentage of Mexican immigrants thought to be in the U.S. illegally raises the question of whether legal status has a substantial impact on business formation. Legal status has previously been shown to be associated with higher earnings of wage and salary workers (Kossoudji and Cobb-Clark 2002), but legal immigrants may also have greater access to financial markets, government

² The lack of business success among blacks is partly due to relatively low levels of education, wealth and parental self-employment, lending constraints, and consumer discrimination (see Borjas and Bronars 1989, Bates 1997, Fairlie 1999, Hout and Rosen 2000, Blanchflower, Levine and Zimmerman 2003, Cavalluzzo, Cavalluzzo, and Wolken 2002, and Fairlie and Robb 2007, 2008).

contracts, the legal system, and other institutions. The net effect of these two forces on business ownership, however, is unknown.

Our aim is to provide a comprehensive analysis of the potential causes of low rates of business formation among Mexican-Americans and the relative under-performance of their businesses. We use data from the U.S. Population Census from 1980 to 2000, the matched and unmatched Current Population Surveys (CPS), Annual Demographic Files and Outgoing Rotation Group Files from 1994 to 2004, and the Legalized Population Survey (LPS). We use Blinder (1973)-Oaxaca (1973) and non-linear decomposition (Fairlie 2005) techniques to examine whether human capital and financial capital constraints contribute to lower business formation rates and less successful businesses among Mexican-Americans. To identify the impact of legal status, we exploit the natural experiment created by the Immigration and Reform Control Act (IRCA) of 1986, which allowed immigrants residing illegally in the United States continuously for five years at the time of passage to obtain legal status. Synthetic control groups are created using Census, CPS and the NLSY data for comparison to undocumented Mexican immigrants in the LPS data.

The analysis contributes to the scant literature on Mexican-American entrepreneurship. In recent research, Lofstrom and Wang (2006) find, using the 1996 Survey of Income and Program Participation (SIPP), that relatively low levels of education and wealth contribute to lower business-creation rates among Mexican-Americans. Using the 2000 Census, Fairlie and Woodruff (2007) find that differences in age, education and marital status explain part of the lower business ownership rate among Mexican-Americans, compared with the entire U.S. labor force.³ Focusing on earnings, Fairlie (2004) finds evidence of faster earnings growth among self-employed Latino men than among male Latino wage and salary workers from the National Longitudinal Survey of Youth, and Zuiker (1998) finds evidence that self-employment helps more than half of Latinos in the Southwest escape poverty. Although the existing literature provides a start, a comprehensive analysis of Mexican-American entrepreneurship focusing on both business formation and performance using several large, nationally-representative datasets is needed.

³ Fairlie and Woodruff (2007) focuses primarily on explaining self-employment rate differences between residents of Mexico and Mexican immigrants in the United States. The analysis is thus limited to using Census data and variables that are comparable across the two countries. The low rate of Mexican immigrant business ownership is not driven by low rates of business ownership in Mexico. Indeed, Mexico has one of the highest business ownership rates in the world.

2. Data

We use data from the Census of Population, Current Population Survey (CPS) and Legalized Population Survey (LPS). The sample sizes for all three datasets are large enough to focus on Mexican-Americans. Microdata from the 1994 to 2004 CPS Annual Demographic Files (ADF) are used to estimate business ownership rates, defined as the percentage of the population that owns a business. Business ownership includes all businesses that are owned as the person's main job activity, including incorporated, unincorporated, employer and non-employer businesses.⁴ A major advantage of the CPS in addition to the large sample sizes is the availability of information on the birthplace of both parents, which is not available in the Census or SIPP. By examining whether individuals have parents born in Mexico we can distinguish between second-generation Mexican-Americans and third- (and higher-) generation Mexican Americans. Third-generation Mexican-Americans are identified by self-reported Hispanic ancestry. The birthplace of the individual is used to determine whether they are a first-generation immigrant.

Although the CPS files are primarily used as cross-sectional samples in the existing literature, one-year transitions can be identified by linking consecutive surveys. The resulting sample sizes are considerably larger than other panel datasets and include recent as well as previous waves of Mexican immigrants.⁵ To estimate business formation rates we use the matched CPS data. Households in the CPS are interviewed each month over a 4-month period. Eight months later they are re-interviewed in each month of a second 4-month period. Thus, individuals who are interviewed in March of one year are interviewed again in March of the following year. The rotation pattern of the CPS makes it possible to match the information from one survey to the following survey creating a one-year panel for up to half of all respondents in a given demographic file. To match these data, the household and individual identifiers provided by the CPS are used. False matches are removed by comparing race, sex, and age codes from the two years. The total match rate is 72.8 percent. Mexican-Americans have lower match rates than whites creating an under representation in the matched sample, but the difference is not large. More generally, minorities, immigrants, the less-educated, young adults and individuals residing in the West are underrepresented

⁴ The focus on main job activity excludes small, side businesses owned by wage and salary workers.

⁵ The NLSY and PSID, for example, do not include recent Mexican immigrants.

in the matched data.⁶ Among Mexican-Americans, the matched sample is slightly older and more educated, and is slightly more likely to be born in the United States, self-employed and living in the West.

The primary sample that we use to examine net business income is the Public Use Microdata (PUMS) 5-Percent Samples of the 2000 U.S. Census of Population. The Census microdata include over 8 million observations for working-age adults. Even after conditioning on business ownership, the sample size is very large, allowing us to explore the causes of differences in net business incomes. One limitation of the Census relative to the CPS is that it does not include information on the birthplace of parents. We are thus limited to distinguishing between Mexican immigrants and U.S.-born Mexicans.

The Legalized Population Survey (LPS) is used to explore the impact of legalization. The LPS selected a sample of immigrants who had applied for legal status following the passage of the Immigration Reform and Control Act (IRCA) in 1987. Individuals were interviewed twice, once in 1989 just after they applied for legal status, and once in 1992, after legal status had been obtained. Those not granted legal status were not resurveyed in 1992, and budget limitations necessitated the elimination of an additional randomly selected subsample from the original 1989 sample. The full LPS sample size is 6,193 in 1989 and 4,012 in 1992. In addition to the 1,191 individuals dropped for the reasons given above, just under 20% of individuals were lost to the sample because of return migration, because they were not found in 1992, or because they refused to participate in the resurvey. More than 97 percent of the sample filed the initial application for legal status between May 1987 and June 1988. The 1989 survey asks respondents about their work status at the time of the survey and also at the time they filed their application for legal status. The final sample of Mexican immigrants aged 20-64 and employed at the time of application and in 1992 includes 837 men and 357 women.

DEFINITION OF BUSINESS OWNERSHIP

Throughout the paper, we measure business ownership based on the class of worker question referring to the respondent's main job or business activity (i.e. activity with the most hours worked) at the time of the interview. Business owners are those individuals who report 1) "self-employed in own not incorporated business, professional practice, or farm," or 2) "self-employed in own incorporated business, professional practice, or farm." This definition

⁶ The CPS is a sample of housing units rather than households. Households that move between waves of the survey are not followed. See Fairlie and Woodruff (2005) for more information on match rates across demographic groups.

includes owners of all types of businesses—incorporated, unincorporated, employer and non-employer firms.

Male business owners are most commonly engaged in construction, automobile repair, and legal services. (See Appendix Table A1). Female business owners are most commonly found in childcare services, beauty salons, and real estate (Appendix Table A2). One might question whether those reporting themselves as self employed in some industries—child care, household cleaning services or taxi drivers, for example—should be thought of as business owners.⁷ We note that these industries represent only a small fraction of those identifying themselves as self employed. For example, among men, taxi drivers only represent 0.7 percent of all self-employed business owners. Among women, childcare represents 10.9 percent of the total self employed, and personal services (including household cleaners) and services to buildings (including business cleaners) represent only 5.1 percent and 2.6 percent of all self-employed, respectively. Alternatively, one might identify industries where self-employed business ownership is of questionable benefit on the basis of earnings in the industry. Appendix Tables A1 and A2 also report the percentage of self employed and average earnings for the industries in which business owners report the lowest earnings. For male business owners, these are private household services, barber shops and childcare services. For female business owners, they are private household services, childcare services and toys and sport manufacturing. We include all industries in the main analysis, but also show that our results are robust to excluding private household services, childcare services, services to buildings, and taxi and limousine service from the sample. These industries generally have low earnings growth potential and represent self-employment activities that are somewhat atypical of business ownership.

3. Mexican-American Rates of Business Ownership and Performance

Using microdata from the CPS and Census, we examine business ownership rates, business formation rates and business performance among Mexican-Americans. Focusing on business formation separate from business performance is important for providing a comprehensive view of the state of Mexican-American business ownership. Business ownership rates among Mexican-Americans are much lower than the national average. Estimates of business ownership to population ratios by ethnicity and race from the 1994 to 2004 March CPS data are reported in Table 1. Only 5.1 percent of Mexican-American men and 2.6 percent of Mexican-

⁷ Day laborers are not included among self-employed business owners. In fact, the CPS occasionally conducts a special Contingent and Alternative Employment Arrangements Supplement and includes day laborers in their wage and salary estimates.

American women own businesses. In contrast, 10.7 percent of all men and 5.6 percent of all women are self-employed business owners. Removing the influence of Mexican-Americans and other minority groups on total U.S. rates results in larger disparities. We find that 12.6 percent of non-Latino white men and 6.6 percent of non-Latino white women are self-employed business owners. To sharpen the findings for Mexican-Americans, we make comparisons to non-Latino whites in the following sections.

Table 1
Business Ownership Rates by Ethnicity/Race
Current Population Survey, Annual Demographic Surveys (1994-2004)

Group	Business Ownership Rate	Rate for Workers with 15+ Hours	Rate for 15+ Hours and Non-Agriculture	Rate for 35+ Hours and Non-Agriculture	Total Sample Size
Men					
Total	10.7%	12.7%	11.9%	11.6%	473,196
White, non-Latino	12.6%	14.5%	13.5%	13.1%	335,794
African-American	4.4%	5.8%	5.8%	5.4%	42,316
Mexican-American	5.1%	5.8%	6.0%	5.6%	43,584
Other Latinos	6.9%	8.3%	8.3%	8.2%	24,973
Native American	6.8%	8.4%	7.7%	6.7%	5,462
Asian	11.0%	13.4%	13.2%	13.5%	18,806
Women					
Total	5.6%	7.1%	6.8%	6.1%	516,946
White, non-Latino	6.6%	8.0%	7.6%	6.8%	356,866
African-American	2.3%	3.2%	3.1%	3.0%	57,839
Mexican-American	2.6%	4.3%	4.3%	4.0%	43,110
Other Latinos	3.5%	5.2%	5.1%	4.7%	28,911
Native American	4.0%	5.5%	5.5%	4.9%	6,215
Asian	5.8%	8.5%	8.4%	8.3%	21,541

Notes: (1) The sample consists of individuals ages 20-64. (2) The business ownership rate is the number of self-employed business owners divided by the population. (3) All estimates are calculated using sample weights provided by the CPS.

Mexican-American rates of business ownership are very close to those of African-Americans. The business ownership rate is 0.7 percentage points higher for Mexican-American men than for black men, and the business ownership rate is 0.3 percentage points higher for women. Another interesting finding is that Mexican-Americans are less likely to own businesses than are other Latinos. Comparing all major ethnic and racial groups in the United States, Mexican-Americans have the second lowest rate of business ownership. The only major group that is less likely to own a business in the United States is blacks. All of these differences across groups are statistically significant due to the large sample sizes in the CPS.

