IMMIGRANTS, SELF-EMPLOYMENT, ETHNICITY, AND GROWTH IN THE UNITED STATES

By

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A DISSERTATION

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

Agricultural, Food, and Resource Economics – Doctor of Philosophy

2016

ABSTRACT

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The goal of this dissertation is to investigate how geographic, socioeconomic, and industrial factors impact and interact with Latino and Latino immigrant business owners in the United States. Further, this dissertation seeks to investigate the impact of Latino business owners on local economic performance. Essay 1 employs decennial Census Bureau data from cities of 10,000 or more to examine the impact of immigrants in American cities on self-employment and median income. The essay examines the relationships using pooled ordinary least squares and generalized method of moments estimators. The results show that self-employment has a statistically significant and positive impact on median income and immigrant population. When controlling for race populations, lagged immigrant population has a negative impact on self-employment, but removing the Hispanic control causes this relationship to become statistically insignificant. In other words, Hispanics, not other ethnicities, drive much of the self-employment in U.S. cities. The implication is that more attention to helping Hispanic business owners succeed and expand their businesses could benefit the general population of a city through median income growth.

Essay 2 employs the Michigan Census Research Data Center to merge three limited-access Census Bureau data sets by individual firm and establishment level to investigate the factors associated with the Latino-owned Business (LOB) location and dynamics over time. The three main LOB outcomes under analysis are as follows: (1) the probability of a business being Latino-owned as opposed to a business being Asian-owned, Black-owned, or White-owned; (2)

the probability of new business entry and exit; and (3) LOB employment growth. This paper then compares these factors associated with LOB with past findings on businesses that are Asian-owned, Black-owned, and White-owned. Some notable findings include: (1) only Black business owners are less associated with using personal savings as start-up capital than Latinos; (2) the only significant coefficient on start-up capital source is personal savings and it increases the odds of survival of a Latino business by 4%; (3) on average, having Puerto Rican ancestry decreases the odds of business survival; and (4) LOB are relatively likely to start a business with a small amount of capital, which, in turn, limits their future growth.

Essay 3 also takes advantage of the Michigan Census Research Data Center to merge limited-access Census Bureau data with county level information to investigate the impact of Latino-owned business (LOB) employment share on local economic performance measures, namely per capita income, employment, poverty, and population growth. Beginning with OLS and then moving to the Spatial Durbin Model, this paper shows the impact of LOB overall employment share is insignificant. When decomposed into various industries, however, LOB employment share does have a significant impact on economic performance measures. Significance varies by industry, but the results support a divide in the impact of LOB employment share in low and high-barrier industries.

ACKNOWLEDGEMENTS

There is no doubt that I would not be in a position to complete a dissertation in any field if not for my parents, Charles and D'Anne Carpenter. Thank you for everything. Your generous and tireless support throughout my life shaped the person I am today. Thanks also to the rest of my family, past and present. You similarly shaped me, and through me, this work. Thanks to all of my friends, especially my best friend, Zari. Thank you for your encouragement and love throughout this process. Nothing in the world is more valuable to me.

Importantly, I also need to thank my advisor, Dr. Scott Loveridge, whose detailed support and ongoing guidance continues to be absolutely invaluable, not only in these essays, but also in my life and career. It was an incredible stroke of luck to land under his tireless and extensive mentorship. Thanks also to my committee members, Drs. Rubén Martinez, David Ortega, and Mark Skidmore, for their significant contributions and guidance. Thanks to the North Central Regional Center for Rural Development for funding my graduate work; without that funding, this work would have been impossible. Thanks to the Department of Agricultural, Food, and Resource Economics at Michigan State University and Dr. Scott Swinton; I greatly appreciate your support through the dissertation completion fellowship and helping to create a unique sense of comradery among the graduate students. Thanks to the Johnson family for the Glenn and Sandy Johnson Dissertation Enhancement Fellowship; the fellowship was integral in paying for access to the Michigan Census Research Data Center (RDC).

Thanks to Anil Rupasingha, Myriam Quispe-Agnoli, and Melissa Banzhaf for their support in the application process to the Census RDC. And thanks to the Michigan RDC, especially J. Clint Carter for his help throughout, and Margaret C. Leventsin for her

understanding and help with the transfer from the Atlanta RDC to the Michigan RDC. Finally, thanks to the Interuniversity Consortium for Political and Social Research for supporting my seat at the Michigan RDC. Support for this research at the Michigan RDC from NSF (ITR-0427889) is also gratefully acknowledged.

DISCLAIMER

Any opinions and conclusions expressed herein are those of the author and do not necessarily represent the views of the U.S. Census Bureau. All results have been reviewed to ensure that no confidential information is disclosed.

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KEY TO ABBREVIATIONS

ACS	American Communities Survey
ERS	Economic Research Service
GMM	Generalized method of moments
ILBD	Integrated Longitudinal Business Database
OLS	Ordinary least squares
POLS	Pooled ordinary least squares
LBD	Longitudinal Business Database
LOB	Latino-owned business
NAICS	North American Industry Classification System
NSF	National Science Foundation
SBO	Survey of Business Owners
SDM	Spatial Durbin Model
USDA	United States Department of Agriculture

ESSAY 1

IMMIGRANTS, SELF-EMPLOYMENT, AND GROWTH IN AMERICAN CITIES

Introduction

Sustained growth in self-employment over the past twenty years implies an increasing importance of knowledge related to the mechanisms associated with the trend, and its impact. In 2009, 10.9% of total employment was made up of the self-employed (Hipple 2010). Self-employment is particularly important for immigrants as it represents a critical route for entering the mainstream American economy. An immigrant is more likely than a native to be self-employed, and the longer an immigrant is in the United States, the more likely he or she is to be self-employed (Borjas 1986). Furthermore, in 2000, the self-employment rates of Latin American, Caribbean, and Southeast Asian immigrants showed sizable increases over their 1990 levels (Toussaint-Comeau 2005b), implying an increased importance of self-employment for immigrants and the United States economy as a whole.

Small businesses and microenterprises (defined as firms with less than five employees) account for approximately eighteen percent of employment and create roughly 900,000 jobs per year in the U.S. (Ramirez de Miess 2009). The increased importance of small and medium size enterprises is occurring in the context of a rapidly growing Hispanic population, which contributes the largest portion of immigration in the United States.

The effects of immigration are controversial, especially in terms of their effects on labor markets for natives but also with regard to their use of social services. Passel (2005) estimates that 35-40% of new arrivals are undocumented immigrants from Mexico and Central America with low education and limited English skills. The sector into which the immigrants enter may

also have an effect; for example Federman et al. (2006) found that Vietnamese manicurists did not displace native manicurists already in the field but may have discouraged new native entries. The size and composition of immigrants are particularly important to urban areas, where most immigrants live. Although Latino immigrants are younger and less educated than natives on average, it is also true that the average immigrant education level is higher in urban areas than in rural areas of the U.S. (Carpenter 2013); persons with higher education may enter the workforce in different ways, either starting as self-employed or starting a business as a second career step, so the effect may be different between urban and rural areas.

This paper contributes to our understanding of current trends and policies by conducting an econometric assessment of the impact and interaction of immigrants, self-employment, and income in urban areas. The methods include pooled OLS and the Arellano-Bond (1991) dynamic panel estimator, sometimes called the "difference generalized method of moments" (GMM) dynamic panel estimator. The results show that self-employment has a statistically significant and positive impact on median income and immigrant population. When controlling for race populations, lagged immigrant population has a negative impact on self-employment, but removing the Hispanic control causes this relationship to become statistically insignificant. In other words, Hispanics, not other ethnicities, drive much of the self-employment in U.S. cities.

This finding is extremely relevant given extant changes in the demographic makeup of the United States. Figure 1 shows the ages of recent Latino immigrants in the United States compared to the native-born population between 2000 and 2008 in the United States. This figure further demonstrates the context of the growing Latino population in the United States. In 2012, White deaths in the United States outnumbered White births for the first time (Morello and Mellnik 2013). Figure 1 shows how immigrants are filling the decrease in population for each

age category that followed the baby boomers. This filling helps maintain a stable population and prevent social concerns with inadequate elderly. This figure clearly emphasizes the importance of understanding and support this growing Latino population.

Figure 1. Recent Latino Immigrant Population and Non-Latino Non-Immigrant Population Ages (Ruggles et al. 2015)[1]

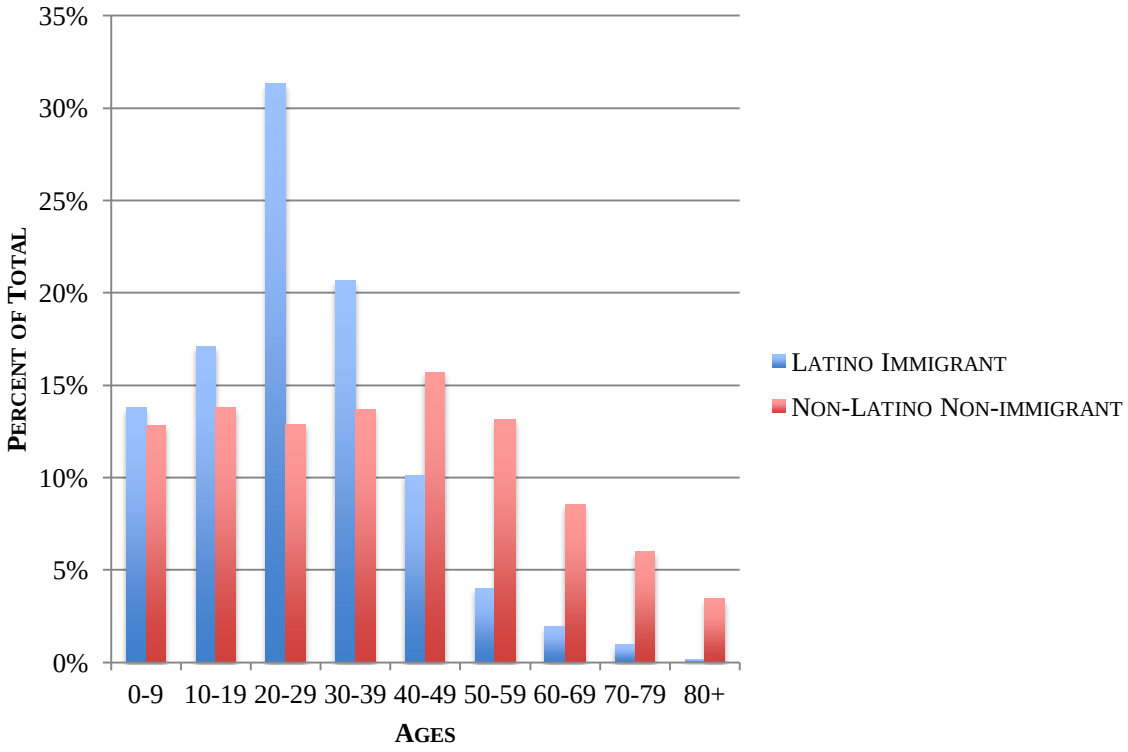

Figure 2 disaggregates the Latino and non-Latino population change by rurality of county in the United States. Rurality is measured with the USDA Rural-Urban Continuum Codes, with 1 being the most metro and 9 being the most rural. The cities used in this essay will be located in counties coded 1 through 3, which are all considered metro. Counties classified as 1 are counties in a metro area with a population of 1 million or more; counties classified as 2 are counties in a metro area with a population of 250,000 to 1 million; counties classified as 3 are counties in a metro area with a population of less than 250,000. The population change in metro areas is large

(around 25 million) and positive, with Latinos comprising around half (or more) of the total population change.

Figure 2. Latino and Non-Latino Population Change by Rurality 2000-2010 (Census)[1]

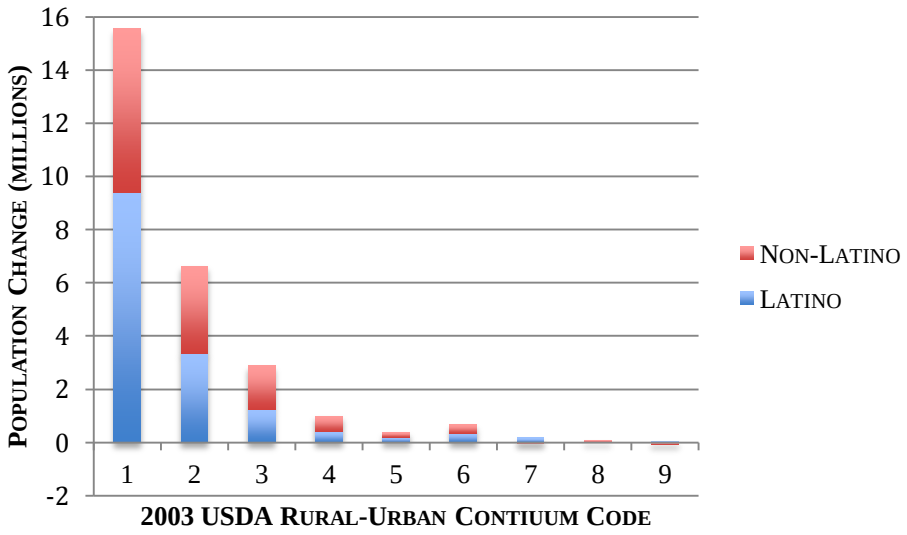

Figure 2 emphasizes the increasing importance of understanding Latinos and their impact in urban areas, where the vast majority of Latino population change occurs. Figures 3 and 4 help visualize the importance of these population changes across the United States. Figure 3 shows the percent change growth for each county in the United States from 2000-2010. Figure 4 shows the Hispanic or Latino Population as a Percent of Total Population 2010.