The comparisons are not sensitive to the measure of business ownership. In the remaining columns of Table 1 we limit the sample to i) those working 15 or

more hours per week, ii) those working 15 or more hours in non-agricultural industries, and iii) those working 35 hours or more in non-agricultural industries. Business ownership rates increase after imposing these restrictions, but the key finding is that Mexican-American rates do not change substantially relative to white rates.⁸

Self-employed business ownership is defined for the individual's main job activity, thus removing the potential for counting side businesses. The insensitivity to changes in hours worked also rules out the possibility that the results are being driven by individuals reporting disguised unemployment, underemployment, or casually selling goods and services as self-employed business ownership (Carter and Sutch 1994).⁹ To investigate this question further, however, we also estimate business ownership rates removing industries in which the self employed activities are generally not scalable, and hence might not be classified as businesses. In particular, we remove private household services, childcare services, services to buildings, and taxis. Estimates of business ownership rates are very similar. The business ownership rates for Mexican-American men and women are 5.0 and 2.4 percent, respectively. The resulting non-Latino white business ownership rates are much higher at 12.5 percent for men and 6.4 percent for women. Disparities in business ownership rates do not appear to be driven by self-employment activities that do not clearly fit the common idea of owning a business.

The rates of business ownership reported in Table 1 include both the immigrant and U.S.-born population. In Table 2, we instead report business ownership rates for first-, second- and third- (and higher-) generation Mexican-Americans and non-Latino whites using CPS data from 1994 to 2004. The rate of business ownership is notably lower for first-, second-, and third-generation Mexican Americans than for whites of the same generation.¹⁰ There is some convergence in the rates across generations, however. The convergence is driven both by falling business ownership rates among non-Latino whites and rising business ownership rates among Mexican-Americans from the first to the second

⁸ Mexican-American business ownership rates remained fairly constant over the sample period for men and increased only slightly for women. These results suggest that the well publicized estimates of rapid growth in the number of Hispanic businesses in the United States by the Census Bureau are due primarily to population growth (U.S. Census Bureau 2006a).

⁹ We cannot rule out the possibility, however, that Mexican-Americans have higher rates of trying to start businesses (Koellinger and Minniti 2006).

¹⁰ Business ownership rate estimates are very similar for men and slightly smaller for women for all reported groups after removing private household services, childcare services, services to buildings, and taxis.

generation.¹¹ Convergence from the second to third generation is driven primarily by falling rates of business ownership for non-Latino whites because Mexican-American rates do not change substantially. Although relatively high rates among non-Latino white immigrants may be partly due to compositional changes, these estimates suggest that business ownership among first-generation Mexican-Americans is particularly lagging relative to whites.¹²

Table 2
Business Ownership Rates by Generation
Current Population Survey, Annual Demographic Surveys (1994-2004)

Group	Generation	Male - Business Ownership		Female - Business Ownership	
		Rate	N	Rate	N
White, non-Latinos	First	16.2%	12,809	7.5%	14,048
	Second	14.3%	19,065	6.8%	19,820
	Third	12.3%	303,920	6.5%	322,998
Mexican-Americans	First	4.9%	24,832	2.4%	21,877
	Second	5.3%	7,238	3.1%	8,090
	Third	5.2%	11,514	2.8%	13,143

Notes: (1) The sample consists of individuals ages 20-64. (2) The business ownership rate is the number of self-employed business owners divided by the population. (3) All estimates are calculated using sample weights provided by the CPS.

BUSINESS FORMATION

Relatively low levels of business ownership among Mexican-Americans may be explained by lower rates of entry, higher rates of exit, or a combination of the two. We first examine business formation rates. Table 3 reports one-year

¹¹ Using 1990 and 2000 Census data and information on year of entry into the United States, we did not find evidence of large changes in business ownership rates across Mexican immigrant entry cohorts.

¹² One issue one which we are unable to address adequately with available data is the role of migration selection on business ownership rates of Mexican migrants. In particular, we are not aware of any data which would allow us to examine whether emigrants from Mexico are more or less entrepreneurial than non-migrants in Mexico. However, estimates from the Northern Border Migration Survey (EMIF) indicate that returning migrants to Mexico are roughly as likely to have been business owners in the United States as the business ownership rates reported here. And, data from the 2000 Mexican population census indicate that returning migrants are more likely to be self-employed in Mexico than are non-migrants. Among those who in 2000 reported that they lived in the U.S. in 1995, 30 percent are self-employed; among those who report that they lived in Mexico in 1995, only 24 percent are self-employed. Taken together, these data are consistent with multiple stories, including the possibilities that migrants are more entrepreneurial than the general population in Mexico and the possibility that migration relaxes capital constraints among small business owners in Mexico (Woodruff and Zenteno 2007).

business formation rates for non-Latino whites and Mexican-Americans from matched CPS microdata.¹³ The business formation rate is defined as the percentage of non-business owners in one year who own a business in the following year. All generations of Mexican-Americans have substantially lower levels of business formation than non-Latino whites. For men, business formation rates decline across generations whereas for women rates increase slightly. Only 1.8 percent of third-generation Mexican-American men start a business annually compared to 3.3 percent of non-Latino white men.

Table 3
Annual Business Formation and Exit Rates by Race/Ethnicity
Current Population Survey, Matched Annual Demographic Surveys (1994-2004)

	Business Ownership		Business Formation		Business Exit	
	Percent	N	Percent	N	Percent	N
Men						
White, non Latinos	14.0%	90,616	3.3%	77,369	22.5%	13,247
Mexican First Generation	6.2%	3,172	2.7%	2,981	34.5%	191
Mexican Second Generation	8.2%	981	2.4%	900	47.5%	81
Mexican Third Generation	6.2%	1,622	1.8%	1,513	30.6%	109
African-American	4.9%	9,109	1.9%	8,659	37.7%	450
Women						
White, non Latinos	7.3%	97,086	2.3%	89,636	33.1%	7,450
Mexican First Generation	2.9%	2,993	1.4%	2,912	52.9%	81
Mexican Second Generation	3.6%	1,128	1.5%	1,091	59.6%	37
Mexican Third Generation	3.0%	1,892	1.7%	1,825	40.0%	67
African-American	2.4%	12,886	1.1%	12,581	44.6%	305

Notes: (1) The sample consists of individuals (ages 20-64) in the first year surveyed for the business ownership rate. The business formation rate sample includes only individuals who are not business owners in year t , and the exit rate sample includes only individuals who are business owners in year t . (2) All estimates are calculated using sample weights provided by the CPS.

BUSINESS PERFORMANCE

Are the businesses that Mexican-Americans start less successful? To address this question, we focus on two performance measures -- business exit rates and net business income. The matched CPS data are used to examine annual business exit rates. Business exit rates provide a complement to the business formation rates discussed above, but racial and ethnic disparities should be interpreted with caution. The CPS does not provide any information on the reason for exit, and

¹³ Examining business formation probabilities over the wage distribution, we do not find clear evidence of negative or positive selection into business ownership among Mexican-Americans (see Fairlie and Woodruff 2005).

many exits can be considered successful and do not represent business closures (Headd 2003). Estimates from the 1992 Characteristics of Business Owners (CBO) indicate that 20 percent of businesses changing ownership were sold or transferred to another person and more than one third of all businesses that are not operating are reported as being "successful" by the owner (U.S. Census Bureau 1997). Hispanic owners are less likely to report selling their business or to report that their businesses were successful. Therefore, we focus on a second measure of business performance, net business income. The 2000 Census provides information on net business income after business expenses.

Table 3 reports estimates of business exit rates from the matched CPS data. Mexican-Americans of all generations have substantially higher exit rates than non-Latino whites.¹⁴ The patterns hold for both men and women. Although estimates of business exit rates differ somewhat across generations the relatively small sample sizes make it difficult to compare rates. The high rates of business exit combine with low rates of business formation to create the low rates of business ownership among Mexican-Americans noted above.¹⁵

Table 4 reports net business income from the 2000 Census by race and ethnicity. The average net income among Mexican immigrant business owners is substantially lower than the national average. For Mexican-immigrant men, mean business income is roughly one half the level of non-Latino white business income. The U.S.-born of Mexican descent have average business incomes which are higher than the Mexican-born, but substantially lower than non-Latino whites.¹⁶ Removing the disproportionate number of very successful white business owners does not change the conclusion. The median business income of Mexican-Americans, especially immigrants, is much lower than the median business income of non-Latino whites.

The estimates reported in Table 4 are based on business owners who work at least 15 hours per week and 20 weeks during the year. Either relaxing these work restrictions to any hours and weeks or increasing them to working full-time, full-year does not change the business income differentials. Another concern is that the differences may reflect an overrepresentation of Mexican-Americans in

¹⁴ Examining the survival dynamics of immigrant business owners using 4-year panel data from the 1996 SIPP, Georgarakos and Tatsiramos (2007) find that Mexican immigrant men have lower business survival rates than non-Latino white men. Unfortunately, sample sizes are relatively small for Mexican immigrant men (107 self-employment spells).

¹⁵ The steady-state rate of business ownership can be expressed as $e / (e+x)$, where e is the business entry rate and x is the business exit rate.

¹⁶ We find similarly large earnings disparities for wage and salary workers. Mexican immigrants earn roughly 1/2 white levels U.S.-born Mexicans earn 70-80 percent of white levels. For all groups, business income is higher than wage and salary earnings.

self-employment activities that do not represent "true" business ownership as discussed above. Removing childcare providers, household and business cleaning services, and taxi drivers, however, results in little change in the business income differentials for men. Average business income is now slightly higher for each group leaving the racial and ethnic differences unchanged. For female business owners, especially among Mexican immigrants, the exclusion of these industries results in larger increases in average business income. The ethnic and racial differentials are now smaller, but remain substantial. Overall, we find that Mexican-American business owners earn substantially less than non-Latino white business owners with foreign-born Mexicans having the lowest levels of earnings. These results appear to be robust to changes in the business owner sample.

Table 4
Net Business Income by Ethnicity/Race
Census (2000)

Group	Mean	Median	Standard Deviation	N
Men				
Total	\$61,591	\$35,000	\$77,645	366,118
White, non-Latino	\$64,138	\$38,000	\$79,421	313,620
Mexican Immigrants	\$32,251	\$20,000	\$47,568	8,022
Mexican U.S. Born	\$45,431	\$28,500	\$58,480	4,933
African-American	\$42,499	\$26,700	\$56,496	11,825
Women				
Total	\$31,655	\$18,700	\$47,363	168,100
White, non-Latino	\$32,354	\$19,300	\$47,971	138,545
Mexican Immigrants	\$18,391	\$11,800	\$31,125	3,326
Mexican U.S. Born	\$26,779	\$15,000	\$43,358	2,506
African-American	\$27,727	\$18,000	\$40,525	7,742

Notes: (1) The sample consists of individuals ages 20-64 who own a business with 15 or more hours worked per week and 20 or more weeks worked during the year. (2) Net business income excludes business expenses. (3) All estimates are calculated using sample weights provided by the Census.

Although most of the previous research has focused on the lack of business success among African-Americans, Mexican-immigrant business owners actually have much lower business income levels. For men, the average business income of Mexican immigrant owners is \$10,000 less than the average for black business owners. Moreover, U.S. born Mexican-Americans have only slightly higher business incomes than blacks among men and actually have slightly lower

income levels among women. Thus, the businesses owned by Mexican-Americans generally underperform black-owned businesses.

Business exit rates and business income are the only information on business performance available from nationally representative public-use microdata with large enough sample sizes of Mexican-Americans. Published estimates from the 2002 Survey of Business Owners (SBO), however, provide information on two additional business outcomes -- average sales and receipts, and employment levels. Estimates from the SBO indicate that Mexican-owned businesses have substantially lower levels of average sales and receipts, and employment than non-Latino white-owned businesses. For example, the average sales of Mexican-American firms are \$137,980 compared to \$437,870 for white firms (U.S. Census Bureau 2006b).

All of the estimates reported here present a consistent story -- Mexican-American businesses are less successful than white businesses with levels of performance that are not better than African-American businesses. The relative lack of success among Mexican-American business owners combined with low business formation rates suggests that a comprehensive analysis of Mexican-American entrepreneurship is needed.