[1] Taken from Carpenter (2013).

Figure 3. Percent Change in Hispanic or Latino Population by County 2000 to 2010 (Ennis et al. 2011)

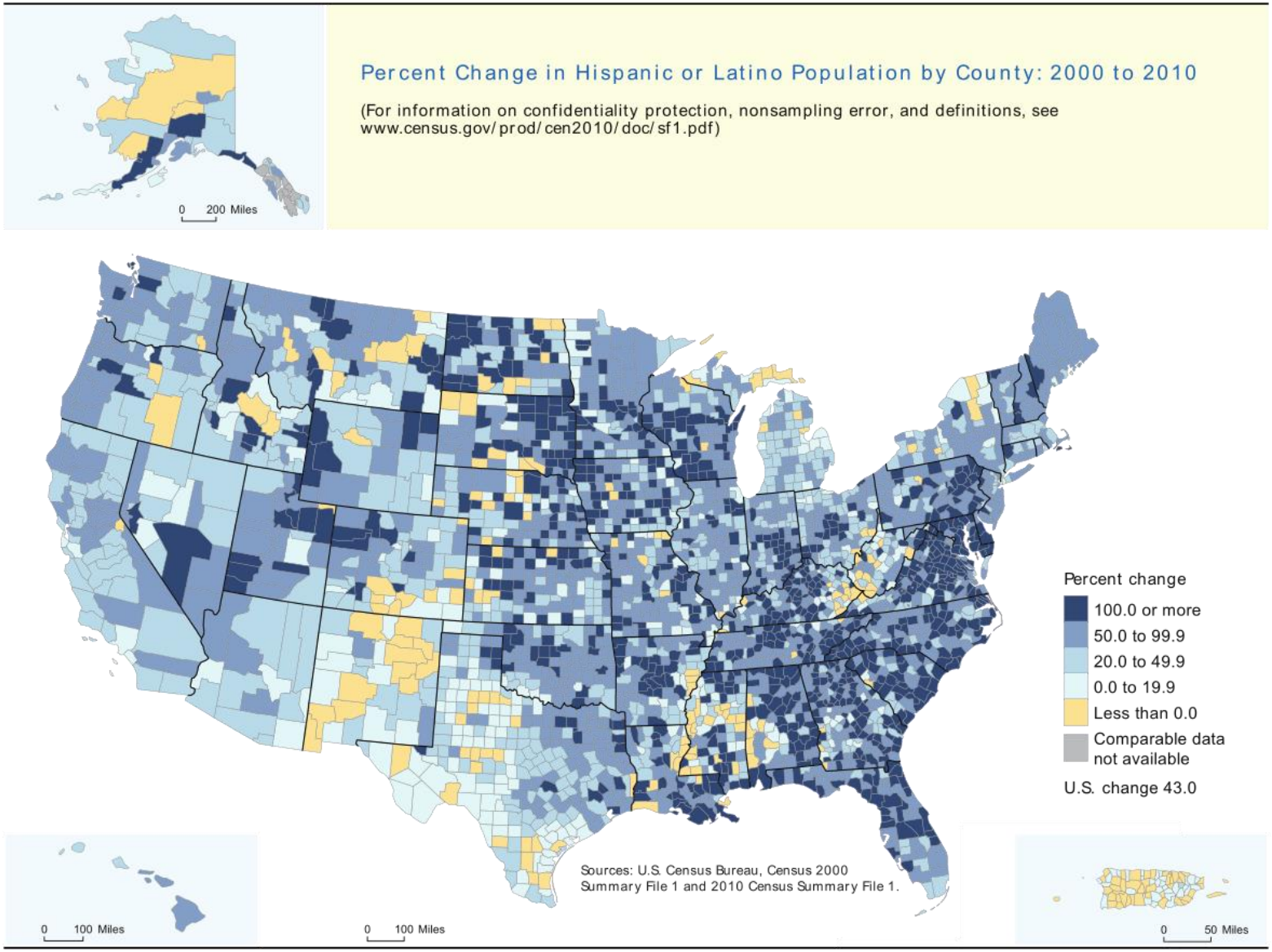

Figure 4. Hispanic or Latino Population as a Percent of Total Population by County 2010 (Ennis et al. 2011)

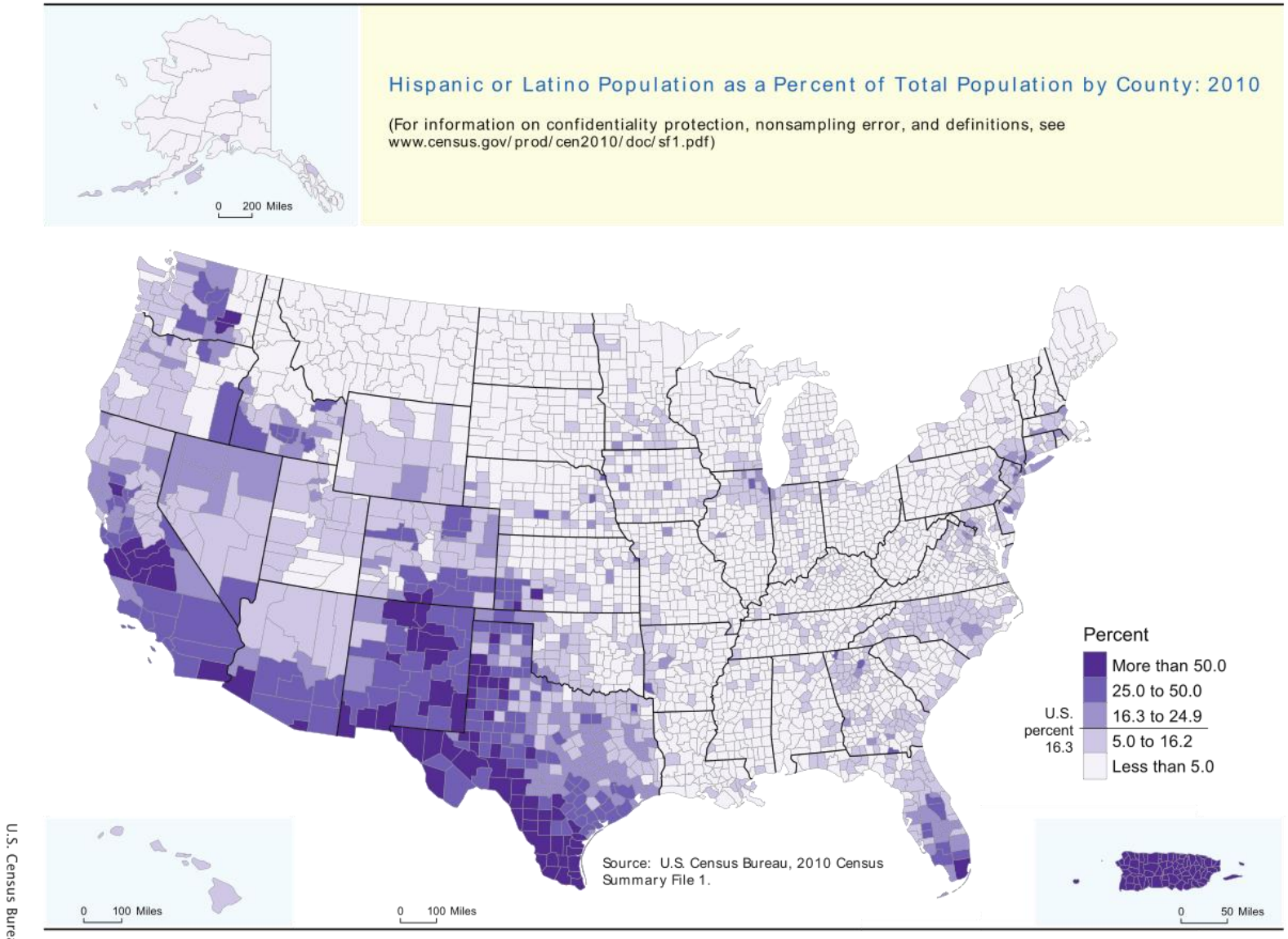

Figure 3 and 4 together emphasize that while the southern counties of the United States have more Latino population as a percent of the total population, rural counties across the United States witnessed a larger population change as a percent of the total population from 2000 to 2010. It is still the case, however, that urban areas contain a larger population of Latino immigrants. Table 1 brings us back to these urban areas and, as is the focus of this essay, cities. This figure shows the total population of the ten cities with the largest populations in the United States and the percent of that population that Hispanic individuals comprise. The right side of Table 1 shows the percent of the Hispanic population of various ethnicities. Essay 2 investigates the importance of country of origin more extensively and Table 1 focuses on the ethnic origins examined therein.

Table 1. Hispanic Ethnicity in Highest Population Cities in United States 2010 (Census)

City	Total Population	Percent Hispanic	Percent Mexican	Percent Puerto Rican	Percent Cuban	Percent Other
New York	8175133	28.58	13.67	30.98	1.75	53.61
Los Angeles	3792621	48.48	65.78	0.85	0.73	32.64
Chicago	2695598	28.89	74.22	13.19	1.07	11.52
Houston	2099451	43.81	73.19	1.01	0.83	24.97
Philadelphia	1526006	12.29	8.28	64.84	2.09	24.79
Phoenix	1445632	40.80	88.09	1.37	0.67	9.86
San Antonio	1327407	63.20	84.10	1.57	0.29	14.04
San Diego	1307402	28.76	86.65	2.19	0.72	10.45
Dallas	1197816	42.35	86.63	0.72	0.46	12.20
San Jose	945942	33.16	85.62	1.52	0.38	12.48

Table 1 highlights the diversity of the Latino population in the United States. Indeed, it is important to emphasize often that the Latino population in the United States and not a monolithic group of individuals with the same skills and experiences. Furthermore, that diversity or mix of various Latino groups itself is also not monolithic and varies significantly across the country.

Naturally this diversity of experience complicates economic development efforts and, as such, highlights the need for further research on Latino and immigrant entrepreneurship. This essay continues and extends current research by using data on cities in the United States to investigate a particularly important interaction of Latino immigration and economic development efforts: self-employment.

Literature Review

Findings on the impact of immigrants on local income are mixed. The impact of immigrants on regional economic growth depends on the characteristics of the immigrants (Barro and Sala-i-Martin 2004). Previous studies on the impact of immigration have struggled in part because immigrants, like natives, are drawn to growing cities, making it harder to draw inferences about the causal effect of immigrant inflows on income growth (Card 2005). Compounding this difficulty, GDP fluctuations of both the sending and receiving countries impact immigrant flows, and this impact changes depending on immigrant characteristics (Simpson and Sparber 2013). Further, immigrant movement in and out of self-employment may confound this difficulty. It could be, for example, that an immigrant lacks sufficient cultural skills and certifications to operate in the formal employment market during the initial years after moving to the US, so is forced into "necessity" entrepreneurship. Later, as the immigrant becomes acculturated, they may be able to enter the formal workforce and begin to build capital or obtain (formal or informal) credentials, which ultimately might allow them to become self-employed again, but in a much higher-level occupation. Thus how and when an immigrant enters the formal labor force is highly idiosyncratic, and one-size-fits all policies may lead to undesirable outcomes.

Although immigrants are less skilled than natives on average and hence tend to reduce the average skills of the local population (Card 2005), recent studies find that even after controlling for city size effects, human capital spillovers, and the possibility that immigrants are drawn to cities with stronger local economies, there is a positive effect between immigrants and average wages (Card 2001; Orrenius and Zavodny 2006; and Glitz 2006). The impact of immigration on wages, however, is not entirely positive; the wage gap between the lowest-skilled natives (who are in most direct competition with immigrants) and natives at the middle of the skill distribution is wider in high immigrant cities than in low-immigrant cities (Altonji and Card 1991).

Past findings indicate that education, English language skills, marriage, financial resources, the sending country's self-employment rate, and length of time in the host country are all positively associated with the decision to become self-employed (Light 1972; Raijman 2001; Yuengert 1995). Although education in general is positively associated with an immigrant's decision to become self-employed, an immigrant with a college degree is less likely to become self- employed than one with a high school diploma (Toussaint-Comeau 2005a). It is also true however, that more highly trained immigrants (i.e., with a college degree) are more likely to start successful companies than their native counterparts (Hunt 2010). Highly trained immigrants are more likely to enter on a student or work visa, and more likely to have their highest degree in a science or engineering field (Hunt 2010). Indeed, Saxenian (1999) finds that in the 1980s and 1990s, Chinese or Indian owners ran 24% of ventures in Silicon Valley, and Wadhwa et al. (2007) find that this trend continued in 2006 with immigrants starting 25% of new high-tech companies with initial capitalizations of more than $1 million.

Immigrant networks have important impacts on business owners in several ways: mentoring and the decision to enter self-employment; raising capital; employee training; acquiring a labor force; and attracting and holding a client base (Walton-Roberts and Hiebert 1997; Kariv et al. 2010). These networks typically rely on solidarity and trust within families in small immigrant communities. This trust mainly derives from kinship, ethnic, or community relationships, rather than by formal legal contracts (Epstein 1994; Roberts 1994). This trust, in turn, constitutes an important source of social capital used in the creation of small enterprises and the allocation of jobs (Rath 2002).

Past studies have not extensively examined the interaction of self-employment vis-à-vis immigration and income. This paper seeks to elaborate on the interaction of these three factors, while keeping the importance of local population size and ethnic composition in mind. Racial and ethnic population shares are included to control for labor market trends, rather than in an attempt to directly investigate a causal relationship between race/ethnicity and a dependent variable under consideration. As noted above, there are numerous theories for why immigrants and non-White entrepreneurs are likely to be self-employed (e.g., "necessity" entrepreneurship) that do not attribute a direct causal relationship to race or ethnicity.

Methods

We use multiple double log pooled OLS (POLS) regressions and lag the likely endogenous variables of interest. Borjas (1986) finds that immigrants are most likely to become self-employed five years to ten years after immigration supporting our ten-year variable lag; shorter lags may not capture the full extent of the impact of immigration on self-employment. Equation (1) describes the set-up.

$$ln(y_{it}) = \beta\, ln\left(X_{i,t-1}\right) + \gamma\, ln(W_{it}) + \delta Z_i + \rho D_t + \varepsilon_{it} \quad (1)$$

The four contemporaneous dependent variables are the natural logs of self-employment population share, immigrant population share, median income, and unpaid family worker population share for city *i* at time *t* ($ln(y_{it})$). Each regression uses the natural log of the lags of the three variables not used as the dependent variable $ln\left(X_{i,t-1}\right)$ as well as a vector of the natural logs of sectoral and demographic variables $ln(W_{it})$, including manufacturing and service sector shares, race shares, bachelor's degree share, median age, and city population. The regressions use the natural log of variables, including those already in share form, to account for the nonlinear nature of the variables discovered in results not reported. Further, the regressions control for state (Z_i) and year (D_t) fixed effects with appropriate dummy variables. Our final regression has the natural log of self-employment population share as the dependent variable and follows the same design as equation 1, but excludes the Hispanic population share control variable. The goal of this regression is to examine the interaction between the Hispanic immigrant population and self-employment.

We include the Arellano-Bond (1991) dynamic panel estimator, sometimes called the "difference generalized method of moments" (GMM) dynamic panel estimator as a robustness check. With this estimator, one first takes the first difference of the same variables used in equation (1), as shown in equation (2).

$$\Delta\, ln(y_{it}) = \alpha\Delta\, ln\left(y_{i,t-1}\right) + \beta\, \Delta ln\left(X_{i,t-1}\right) + \gamma\, \Delta ln(W_{it}) + \rho\Delta \mathrm{D_t} + \Delta\varepsilon_{it} \quad (2)$$

One then uses all prior lagged values of $ln(y_{it})$, $ln\left(X_{i,t-1}\right)$, and $ln(W_{it})$ as "GMM-style" instruments, as described in Holtz-Eakin, Newey, and Rosen (1988) and Arellano and Bond (1991). A GMM-style instrument uses all available lags of the specified variables in levels as instruments for the transformed equation, and the contemporaneous first differences as

instruments in the levels equation, as is appropriate for predetermined variables that are not strictly exogenous (Bond 2002).

Data

The analysis that follows uses an unbalanced panel of 3,367 cities with population greater than 10,000 in the continental United States in the years 1980, 1990, 2000, and 2010. The data were developed from publicly available sources from the Bureau of the Census: the decennial census and the American Community Survey (ACS). Much of the data comes from the National Historical Geographic Information System (Minnesota Population Center). To facilitate our examination of the impacts of interests, most variables (those labeled "population share") are as a percent of the city population. Table 2 presents a list of the regression variables.

Table 2. Variable Descriptions

Variable Name	Variable Description	Mean	Std. Dev.	Source
Immigrant population	immigrant population share	0.08	0.10	Census and ACS
Median income	median income	35470	18985	Census and ACS
Self-employment	self-employed population share	0.03	0.02	Census and ACS
Family worker	unpaid family worker population share	0.00	0.00	Census and ACS
Black population	Black population share	0.10	0.16	Census
Asian population	Asian population share	0.03	0.05	Census
Hispanic Population	Hispanic population share	0.36	0.42	Census
Median age	median age	33.42	5.61	Census
Bachelor's degree	population share with bachelor's degree	0.10	0.06	Census and ACS
Manufacturing	population share working in manufacturing sector	0.08	0.04	Census and ACS
Service	population share working in service sector	0.21	0.10	Census and ACS
Population	total city population	53867	202708	Census

Results

Table 3 contains our pooled OLS results. Much of the results are generally consistent with expectations, given extant literature on self-employment; for example, our findings that age, education, and services are positively related to self-employment are consistent with past findings (e.g., Toussaint-Comeau 2005a; Goetz and Rupasingha 2013). Similarly, our finding that a larger Black population share is associated with less self-employment is consistent with past findings that Blacks are relatively less likely to be self-employed (Hipple 2010). The finding that a 1% Black population share implies a 3.3% decrease in the unpaid family worker population share is also consistent with this finding, given that self-employment is positively related with unpaid family workers.

Table 3. POLS Regression Results

	ln(self-employment)	ln(self-employment)	ln(immigrant population)	ln(median income)	ln(family worker)
lagged ln(self-employment)			-0.062*	-0.009	0.321***
			(0.033)	(0.020)	(0.037)
lagged ln(immi-grant population)	-0.025***	-0.006		0.034***	0.030*
	(0.008)	(0.007)		(0.007)	(0.017)
lagged ln(median income)	0.090***	0.089***	0.210***		-0.160***
	(0.024)	(0.024)	(0.038)		(0.042)
lagged ln(family worker)	0.084***	0.084***	0.014	-0.008	
	(0.007)	(0.007)	(0.012)	(0.005)	
ln(Asian share)	-0.030***	-0.030***	0.358***	0.059***	0.014
	(0.008)	(0.008)	(0.014)	(0.008)	(0.015)
ln(Black share)	-0.050***	-0.048***	-0.050***	-0.036***	-0.034***
	(0.004)	(0.004)	(0.009)	(0.003)	(0.008)
ln(Hispanic share)	0.028***	(omitted)	0.509***	0.019***	-0.006
	(.008)		(0.012)	(.006)	(0.013)
ln(bachelor's degree share)	0.228***	0.217***	-0.072*	0.382***	-0.045
	0.026	(0.026)	(0.037)	(0.018)	(0.037)
ln(manufacturing)	0.011	0.016	-0.073***	0.092***	0.018
	(0.018)	(0.019)	(0.037)	(0.012)	(0.022)
ln(median age)	0.656***	0.618***	0.453***	0.229***	0.180**
	(0.051)	(0.48)	(0.093)	(0.047)	(0.088)
ln(population)	-0.016**	-0.014***	0.037***	-0.041***	-0.079***
	(0.007)	(0.007)	(0.010)	(0.005)	(0.011)
ln(service)	0.480***	0.475***	0.299***	-0.108**	0.285***
	(0.086)	(0.085)	(0.074)	(-0.052)	(0.084)
y1990	0.228***	0.201***	0.530***	-0.517***	0.787***
	(0.065)	(0.062)	(0.069)	(0.039)	(0.086)
y2000	0.391***	0.382***	0.356***	-0.223***	0.505***
	(0.055)	(0.053)	(0.053)	(0.032)	(0.073)
Joint state F-stat	34.261***	46.317***	36.028***	23.555***	5.648***
n	5,802	5,803	5,802	5,802	5,446
R^2	0.734	0.732	0.844	0.755	0.211

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

When controlling for Hispanic population share, the results indicate that a 1% increase in the lagged immigrant population share implies a 2.9% decrease self-employment. When not controlling for Hispanic population share, however, the results indicate that lagged immigrant population share does not have a statistically significant impact on self-employment population share.

Even though the explanatory variables of interest are lagged, there may still be some concern of endogeneity. As a robustness check to this concern, I next present the results of the difference-GMM estimator. The finding that removing the Hispanic population share control variable makes the impact of immigrant population share shift from statistically significant and negative to insignificant, remains in the difference-GMM results in Table 4. This finding supports the idea that Hispanic immigrants are more inclined than other types of immigrants to be self-employed. The other results presented in Table 4 are similar to the OLS results presented in Table 5.

Table 4. Difference GMM Regression Results

	ln(self-employment)	ln(self-employment)	ln(immigrant population)	ln(median income)	ln(family worker)
lagged ln(self-employment)			-0.162**	-0.020	0.488***
			(0.065)	(0.042)	(0.091)
lagged ln(immi-grant population)	-0.067***	-0.026		0.053***	0.061*
	(0.025)	(0.036)		(0.017)	(0.033)
lagged ln(median income)	0.094***	0.073	0.000		-0.084
	(0.059)	(0.072)	(0.083)		(0.087)
lagged ln(family worker)	0.030***	0.026**	0.006	-0.007	
	(0.011)	(0.012)	(0.018)	(0.008)	
ln(Asian share)	0.041	-0.080	0.409***	0.066*	-0.047
	(0.054)	(0.051)	(0.035)	(0.039)	(0.043)
ln(Black share)	-0.008	-0.024*	0.003	-0.101***	0.018
	(0.011)	(0.014)	(0.019)	(0.010)	(0.020)
ln(Hispanic share)	0.054***	(omitted)	0.505***	0.039**	0.012
	(.020)		(0.017)	(.016)	(0.021)
ln(bachelor's	0.352***	0.313***	-0.240***	0.439***	-0.097
degree share)	0.113	(0.119)	(0.069)	(0.070)	(0.110)
ln(manufacturing)	-0.085	-0.074	-0.291***	0.001	0.107**
	(0.058)	(0.061)	(0.037)	(0.043)	(0.049)
ln(median age)	-0.346*	-0.710**	2.226***	0.448***	-0.561**
	(0.199)	(0.283)	(0.215)	(0.174)	(0.254)
ln(population)	-0.066***	-0.072***	0.033	-0.042***	-0.072***
	(0.018)	(0.019)	(0.022)	(0.016)	(0.023)
ln(service)	0.217	0.250	0.622***	0.089	0.371*
	(0.231)	(0.237)	(0.109)	(-0.047)	(0.198)
1990	0.043	-0.001	0.891***	-0.241**	0.904***
	(0.181)	(0.175)	(0.110)	(0.114)	(0.192)
2000	0.233	0.242	0.635***	-0.037	0.600***
	(.148)	(0.150)	(0.082)	(0.096)	(0.152)
n	5,804	5,805	5,804	5,804	5,448

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Conclusions and Suggestions for Future Research

Our regressions produce several insights into the immigrant economic experience and how it plays out in U.S. urban settings. First, immigrant Hispanics seem to play a different role in urban economies than people from the other great sending region, Asia. Asian newcomers in general come from further away than Hispanics, and this represents a barrier to entry. Overcoming the barrier to entry takes resources. The Asian population is therefore likely to be better resourced (in human or financial capital) and better able to enter the formal employment market than the Hispanic population, and this is reflected in the opposite signs of the respective coefficients in our self-employment equation. It could also be that the Asian population is more inclined to support extended family and social network franchises (e.g. the manicurists studied by Federman et al., 2006; Gujarati owners of U.S. Hotels studied by Kalnins and Chung, 2006) that result in employment even when the immigrant is not competitive in traditional formal employment situations. Further, it would be consistent with the literature because the population of Hispanic immigrants is larger (relative to other immigrant populations), the positive networking effects are stronger for Hispanic business owners. An implication of our results with respect to Hispanics is that there may be some efficiency in focusing on that group in efforts to increase the survival and growth rate of start-ups. One should also note that the situation may differ regionally depending on the nature of the local economy: Silicon Valley, for example, may wish to pay special attention to Asian business owners given what the literature has found with respect to tech start-ups from that group (Saxenian 2002).

We also find that the proportion of the local employment base in manufacturing is negatively related to the proportion of immigrants in the city. The mechanism for this outcome could be related to more formalized hiring mechanisms in urban manufacturing that preclude the

use of undocumented workers, or it could be that modern capital-intensive production processes require great fluency in English as a prerequisite to employment. Another explanation might be that consistent employment found in manufacturing (relative, say, to agricultural labor) is more attractive to the resident population such that employers do not need to seek labor elsewhere.

Past research found that co-ethnic involvement may enhance the success of businesses owned by ethnic immigrants within their communities (Portes and Bach 1985; Borjas 1986; Sanders and Nee 1987), but not in the mainstream market, which would typically be larger and therefore have more room for growth. Given that recent mapping of race by census tract strikingly illustrates a trend towards self-segregation in the United States (Cable 2013), future research into the impact of immigrants could investigate the impact of urban mixing and diversity. Although there is likely widespread agreement on the value of diversity, it may be the case that more diversity (or more urban mixing) has the perverse effect of actually decreasing immigrant (and thereby minority) self-employment by isolating newcomers from social networks that can provide support as the individual transitions to the new culture. Alternatively, the limited market could benefit a start-up initially due to better understanding of the clientele base while limiting long-term growth. Strategies to help moderately successful but plateaued enclave business owners break into the national market may be appropriate.

Lofstrom (2002) finds that the higher the unemployment rate in a city, the greater the likelihood of self-employment. Future research should want to include more controls for such factors as the unemployment rate. Future research can also explore the relationships found in our work with respect to services in more detail. The service sector is diverse, including disparate activities such as gardening and finance. While the results indicate that the size of the service sector in the local economy is positively related to the proportion of the population that are

immigrants, it is possible that the story may be more nuanced if the sector is more finely divided into higher-order and lower-order services. Including non-urban areas in future research is also needed to inform national policy recommendations. The situation in rural areas may be quite different due to large regions of population stagnation or decline that may provide openings in existing business niches that at once provide a better quality of life for long-term residents (e.g. more choices as consumers) and an income for newcomers.