4. Explanations for Business Formation and Performance Patterns

We next turn to the broader literatures on entrepreneurship and immigration to search for potential explanations for the relatively low business formation rates and performance among Mexican-Americans. We are particularly interested in identifying barriers to business formation and performance related to access to human capital (education and language ability), financial capital, and legal status. The standard theoretical model of entrepreneurship posits that human capital and access to financial capital are two of the most important determinants of the entrepreneurial decision (Evans and Jovanovich 1989). Human capital, financial capital and legal status are clearly inputs in the production process, and thus potentially affect business performance. Indeed, previous empirical studies generally find that education and wealth increase business creation, ownership and performance.¹⁷ English-language ability is also found to increase business ownership and earnings (Fairlie and Meyer 1996, Lofstrom 2002). We therefore test the hypotheses of whether human capital is important in limiting Mexican-American business success as found for Mexican-American wages (Trejo 1997)

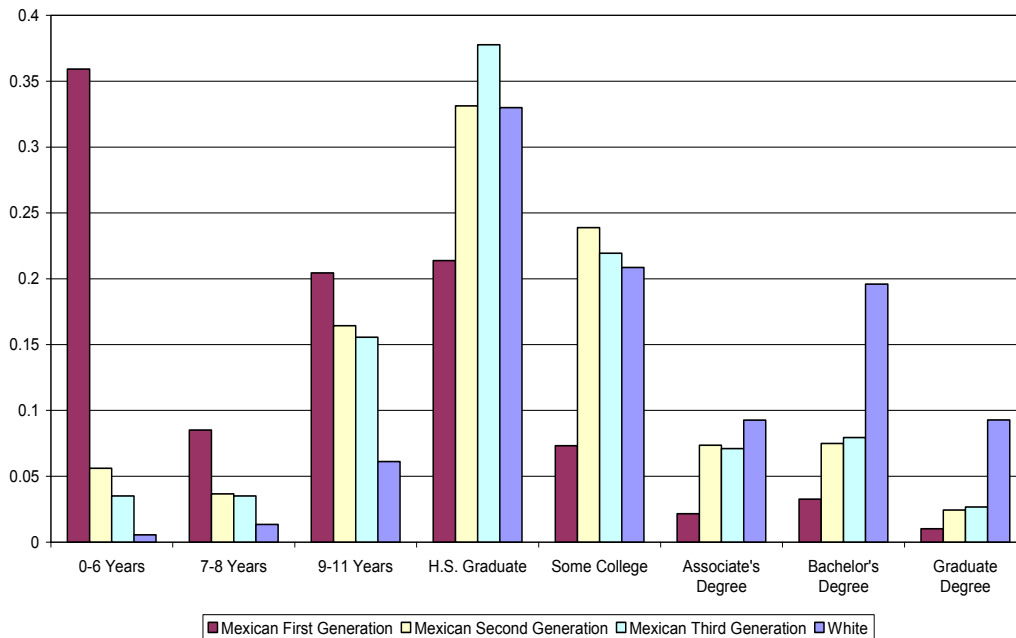
¹⁷ For example, see Evans and Jovanovic (1989), Evans and Leighton (1989), Meyer (1990), Holtz-Eakin, Joulfaian, and Rosen (1994), Fairlie (1999), and Dunn and Holtz-Eakin (2000), Lofstrom and Wang (2006), and van der Sluis, van Praag and Vijverberg (2004), and Moutray (2007).

and whether limited access to financial capital is important as found for black entrepreneurs (Bates 1997 and Fairlie and Robb 2007, 2008) in this section. We test the legal status hypothesis in the following section.

EXPLAINING DIFFERENCES IN BUSINESS FORMATION

We first examine the underlying causes of differences in business formation rates. One of the largest differences found between Mexican-Americans and non-Latino whites is education. Figure 3 shows educational distributions for first-, second- and third-generation Mexican-Americans compared to non-Latino whites. Mexican-Americans—especially Mexican immigrants—have substantially lower education levels than whites. Given previous research indicating that the owner's education level increases the likelihood of starting a business, these differences are likely to contribute to lower business formation rates among Mexican-Americans. But, we do not know how much of the total Mexican/white gap in business formation rates is explained by education and other measurable differences.

Figure 3
Educational Distribution by Generation
Current Population Survey (1994-2004)



To explore this question and identify the explanatory power of ethnic and racial differences in other observable characteristics we first estimate logit regressions for the probability of business formation using the matched CPS data. The logit regressions include controls for detailed levels of education, age, home ownership, asset income, marital status, number of children, central city status, region, and survey year.¹⁸ All variables are measured in the first survey year. The estimates from these regressions are generally similar to those from previous studies. We find that education, home ownership, asset income, age, and marriage are associated with higher levels of business formation.¹⁹

To identify the separate contributions from group differences in the included explanatory variables, we employ a variant of the familiar technique of decomposing inter-group differences in a dependent variable into those due to different observable characteristics across groups and those due to different "prices" of characteristics of groups (see Blinder 1973 and Oaxaca 1973). The technique that we use takes into account the nonlinearity of the logit regressions (see Fairlie 1999, 2005 for more details).²⁰

Tables 5 and 6 report estimates from decomposing the gaps in business formation rates between Mexican-Americans and non-Latino whites for men and women, respectively. We discuss the results for men first. Lower levels of education among Mexican-Americans explain nearly 40 percent of the gap in business formation rates.²¹ The findings are even more striking when we focus on Mexican immigrants, who represent roughly two thirds of all Mexican-Americans (see column 2). Nearly 80 percent of the lower business formation rate for this group is explained by differences in education alone. The low levels of education reflected in Figure 3 represent a sizeable barrier to business entry for this group.

¹⁸ The inclusion of survey year dummies controls for the effects of tax changes and macroeconomic conditions on self-employment which are found to be important determinants of trends in self-employment (Schuetze 2000).

¹⁹ These results are robust to alternative estimation techniques, samples, and variable definitions. Estimates are available by request from the authors.

²⁰ The decomposition estimates use coefficient estimates from a pooled sample, and standard errors are approximated using the delta method following Oaxaca and Ransom (1994, 1998) and Fairlie (2005). Stata code is available by entering `ssc install fairlie` in Stata, and SAS code for the non-linear decomposition is available at <http://people.ucsc.edu/~rfairlie/decomposition>.

²¹ Using the 1996 SIPP for all Mexican-American men, Lofstrom and Wang (2006) find that education differences explain 111 percent of the gap in business entry rates. The larger estimate of the education effect may be due to the inclusion of nativity in the decomposition and its large negative contribution (-164 percent). We do not include nativity and instead report separate estimates by generation of Mexican-Americans.

Table 5
Decomposition of Racial/Ethnic Gaps in Business Formation Rates - Men
Current Population Survey, Matched Annual Demographic Surveys (1994-2004)

	Mexican- American	Mexican 1st Gen.	Mexican 2nd Gen.	Mexican 3rd Gen.	African- American
White/minority gap in entry rate	0.0102	0.0076	0.0090	0.0162	0.0153
Contributions: Education	0.0039 (0.0006)	0.0059 (0.0010)	0.0018 (0.0004)	0.0017 (0.0003)	0.0011 (0.0003)
	37.9%	78.1%	20.5%	10.2%	7.3%
Age	0.0010 (0.0003)	0.0009 (0.0004)	0.0017 (0.0003)	0.0003 (0.0002)	0.0001 (0.0001)
	9.4%	12.0%	19.3%	2.1%	1.0%
Marital status and children	-0.0003 (0.0003)	-0.0006 (0.0004)	0.0001 (0.0003)	-0.0002 (0.0003)	0.0002 (0.0002)
	-3.3%	-7.7%	1.5%	-1.5%	1.5%
Assets	0.0024 (0.0004)	0.0026 (0.0004)	0.0021 (0.0003)	0.0020 (0.0003)	0.0022 (0.0003)
	23.0%	34.8%	23.5%	12.5%	14.2%
Region	-0.0021 (0.0006)	-0.0015 (0.0006)	-0.0023 (0.0007)	-0.0032 (0.0008)	0.0002 (0.0004)
	-20.4%	-19.8%	-25.6%	-19.5%	1.2%
Central city status	0.0005 (0.0003)	0.0005 (0.0003)	0.0007 (0.0003)	0.0004 (0.0002)	0.0003 (0.0004)
	5.0%	6.4%	7.9%	2.4%	2.0%
Year effects	0.0001 (0.0001)	0.0001 (0.0001)	0.0001 (0.0001)	0.0002 (0.0001)	0.0002 (0.0001)
	1.1%	0.9%	1.3%	1.0%	1.1%
Assets and education	0.0062 60.9%	0.0086 112.9%	0.0039 44.0%	0.0037 22.7%	0.0033 21.5%
All included variables ("explained" part of the gap)	0.0054 52.7%	0.0079 104.6%	0.0043 48.4%	0.0012 7.1%	0.0043 28.3%

Notes: (1) The sample consists of individuals (ages 20-64) who are not self-employed business owners in year t . (2) Contribution estimates are from non-linear decompositions. See text for more details. (3) Standard errors are reported in parentheses.

Table 6
Decomposition of Racial/Ethnic Gaps in Business Formation Rates - Women
Current Population Survey, Matched Annual Demographic Surveys (1994-2004)

	Mexican- American	Mexican 1st Gen.	Mexican 2nd Gen.	Mexican 3rd Gen.	African- American
White/minority gap in entry rate	0.0084	0.0099	0.0093	0.0053	0.0136
Contributions: Education	0.0027 (0.0005)	0.0047 (0.0009)	0.0012 (0.0003)	0.0010 (0.0002)	0.0004 (0.0001)
	32.8%	47.2%	13.2%	19.2%	3.3%
Age	-0.0002 (0.0003)	-0.0002 (0.0003)	0.0003 (0.0004)	-0.0004 (0.0002)	-0.0001 (0.0001)
	-1.8%	-2.1%	3.0%	-6.6%	-1.1%
Marital status and children	-0.0010 (0.0003)	-0.0019 (0.0004)	-0.0001 (0.0003)	-0.0005 (0.0003)	0.0021 (0.0003)
	-12.4%	-19.0%	-0.9%	-10.1%	15.1%
Assets	0.0020 (0.0003)	0.0024 (0.0004)	0.0016 (0.0002)	0.0015 (0.0002)	0.0020 (0.0003)
	23.5%	24.6%	16.9%	28.5%	14.6%
Region	-0.0029 (0.0005)	-0.0026 (0.0006)	-0.0028 (0.0006)	-0.0035 (0.0006)	0.0018 (0.0003)
	-34.8%	-26.4%	-30.4%	-64.8%	12.9%
Central city status	0.0009 (0.0003)	0.0009 (0.0003)	0.0011 (0.0003)	0.0007 (0.0002)	0.0007 (0.0003)
	10.9%	9.6%	11.5%	13.4%	5.4%
Year effects	0.0003 (0.0001)	0.0004 (0.0001)	0.0003 (0.0001)	0.0002 (0.0001)	0.0001 (0.0000)
	3.6%	3.8%	3.0%	3.7%	0.4%
Assets and education	0.0047 (0.0003)	0.0071 (0.0003)	0.0028 (0.0003)	0.0025 (0.0002)	0.0024 (0.0003)
	56.3%	71.8%	30.1%	47.6%	17.9%
All included variables ("explained" part of the gap)	0.0018 21.8%	0.0037 37.6%	0.0015 16.3%	-0.0009 -16.9%	0.0069 50.5%

Notes: (1) The sample consists of individuals (ages 20-64) who are not self-employed business owners in year t . (2) Contribution estimates are from non-linear decompositions. See text for more details. (3) Standard errors are reported in parentheses.

The level of education is higher among second-generation Mexican-Americans than among the Mexican born, and higher among third-generation Mexican-Americans than among the second generation (columns 2 and 3). Even for second-generation Mexican-Americans, however, education accounts for slightly more than 20 percent of the gap in business formation rates between second-generation Mexicans and non-Latino whites. Education explains only 10

percent of the gap in business formation rates among third-generation Mexican-Americans. The interpretation of results for the third generation is more problematic, because third generation Mexican-Americans are self identified rather than being determined by information on their place of birth or their parents' place of birth (Trejo and Duncan 2007, 2008). One concern is that among third and higher generation Mexican-Americans, there is a negative correlation between assimilation in the United States and self-identification as being of Mexican descent.