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ESSAY 2

THE DYNAMICS OF LATINO-OWNED BUSINESS WITH COMPARISIONS TO OTHER ETHNICITIES

Introduction

Entrepreneurship has always been an integral part of the United States economy, but the growth in the rate of immigration to Western countries post World War II and the growth in the rate of small and medium size enterprises (Light and Rosenstein 1995) combine to provide evidence of a revival in entrepreneurship over the past forty years. Small businesses and microenterprises (defined as firms with less than five employees) are very important to the United States economy. They account for approximately 18 percent of employment and create 900,000 jobs a year in the United States (Ramirez de Miess 2006). In the United States, the increased importance of micro and small enterprises is occurring in the context of a rapidly growing Latino population. In many rural areas, the economic impact of Latino immigration is significant and positive (Coates and Gindling 2010). Given the turbulent record of unemployment of the past decade, the possible employment benefits from a more engaged Latino community are substantial.

Researchers explored immigrant and ethnic business ownership extensively over the past 20 years, but small sample size and a lack of micro data on immigrant and ethnic business ownership hindered the success of studies. Robles and Cordero-Guzmán (2007) assess the current literature and write that one of the problems Latino business ownership researchers have is "the lack of a sufficiently large data sample for specific country of origin analysis." This is especially true for relatively sparsely populated rural areas. In fact, studies seeking to look at

specific questions about Latino immigrant business ownership in rural areas have been limited in general by small sample size. Studies using microdata (e.g., Bates and Lofstrom 2009), faced limitations in their examination of comprehensive demographic and geographic differences with respect to the success of immigrant business owners in the United States.

Many theories have been proposed regarding the impact of immigrant business owners on their environment and the impact of their environment on their success. For example, the disadvantage theory of entrepreneurship suggests that limited opportunities in the labor market (e.g. from language barriers, discrimination, or unemployment) cause people to seek self-employment (Light 1979, 1980). The structuralist theory proposes that immigrant entrepreneurship experience cannot result entirely from culture, but rather also from the interaction of the group characteristics (e.g. human capital) of different immigrants and the opportunity structures they experience (Waldinger 1993; Waldinger et al. 2000). These theories are obviously very broad and more recently researchers have attempted to examine more specific areas of interest. For example, researchers interested in immigrant business ownership have examined the impact of acculturation, i.e., the process of adapting to a new culture (e.g., Calo 1995), the impact of financial resources (or lack thereof) (e.g., Cavalluzzo and Wolken 2005; Fairlie and Robb 2008b), human and social capital (e.g., Hansen 1995; Peters and Brush 1996), networks (e.g., Walton-Roberts and Hiebert 1997), and motivation, business strategy and community resources (e.g., Liu 2012).

This paper seeks to identify and determine factors associated with the dynamics of Latino-owned business measured in terms of business start-ups, growth, and closure using firm/establishments and employment. Further, this paper compares these factors associated with Latino-owned business with businesses owned by Asians, Blacks, and Whites.

From an economic perspective, it is important to know the factors associated with Latino-owned business (LOB) compared to the factors associated with non-LOB or other minority-owned businesses. Indeed, Martinez and Avila (2011) show that LOB businesses are significantly more likely to go out of business compared to White-owned businesses, so what causes LOB to exit the market and what are the main barriers to LOB growth? The environment that facilitates entrepreneurship in general and LOB in particular is largely dependent on these factors and on activities of local economic development decision makers and practitioners that promote entrepreneurship. Efforts to promote LOB at various levels of government and nongovernmental entities are dependent upon decision makers and practitioners understanding the determinants of location and growth of LOB, and the characteristics of business owners, businesses, and localities. Understanding these determinants may facilitate developing appropriate guidelines and training of economic development practitioners that will lead to fostering LOB activities more efficiently and effectively.

This essay uses limited-access Census microdata from the Survey of Business Owners, Longitudinal Business Database, and Integrated Longitudinal Business Database to first estimate ethnicities' relative associations with individual, business, and location factors by using a multinomial logit model. Next, the essay examines how these various factors affect the odds of survival of a LOB using Cox survival analysis. Finally, the essay examines how these various factors affect the employment growth of a LOB over time using Pooled OLS. Taken together, these three examinations help paint a more complete picture of how individual, business, and location factors impact LOB survival and growth. Among this essay's conclusion are: (1) Black and Latino business owners are less associated with using personal savings as start-up capital than other ethnicities; (2) use of personal savings increases the odds of survival of LOB by 4%;

and (3) relative to other ethnicities, LOB are likely to start a business with a small amount of capital, which, in turn, limits their future growth.

Literature Review

Although studying factors associated with small business has dominated the literature in general, there is a dearth of studies that investigate business and business-owner characteristics associated with LOB in the U.S., primarily because of difficulties obtaining access, using and reporting results from the data. Fairlie and Robb (e.g. 2005a, 2005b, 2006, 2008a) conducted studies on gender differences in business ownership and on minority-owned business using Census RDC data, but those studies have not focused on LOB.

Previous literature found that a major factor impacting Latino business survival and growth is the lack of financial resources, and that Latinos primarily finance their businesses with personal savings and informal loans from friends or family and moneylenders (Granier 2006, Haynes, Onochie, and Lee 2008, Raijman and Tienda 2000). Similarly, data from the 2005 National Minority Business Owner Survey suggests that in comparison to Korean-Americans, Mexican-American business owners borrow more from family, friends, suppliers, and credit cards and have a lower proportion of bank loan debt (Haynes, Onochie, and Lee 2008). The findings of Martinez et al. (2011) contradicted those of previous studies (Haynes, Onochie, and Lee 2008, Cavalluzzo and Wolken 2005, Granier 2006, and Blanchard, Zhao, and Yinger 2008) on the types of startup funds that Latino business owners use, as they did not find that Latino business owners use fewer formal funds compared to Whites. Indeed, Martinez et al. (2011) find that African Americans were the only race group significantly less likely to use formal funds compared to Whites. These results support the findings of Blanchard, Zhao, and Yinger (2008),

which show that Latinos receive higher interest rates on bank loans, which also discourages them from seeking formal funds for their businesses.

There have not been many studies into the interaction of gender and minority business factors, though Martinez and Avila (2011) use data from the Kauffman Foundation to show that neither Latinos nor Latinas differ significantly from White men or women in terms of having a college degree. Martinez and Avila (2011) also find that Latinos owned significantly fewer home-based businesses compared to White men.

Recent studies attempted to examine why Latinos tend to concentrate in sectors perceived as relatively vulnerable, such as the services (Puryear et al. 2008, Robles and Cordero-Guzmán 2007), construction, wholesale trade, and retail trade sectors (U.S. Census Bureau 2010). Martinez et al. (2011) explain LOB are often associated with low-barrier industries because they lack financial capital to enter high-barrier industries. High barrier industries are those requiring advanced educational credentials or large amounts of startup capital. Industries such as professional services, finance or insurance are examples of high barrier industries while low barrier industries include some food services and construction.

Robb & Coleman (2009) conclude that women business owners also have more difficulty keeping their businesses in operation. Bates, Lofstrom, and Servnon (2010) find that businesses within the low technology sectors or low barrier industries face a greater likelihood of going out of business compared to businesses within the high technology sectors or the high barrier industries. Martinez and Avila (2011) also find that Latina-owned businesses represent a larger percentage of businesses within the low technology sector and a smaller percentage of businesses within the medium and high technology sectors compared to White-owned businesses, but not that Latino-owned businesses were concentrated in the low technology sectors compared to

White men-owned businesses, or represented a significantly smaller percentage of businesses within the high or medium technology sectors. These results contradict Bates, Lofstrom, and Servnon (2010). Other factors found to be associated with higher LOB survival rates are older owner age (Fairlie 2005) and higher education (Martinez and Avila 2011).

Methods

The literature shows numerous testable hypotheses. Thus this essay will test each of the following seven hypotheses:

H1. Latino business owners primarily finance their businesses with personal savings.

H2. Latino business owners are less likely to finance their business with bank loans.

H3. Latino business owners do not differ significantly from White business owners in their likelihood of having a college degree.

H4. LOB are more associated with low-barrier industries such as the services, construction, wholesale trade, and retail trade sectors.

H5. LOB are less associated with high-barrier industries such as professional services, and finance or insurance.

H6. Latina-owned businesses are less likely to survive than Latino-owned businesses.

H7. LOB in low-barrier industries are less likely to survive.

The empirical approach to implement the aforementioned objectives and test these hypotheses is grounded in the theory of firm entry, growth and exit, which is well-developed in the small business and industrial organization literature (Borjas 1986; Evans 1987; Evans and

Jovanovic 1989; Evans and Leighton 1989; Dunne, Roberts and Samuelson 1989; Dunne and Hughes 1994). I draw on this literature to motivate the behavior of LOB. A generalized version of this framework allows the model to explain LOB activity or outcomes as a function of explanatory factors as well as stochastic variables as follows:

$$(1) \qquad y_{it} = f(X_{1t}, \ldots, X_{it}, \varepsilon_i)$$

where y_{it} is the LOB outcome variable at time t for business i, X_i's are the explanatory factors that affect the outcome, and ε_i is a random error term. This approach can capture business location and dynamics (firm entry, growth and exit behavior). This model allows incorporation of business, business owner, and region-specific factors such as business size and age, industry, access to capital, demographic, economic, and location specific factors such as population density (including density of populations from various country of ancestral origins), amenities, local government finance, and distance-to-urban centers.

The three main LOB outcomes in the analysis are as follows:

1. The probability of a business being Latino-owned as opposed to a business being Asian-owned, Black-owned, or White-owned.
2. The first LOB dynamic outcome: the probability of LOB year-over-year survival.
3. The second LOB dynamic outcome: LOB employment growth factors.

In the analysis of the first LOB outcome, I use a multinomial logit model to estimate the factors associated with LOB, Asian businesses, and businesses owned by Blacks and by Whites. The racial/ethnic groups of businesses in the data is categorical (taking on non-ordered outcome

values for each type of ownership such as LOB, Asian-owned, Black-owned, White-owned).[2] The model assesses how these different owner groups are related to personal traits and demographic variables, business and industry characteristics, and location factors. I estimate multinomial logit model as follows (Greene 2000):

$$(2)\ \Pr(y = k) = \frac{\exp(\propto + \beta' X_{ij})}{\sum_{j=1}^{3} \exp(\propto + \beta' X_{ij})}\ k = 1,2,3$$

A categorical dependent variable be defined so that it takes on four levels (0 for LOB, 1 for Asian-owned businesses, 2 for Blacks-owned businesses, and 3 for White-owned businesses). The vector X denotes the set of characteristics associated with the businesses. Thus this examination will use LOB as the base group and the results will be presented in terms relative to LOB. Often the omitted group in similar analyses is White individuals, and the relative position of Latino individuals must be inferred. As Latino business owners are the focus of this essay, they will be the base group in this analysis and hence all ethnic associations will be in terms of their association relative to Latino business owners.

Note that the explanatory variables that represent personal traits refer to the traits of the owner or majority shareholder of the firm and include variables such as whether the owner had prior experience owning a business, and hours per week spent working.[3] Demographic information includes traits such as gender, education, disability, marital status, and age, and country of ancestral origin. Personal and demographic traits of business owners, business age, and sources of capital are available from the SBO. Business characteristics such as firm age, size, and industry can be constructed using information available from the merged ILBD/LBD.

[2] For the sake of this study, ethnicities are assumed exclusive (e.g., if someone if Hispanic and White, they appear as Hispanic in the multinomial). While this assumption overlooks detail in the nonexclusive nature of ethnicity, the model nonetheless provides an examination of factors associated with each ethnic group.
[3] If individuals share ownership of a firm equally, I assign ownership to one of the owners at random.

Regional factors include demographic information of the county including population shares from Latin American countries, local unemployment rates or some measure of local conditions, and the rurality of U.S. counties. The rurality of U.S. counties follows the contemporaneous USDA Urban-Rural Continuum Codes. Demographics of locality include measures such as the racial mix, the age distribution, the proportion of the local population with the same country of ancestral origin, and the proportions of the local population speaking English, etc. These county level characteristics are publicly available from the decennial census and Bureau of Economic Analysis and are merged with the ILBD/LBD and SBO data using business location information.

Regional factors, including demographic information of the county, may include interactions between the country of ancestral origin of the firm owner and the demographics of the locality in some specifications, allowing us to answer my research questions regarding the impact of Latino population density (especially Latino with the same ancestral origin) on business development outcomes. Similarly the coefficients on the owner's country of ancestral origin variables help investigate the impact of country of origin on firm survival.

This paper uses duration analysis employing the hazard model to investigate the determinants of new firm entry and exit (or more specifically firm survival). This framework allows us to quantify the timing of the exit, rather than the mere incidence. The application of a hazard model (Cox 1972, 1975) for likelihood of firm survival has become a routine method for survival data used in the empirical literature since Audretsch and Mahmood (1995; see Musso and Schiavo 2008 and Christie and Sjoquist 2012 for recent applications). Following the standard notation of survival analysis models, let T denote the duration of time that a firm has been in existence and t as the current time. The probability that this firm does not survive within a short

interval of time, $(t, t + dt)$, conditional on the fact that it has survived as of period *t* can be calculated as follows:

$$(3)\ h_i(t|X) = \lim_{dt \to 0} \frac{P(t \leq T \leq t + dt | T \geq t; X_i)}{dt}$$

where X is the vector of covariates that are likely to affect the duration of the firm. Empirically, to examine the effects of the covariates on the duration, researchers have used a proportional hazards model (Cox 1972) which assumes the hazard rate is a multiplicative function of a baseline hazard, $h_0(t)$, and an exponential function of a set of covariates (Christie and Sjoquist, 2012):

$$(4)\ h_i(t|X_i) = h_0(t)\ exp(X_i\beta)$$

where β represents the usual vector of coefficients, and X_i is a vector of explanatory variables. In addition to above explanatory factors, following firm survival literature, I also include in this model the firm age, employment, and payroll. This paper uses the Cox proportional hazard model to estimate the hazard rates and the conditions affecting them. The primary focus of this exercise is on variables associated with LOB survival. The hazard function gives the risk that an establishment does not survive in the next year, on the condition that this business has survived up to the beginning of the current year (Christie and Sjoquist 2012). Length of survival is calculated as the number of years a business reports positive employment from the start-up year.

The probability of survival is assumed to be dependent on the same set of explanatory factors used in equation 2. Since there is little theoretical support for any particular parametric shape of the baseline hazard, most studies use a nonparametric approach (Christie and Sjoquist 2012) for estimation. Therefore, I use a nonparametric approach, but also use parametric models

in order to check whether my results are sensitive to the choice of a particular assumption regarding the distribution.

I use definitions and methods provided by the Bureau of the Census Business Dynamics Statistics website[4] to formulate employment change variables. The firm- or establishment–level employment growth rate is defined as follows:

$$(5) \quad g_{it} = \frac{(E_{it} - E_{i,t-\tau})}{X_{it}} \quad where\ X_{it} = \frac{1}{2}(E_{it} + E_{i,t-\tau})$$

E_{it} is employment in year t for establishment i and $E_{i,t-\tau}$ is employment in year $t-\tau$ for establishment i. Known as DHS measure (Haltiwanger et al. 2009), this measure can be defined at any level of aggregation (establishment, firm, local area, industry, etc.) and details of calculations including measures of job creation and destruction at the establishment and firm level are given in Haltiwanger et al. (2010). I use the establishment-level growth rate measures and the estimation equation takes the following form:

$$(5) \quad g_{it} = f(\beta X_{it}, \gamma Z_{it}, \delta L_{it})$$

where g_{it} refers to employment growth for the i^{th} firm, X is a vector of personal traits and demographic variables, Z is a vector of firm and industry characteristics, and L is a vector of regional variables. I estimate this model using linear relationships. First, I use a 1-year time horizon (i.e., $\tau = 1$) to calculate the employment growth. Then I repeat the model with 2 and 3-year time intervals (i.e., $\tau = 2, 3$) to test the stability of the initial specification over time.

[4] See http://www.census.gov/ces/dataproducts/bds/overview.html for more details.

Data

This paper merges three Census Bureau data sets by individual firm and establishment level to investigate the factors associated with LOB location and dynamics over time. The three databases are the Integrated Longitudinal Business Database (ILBD, $n =$ approximately 18 million annually), the Longitudinal Business Database (LBD, $n =$ approximately 8 million annually) and the Survey of Business Owners (SBO, $n =$ approximately 2.3 million in 2007). The SBO is not a longitudinal survey of businesses. However, by linking the SBO with the LBD and the ILBD by firm id number, one can trace longitudinal changes of the businesses that are matched.

Access to these three micro-datasets is limited. Qualified researchers with approved Federal Statistical Research Data Center (RDC) projects gain restricted access to the data at one of the 22 secure RDC locations and are sworn for life to protect the confidentiality of the data they access. The Center for Economic Studies (a unit within the Census) considers proposals from qualified researchers consistent with the subject matter of the surveys and censuses collected by the Census Bureau. Most economic datasets also contain Federal Tax Information and thus also require approval from the Internal Revenue Service. The application process is lengthy and includes a background check as a prerequisite to gaining Special Sworn Status. Researchers must receive Special Sworn Status before gaining access to Census microdata. Moreover, these researchers are subject to legal obligations and penalties should they violate the confidentiality agreement. Approved projects gain access to only those datasets approved within their project and all results must go through disclosure analysis to verify that they contain no risk of improper disclosure of any identifiable information. In the analysis that follows, certain estimated coefficients are non-disclosed to protect confidentiality of individuals and businesses.

Under Census guidelines, the reader can be shown that a non-disclosed variable was included in estimated equation, but not the coefficient value, sign, or significance.

Factors associated with LOB ownership and dynamics include characteristics of business and industry, characteristics of business owner, and characteristics of location. The standard economic model predicts that these factors are associated with the firm's production process. While measures of business ownership are available from the SBO, the data are cross-sectional and cannot capture the dynamics of LOB. Measures of business creation, expansion, and destruction are needed to represent dynamics of businesses. Such measures are available from the LBD or can be created using the LBD. On the other hand, the LBD lacks information on the characteristics of business owners such as race, ethnicity, gender, education level, whether the owner is foreign born, and access to capital. Such information is available from the SBO.

The LBD has firm and establishment identifiers, making the linking of the LBD with the SBO feasible. The ILBD is needed to address the issue that while SBO has information about firms that have no paid employees, the LBD has information only about establishments that have paid employees. The ILBD consists of administrative records for all nonemployer business units. By linking the ILBD, LBD, and SBO, one can track the dynamics of not only employer LOB but also the nonemployer LOB including the transitions of LOB nonemployers to LOB employers. Although location of the businesses are available from these merged data sets, location specific characteristics such as agglomeration, racial make-up of location, amenities, and market size are not available in this data. This requires linking merged data with location specific factors that are publicly available from the Bureau of the Census, the BEA and the USDA.

The first objective of this essay is to study the factors associated with LOB in comparison to the businesses owned by Asians, Blacks and Whites. The model identifies these businesses

using 2002 SBO. Because we are interested in age and initial size (using start-up employment), I merge the 2002 and 2007 SBO data with pre-2008 ILBD/LBD data sets that date back to 1994 for some businesses.

The second objective of this essay is to study the factors associated with LOB dynamics, measured using business duration and employment growth. First, I measure the survival of LOB establishments. This requires creating a cohort of only LOB. Because a LOB's inclusion in the 2007 SBO implies its prior survival, for this objective I only use the 2002 SBO and examine the time period from 2002-2007. The merged 2002 SBO with ILBD/LBD facilitate tracking these businesses for the interim period (2002-2007) with business characteristics. Given the panel nature of the created data set, it is possible to track the survival rates of cohorts over the time period 2002-2007. Secondly, I measure employment growth of these LOB over time. I use a one-year time horizon to calculate the employment growth first and then experiment with expanded time horizons such as 2-year and 3-year time intervals to test the stability of the initial specification.

Results

The results of the multinomial logit analysis of the first LOB outcome – the probability of a business being Latino-owned as opposed to a business being Asian-owned, Black-owned, or White-owned – is given in Table 5.[5] For ease of interpretation, Table 5 displays the results as relative risk ratios (or odds ratios, i.e., as exponentiated multinomial logit coefficients). Table A1

[5] Note that "XX" may appear rather than a coefficient and standard error in the tables using limited access data if that coefficient and standard error have been suppressed upon release of the results because the Census Bureau finds that coefficient and standard error to risk an inappropriate disclosure of individual response.

in the appendix contains the coefficients on control variables in the estimation that are not included in Table 5. These variables are listed below:

Establishment-Level Variables

- Business organization type indicators:
  - Coop
  - Estate
  - Nonprofit
  - Public
  - Husband and wife
- Establishment employment
- Establishment payroll
- Firm employment
- Firm payroll
- State industry employment
- State indicators variables

County-Level Variables

- Population
- Population squared
- Population density
- Age 25 to 34 population
- Age 35 to age 44 population
- Age 45 to 54 population
- Age 55 to 64 population
- Age greater than 64 population
- Female population
- Female population squared
- Black population
- Black population squared
- Asian population
- Asian population squared
- Hispanic population
- Hispanic population squared
- Number of build permits issued
- Industry employment

Though some of the coefficients on the county-level control variables are not statistically significant, most are statistically significant, but equal to 1.00. Equality to 1.00 implies that (*ceteris paribus*) the represented ethnic group is near equal to Hispanic-Americans[6] in its relationship with the control variable in question. The employment and payroll variables relate similarly. The logit coefficients are given in the appendix Table A2.[7]

[6] The paper uses the term Hispanic, rather than Latino, in some cases because the Census data categorizes individuals as Hispanic, rather than Latino. This paper acknowledges the difference between the two terms, but given the population of interest is Latino and that most individuals in the U.S. who are Hispanic are also Latino, this paper assumes results on Hispanic entrepreneurs in the U.S. are be similar to results on Latinos in the U.S.

[7] Numerous coefficients in this and other tables are statistically significant, but displayed as 0.00*** or -0.00***. The Bureau of the Census limits the specificity with which the regression results can be displayed to protect against improper disclosure, so only the sign of the coefficient is available. As these coefficients are near zero, their impact, while statistically significant, is small.

Table 5. Multinomial Logit Results (Relative Risk Ratio)

Business Variables	(1) Asian-American	(2) Black-American	(3) White-American
Female	0.92***	1.24***	0.76***
	(0.02)	(0.02)	(0.01)
Ed level: high school	1.66***	2.26***	3.31***
	(0.05)	(0.08)	(0.07)
Some college	XX	3.69***	4.77***
	XX	(0.14)	(0.11)
Trade school	1.29***	3.50***	3.76***
	(0.06)	(0.16)	(0.11)
Associates degree	2.15***	XX	4.64***
	(0.09)	XX	(0.14)
Bachelor's degree	4.67***	3.78***	8.06***
	(0.15)	(0.15)	(0.19)
Graduate degree	5.91***	3.34***	7.55***
	(0.21)	(0.14)	(0.20)
Owner age: 25 to 34	XX	XX	0.11***
	XX	XX	(0.00)
35 to 44	0.26***	0.37***	0.13***
	(0.01)	(0.02)	(0.00)
45 to 54	0.29***	0.49***	0.19***
	(0.01)	(0.03)	(0.01)
55 to 64	0.30***	0.62***	0.27***
	(0.01)	(0.03)	(0.01)
≥ 65	0.24***	0.72***	0.37***
	(0.01)	(0.04)	(0.01)
Hours: 20 to 39 hours	0.78***	XX	0.78***
	(0.02)	XX	(0.02)
40	0.98	0.81***	0.67***
	(0.03)	(0.03)	(0.02)
41 to 59	0.88***	0.89***	0.78***
	(0.03)	(0.03)	(0.02)
≥ 60	1.04	1.27***	0.72***
	(0.03)	(0.04)	(0.02)
Primary income	1.17***	0.59***	0.96**
	(0.03)	(0.01)	(0.02)
Provide good/service	0.79***	XX	0.94***
	(0.01)	XX	(0.01)
Manage	1.10***	1.17***	1.12***
	(0.02)	(0.03)	(0.02)
Financial	1.05***	0.92***	1.48***
	(0.02)	(0.02)	(0.02)

Table 5. (cont'd)

Business Variables	(1) Asian-American	(2) Black-American	(3) White-American
Start-up capital: $5,000-	0.79***	0.94*	0.76***
$10,000	(0.03)	(0.03)	(0.02)
$10,000-$25,000	1.15***	0.82***	0.82***
	(0.03)	(0.03)	(0.02)
$25,000-$50,000	1.32***	0.79***	0.87***
	(0.05)	(0.04)	(0.02)
$50,000-$100,000	XX	0.73***	0.96
	XX	(0.04)	(0.03)
$100,000-$250,000	1.83***	0.75***	1.07**
	(0.07)	(0.04)	(0.04)
$250,000-$1 million	1.85***	0.74***	1.23***
	(0.10)	(0.05)	(0.06)
> $1 million	2.13***	XX	1.45***
	(0.18)	XX	(0.11)
Start-up capital source:	1.08***	0.93***	1.00
Savings	(0.02)	(0.02)	(0.02)
Credit	0.91***	1.11***	0.85***
	(0.03)	(0.03)	(0.02)
Government loan	XX	1.32***	0.89**
	XX	(0.09)	(0.05)
Bank loan	1.29***	0.89***	1.19***
	(0.04)	(0.03)	(0.03)
Venture capital	1.33***	1.06	1.32***
	(0.10)	(0.10)	(0.08)
None Needed	0.82***	0.88***	0.92***
	(0.02)	(0.03)	(0.02)
Expansion capital source:	1.11***	1.06**	0.98
Savings	(0.02)	(0.03)	(0.02)
Credit	0.74***	0.94**	1.09***
	(0.02)	(0.03)	(0.02)
Government loan	0.81***	1.14	0.78***
	(0.06)	(0.10)	(0.05)
Bank loan	0.89***	0.73***	1.12***
	(0.03)	(0.03)	(0.02)
Venture capital	0.94	XX	0.92
	(0.10)	XX	(0.08)
None needed	0.98	0.83***	1.20***
	(0.02)	(0.02)	(0.02)

Table 5. (cont'd)

Business and County Variables	(1) Asian-American	(2) Black-American	(3) White-American
Multiple establishments	0.68***	1.12**	2.00***
	(0.03)	(0.05)	(0.07)
>10% sales: Federal	1.09*	1.07	0.66***
	(0.05)	(0.06)	(0.03)
State or local gov't	0.67***	1.40***	0.89***
	(0.03)	(0.05)	(0.02)
Primary customer: other	0.90***	1.11***	0.89***
businesses	(0.01)	(0.01)	(0.01)
Individuals	1.02*	0.90***	1.05***
	(0.01)	(0.01)	(0.01)
County-level variables:			
Per capita income	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Mean household size	0.60***	0.66***	0.22***
	(0.04)	(0.05)	(0.01)
% of hh headed by single female	4.56***	27,791.40***	0.01***
	(1.94)	(13,190.53)	(0.00)
Unemployment rate	17.58***	2.03	1.62
	(14.48)	(1.91)	(1.03)
Labor force participation rate	1.53*	0.68	3.39***
	(0.35)	(0.17)	(0.57)

Table 5. (cont'd)