Another measure of human capital – age or potential work experience – is also found to be important for first and second generation Mexican-Americans. The relative youth of Mexican immigrants and Mexican-Americans and the strong positive relationship between age and business formation explains 12.0 percent of the business formation gap for first-generation Mexicans and 19.3 percent of the gap for second generation Mexicans.

Access to financial capital may also be an important limiting factor for business formation among Mexican-Americans. Previous research indicates large disparities in wealth between Latinos, especially Mexican-Americans, and non-Latino whites (U.S. Census Bureau 2001 and Cobb-Clark and Hildebrand 2006 for example). Estimates from the Survey of Income and Program Participation (SIPP) indicate that the median levels of net worth among native-born and foreign-born Mexicans are \$27,929 and \$6,792, respectively, compared with a median net worth for non-Latino whites of \$79,220 (Cobb-Clark and Hildebrand 2006). Relatively low levels of wealth among Mexican-Americans may limit the ability of Mexican entrepreneurs to raise capital to start businesses. Personal wealth of the entrepreneur can be leveraged as collateral to obtain business loans and personal/family savings are the most common source of startup capital among businesses in the United States (U.S. Census Bureau 2006b).²² Related to this issue, Mexican entrepreneurs may face discrimination in the lending market, limiting their ability to invest in their businesses (Cavalluzzo, Cavalluzzo, and Wolken 2002 and Blanchflower, Levine and Zimmerman 2003). Given the extremely low levels of personal wealth and limited experience with lending institutions, Mexican-American entrepreneurs may be especially liquidity constrained.

Using the matched CPS data, we include home ownership, interest income, dividend income and rental income as measures of wealth. Disparities in

²² Using data from the SSBF and Survey of Consumer Finances (SCF), Avery, Bostic and Samolyk (1998) find that the majority of all small business loans have personal commitments. The common use of personal commitments to obtain business loans suggests that wealthier entrepreneurs may be able to negotiate better credit terms and obtain larger loans for their new businesses. Cavalluzzo and Wolken (2005) find that personal wealth, primarily through home ownership, decreases the probability of loan denials among existing business owners.

wealth between Mexican-Americans and whites are large. For example, first generation Mexicans have average annual interest income of \$113 and only 52 percent own homes. In contrast, non-Latino whites have average annual interest income of \$822 and 82 percent own a home. The relative differences in asset income (measured as a ratio) are similar to the relative difference in net worth from the SIPP. These large disparities in asset levels translate into differences in business formation rates between Mexican immigrants and whites. More than one-third of the gap in business formation rates is explained by wealth differences. These findings are consistent with the hypothesis that Mexican immigrants face barriers to entry due to their limited ability to use personal wealth directly or as collateral for startup capital. Findings from the SIPP using net worth as a measure of wealth also indicate a large contribution from wealth differences.²³

Asset income and home ownership rates for U.S. born Mexicans remain substantially lower than for non-Latino whites. The large wealth disparities for second and third generation Mexican-Americans compared to whites contribute to the difference in business formation rates. For second-generation Mexican-Americans, nearly one quarter of the gap in business formation rates is due to assets and for third generation Mexican-Americans 12.5 percent of the gap is explained by assets.

First-generation Mexican-Americans apparently face two substantial barriers to business entry -- low levels of human capital and limited access to financial capital. *These two factors alone explain the entire gap in business formation rates.* For second generation Mexican-Americans education and assets explain nearly half of the gap in business formation rates. Even for third generation Mexican-Americans who have experienced improvements in both levels of education and wealth, these two factors account for nearly one fourth of the gap in business formation rates. As before, these results are not sensitive to excluding childcare services, household and business cleaning services and taxis. Indeed, an almost identical share of the gaps in each generation is explained when these industries are excluded.

Comparing the Mexican-American results to those for African-Americans (reported in column 5), we find that, for blacks, only 7.3 percent of the gap is explained by differences in education and only 14.2 percent is explained by differences in assets, contributions which are similar to previous findings using the PSID (Fairlie 1999). Although much has been written in the previous literature on the deleterious effects of low levels of education and limited access to financial capital for black-owned firms, these factors explain considerably less

²³ Lofstrom and Wang (2006) find that wealth differences explain 70 percent of the entry rate gap between Mexican-American men and white men.

of the disparities in business formation rates among blacks than among those of Mexican descent.

Among the other included factors, only region of residence is important in explaining Mexican/white business formation gaps. The negative contributions indicate that Mexican-Americans are disproportionately located in regions of the country where business formation rates are relatively high. These areas are the West South Central, Mountain, and Pacific regions. This suggests that the formation rate gap would be even larger if Mexican-Americans had a similar geographical dispersion as whites.

The results are generally similar for Mexican-American women. We find that low levels of education and assets explain most of the gap in business formation rates for Mexican immigrants and a sizeable portion of the gap for second and third generation Mexican-Americans.²⁴ Regional differences are also found to work in the opposite direction.

EXPLAINING DIFFERENCES IN BUSINESS PERFORMANCE

To identify the underlying causes of differences in business performance we calculate similar decompositions with two measures of business outcomes – business exit and net business income. As noted above, the results for business exits should be interpreted with some caution. They are based on relatively small sample sizes, some exits may be considered successful, and there is more noise associated with the decision to stop owning a business. We discuss these results briefly before turning to a more thorough discussion of the results for net business income, which is our preferred measure of business performance.

Table 7 reports decomposition results for racial and ethnic gaps in business exit rates.²⁵ We combine second and third generation Mexican-Americans to increase sample sizes. Educational differences account for part of the gap in business exit rates between Mexican-Americans and non-Latino whites.

The size of the contribution is large for immigrants, but relatively small for U.S. born Mexican-Americans. For business exits, the relative youth of Mexican-American business owners appears to limit their longevity in business compared with white owners. Low levels of assets also explain part of why Mexican-Americans have higher rates of business exits than whites. This result, however, is difficult to interpret because lower levels of wealth accumulation may simply be a result of less successful businesses instead of a determinant of

²⁴ The importance of human and financial capital differences for gaps in business formation rates holds after removing childcare services, household and business cleaning services, and taxis.

²⁵ The regression results indicate that education, home ownership and age are associated with a lower probability of business exits.

Table 7
Decomposition of Racial/Ethnic Gaps in Business Exit Rates
Current Population Survey, Matched Annual Demographic Surveys (1994-2004)

	Men Mexican 1st Gen.	Men Mexican U.S. Born	Men African- American	Women Mexican 1st Gen.	Women Mexican U.S. Born	Women African- American
White/minority gap in exit rate	-0.1237	-0.1413	-0.1612	-0.2080	-0.1868	-0.1428
Contributions: Education	-0.0183 (0.0131)	-0.0055 (0.0032)	-0.0038 (0.0015)	-0.0500 (0.0205)	-0.0152 (0.0047)	-0.0091 (0.0023)
	14.8%	3.9%	2.4%	24.0%	8.1%	6.3%
Age	-0.0109 (0.0021)	-0.0239 (0.0033)	-0.0071 (0.0009)	-0.0098 (0.0020)	-0.0118 (0.0023)	-0.0115 (0.0016)
	8.8%	16.9%	4.4%	4.7%	6.3%	8.0%
Marital status and children	0.0080 (0.0027)	-0.0034 (0.0023)	-0.0061 (0.0018)	0.0001 (0.0039)	-0.0007 (0.0030)	0.0074 (0.0045)
	-6.5%	2.4%	3.8%	0.0%	0.4%	-5.2%
Assets	-0.0127 (0.0027)	-0.0116 (0.0024)	-0.0120 (0.0022)	-0.0148 (0.0046)	-0.0063 (0.0026)	-0.0168 (0.0047)
	10.3%	8.2%	7.4%	7.1%	3.4%	11.7%
Region	0.0062 (0.0051)	0.0028 (0.0049)	-0.0102 (0.0030)	0.0134 (0.0071)	0.0151 (0.0068)	-0.0141 (0.0047)
	-5.0%	-1.9%	6.3%	-6.5%	-8.1%	9.9%
Central city status	-0.0170 (0.0027)	-0.0041 (0.0017)	-0.0181 (0.0039)	-0.0151 (0.0046)	-0.0058 (0.0021)	-0.0144 (0.0056)
	13.8%	2.9%	11.2%	7.2%	3.1%	10.1%
Year effects	-0.0040 (0.0013)	0.0005 (0.0008)	0.0008 (0.0007)	-0.0010 (0.0023)	-0.0022 (0.0025)	0.0013 (0.0015)
	3.2%	-0.4%	-0.5%	0.5%	1.2%	-0.9%
Assets and education (explain part of the gap)	-0.0311 (0.0013)	-0.0172 (0.0008)	-0.0158 (0.0007)	-0.0648 (0.0023)	-0.0215 (0.0025)	-0.0258 (0.0015)
	25.1%	12.2%	9.8%	31.2%	11.5%	18.1%
All included variables ("explain part of the gap")	-0.0489 (0.0013)	-0.0454 (0.0008)	-0.0566 (0.0007)	-0.0772 (0.0023)	-0.0268 (0.0025)	-0.0571 (0.0015)
	39.5%	32.1%	35.1%	37.1%	14.4%	40.0%

Notes: (1) The sample consists of individuals (ages 20-64) who are self-employed business owners in year t . (2) Contribution estimates are from non-linear decompositions. See text for more details. (3) Standard errors are reported in parentheses.

business survival through limiting access to financial capital for startup, expansion or weathering negative demand shocks. Unfortunately, we do not have a more exogenous measure of access to financial capital in the matched CPS data.

Overall, education and asset differences explain less of the gap in business exit rates between Mexican-Americans and whites than the business formation rate gap. The determinants of business exit are not as well identified. Similarly, we do not find that these factors explain much of the black/white gap in business exit rates.

We now turn to identifying the underlying causes of differences between Mexican-Americans and non-Latino whites in business income. We estimate linear regressions for log net business income and calculate standard Blinder-

Table 8
Decomposition of Racial/Ethnic Gaps in Log Business Income
Census (2000)

	Men Mexican Immigrants	Men U.S. Born Mexicans	Men African- Americans	Women Mexican Immigrants	Women U.S. Born Mexicans	Women African- Americans
White log business earnings	10.3648	10.3648	10.3648	9.6296	9.6296	9.6296
Minority log business earnings	9.8526	10.1064	10.0384	9.2619	9.4812	9.5974
White/minority gap in bus. income	0.5122	0.2585	0.3264	0.3677	0.1484	0.0322
Contributions: Education	0.3000 (0.0071)	0.1349 (0.0014)	0.0790 (0.0008)	0.2588 (0.0113)	0.1129 (0.0021)	0.0701 (0.0013)
	58.6%	52.2%	24.2%	70.4%	76.1%	
English language ability	0.1593 (0.0112)	0.0144 (0.0056)	0.0026 (0.0004)	0.0619 (0.0170)	-0.0166 (0.0077)	0.0003 (0.0003)
	31.1%	5.6%	0.8%	16.8%	-11.2%	
Age	0.0233 (0.0017)	0.0195 (0.0011)	0.0055 (0.0004)	0.0218 (0.0017)	0.0254 (0.0015)	0.0140 (0.0008)
	4.5%	7.5%	1.7%	5.9%	17.1%	
Marital status and children	-0.0379 (0.0021)	0.0136 (0.0010)	0.0393 (0.0010)	0.0454 (0.0035)	0.0170 (0.0017)	-0.0146 (0.0025)
	-7.4%	5.3%	12.0%	12.4%	11.4%	
Region	-0.0263 (0.0028)	-0.0027 (0.0028)	-0.0273 (0.0015)	-0.0324 (0.0042)	-0.0086 (0.0038)	-0.0322 (0.0022)
	-5.1%	-1.0%	-8.4%	-8.8%	-5.8%	
Education and language ability	0.4593 (0.0028)	0.1494 (0.0028)	0.0816 (0.0015)	0.3208 (0.0042)	0.0963 (0.0038)	0.0704 (0.0022)
	89.7%	57.8%	25.0%	87.2%	64.9%	
All included variables ("explained" part of the gap)	0.4183 81.7%	0.1798 69.6%	0.0992 30.4%	0.3556 96.7%	0.1301 87.7%	0.0376

Notes: (1) The sample consists of individuals (ages 20-64) who are business owners and work at least 15 hours per week and 20 weeks in the previous year. (2) Contribution estimates are from linear decompositions. See text for more details. (3) Standard errors are reported in parentheses. (4) The decomposition percentages for black women are not reported because of the small log earnings gap.