NAICS Sector Industry	(1) Asian-American	(2) Black-American	(3) White-American
11: Ag., Forestry, Fishing, Hunting	0.66*	0.59**	1.87***
	(0.14)	(0.12)	(0.30)
21: Mining, Quarrying, Oil & Gas	0.50***	0.56**	3.79***
Extraction	(0.13)	(0.16)	(0.71)
22: Utilities	0.98	1.27	2.08***
	(0.34)	(0.41)	(0.45)
23: Construction	0.37***	0.58***	1.43**
	(0.07)	(0.10)	(0.20)
31-33: Manufacturing	1.08	0.42***	1.57***
	(0.19)	(0.08)	(0.22)
42: Wholesale Trade	1.96***	0.40***	1.64***
	(0.35)	(0.07)	(0.23)
44-45: Retail Trade	1.98***	0.62***	1.37**
	(0.34)	(0.11)	(0.19)
48-49: Transportation and	0.74*	XX	0.86
Warehousing	(0.13)	XX	(0.12)
51: Information	0.92	1.17	1.95***
	(0.16)	(0.22)	(0.28)
52: Finance and Insurance	0.80	0.89	1.76***
	(0.14)	(0.16)	(0.25)
53: Real Estate, Rental, Leasing	1.25	0.73*	XX
	(0.22)	(0.13)	XX
54: Professional, Scientific, and	0.98	0.85	1.66***
Technical Services	(0.17)	(0.15)	(0.23)
55: Management of Companies	1.65**	1.14	1.67**
and Enterprises	(0.40)	(0.30)	(0.33)
56: Administrative Support, Waste	0.47***	0.83	0.88
Management & Remediation Services	(0.08)	(0.15)	(0.12)
61: Educational Services	0.97	1.00	1.37**
	(0.18)	(0.19)	(0.20)
62: Health Care and Social	1.09	1.41*	0.96
Assistance	(0.19)	(0.26)	(0.14)
71: Arts, Entertainment, & Recreation	0.62***	1.46**	2.08***
	(0.11)	(0.26)	(0.30)
72: Accommodation & Food Services	3.07***	0.44***	0.71**
	(0.54)	(0.08)	(0.10)
81: Other Services	XX	1.01	1.14
	XX	(0.18)	(0.16)

Table 5. (cont'd)

County Variables	(1) Asian-American	(2) Black-American	(3) White-American
Amenities	0.84***	0.75***	0.86***
	(0.01)	(0.01)	(0.01)
Rural-urban code 2	1.01	1.08**	1.13***
Metro area, 0.25 to 1 million pop.	(0.03)	(0.04)	(0.03)
Rural-urban code 3	0.91**	1.05	1.28***
Metro area, < 250,000	(0.04)	(0.05)	(0.04)
Rural-urban code 4	0.89**	1.11	1.36***
Adjacent to metro, ≥ 20,000	(0.05)	(0.07)	(0.06)
Rural-urban code 5	0.89	1.04	1.58***
Not adjacent to metro, ≥ 20,000	(0.07)	(0.10)	(0.10)
Rural-urban code 6	0.89*	1.22***	1.76***
Adjacent to metro, 2,500-19,999	(0.06)	(0.08)	(0.09)
Rural-urban code 7	0.75***	0.83**	1.54***
Not adjacent to metro, 2,500-19,999	(0.06)	(0.07)	(0.09)
Rural-urban code 8	0.74*	1.59***	1.94***
Adjacent to a metro, < 2,500	(0.13)	(0.25)	(0.25)
Rural-urban code 9	0.37***	1.11	1.92***
Not adjacent to a metro, < 2,500	(0.06)	(0.17)	(0.21)
Constant	0.10***	0.01***	100.23***
	(0.05)	(0.00)	(36.10)
State FE	YES	YES	YES
Year FE	YES	YES	YES

Pseudo *R*-squared = 0.224
n = ~11,847,500[8]
Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results presented in Table 5 show, ceteris paribus, the relative risk ratio of business owner ethnicity relative to Hispanic-American associated with various factors. For example, Table 5 shows that if a business owner is female, relative to Hispanic-American, the odds that she is Asian-American change by a factor of 0.92, 1.24 for Black-American, and 0.76 for White-

[8] The exact number of observations is suppressed by the Bureau of the Census to avoid improper disclosure of an individual response.

American. The coefficients on owner education indicate that Hispanic-American business owners are less likely to be associated with any level of education included. Thus Hispanic-American business owners are more likely to be associated with the omitted education level: less than a high school degree. Conversely, for the age group coefficients, Hispanics-American business owners are more likely to be associated with any of the included age groups. Thus Hispanic-American business owners are less associated with the less than 25 years old category.

Hispanic-American business owners' relative association with weekly hours worked is more complex. Hispanic-American business owners are more likely to work 20 to 59 hours per week on their business; they are also more likely than White-Americans to work 60 or more hours per week, but less likely than Asian and Black-American business owners to work 60 or more hours per week. Hispanic-American business owners are more likely to be associated with having the business as their primary source of income than both Black and White-Americans, but less likely than Asian-Americans.

The start-up capital amount is divided into value ranges (imposed by the 2007 SBO). The omitted category is less than $5,000. Hispanic-Americans are more likely to be associated with the $5,000 to $10,000 range than the other ethnicities. Hispanic-Americans are more likely to be associated with the ranges in $10,000 to $100,000 than White and Black-Americans, but less likely than Asian-Americans (though the $50,000 to $100,000 range is suppressed for Asian-Americans). Hispanic-Americans are less associated with all of the ranges over $100,000 than Asian and White-Americans, but more associated with those (non-suppressed) ranges than Black-Americans. Start-up and expansion capital source associations have statistically significant variation.

The county-level variables for percent of the population with various education levels show that Hispanic-American business owners are less associated with every included education level. Hence, Hispanic-American business owners tend to be located in counties with a relatively high percent of individuals having less than a high school degree. The coefficients on other county-level variables reveal that LOB are more associated with areas in which there are high amenities than any other ethnicity. The amenities variable uses the USDA ERS amenities scale, which is constructed by combining six measures of climate, topography, and water area that reflect environmental qualities most people prefer. Further, the coefficients on the rural-urban continuum codes indicate that LOB are more associated with rural counties than Asian-American business owners, but less associated with rural counties than White-Americans.

Table 5 shows that Asian-American business owners are more likely than Hispanic-American business owners to be located in counties with higher unemployment rates. White and Black-American business owners do not have a statistically significant difference from Hispanic-Americans in their association with the unemployment rate. The results also show many statistically significant results surrounding the various NAICS 2-digit industries. Most of those results are left to the reader to examine, but note that if a businesses is in the construction and agricultural industries, two industries often associated with Hispanic-Americans, the odds of it being owned by a White-American rather than a Hispanic-American increase by 1.43 and 1.87 times, respectively.

The results of the analysis into the factors associated with a LOB's survival probability are given in Table 6. The hazard function gives the risk of survival, that is, the probability that a business will still be in business in the next year, on the condition that this business has survived up to the beginning of the current year (Christie and Sjoquist 2012). As noted above, there is

little theoretical support for any particular parametric shape of the baseline hazard and, as a result, most studies use a non- or semi-parametric approach (Christie and Sjoquist 2012) for estimation. Therefore, the paper focuses on the results given by the Cox proportional hazard model, but also includes two parametric models – exponential and Weibull – to check the sensitivity of the results to the choice of a particular assumption regarding the distribution. Table 6 contains the results of these three models and shows that the results are stable across model selection. For ease of comparison, these results are presented as hazard ratios.

For readability, Table A3 in the appendix contains the coefficients on variables that are controlled, but not included in Table 6.[9] Equality to 1.00 implies that (*ceteris paribus*) as the variable in question increases by 1, the odds that the business will survive in the next year decrease by 1.00 times (i.e. remain about the same). The Cox Proportional Hazard Model, exponential, and Weibull coefficients (the parametric results are presented in accelerated failure time form) are given in the appendix Table A4.

[9] These variables include: business organization type indicators; establishment employment; establishment payroll; firm employment; firm payroll; state-level industry employment; and state indicator variables. Table A3 also contains some of the county-level control variables: population, population squared, population density, age group populations; female, Black, Asian, Hispanic, Mexican, Cuban, and Puerto Rican population and populations-squared; number of build permits issued; industry employment; Mexican, Cuban, and Puerto Rican employment and establishments; and interaction terms between ancestral origin and local population and number of business owners of the same origin. Though some of the coefficients on these county-level control variables are statistically significant, almost all are significant and equal to 1.00.

Table 6. Cox Proportional Hazard, Exponential, Weibull Survival Model Results (Odds Ratio)

Business Owner Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Female	1.06***	1.06***	1.06***
	(0.02)	(0.02)	(0.02)
Mexican	1.02	1.02	1.02
	(0.03)	(0.03)	(0.03)
Cuban	1.00	0.99	0.98
	(0.04)	(0.04)	(0.04)
Puerto Rican	1.19***	1.20***	1.22***
	(0.05)	(0.05)	(0.06)
Owner education: High school	0.99	1.00	1.01
	(0.04)	(0.04)	(0.04)
Some college	1.00	1.00	1.02
	(0.04)	(0.04)	(0.04)
Tech or trade school	0.96	0.96	0.97
	(0.05)	(0.05)	(0.05)
Associates degree	0.98	0.99	1.00
	(0.06)	(0.06)	(0.06)
Bachelor's degree	1.01	1.01	1.03
	(0.04)	(0.04)	(0.04)
Graduate degree	0.96	0.97	1.00
	(0.04)	(0.04)	(0.05)
Business Age	1.02	0.99***	0.91***
	(0.02)	(0.00)	(0.00)
Owner age: 25 to 34	0.89*	0.91	0.95
	(0.06)	(0.06)	(0.06)
35 to 44	0.81***	0.81***	0.79***
	(0.05)	(0.05)	(0.05)
45 to 54	0.82***	0.81***	0.78***
	(0.05)	(0.05)	(0.05)
55 to 64	0.89**	0.89**	0.87**
	(0.05)	(0.05)	(0.05)
Older than 64	0.95	0.96	1.00
	(0.06)	(0.06)	(0.06)
Hours: 20 to 39 hours	0.94	0.95	0.97
	(0.04)	(0.04)	(0.05)
40	0.95	0.96	0.98
	(0.04)	(0.04)	(0.04)
41 to 59	0.86***	0.86***	0.87***
	(0.04)	(0.04)	(0.04)
More than 59	0.89**	0.90**	0.92*
	(0.04)	(0.04)	(0.04)

Table 6. (cont'd)

Business Owner Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Primary income	0.85***	0.84***	0.82***
	(0.02)	(0.02)	(0.02)
Provide goods/services	1.04	1.04	1.05*
	(0.03)	(0.03)	(0.03)
Management	1.03	1.02	1.02
	(0.03)	(0.03)	(0.03)
Finances	0.94**	0.94**	0.94**
	(0.02)	(0.02)	(0.02)
Multiple establishments	0.75***	0.75***	0.75***
	(0.03)	(0.03)	(0.03)
State-up capital source: Savings	0.94**	0.94**	0.93**
	(0.03)	(0.03)	(0.03)
Assets	1.00	1.00	1.00
	(0.03)	(0.03)	(0.03)
Credit	0.94	0.95	0.96
	(0.04)	(0.04)	(0.04)
Government loan	0.98	0.98	0.99
	(0.07)	(0.07)	(0.07)
Bank loan	0.99	0.99	1.00
	(0.03)	(0.03)	(0.03)
Venture capital	1.04	1.04	1.05
	(0.06)	(0.06)	(0.06)
None needed	1.06	1.07	1.09*
	(0.05)	(0.05)	(0.05)
Expansion capital source: Savings	1.10***	1.11***	1.13***
	(0.04)	(0.04)	(0.04)
Assets	1.06	1.07	1.09*
	(0.05)	(0.05)	(0.05)
Credit	1.06	1.05	1.05
	(0.04)	(0.04)	(0.04)
Government loan	1.00	0.99	0.99
	(0.08)	(0.08)	(0.08)
Bank loan	0.81***	0.80***	0.78***
	(0.03)	(0.03)	(0.03)
Venture capital	1.09	1.10	1.13
	(0.08)	(0.08)	(0.09)
None needed	0.96	0.96	0.96
	(0.03)	(0.03)	(0.04)

Table 6. (cont'd)

Business Owner and County Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
>10% sales: federal government	1.10*	1.10*	1.10*
	(0.06)	(0.06)	(0.06)
State or local government	0.84***	0.84***	0.84***
	(0.04)	(0.04)	(0.04)
Primary customer: other businesses	0.93***	0.93***	0.93***
	(0.02)	(0.02)	(0.02)
Individuals	0.85***	0.85***	0.85***
	(0.02)	(0.02)	(0.02)
County-level variables:			
% with education: High school	2.56	2.46	2.14
	(1.58)	(1.52)	(1.35)
Some college	5.62**	5.65**	6.19**
	(3.89)	(3.92)	(4.39)
Associates degree	1.94	1.80	1.35
	(2.28)	(2.12)	(1.63)
Bachelor's degree	1.49	1.44	1.24
	(1.00)	(0.97)	(0.85)
Graduate degree	2.40	2.31	2.13
	(1.87)	(1.80)	(1.69)
Per capita income	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Unemployment rate	2.28	2.09	1.65
	(2.36)	(2.16)	(1.75)
Labor force participation rate	1.00	0.99	0.96
	(0.33)	(0.33)	(0.33)

Table 6. (cont'd)