Oaxaca decompositions. These are shown in Table 8. Estimates from the underlying regression models indicate that the owner's education level, English language ability and age are strong, positive determinants of business income. Because we are conditioning on business ownership, which represents roughly 10 percent of the population, we use the 2000 Census to ensure large sample sizes. As noted above, we can only distinguish between Mexican immigrants and U.S. born Mexican-Americans in the Census data. We discuss the results for men first. The single largest factor in explaining why Mexican immigrants and U.S. born Mexican-Americans have lower business income than whites is education. Lower levels of education account for more than half of the gaps in business income. In addition to having an effect on business formation, education is important for business success. Education is also more important in explaining the

white/Mexican-American gap in business income than explaining the white/black gap where the contribution is roughly 25 percent.

The second most important factor is language ability. The Census includes detailed information on English language ability. We include separate dummy variables for those individuals who report speaking English "very well," "well," "not well," and "not at all." The left-out category is individuals who report only speaking English at home. English language ability has a large effect on business income. Because Mexican immigrants, and to a lesser extent U.S. born Mexican-Americans, have relatively low levels of English language ability their businesses are less successful on average than white-owned businesses. For Mexican immigrant men, limited ability speaking English explains roughly one third of the gap in business income.

Overall, human capital differences are the major reason Mexican immigrant business owners have lower income levels. Education and language ability alone explain nearly 90 percent of the gap in net business income between Mexican immigrants and whites. For U.S.-born Mexicans, these two measures of human capital explain roughly 60 percent of the gap in business income. The relative youth of Mexican-Americans also contributes to lower business incomes, but the contribution of age is smaller. Mexican-Americans live in regions that have higher business incomes, all else equal, but the contributions are not large.

INDUSTRY DIFFERENCES

Businesses owned by Mexican-Americans may be concentrated in different industries than white-owned businesses. Following the literature, we do not control for industry differences in the main results because of endogeneity concerns. In particular, we are concerned that Mexican-Americans may face human and financial capital constraints that limit their selection of high-growth potential industries. Controlling for industries thus removes part of the outcome that we are trying to measure. With these concerns in mind, however, we investigate this issue further. Appendix Table A3 reports the industry distribution of businesses owned by non-Latino whites, Mexican immigrants, and U.S.-born Mexicans. The data do not indicate large differences in industry distributions for men. For women, the differences are larger, but primarily reflect shifts in only a couple of industries. Another interesting finding is that Mexican-American owned businesses have lower average incomes than white-owned businesses in all industries for men and most industries for women (see Appendix Table A4). The only exceptions for women are found in industries with relatively low participation among Mexican-Americans. These estimates suggest that industry differences are not responsible for the substantial differences in business incomes between Mexican-Americans and whites.

To confirm this suspicion and ignoring concerns regarding endogeneity, we estimated a set of decompositions including industry indicator variables. Differences in industry explain only about 5 percent of the gap in business income for men, but have a larger contribution for women, explaining roughly 20 percent of the gap in business income. Even after including the industry controls, however, we continue to find that education and English language ability have large explanatory power for Mexican immigrants and education remains important for U.S.-born Mexicans. Thus, the results are not highly sensitive to the inclusion of industry controls.

We also estimate regressions and decompositions removing low-earning industries and industries where self-employed business ownership does not clearly imply a business enterprise -- childcare providers, household and business cleaning services, and taxi drivers. We find that education and English language ability differences explain 59.2 and 30.4 percent of the gap in business income for Mexican immigrant men, respectively. For U.S.-born Mexican men, education differences explain 52.9 percent of the gap and English language ability differences explain 5.3 percent. These human capital contributions are nearly identical to estimates from the full sample of industries. For women, the business income gaps become smaller as noted above, but human capital differences remain the key explanation. For Mexican immigrant women, education differences explain 99.7 percent and English language ability differences explain 13.3 percent of the gap in business income. For U.S.-born Mexican women all of the gap is explained by education differences whereas English language ability provides a negative contribution. These results provide strong evidence that the main results are not being driven by self-employment activities that do not fit the standard idea of what it means to own a business.

5. Legal Status among Mexican Immigrants

The Bureau of the Census estimates that 3.9 million of the 7.8 million Mexican-born resident in the United States in 2000 were not registered with immigration authorities (Costanzo et al, 2001). Included in this number are many residents who are in the United States legally, but not yet reported in official immigration statistics. The INS places the number of undocumented Mexican immigrants in 2000 at 4.8 million, Passel, Capps and Fix (2004) at 5.3 million, and recent estimates from the Pew Hispanic Center (2009) at 7.0 million. These estimates suggest that half or more of the Mexican born population resides in the U.S. without legal documentation.

Legal status may affect the decision to start a business for several reasons. First, legal status is a prerequisite for access to many institutions which are important to entrepreneurs. Legal residents have access to the court system,

should disputes arise with employees or customers. Legal status may also be required for participation in government contracts. Legal migrants are more likely to own property which might be used as collateral, and hence have access to credit.²⁶ These factors suggest that legal status should result in higher levels of business ownership. On the other hand, Kossoudji and Cobb-Clark (2002) find that Latino wage and salary workers gaining legal status through IRCA experienced wage increases, which increase the opportunity costs of starting a business.²⁷ Hence, the association between legal status and business ownership is theoretically ambiguous.

We are unaware of any existing empirical evidence on how legal status affects rates of business ownership. The ideal estimate of the impact of legal status on business ownership would randomly assign legal status to one group of illegal immigrants while leaving another group without legal status. Such an exercise is obviously infeasible. Indeed, even ascertaining the legal status of immigrants is problematic in most circumstances. Given these challenges, we use a sample of undocumented immigrants from the Legalized Population Survey (LPS) and the Immigration Reform and Control Act of 1986 (IRCA) as a natural experiment to assess the impact of legal status on business ownership. The LPS surveyed a sample of immigrants applying for legal residency under IRCA in 1989 and again in 1992, obtaining job information from both before and after they obtained legal status through IRCA. Thus, the LPS identifies a group of individuals who transitioned from the status of illegal alien to legal resident over a short period of time.

IRCA allowed migrants residing illegally in the United States to apply for legal status if they met either of two criteria. The Legally Authorized Workers (LAWs) program required that immigrants show that they had arrived in the United States prior to January 1, 1982, and had resided in the country continuously between 1982 and the time of application.²⁸ The Special

²⁶ Legal status may affect the decision of migrants to return to their home country, and hence affect the selection of migrants choosing to remain in the United States. If more (less) entrepreneurial migrants are induced to remain in the U.S. after obtaining legal status, then this may result in higher (lower) rates of self employment among the legal population. We lack data to say anything about selection effects.

²⁷ More recent research, however, does not find evidence of large positive effects of legalization on labor market outcomes among migrants legalized after 2000 and surveyed in the New Immigrant Survey (Lofstrom, Hill and Hayes 2009).

²⁸ The specific cutoff date of the LAWs program suggests the possibility of using regression discontinuity to estimate the effects of the program. However, in addition to the usual concerns about endogeneity of the timing of the change in the law, there is some suggestion that many migrants who did not qualify under the residency / agricultural work criteria were able to fabricate evidence indicating that they did qualify, and many who in fact met the residency / agricultural

Agricultural Workers (SAWs) program eliminated the five-year residency requirement but required individuals to prove that they had worked in agriculture for at least 90 days during 1985 or 1986. Just over 3 million immigrants applied for legal residency under IRCA—1.8 million through the LAWs program and 1.3 million through the SAWs program. The number of SAWs applicants far exceeded U.S. Department of Agriculture estimates of 350,000 illegal immigrants employed in agriculture at the time of IRCA's passage (Martin 1994). Mexico was by far the most common country of origin of applicants in both the LAWs and SAWs programs, with 1.4 million applicants in the former and almost 900,000 in the latter. The LPS survey gathered data only on those migrants applying through the LAWs program. For this reason, we exclude agricultural workers from all of the samples we use for comparison purposes.

The first wave of the LPS survey was undertaken between February and June 1989 by the INS for the purpose of gaining a better understanding of the characteristics of immigrants applying for residency. The survey asked applicants about their labor market experience at three points in time: during the first year in residency in the United States, at the time of application for legal residency (between June 1987 and May 1988), and at the time of the survey. The U.S. Department of Labor then re-surveyed the majority of the LPS sample in 1992. We use the data on employment at the time of application for legal status and in 1992 to examine changes associated with legal status.

The LPS data show a very large increase in business ownership rates subsequent to obtaining legal status. Among all immigrants outside agriculture, the percentage of males (females) owning a business increased from 5.3 percent (4.4 percent) at the time the migrant applied for legal status to 10.0 percent (5.6 percent) in 1992. Among those born in Mexico, the gain was no less impressive, from 3.1 percent to 5.8 percent for men and from 1.5 percent to 2.7 percent for women. These data provide suggestive evidence of a link between legal status and business ownership, but they should not be taken at face value for two reasons. First, macroeconomic circumstances may have changed between 1987 and 1992 affecting the incentives for opening or closing a business. Second, business ownership rates have been found to increase with age and, for immigrants, with length of time since migration. Between 1987/1988 and 1992, the individuals in the LPS sample became older and increased the length of residency in the United States by just over four years on average. At least part of the increase in business ownership rates in the LPS sample between 1987 and 1992 may be due to the increase in age and time-in-country rather than to the change in legal status.

work requirements were unable to prove that to be true. We do not have reliable estimates of the likelihoods of these two problems.

Ideally, we would filter these factors out by identifying a comparison sample of individuals observed between 1987 and 1992, but not subject to changes in legal status. To study the impact of legal status on wages, Kossoudji and Cobb-Clark (2002) use Hispanics in the NLSY as a comparison sample for the LPS. They argue that immigrants in the panel are almost certainly in the country legally, and hence not subject to any change in legal status over the period. The Hispanic subsample of the NLSY shows a much smaller increase in self employed business ownership between 1987 and 1992 or over an average 5-year period. Even controlling for other factors, such as age and education, in regression models as discussed in more detail below, we find a similarly small difference in predicted business ownership rates for the Hispanic sample in the NLSY. For males, the NLSY coefficients imply that a comparable sample of legal migrants would have had an increase in self employment of 1.0 percentage points between the time of application for legal status and 1992. For females, the NLSY sample suggests an increase in business ownership rates of 0.6 percentage points. Both of these changes are substantially smaller than the 2.7 percentage point and 1.2 percentage point changes found for males and females, respectively, in the LPS.

While informative, we note that the Hispanic sample in the NLSY is made up primarily of native-born Hispanics. As such, the full Hispanic NLSY sample cannot account for time-in-country effects, which are found to be important determinants of business ownership among immigrants in the United States. Unfortunately, the sample of Hispanic immigrants in the NLSY is too small to serve as a comparison sample. There are only about 125 males born in Mexico or Central America with data for 1988, and an even smaller number of females. To account for time-in-country effects, we use data on Mexican immigrants in the 1980 Census to create a synthetic comparison sample. We first estimate a regression on self employed business ownership using the Census data, with controls for age, education and time-in-country. We then use the coefficients obtained from this regression and the characteristics of individuals in the LPS both at the time of application for legal status and at the time of re-survey in 1992 to obtain predicted business ownership rates. This measures the predicted change in business ownership rates given the increase in age and time-in-country of the LPS sample. Because the 1980 data allow us to control for time-in-country effects, we believe these estimates provide a more accurate adjustment for changes in individual characteristics between the two LPS sample periods than the matched NLSY sample does.

Table 9 shows the raw and adjusted changes in business ownership rates for males and females in the LPS sample. The unadjusted change in business ownership rates is 2.7 percentage points for men and 1.2 percentage points for women. Using coefficients from the probits from the 1980 Census sample, we

estimate that the increase in age and time in the United States accounts for 1.3 and 0.3 percentage points of that increase for males and females, respectively.²⁹ In addition to addressing changes in the characteristics of individuals over time, we also need to take into account changes in macroeconomic conditions affecting business ownership between the time of application and 1992. Using CPS ORG microdata, we find that overall business ownership rates did not change for males and increased only slightly for females between 1987 and 1992. These estimates suggest that adjusting our estimates for macroeconomic effects changes the conclusions very little. The bottom half of Table 9 shows that incorporating macroeconomic conditions does not change the estimated effect of legal status for males, but increases the estimated effect to 1.2 percentage points for females.

The regressions use cross-sectional Census data while the LPS data are a single panel across time. The Census coefficient estimates may capture the effects of different cohorts of Mexican immigrants arriving in the United States instead of only the effects of time in the country. To check this, we estimate the same regressions using the 1994-2004 CPS samples, adding controls for different entry cohorts. Estimates for the CPS are reported in Table 10. The first set of estimates do not control for cohort effects. The predicted changes in business ownership rates are 1.6 percent for men and 0.6 percent for women, which are larger than the estimates from the 1980 Census, but roughly of the same magnitude relative to the much larger changes found in the LPS. In the second set of estimates using the CPS, we control for cohort effects. The predicted change in business ownership rates is slightly smaller for men and larger for women. In both cases, the predicted changes in business ownership rates are smaller than the changes in the LPS. As a final comparative sample, we conduct the same exercise using the 2000 Census (see Table 9). We find adjustments of 1.4 percentage points for males and 0.6 percentage points for females. The consistency of the results using data from widely divergent time periods, and the CPS estimates explicitly controlling for entry cohorts, suggests that cohort differences do not have a major effect on the estimates.

The ideal comparison sample would be composed entirely of illegal immigrants, the same as the baseline LPS sample. The 1980 Census (and the CPS and 2000 Census samples) includes both legal and illegal immigrants. This is likely to result in an overstatement of the effect of time-in-country for two

²⁹ If migrants arriving in the U.S. after the January 1, 1982 cutoff date for legalization misreport their arrival date, this may cause errors in our estimates of the time-in-country effects. We have re-run the analysis assuming that everyone has misreported by 3, or alternatively, 5 years, and find that this has little effect on our estimates. The adjustment for age and time-in-country effects remain 1.3 percentage points for males and increase to 0.4 percentage points for females. The underlying regressions on which these adjustments are based are available from the authors on request.

Table 9
Business Ownership Rates by Legal Status
Legalized Population Survey, Census (1980, 2000), and Current Population Surveys, ORG (1987, 1992)

	Male Business Ownership Rate			Female Business Ownership Rate		
	1987/88	1992	Change	1987/88	1992	Change
Mexican-born undocumented immigrants obtaining legal status under IRCA (LPS)	3.1%	5.8%	2.7%	1.5%	2.7%	1.2%
I. Synthetic control group of Mexican immigrants (Census 1980)	2.9%	4.2%	1.3%	0.6%	0.9%	0.3%
Difference in Change from LPS Change			1.4%			0.9%
Aggregate business ownership rate (CPS)	13.3%	13.3%	0.0%	6.7%	6.4%	-0.3%
Total Difference from LPS Change			1.4%			1.2%
II. Synthetic control group of Mexican immigrants (Census 2000)	4.7%	6.2%	1.5%	2.4%	3.1%	0.7%
Difference in Change from LPS Change			1.3%			0.5%
Aggregate business ownership rate (CPS)	13.3%	13.3%	0.0%	6.7%	6.4%	-0.3%
Total Difference from LPS Change			1.3%			0.8%

Notes: (1) The synthetic control group estimates are created by multiplying the characteristics of Mexican-born undocumented immigrants in the LPS by business ownership probit coefficients estimated using the 1980 or 2000 Census. See text for more details. (2) Aggregate business ownership rates for 1987 and 1992 are estimated using the CPS.

Table 10
Business Ownership Rates by Legal Status
Legalized Population Survey and Current Population Surveys, ORG (1987, 1992, 1994-2004)

	Male Business Ownership Rate			Female Business Ownership Rate		
	1987/88	1992	Change	1987/88	1992	Change
Mexican-born undocumented immigrants obtaining legal status under IRCA (LPS)	3.1%	5.8%	2.7%	1.5%	2.7%	1.2%
I. Synthetic control group of Mexican immigrants (CPS 1994-2004)	4.2%	5.8%	1.6%	1.4%	2.0%	0.6%
Difference in Change from LPS Change			1.1%			0.6%
Aggregate business ownership rate (CPS)	13.3%	13.3%	0.0%	6.7%	6.4%	-0.3%
Total Difference from LPS Change			1.1%			0.9%
II. Synthetic control group of Mexican immigrants including cohort and year effects (CPS 1994-2004)	4.2%	5.7%	1.5%	1.4%	2.2%	0.8%
Difference in Change from LPS Change			1.2%			0.4%
Aggregate business ownership rate (CPS)	13.3%	13.3%	0.0%	6.7%	6.4%	-0.3%
Total Difference from LPS Change			1.2%			0.7%

Notes: (1) The synthetic control group estimates are created by multiplying the characteristics of Mexican-born undocumented immigrants in the LPS by business ownership probit coefficients estimated using the 2000 Census. See text for more details. (2) Aggregate business ownership rates for 1987 and 1992 are estimated using the CPS.

reasons. First, there is likely a positive correlation between time-in-country and the likelihood an individual in the Census sample is legal. The coefficient on time-in-country is likely to absorb some of these effects. Second, the time-in-

country effect is likely to differ for legal and illegal immigrants, and we would expect the effect to be larger for legal residents. To the extent that our estimates of time-in-country effects from the Census sample are overstated relative to the ideal comparison group, our estimate of the effect of legal status on business ownership is likely to be understated.

Finally, an important question is how well estimates based on the LPS data reflect likely outcomes in the 2000 Census or 1994-2004 CPS. Have the characteristics of migrants changed substantially since the LPS was conducted as to make the results of less relevance today? Appendix Table A5 compares the characteristics of the LPS sample with those of the 1980 and 2000 population Censuses. The average age and educational distribution in the LPS sample are very close to those in the 1980 Census. There are very few immigrants in the LPS sample who arrived in the United States within five years of or more than 20 years from the baseline survey. The former is an artifact of the residency requirements in the law. However, we find no differences greater than 0.1 percentage points in the adjustments when we re-run any of the estimates excluding those arriving within the previous five years—or alternatively excluding both those arriving within five years and more than 20 years prior to the survey date—from the sample. Finally, the education levels of Mexican migrants are notably higher in the 2000 Census. For both males and females in the LPS sample, we find that the change in business ownership rates is much larger for those with higher levels of schooling. Among males, those with 6 or fewer years of schooling have business ownership rates of 3.1 percent in 1987/88 and 5.3 percent in 1992; those with more than 6 years of schooling have business ownership rates of 3.1 percent in the earlier period and 6.5 percent in 1992. For females, the comparable changes are from 2.0 to 2.5 percent for those with low schooling and 0.6 to 2.9 for those with higher schooling. Given that three-quarters of the 2000 Census sample has more than 6 years of schooling, compared with less than half of the LPS sample, we might expect the impact of legal status to be larger than the LPS data suggest.

While we lack an ideal comparison sample, the LPS data provide some evidence that legal status has an important impact on business ownership rates of those individuals who were granted legal status. Given estimates that half or more of the Mexican-born population in the United States in 2000 was in the country illegally, we estimate that legal status accounts for at least 0.7 percentage points in the business ownership rate of male and female Mexican immigrants. As a final caveat to the results, we note that if increased entry by the legalized population lead to increased competition, and exit by Mexican-born business owners who had already attained legal status, then this may overstate the effects on business ownership rates among the entire Mexican-born population. The benefits of legal status for business ownership thus appear to outweigh the increased opportunity costs associated with higher wages as found in Kossoudji and Cobb-Clark (2002).

6. Conclusions

The comprehensive analysis of Census, CPS and LPS data provides several novel findings on Mexican-American entrepreneurship. First, measured characteristics account for the entire gap between Mexican-born immigrants and non-Latino whites in the rates of business formation and levels of business income. The lower rates of business formation among Mexican immigrants are entirely explained by low levels of education and wealth. Nearly the entire gap in business income for Mexican immigrants is explained by low levels of education and limited English language ability. Legal status represents an additional barrier for Mexican immigrants, a large percentage of which reside in the United States illegally. We find that the lack of legal status reduces business ownership rates by about seven-tenths of a percentage point among both men and women. Accounting for legal status as well, the data suggest that conditional business ownership rates are higher for Mexican immigrants than for the native born population.

Combined, the analysis suggests that the absent barriers created by human capital, financial capital and legal status, rates of business ownership among Mexican immigrants would be higher than rates of the native-born population. This suggests that, like immigrants from Asia and Europe, Mexican immigrants of given characteristics are more likely to own a business than are native-born whites with the same characteristics. This runs counter to the sentiment that Mexican immigrants are likely to be less entrepreneurial because the cost of migration is lower than the cost of migrating to the United States from most other countries (Borjas 1987).

The fact that we are able to explain the gaps for Mexican immigrants, who make up two-thirds of working age Mexican-Americans, stands in sharp contrast with the inability of measured characteristics to explain differences between African-Americans and whites in business formation and performance. Even among second and third generation Mexican-Americans, education and wealth explain much more of the entrepreneurship gap than is the case for African-Americans. For example, among second generation Mexican-American men lower education levels explain more than twice the amount explained by lower levels of education among black men. Nevertheless, some portion of the gap remains unexplained, especially among the less-accurately identified third generation. This difference suggests that Mexican immigrants may be more entrepreneurial than the native-born population, but U.S.-born Mexicans are less so. We leave further exploration of entrepreneurship among U.S.-born Mexicans to future research.

These findings on Mexican-American entrepreneurship contribute to our understanding of ethnic and racial income inequality in the United States. Most research on earnings inequality ignores business owners. But, the low rates of business formation among Mexican-Americans and underperformance of

Mexican-owned businesses contributes substantially to overall earnings inequality. We estimate that earnings inequality would drop by 16.4 percent if Mexican-American business ownership and outcomes improved to non-Latino white levels. The relative lack of success in entrepreneurship is also likely to negatively affect wealth accumulation and job creation for Mexican-Americans (Bradford 2003 and Boston 1999, 2006). Currently, Mexican-American firms hire 720,288 employees with a total annual payroll of \$16 billion in the United States. Estimates from the U.S. Census Bureau (1997, 2006) indicate that increasing business ownership rates to white levels would result in the creation of an additional half million jobs, many held by minorities and in disadvantaged areas.