NAICS Sector Industry	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
21: Mining, Quarrying, Oil & Gas Extraction	0.97	1.00	1.11
	(0.21)	(0.22)	(0.25)
22: Utilities	XX	XX	XX
	XX	XX	XX
23: Construction	0.92	0.95	1.04
	(0.10)	(0.10)	(0.12)
31-33: Manufacturing	0.92	0.94	0.99
	(0.10)	(0.10)	(0.11)
42: Wholesale Trade	0.82*	0.84	0.90
	(0.09)	(0.09)	(0.10)
44-45: Retail Trade	0.94	0.97	1.04
	(0.10)	(0.11)	(0.12)
48-49: Transportation and Warehousing	0.95	0.97	1.04
	(0.10)	(0.11)	(0.12)
51: Information	XX	XX	XX
	XX	XX	XX
52: Finance and Insurance	XX	XX	XX
	XX	XX	XX
53: Real Estate and Rental and Leasing	0.80*	0.82*	0.89
	(0.09)	(0.10)	(0.11)
54: Professional, Scientific, and Technical Services	0.85	0.86	0.90
	(0.09)	(0.09)	(0.10)
55: Management of Companies and Enterprises	1.09	1.11	1.16
	(0.19)	(0.20)	(0.21)
56: Administrative Support and Waste Management and Remediation Services	0.93	0.95	1.01
	(0.11)	(0.11)	(0.12)
61: Educational Services	0.72**	0.73**	0.75**
	(0.10)	(0.10)	(0.11)
62: Health Care and Social Assistance	0.69***	0.71***	0.75**
	(0.08)	(0.09)	(0.09)
71: Arts, Entertainment, and Recreation	0.92	0.94	1.00
	(0.12)	(0.12)	(0.13)
72: Accommodation and Food Services	0.82*	0.84	0.89
	(0.09)	(0.09)	(0.10)
81: Other Services	0.85	0.87	0.92
	(0.09)	(0.10)	(0.10)
92: Public Administration	XX	XX	XX
	XX	XX	XX

Table 6. (cont'd)

County Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Amenities	XX	XX	XX
	XX	XX	XX
Rural-urban code 2	1.06	1.06	1.06
Metro area, 0.25 to 1 million pop.	(0.04)	(0.04)	(0.04)
Rural-urban code 3	0.97	0.98	0.98
Metro area, < 250,000	(0.05)	(0.05)	(0.06)
Rural-urban code 4	1.01	1.01	1.01
Adjacent to metro, ≥ 20,000	(0.07)	(0.07)	(0.08)
Rural-urban code 5	1.00	1.00	0.99
Not adjacent to metro, ≥ 20,000	(0.10)	(0.10)	(0.10)
Rural-urban code 6	0.95	0.94	0.93
Adjacent to metro, 2,500-19,999	(0.08)	(0.08)	(0.08)
Rural-urban code 7	0.98	0.98	1.00
Not adjacent to metro, 2,500-19,999	(0.09)	(0.09)	(0.09)
Rural-urban code 8	1.01	1.01	0.97
Adjacent to a metro, < 2,500	(0.21)	(0.21)	(0.20)
Rural-urban code 9	0.82	0.81	0.81
Not adjacent to a metro, < 2,500	(0.16)	(0.16)	(0.17)
Observations	~127,000	~127,000	~127,000
State FE	YES	YES	YES
Year FE	YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The results in Table 6 are displayed as an odds ratio. Hence, for example, given a Hispanic-American business owner is female, the business is 1.06 times less likely to continue in business in the next year than a Hispanic-American business owned by a male. The only ethnicity that has a statistically significant impact on the probability of survival in the next year is Puerto Rican. If a Hispanic-American business owner is Puerto Rican, the odds of survival in the next year decrease by 1.19 times. Owner education does not have a statistically significant impact on survival rates. Although business age does not have a statistically significant effect,

the owner age range variables do have significance. Indeed, the omitted owner age category is "less than 25 years old," and every other age category except "older than 64" (which is insignificant) increases the odds of survival in the next year by about 15%.

Both working more than 40 hours per week and having the business be the owner's primary source of income increases the odds of survival. The only start-up capital source that has a statistically significant impact is personal savings and it increases the odds of survival by 6%. For expansion capital source, however, using personal savings actually decreases the odds of survival by 10% and using a bank loan increases the odds of survival by 19%. This relationship between using a bank loan for expansion capital is not entirely causal; banks analyze a business's plan, history, etc., and, in turn, are effective at selecting businesses that are relatively likely to survive. Thus only businesses that are a priori relatively likely to survive receive a bank loan. It may be that the relatively low interest rates of bank loans contribute to the survival of a business, but this coefficient cannot be attributed entirely to this effect. In terms of customer types, both having other businesses and individuals as the primary customers increases the odds of survival. Having state or local governments account for more than 10% of sales also increases the odds of survival, while having the federal government account for more than 10% of sales decreases the odds of survival.

The omitted NAICS 2-digit industry is 11: Agriculture, Forestry, Fishing and Hunting. Although all other (non-suppressed) industries except Management of Companies and Enterprises increase the probability of survival, only (1) Wholesale Trade, (2) Real Estate and Rental and Leasing, (3) Education Services, and (4) Health Care and Social Assistance have statistically significant increase in the probability of survival in the Cox specification. Indeed, LOBs in the educational services and health care and social assistance industries were the most

likely to survive and be significant across all specifications. Finally, note that rurality does not appear to change the probability of survival of a LOB.

Table 7 contains the results of this paper's analysis into factors impacting LOB employment growth. These regressions contain the same variables that were in the LOB survival analysis presented above in Table 6 and the same control variable coefficients as listed above are omitted (available in the appendix) for readability.

Recall, the firm- or establishment–level employment growth rate is defined as follows:

$$(5) \quad g_{it} = \frac{(E_{it} - E_{i,t-\tau})}{X_{it}} \quad where\ X_{it} = \frac{1}{2}(E_{it} + E_{i,t-\tau})$$

E_{it} is employment in year t for establishment i and $E_{i,t-\tau}$ is employment in year $t-\tau$ for establishment i. Columns (1), (2), and (3) of Table 6 present the results with $\tau = 1$ and various level of fixed effects. Columns (4) and (5) present the results with $\tau = 2$ and $\tau = 3$, respectively.

Table 7. Pooled OLS Regression Results: LOB Employment Growth

Business Owner Variables	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
Female	0.02**	0.02**	0.02**	0.01	0.03
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Mexican	-0.00	-0.00	-0.00	-0.02	-0.01
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
Cuban	0.01	0.01	0.01	0.00	0.02
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Puerto Rican	-0.04**	-0.03**	-0.03*	-0.06**	-0.06
	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)
Owner education: High school	0.02	0.02	0.02	0.05**	0.05
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Some college	0.03***	0.03***	0.03**	0.06***	0.09***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Technical or trade school	0.03**	0.04**	0.04**	0.06**	0.10**
	(0.02)	(0.01)	(0.02)	(0.03)	(0.04)
Associates degree	0.01	0.01	0.01	0.02	0.05
	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)
Bachelor's degree	0.05***	0.05***	0.05***	0.08***	0.11***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.04)
Graduate degree	0.06***	0.06***	0.06***	0.08***	0.13***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.04)
Business Age	-0.01***	-0.01***	-0.01***	-0.02***	-0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Owner age: 25 to 34	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.02)	(0.02)	(0.02)	(0.04)	(0.06)
35 to 44	-0.06***	-0.06***	-0.06***	-0.07*	-0.10*
	(0.02)	(0.02)	(0.02)	(0.04)	(0.06)
45 to 54	-0.06***	-0.06***	-0.06***	-0.09**	-0.13**
	(0.02)	(0.02)	(0.02)	(0.04)	(0.06)
55 to 64	-0.06***	-0.06***	-0.06***	-0.08**	-0.12**
	(0.02)	(0.02)	(0.02)	(0.04)	(0.06)
Older than 64	-0.02	-0.02	-0.02	-0.04	-0.08
	(0.02)	(0.02)	(0.02)	(0.04)	(0.06)
Hours: 20 to 39 hours	0.02	0.02	0.02	0.03	0.06
	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)
40	0.03*	0.03*	0.03*	0.04	0.04
	(0.02)	(0.01)	(0.01)	(0.03)	(0.04)
41 to 59	0.02	0.02	0.02	0.03	0.03
	(0.01)	(0.01)	(0.01)	(0.02)	(0.04)
More than 59	0.03**	0.03*	0.03**	0.04*	0.06
	(0.01)	(0.01)	(0.01)	(0.03)	(0.04)

Table 7. (cont'd)

Business Owner Variables	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
Primary income	-0.03***	-0.03***	-0.03***	-0.05***	-0.05**
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Provide goods or services	0.01	0.01	0.01**	0.02*	0.03
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Management	-0.00	-0.00	-0.00	-0.01	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Finances	-0.02**	-0.02**	-0.02**	-0.02	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Multiple establishments	-0.11***	-0.11***	-0.11***	-0.16***	-0.21***
	(0.01)	(0.01)	(0.01)	(0.02)	(0.02)
State-up capital source: savings	0.01	0.01	0.01	0.01	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Assets	0.02*	0.02*	0.02*	0.04**	0.06**
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Credit	-0.01	-0.01	-0.01	-0.02	-0.04
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Government loan	0.02	0.02	0.02	0.00	-0.00
	(0.01)	(0.01)	(0.01)	(0.02)	(0.04)
Bank loan	-0.00	-0.00	-0.00	0.00	0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Venture capital	0.00	0.00	0.00	0.01	0.02
	(0.01)	(0.01)	(0.01)	(0.03)	(0.04)
None needed	0.03*	0.03*	0.03*	0.05*	0.07
	(0.02)	(0.02)	(0.02)	(0.03)	(0.04)
Expansion capital source: savings	0.02**	0.02**	0.02**	0.04**	0.05**
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Assets	0.01	0.01	0.01	0.02	0.02
	(0.02)	(0.02)	(0.01)	(0.02)	(0.04)
Credit	0.01	0.01	0.01	0.02	0.04
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Government loan	0.02	0.02	0.02	-0.02	-0.03
	(0.02)	(0.02)	(0.02)	(0.04)	(0.07)
Bank loan	-0.01	-0.01	-0.01	-0.01	-0.01
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Venture capital	-0.01	-0.01	-0.01	0.02	0.06
	(0.03)	(0.03)	(0.03)	(0.05)	(0.07)
None needed	0.01	0.01	0.01	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)

Table 7. (cont'd)

Business and County Variables	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
>10% sales: federal government	-0.01	-0.01	-0.01	-0.04	-0.10**
	(0.01)	(0.01)	(0.01)	(0.03)	(0.04)
State or local government	0.00	0.00	-0.00	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Primary customer: other businesses	0.01	0.00	0.00	-0.01	-0.02
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
Individuals	0.01	0.01	0.01	0.00	0.01
	(0.01)	(0.01)	(0.01)	(0.01)	(0.02)
County-level variables:					
% with: high school	-0.15	-0.06	-0.05	-0.03	-0.29
	(0.18)	(0.21)	(0.21)	(0.33)	(0.48)
Some college	0.25	0.10	0.12	-0.25	-0.39
	(0.16)	(0.22)	(0.22)	(0.35)	(0.47)
Associates degree	-0.41	-0.64*	-0.65*	-0.02	0.24
	(0.29)	(0.39)	(0.39)	(0.61)	(0.83)
Bachelor's degree	-0.04	0.00	-0.00	0.12	-0.27
	(0.19)	(0.23)	(0.23)	(0.37)	(0.52)
Graduate degree	-0.14	-0.20	-0.19	-0.25	-0.58
	(0.23)	(0.26)	(0.26)	(0.40)	(0.57)
Per capita income	0.00	0.00	0.00	0.00	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mean household size	-0.00	-0.01	-0.01	-0.03	-0.03
	(0.02)	(0.03)	(0.03)	(0.04)	(0.06)
% of hh headed by single female	0.14	0.22	0.21	-0.00	-0.31
	(0.24)	(0.28)	(0.28)	(0.37)	(0.54)
Unemployment rate	-0.42	-0.42	-0.37	0.22	-0.11
	(0.29)	(0.34)	(0.34)	(0.59)	(0.90)
Labor force participation rate	0.05	0.01	0.00	0.09	0.14
	(0.10)	(0.11)	(0.11)	(0.16)	(0.22)

Table 7. (cont'd)

NAICS Sector Industry	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
21: Mining, Quarrying, and Oil and Gas Extraction			0.14**	0.32***	0.39**
			(0.06)	(0.10)	(0.15)
22: Utilities			0.14	0.30	0.32
			(0.13)	(0.19)	(0.29)
23: Construction			0.08*	0.20**	0.23*
			(0.05)	(0.09)	(0.13)
31-33: Manufacturing			0.08*	0.18**	0.23*
			(0.05)	(0.09)	(0.13)
42: Wholesale Trade			0.09*	0.24***	0.31**
			(0.05)	(0.09)	(0.13)
44-45: Retail Trade			0.08*	0.19**	0.22*
			(0.05)	(0.09)	(0.13)
48-49: Transportation and Warehousing			0.08*	0.19**	0.26*
			(0.05)	(0.09)	(0.14)
51: Information			0.11**	0.19**	0.17
			(0.05)	(0.09)	(0.15)
52: Finance and Insurance			0.09*	0.21**	0.25*
			(0.05)	(0.09)	(0.13)
53: Real Estate, Rental and Leasing			0.10**	0.19**	0.22
			(0.05)	(0.09)	(0.14)
54: Professional, Scientific, and Technical Services			0.07	0.20**	0.23*
			(0.05)	(0.09)	(0.13)
55: Management of Companies and Enterprises			0.09	0.20*	0.25
			(0.06)	(0.11)	(0.16)
56: Administrative Support, Waste Management, Remediation Services			0.07	0.16*	0.18
			(0.05)	(0.09)	(0.14)
61: Educational Services			0.06	0.16*	0.18
			(0.05)	(0.09)	(0.14)
62: Health Care and Social Assistance			0.06	0.18**	0.17
			(0.05)	(0.09)	(0.14)
71: Arts, Entertainment, & Recreation			0.08	0.24**	0.35**
			(0.06)	(0.11)	(0.17)
72: Accommodation & Food Services			0.07	0.19**	0.22*
			(0.05)	(0.09)	(0.13)
81: Other Services			0.05	0.14	0.16
			(0.05)	(0.09)	(0.13)
92: Public Administration			0.51***	0.01	-1.82***
			(0.20)	(0.49)	(0.15)