Appendix Table A1
 Lowest Earnings and Most Common Industries for Male Self-Employed Business Owners
 Census 2000

Industry	Percent of Total Self-Employed	Within Industry SE Rate	Mean SE Earnings	Mean WS Earnings	Percent of Mexican Total SE
Most Common SE Industries					
Construction	23.9%	20.7%	\$44,035	\$34,634	29.8%
Automotive repair	3.6%	22.1%	\$34,221	\$29,787	6.1%
Legal services	3.6%	44.2%	\$129,861	\$92,051	1.4%
Crop production	3.5%	36.4%	\$36,465	\$21,815	3.2%
Real estate	3.2%	25.9%	\$75,657	\$47,940	1.6%
Truck transportation	3.2%	15.2%	\$50,835	\$36,351	4.6%
Landscaping services	2.8%	28.8%	\$30,801	\$21,761	11.2%
Restaurants and oth. food	2.5%	7.8%	\$48,017	\$21,963	4.2%
Animal production	2.5%	45.7%	\$33,824	\$24,255	0.9%
Mgt., sci. and tech. serv.	2.1%	28.9%	\$95,720	\$80,531	0.5%
Physician offices	2.0%	40.3%	\$202,543	\$119,925	0.7%
Insurance carriers	1.9%	15.6%	\$88,364	\$64,824	0.8%
Architectural services	1.6%	13.0%	\$76,995	\$55,443	0.8%
Artists	1.6%	38.7%	\$44,711	\$44,634	1.1%
Services to buildings	1.4%	22.8%	\$37,372	\$25,427	2.2%
Lowest Self-Employment Earnings					
Private household serv.	0.2%	29.5%	\$21,828	\$20,716	0.6%
Barber shops	0.5%	64.9%	\$26,441	\$21,636	0.6%
Childcare services	0.1%	14.4%	\$27,366	\$23,719	0.1%
Nail salon, oth. pers.care	0.2%	40.6%	\$27,600	\$23,284	0.1%
Taxis	0.7%	30.8%	\$27,603	\$25,174	0.5%
Footwear and leather gds rep.	0.1%	51.6%	\$28,921	\$23,967	0.0%
Pottery and cer. manuf.	0.0%	8.9%	\$29,331	\$35,017	0.0%
Pers. and HH goods rep. and maint.	0.7%	41.8%	\$29,720	\$28,918	0.8%
Landscaping services	2.8%	28.8%	\$30,801	\$21,761	11.2%
Newspaper publishers	0.2%	6.3%	\$31,572	\$40,415	0.2%
Used merch. store	0.3%	36.5%	\$32,807	\$24,424	0.4%
Misc. general merch. store	0.1%	9.8%	\$33,352	\$28,470	0.0%
Animal production	2.5%	45.7%	\$33,824	\$24,255	0.9%
Drinking places, alc. bevs.	0.2%	17.8%	\$33,901	\$19,704	0.3%
Automotive repair	3.6%	22.1%	\$34,221	\$29,787	6.1%

Notes: (1) The sample consists of men ages 20-64 who own a business with 15 or more hours worked per week and 20 or more weeks worked during the year. (2) All estimates are calculated using sample weights provided by the Census.

Appendix Table A2
 Lowest Earnings and Most Common Industries for Female Self-Employed Business Owners
 Census 2000

Industry	Percent of Total Self- Employed	Within Industry SE Rate	Mean SE Earnings	Mean WS Earnings	Percent of Mexican Total SE
Most Common SE Industries					
Childcare services	10.9%	29.2%	\$14,544	\$15,450	15.3%
Beauty salons	7.8%	39.5%	\$18,908	\$17,816	7.9%
Real estate	5.2%	18.7%	\$51,341	\$31,745	2.9%
Private household serv.	5.1%	40.8%	\$13,292	\$14,854	18.7%
Construction	3.9%	14.8%	\$31,172	\$27,438	2.6%
Restaurants and oth. food	3.4%	4.4%	\$28,535	\$15,102	5.8%
Services to buildings	2.6%	23.1%	\$18,151	\$16,109	6.0%
Mgt., sci. and tech. serv.	2.5%	20.1%	\$59,858	\$46,234	0.5%
Artists	2.4%	37.8%	\$28,646	\$28,226	0.7%
Legal services	2.2%	8.3%	\$72,981	\$36,860	1.2%
Accounting services	2.1%	14.9%	\$35,868	\$30,948	1.5%
Specialized design serv.	1.9%	43.9%	\$35,227	\$30,559	0.5%
Oth. sch., instr., educ.	1.6%	33.6%	\$21,776	\$24,522	0.4%
Business support services	1.6%	14.9%	\$29,415	\$22,393	1.0%
Other health practitioners	1.5%	28.9%	\$47,042	\$28,849	0.3%
Lowest Self-Employment Earnings					
Private household serv.	5.1%	40.8%	\$13,292	\$14,854	18.7%
Childcare services	10.9%	29.2%	\$14,544	\$15,450	15.3%
Toys and sport manuf.	0.2%	12.9%	\$14,767	\$25,008	0.2%
Pers. and HH goods rep. and maint.	0.8%	51.2%	\$16,231	\$18,400	0.6%
Knitting mills	0.1%	3.2%	\$16,572	\$19,543	0.0%
Oth. direct selling estabs.	0.8%	27.9%	\$17,551	\$19,012	0.8%
Pottery and cer. manuf.	0.1%	18.7%	\$17,792	\$23,001	0.0%
Barber shops	0.3%	46.6%	\$17,873	\$16,802	0.4%
Services to buildings	2.6%	23.1%	\$18,151	\$16,109	6.0%
Nail salon, oth. pers.care	1.5%	43.3%	\$18,799	\$16,972	0.7%
Beauty salons	7.8%	39.5%	\$18,908	\$17,816	7.9%
Newspaper publishers	0.4%	5.7%	\$19,088	\$27,193	0.3%
Car washes	0.1%	16.3%	\$19,758	\$15,763	0.1%
Glass and glass prod. manuf.	0.1%	4.3%	\$19,867	\$26,358	0.0%
Sewing, needlework stores	0.2%	16.8%	\$20,025	\$15,708	0.1%

Notes: (1) The sample consists of women ages 20-64 who own a business with 15 or more hours worked per week and 20 or more weeks worked during the year. (2) All estimates are calculated using sample weights provided by the Census.

Fairlie and Woodruff: Mexican-American Entrepreneurship

Appendix Table A3
Industry Distribution of Businesses by Ethnicity/Race
Census (2000)

	Men				Women			
	White, non-Latino	Mexican Immigrants	Mexican U.S. Born	African-American	White, non-Latino	Mexican Immigrants	Mexican U.S. Born	African-American
Agriculture and mining	8.1%	5.9%	3.1%	2.1%	3.0%	1.6%	1.0%	0.3%
Construction	24.5%	30.4%	28.9%	21.2%	4.3%	1.9%	3.5%	1.5%
Manufacturing	5.2%	4.6%	4.6%	2.5%	3.7%	4.9%	3.1%	1.8%
Wholesale trade	3.9%	3.2%	3.0%	1.9%	2.2%	2.0%	1.6%	0.9%
Retail trade	9.0%	9.1%	8.5%	7.3%	12.2%	12.0%	9.6%	6.1%
Transportation	4.3%	6.0%	6.7%	13.3%	1.5%	0.9%	1.3%	1.3%
Information	1.5%	0.5%	1.4%	1.9%	1.8%	0.2%	1.7%	1.3%
FIRE	7.7%	1.9%	5.7%	6.7%	8.5%	2.5%	8.1%	5.8%
Professional services	18.2%	19.9%	17.8%	18.7%	20.2%	13.0%	15.1%	15.7%
Education, health and social services	5.9%	1.5%	4.2%	5.6%	19.4%	17.4%	25.0%	34.9%
Arts, entertainment and recreation	4.8%	6.6%	5.0%	5.6%	7.1%	7.7%	7.5%	4.7%
Other services	7.0%	10.6%	11.1%	13.2%	16.2%	35.9%	22.6%	25.9%
Sample size	313,620	8,022	4,933	11,825	138,545	3,326	2,506	7,742

Notes: (1) The sample consists of individuals ages 20-64 who own a business with 15 or more hours worked per week and 20 or more weeks worked during the year. (2) All estimates are calculated using sample weights provided by the Census.

Appendix Table A.4
Average Net Business Income by Industry and Ethnicity/Race
Census (2000)

	Men				Women			
	White, non-Latino	Mexican Immigrants	Mexican U.S. Born	African-American	White, non-Latino	Mexican Immigrants	Mexican U.S. Born	African-American
Agriculture and mining	\$36,947	\$27,358	\$32,395	\$31,547	\$23,412	\$27,358	\$23,049	\$11,481
Construction	\$45,396	\$32,151	\$41,452	\$31,714	\$31,325	\$21,704	\$27,724	\$26,261
Manufacturing	\$66,381	\$37,093	\$43,668	\$44,299	\$31,141	\$20,868	\$39,222	\$31,624
Wholesale trade	\$74,121	\$39,004	\$37,568	\$45,628	\$41,773	\$23,408	\$39,264	\$35,785
Retail trade	\$55,225	\$28,543	\$37,429	\$39,805	\$27,527	\$21,926	\$24,678	\$25,516
Transportation	\$50,322	\$48,513	\$46,738	\$39,739	\$32,976	\$22,954	\$45,038	\$32,594
Information	\$63,018	\$34,448	\$44,673	\$35,635	\$36,478	\$16,425	\$28,580	\$44,517
FIRE	\$89,098	\$48,922	\$64,386	\$60,307	\$52,180	\$57,728	\$51,947	\$37,501
Professional services	\$83,946	\$24,880	\$48,640	\$45,704	\$43,373	\$19,111	\$32,879	\$37,931
Education, health and social services	\$147,153	\$125,980	\$109,579	\$100,681	\$29,088	\$15,948	\$23,000	\$25,838
Arts, entertainment and recreation	\$48,056	\$29,519	\$37,638	\$40,988	\$27,712	\$21,027	\$24,472	\$35,380
Other services	\$36,151	\$24,565	\$32,163	\$28,178	\$18,189	\$13,531	\$15,764	\$19,649
Sample size	313,620	8,022	4,933	11,825	138,545	3,326	2,506	7,742

Notes: (1) The sample consists of individuals ages 20-64 who own a business with 15 or more hours worked per week and 20 or more weeks worked during the year. (2) All estimates are calculated using sample weights provided by the Census.

Appendix Table A5
Comparison of Legalized Population Survey and Census Samples

	Men			Women		
	LPS	Census 1980	Census 2000	LPS	Census 1980	Census 2000
Business ownership rate	2.9%	2.7%	5.5%	1.7%	0.7%	2.9%
Mean age	30.9	33.2	34.7	31.7	34.7	36
Education by category						
0 - 6 years	58.3%	52.8%	25.4%	59.2%	55.6%	25.5%
7 - 8 years	7.1%	10.6%	8.5%	8.9%	10.6%	8.3%
9-11 years	16.3%	13.4%	17.2%	17.9%	12.1%	16.2%
12 years	13.3%	13.6%	25.6%	9.8%	13.5%	24.8%
13-15 years	4.5%	6.7%	10.1%	3.0%	6.2%	11.2%
16 years	0.1%	1.1%	2.4%	0.6%	1.0%	2.7%
> 16 years	0.3%	1.8%	0.9%	0.6%	1.1%	0.9%
Time since arrival in U.S.						
0-5 years	1.0%	34.3%	24.3%	0.0%	30.0%	21.5%
6-10 years	59.1%	28.7%	17.9%	59.2%	27.4%	20.5%
11-15 years	28.9%	14.7%	19.1%	28.9%	16.1%	17.8%
16-20 years	7.0%	9.4%	13.6%	8.6%	11.2%	12.6%
> 20 years	3.9%	12.8%	25.1%	3.3%	15.4%	27.7%

Notes: (1) The sample consists of Mexican immigrants ages 20-64. (2) Agricultural workers are excluded.

References

- Avery, Robert B., Raphael W. Bostic, and Katherine A. Samolyk. 1998. "The Role of Personal Wealth in Small Business Finance," Journal of Banking and Finance, 22: 1019-1061.
- Baron, Salo W., Arcadius Kahan, and others. 1975. Economic History of the Jews, ed, Nachum Gross. New York: Schocken Books.
- Bates, Timothy. 1997. Race, Self-Employment & Upward Mobility: An Illusive American Dream, Washington, D.C.: Woodrow Wilson Center Press and Baltimore: John Hopkins University Press.
- Blanchflower, David G., P. Levine and D. Zimmerman (2003), "Discrimination in the small business credit market", Review of Economics and Statistics, November, 85(4), pp. 930-943.

- Blau, Francine D., and Lawrence M. Kahn. 2007. "Gender and Assimilation among Mexican- Americans," in Mexican Immigration to the United States, ed. George J. Borjas. Chicago: University of Chicago Press..
- Blinder, Alan S. 1973. "Wage Discrimination: Reduced Form and Structural Variables." Journal of Human Resources, 8, pp. 436-455.
- Bonacich, Edna and John Modell. 1980. The Economic Basis of Ethnic Solidarity in the Japanese American Community. Berkeley: University of California Press.
- Borjas, George. 1987. "Self-Selection and Earnings of Immigrants." American Economic Review 77(4): 531-553.
- Borjas, George, and Stephen Bronars (1989): "Consumer Discrimination and Self-Employment," Journal of Political Economy, 97, pp. 581-605.
- Borjas, George J. 1999. "The Wage Structure and Self-Selection into Self-Employment," Harvard University working paper.
- Boston, Thomas D. 1999. "Generating Jobs Through African American Business Development", in J. Whitehead and C. Harris, eds. *Readings in Black Political Economy* (Dubuque: Kendall-Hunt)
- Boston, Thomas D. 2006. "Black Patronage of Black-owned Businesses and Black Employment" in J. Whitehead, J. Stewart and C. Conrad (eds). *African Americans in the United States* (Rowman & Littlefield Publishers, Inc).
- Bradford, William D. 2003. "The Wealth Dynamics of Entrepreneurship for Black and White Families in the U.S.," Review of Income and Wealth, 49(1): 89-116.
- Bucks, Brian K., Arthur B. Kennickell, and Kevin B. Moore. 2006. "Recent Changes in U.S. Family Finances: Evidence from the 2001 and 2004 Survey of Consumer Finances," Federal Reserve Bulletin, Washington, D.C.: Board of Governors of the Federal Reserve System.

- Carter, Susan B., and Richard Sutch. 1994. "Self-employment in the Age of Big Business: Toward an Appreciation of an American Labor Market Institution," Working Papers on the History of Retirement, History of Retirement Project, University of California.
- Cavalluzzo, Ken, Linda Cavalluzzo, and John Wolken. 2002. "Competition, Small Business Financing, and Discrimination: Evidence from a New Survey," *Journal of Business*, Vol. 25 no. 4.
- Cavalluzzo, Ken and John Wolken. 2005. "Small Business Loan Turndowns, Personal Wealth and Discrimination." *Journal of Business* (forthcoming).
- Clark, Kenneth and Stephen Drinkwater. 2002. "Enclaves, Neighborhood Effects and Employment Outcomes: Ethnic Minorities in England and Wales." *Journal of Population Economics*, 15: 5-29.
- Cobb-Clark, Deborah A., and Vincent Hildebrand. 2006. "The Wealth of Mexican Americans," *Journal of Human Resources*, 41(4): 841-868.
- Costanzo, Joe, Cynthia Davis, Caribert Irazi, Daniel Goodkind, and Roberto Ramirez, 2001, "Evaluating Components of International Migration: The Residual Foreign Born, U.S. Bureau of the Census, working paper No. 61.
- Dunn, Thomas A. and Douglas J. Holtz-Eakin. 2000. "Financial Capital, Human Capital, and the Transition to Self-Employment: Evidence from Intergenerational Links," *Journal of Labor Economics* 18 (2): 282-305.
- Evans, David and Jovanovic, Boyan, 1989, "An Estimated Model of Entrepreneurial Choice under Liquidity Constraints," *Journal of Political Economy*, Vol. 97 (August), pp. 808-27.
- Evans, David, and Linda Leighton (1989): "Some Empirical Aspects of Entrepreneurship," *American Economic Review*, 79, pp. 519-535.
- Fairlie, Robert W. 1999. "The Absence of the African-American Owned Business: An Analysis of the Dynamics of Self-Employment." *Journal of Labor Economics*, 17(1): 80-108.
- Fairlie, Robert W. 2004. "Does Business Ownership Provide a Source of Upward Mobility for Blacks and Hispanics?," *Entrepreneurship and Public Policy*, ed., Doug Holtz-Eakin, Cambridge: MIT Press.

- Fairlie, Robert W. 2005. "An Extension of the Blinder-Oaxaca Decomposition Technique to Logit and Probit Models," *Journal of Economic and Social Measurement*, 30(4): 305-316.
- Fairlie, Robert W., and Bruce D. Meyer. 1996. "Ethnic and Racial Self-Employment Differences and Possible Explanations," *Journal of Human Resources*, 31, Fall 1996, pp. 757-793.
- Fairlie, Robert W., and Alicia M. Robb. 2007. "Why are Black-Owned Businesses Less Successful than White-Owned Businesses: The Role of Families, Inheritances, and Business Human Capital," *Journal of Labor Economics*, 25(2): 289-323.
- Fairlie, Robert W., and Alicia M. Robb. 2008. *Race and Entrepreneurial Success: Black-, Asian-, and White-Owned Businesses in the United States*, Cambridge: MIT Press.
- Fairlie, Robert W., and Christopher Woodruff. 2005. "Mexican-American Entrepreneurship," Working paper presented at May 2005 Society of Labor Economists Meetings.
- Fairlie, Robert W., and Christopher Woodruff. 2007. "Mexican Entrepreneurship: A Comparison of Self-Employment in Mexico and the United States," in *Mexican Immigration to the United States*, ed. George J. Borjas. Chicago: University of Chicago Press.
- Georgarakos, Dimitris, and Konstantinos Tatsiramos. 2007. "Entrepreneurship and Survival Dynamics of Foreign-Born and U.S.-Born Immigrants," IZA Discussion Paper No. 1150.
- Glazer, Nathan and Daniel P. Moynihan. 1970. *Beyond the Melting Pot: the Negroes, Puerto Ricans, Jews, Italians, and Irish of New York City*, 2nd Edition. Cambridge: MIT Press.
- Headd, Brain. 2003. "Redefining Business Success: Distinguishing Between Closure and Failure." *Small Business Economics* 21(1): 51-61.
- Holtz-Eakin, Douglas, David Joulfaian, and Harvey Rosen (1994): "Entrepreneurial Decisions and Liquidity Constraints," *Rand Journal of Economics*, 23, 2, pp. 334-347.

- Hout, Michael and Harvey S. Rosen. 2000. "Self-Employment, Family Background, and Race," Journal of Human Resources, 35(4): 670-92.
- Kinzer, Robert H., and Edward Sagarin. 1950. The Negro in American Business: the Conflict between Separatism and Integration, New York: Greenberg.
- Koellinger, P., and M. Minniti. 2006. "Not for Lack of Trying: American Entrepreneurship in Black and White," *Small Business Economics* (2006) 27: 59–79.
- Kossoudji, Sherrie A. and Deborah A. Cobb-Clark, 2002, "Coming out of the Shadows: Learning about Legal Status and Wages from the Legalized Population," *Journal of Labor Economics*, July 20(3): 598-628.
- Loewen, James W. 1971. The Mississippi Chinese: Between Black and White. Cambridge: Harvard University Press.
- Lofstrom, Magnus. 2002. "Labor market assimilation and the self-employment decision of immigrant entrepreneurs", Journal of Population Economics, 15(1), January, 83-114.
- Lofstrom, Magnus, and Chunbei Wang. 2006. "Hispanic Self-Employment: A Dynamic Analysis of Business Ownership," Public Policy Institute of California working paper.
- Lofstrom, Magnus, Laura Hill and Joseph Hayes. 2009. "What are the Labor Market Effects of Immigrant Legalization?," Public Policy Institute of California working paper.
- Martin, Phillip L., 1994, "Good Intentions Gone Awry: IRCA and U.S. Agriculture," *The Annals of the Academy of Political and Social Science*, Vol 534: July. Pp 44-57
- Meyer, Bruce. 1990. "Why Are There So Few Black Entrepreneurs?" National Bureau of Economic Research, Working Paper No. 3537.
- Min, Pyong Gap. 1996. Caught in the Middle: Korean Merchants in America's Multiethnic Cities. Berkeley: University of California Press.

- Moutray, Chad. 2007. "Educational Attainment and Other Characteristics of the Self-Employed: An Examination using the Panel Study of Income Dynamics Data," U.S. Small Business Administration Working Paper.
- Oaxaca, Ronald. 1973. "Male-Female Wage Differentials in Urban Labor Markets," International Economic Review, 14 (October), 693-709.
- Oaxaca, Ronald, and Michael Ransom. 1994. "On Discrimination and the Decomposition of Wage Differentials," Journal of Econometrics, 61, 5-21.
- Oaxaca, Ronald, and Michael Ransom. 1998. "Calculation of Approximate Variances for Wage Decomposition Differentials," Journal of Economic and Social Measurement, 24, 55-61.
- Passel, Jeffrey, Randy Capps, and Michael Fix, 2004, "Undocumented Immigrants: Facts and Figures," working paper, Urban Institute.
- Pew Hispanic Center. 2009. "Mexican Immigrants in the United States, 2008," <http://pewresearch.org/pubs/1191/mexican-immigrants-in-america-largest-group> (accessed January, 25, 2010).
- Schuetze, Herb J. 2000. "Taxes, economic conditions and recent trends in male self-employment: a Canada-US comparison," *Labour Economics* 7: 507-544.
- Trejo, Stephen J. 1997. "Why Do Mexican Americans Earn Low Wages?" Journal of Political Economy, 105(6): 1235-1268.
- Trejo, Stephen J. 2003. "Intergenerational Progress of Mexican-Origin Workers in the U.S. Labor Market," Journal of Human Resources, 38(3): 467-489.
- Trejo, Stephen J. and Brian Duncan. 2007. "Ethnic Identification, Intermarriage, and Unmeasured Progress by Mexican Americans," in George J. Borjas, ed., Mexican Immigration to the United States, Chicago: The University of Chicago Press and the National Bureau of Economic Research, 229-267.
- Trejo, Stephen J. and Brian Duncan. 2008. "Intermarriage and the Intergenerational Transmission of Ethnic Identity and Human Capital for Mexican Americans," IZA Discussion Paper No. 3547.

- U.S. Census Bureau. 1997. 1992 Economic Census: Characteristics of Business Owners. Washington, D.C.: U.S. Government Printing Office.
- U.S. Census Bureau 2001. Wealth and Asset Ownership, Asset Ownership of Households: 2000, http://www.census.gov/hhes/www/wealth/1998_2000/wlth00-1.html
- U.S. Census Bureau 2006a. Growth of Hispanic-Owned Businesses Triples the National Average, U.S. Census Bureau Press Release, http://www.census.gov/Press-Release/www/releases/archives/business_ownership/006577.html
- U.S. Census Bureau. 2006b. Characteristics of Businesses: 2002: 2002 Economic Census, Survey of Business Owners Company Statistics Series, Washington, D.C.: USGPO.
- U.S. Census Bureau. 2006c. Hispanic-Owned Firms: 2002, 2002 Economic Census, Survey of Business Owners, Company Statistics Series, Washington, D.C.: USGPO.
- U.S. Immigration and Naturalization Service (INS), 2003, Estimates of unauthorized immigrant population residing in the United States: 1990 to 2000, Office of Policy Planning.
- van der Sluis, J., van Praag, M., and Vijverberg, W. 2004. *Education and Entrepreneurship in Industrialized Countries: A Meta-Analysis*. University of Amsterdam Working Paper.
- Woodruff, Christopher and Rene Zenteno, 2007, "Migration Networks and Microenterprises in Mexico", *Journal of Development Economics*, Vol 82(2), pp. 509-528.
- Zuiker, Virginia S. 1998. *Hispanic self-employment in the Southwest: Rising above the Threshold of Poverty*, New York: Garland Publishing, Inc.