Table 7. (cont'd)

County Variables	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
Amenities	-0.00	-0.01	-0.01	0.02*	0.03*
	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)
Rural-urban code 2	-0.03***	-0.03**	-0.03**	-0.02	-0.04
Metro area, 0.25 to 1 million pop.	(0.01)	(0.01)	(0.01)	(0.02)	(0.03)
Rural-urban code 3	-0.04***	-0.04***	-0.04***	-0.01	-0.05
Metro area, < 250,000	(0.01)	(0.02)	(0.02)	(0.03)	(0.04)
Rural-urban code 4	-0.02	-0.03	-0.03	-0.00	-0.06
Adjacent to metro, ≥ 20,000	(0.02)	(0.02)	(0.02)	(0.03)	(0.05)
Rural-urban code 5	-0.06***	-0.07***	-0.07***	-0.06	-0.15**
Not adjacent to metro, ≥ 20,000	(0.02)	(0.03)	(0.03)	(0.04)	(0.07)
Rural-urban code 6	-0.00	-0.01	-0.02	-0.03	-0.06
Adjacent to metro, 2,500-19,999	(0.03)	(0.03)	(0.03)	(0.04)	(0.06)
Rural-urban code 7	-0.05	-0.06	-0.06*	-0.08	-0.12
Not adjacent to metro, 2,500-19,999	(0.03)	(0.03)	(0.03)	(0.05)	(0.09)
Rural-urban code 8	0.00	-0.02	-0.02	0.14	0.20
Adjacent to a metro, < 2,500	(0.04)	(0.05)	(0.05)	(0.09)	(0.16)
Rural-urban code 9	-0.02	-0.02	-0.03	-0.01	0.03
Not adjacent to a metro, < 2,500	(0.04)	(0.04)	(0.04)	(0.07)	(0.09)
Constant	0.32*	0.33	0.75***	0.12	-1.58***
	(0.18)	(0.21)	(0.28)	(0.60)	(0.50)
Observations	~112,900	~112,900	~112,900	~86,900	~62,700
R^2	0.03	0.03	0.04	0.05	0.06
Year FE	YES	YES	YES	YES	YES
State FE		YES	YES	YES	YES
NAICS Sector FE			YES	YES	YES

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

As Table 7 shows, the coefficients for 1-year employment growth appear mostly robust to the various levels of fixed effects. As a result, this paper's discussion of the employment growth results focus on columns (3) through (5) of Table 7. The results show that, on average, if a Hispanic-American owner is female, her 1-year employment growth rate is 2 percentage points

higher. This effect becomes statistically insignificant for the 2 and 3-year growth rates, however. If the LOB is owned by a Puerto Rican, 1-year and 2-year employment growth decreases by 3 and 6 percentage points, respectively. The impact of a Puerto Rican owner becomes insignificant on 3-year employment growth. Most county-level factors are statistically insignificant, though rural-urban continuum codes 2, 3, and 5 all have a significant and negative effects on employment growth in multiple specifications. Code 5, defined as an "urban population of 20,000 or more, not adjacent to a metro area" is the most robust to specification. The USDA ERS amenities level has a significant and positive effect on the 2 and 3-year employment growth rates.

All of the owner education levels have a positive and significant coefficient in a least one of the specifications, except associate's degree, which is insignificant in all specifications. As in the other regressions, the omitted category is less than a high school degree, which has an implied negative sign. The significant and positive coefficients on the various education levels increase with education level and as we increase τ. Business age has a significant and negative effect on employment growth, as does owner age. Once again, the effects appear to compound as we increase the time interval of the analysis. The categories of working 40 hours and more than 59 hours a week both have positive association with employment growth.

If the LOB is the owner's primary source of income, there is a statistically significant and negative effect on employment growth. If the owner's main function in the business is to provide the good or the service, the 1 and 2 year employment growth rates increase by 1 and 2 percentage points, respectively. If the owner's that main function in the business is finances, the 1 year employment growth rate decreases by 1 percentage points, though this effect becomes

insignificant in the 2 and 3-year specifications. If a business has multiple establishments, the 1, 2, and 3-year growth rates decrease by 11, 16, and 21 percentage points, respectively.

In terms of the impact of start-up capital sources, using assets reduces the 1, 2, and 3-year employment growth rates by 2, 4, and 6 percentage points, respectively. Not needed start-up capital also increases the employment growth rate. For expansion capital, only personal savings is significant, and it has a statistically significant and positive effect on employment growth in all of the specifications. As in the survival analysis, the omitted 2-digit NAICS category is 11: Agriculture, Forestry, Fishing and Hunting. Each of the following 2-digit NAICS coded industries has a statistically significant effect on employment growth in the 1-year specification: Mining, Quarrying, and Oil and Gas Extraction; Construction; Manufacturing; Wholesale Trade; Retail Trade; Transportation and Warehousing; Information; Finance and Insurance; and Real Estate, Rental and Leasing. Furthermore, this impact appears to affect growth nonlinearly over time, increasing the employment growth rate by a larger amount as the employment growth timespan increases. All of the other included industries except Utilities and Other Services have a statistically significant and positive effect on the employment growth rate in at least one of the specifications.

Conclusions and Suggestions for Future Research

The results on relative associations between owner, business, and geographical characteristics and the owner's ethnicity presented in Table 5 are similar to past results, but there are some important differences. For example, data from the 2005 National Minority Business Owners Survey suggests that in comparison to Korean-Americans, Mexican-American business owners borrow more from family, friends, suppliers, and credit cards and have a lower

proportion of bank loan debt (Haynes, Onochie, and Lee 2008). This paper's results imply this relative association between Korean and Mexican-Americans is more general, and that Asian-American business owners are more likely than Latino-Americans to take on bank loan debt and less likely to take on credit card debt. Further, the results do not support the first hypothesis (H1), that Latino business owners primarily finance their businesses with personal savings. Indeed, only Black business owners are less associated with using personal savings, while White business owners do not differ significantly in their association and Asian business owners are more associated with using personal savings.

The findings of Martinez et al. (2011) contradicted those of previous studies (Haynes, Onochie, and Lee 2008, Cavalluzzo and Wolken 2005, Granier 2006, and Blanchard, Zhao, and Yinger 2008) on the types of startup funds that Latino business owners use, as they did not find that Latino business owners use fewer formal funds compared to Whites. Martinez et al. (2011) did find that African Americans were the only race group significantly less likely to use formal funds compared to Whites. While our results do not separate formal from informal specifically, they do show that LOB are more associated with using credit card and government loan or government guaranteed loans than White business owners, while White business owners are more likely to use bank loans or venture capital. Similar to Martinez et al. (2011), the results show that only Black business owners are less likely than LOB to use bank loans. Hence we find support for H2, that Latino business owners are less likely to finance their business with bank loans. These results are consistent with the findings of Blanchard, Zhao, and Yinger (2008), which show that Latinos receive higher interest rates on bank loans, which also discourages them from seeking formal funds for their businesses.

Using data from the Kauffman Foundation, Martinez and Avila (2011) find that neither Latino nor Latina business owners differ significantly from White men or women in terms of having a college degree. The results presented in Table 5 contradict those findings and show that White business owners have a stronger association with every level of education except "less than a high school degree." Thus we can reject H3, that Latino business owners do not differ significantly from White business owners in their likelihood of having a college degree. Martinez and Avila (2011) also find that Latinos owned significantly fewer home-based businesses compared to White men. While the Census does not have data on home-based businesses, this paper's results show that Latinos are significantly more associated with husband and wife businesses; businesses owned by couples may be associated with home-based business operations.

In general, it is true that Latinos are more likely to work in sectors thought to be relatively vulnerable, such as the services (Puryear et al. 2008, Robles and Cordero-Guzmán 2007), construction, wholesale trade, and retail trade sectors (U.S. Census Bureau 2010). Martinez et al. (2011) explain LOB lack financial capital to enter high-barrier industries, and thus are often associated with low-barrier industries. High barrier industries are those requiring advanced educational degrees or large amounts of startup capital. Low barrier industries include some food services and construction. High barrier industries include professional services and finance or insurance.

Martinez and Avila (2011) find that Latina-owned businesses are a large percentage of businesses in the low-barrier sector and a small percentage of businesses in the high-barrier sectors compared to White-owned businesses, but not that Latino-owned businesses were concentrated in the low-barrier sectors compared to White men-owned businesses, or represented

a significantly smaller percentage of businesses within the high-barrier sectors. These results contradict Bates, Lofstrom, and Servnon (2010). Our results do not separate associations between Latinos and Latinas, but do find that (with our numerous controls) the only sector significantly more associated with Latino/a owners, relative to Whites, is accommodation and food services, which provides partial support for our fourth hypothesis (H4), that LOB are more associated with low-barrier industries such as the services, construction, wholesale trade, and retail trade sectors. Further, although the results do show that White-owned business are more associated with the high-barrier industries of Finance and Insurance, and Professional, Scientific, and Technical Services, LOB either do no differ significantly or are more associated with these high-barrier industries. Thus the results do partially support H5, that LOB are less associated with high-barrier industries such as professional services, and finance or insurance. However, an alternative hypothesis, that White business owners are more associated than other ethnicities with high-barrier industries, may be more accurate.

It may be that the sample size on LOB in the Kauffman Firm Survey is too small. As Martinez et al. (2011) point out, Latinos represent a very small number in the sample ($n = 244$ for primary owners) in the Kauffman Firm Survey data. The SBO data used for this paper's measures of ethnic associations had well over $n = 100{,}000$ for LOB. It is also important to note, however, that the Kauffman sample used in Martinez et al. (2011) is only on LOB start-ups, which may have different factor associations than LOB in general, which the SBO samples.

The results here confirm the results of Fairlie (2005), which found that Latinos' younger age contributes to lower survival rates from business. Indeed, Table 6 shows that Latino business owners are less associated with older ages and Table 7 shows that older Latino business owners are more likely to continue in business. Other results in the survival analysis make substantial

contributions to the literature. Further examining the survival analysis, one of the few statistically significant local population factors in the results is that the percent of the county with some college but no degree as their highest educational attainment decreases the odds of LOB survival in the next year. Given that the model controls for owner education levels, it may be that this coefficient is biased by the unobserved variable "county contains a major university." For example, it is possible that areas lacking a university may cause many people to attempt online degrees, where the non-completion rate is higher than traditional classroom-based programs (Patterson and McFadden 2009). Alternatively, a boom-bust economy might produce a high level of degree non-completions as people alternate between lack of tuition funds and remunerative fulltime non-degree work. As with the boom-bust example, it may also be that areas with many degree non-completers are relatively difficult for business survival for reasons only tangentially related to the local population's education level. Such a conclusion may follow Lichtenstein and Lyons (2006) entrepreneurial pipeline model, in that lack of higher education opportunities may make a county less viable for start-ups because of a lack of larger employers that might serve as customers or role models.

This paper also shows that the results of Robb & Coleman (2009), that women business owners also have more difficulty keeping their businesses in operation compared to male business owners, is applicable to Latinas. Thus we find support for our fifth hypothesis (H5), Latina-owned businesses are less likely to survive than Latino-owned businesses. Bates, Lofstrom, and Servnon (2010) find that businesses within the low barrier industries face a greater likelihood of going out of business compared to businesses within the high barrier industries. The analysis presented here shows that construction and food service do not have low survival rates relative to other industries and thus we can reject our final hypothesis (H7), that LOB in

low-barrier industries are less likely to survive. Unfortunately, the coefficient on the finance and insurance industry is suppressed in the survival analysis, so it is difficult to compare this paper's results to prior work on high-barrier industries.

Past research has also found that a factor impacting Latino business survival and growth is the lack of financial resources, and, as a result, Latinos tend to finance their businesses with personal savings or informal loans from friends, family, or moneylenders (Granier 2006, Haynes, Onochie, and Lee 2008, Raijman and Tienda 2000). In this paper's survival analysis, the only significant coefficient on start-up capital source was on personal savings, but it actually increases the odds of survival of a Latino business by 4%. Indeed this paper supports the slightly different narrative on start-up capital that only Black business owners are less associated with using personal savings than Latinos. It may still be the case, however, that LOB are more likely to use informal loans from friends or family and moneylenders.

Bates, Lofstrom, and Servnon (2010) also suggest business owners with large amounts of personal capital to spend on business startup will be able to open more lucrative businesses in the high-technology, high-barrier industries, while others are more limited in their ability to expand. Our employment growth results do not support such a conclusion. Indeed, LOB in the high-barrier industries of professional services or finance have similar or lower employment growth rates than LOB in the low-barrier industries of wholesale or retail trade. Further, this essay shows that LOB using savings for start-up capital does not have a statistically significant impact on employment growth, and using personal assets for start-up or expansion capital actually increases the employment growth. Recall also that this paper shows LOB as more associated with the $5,000 to $10,000 range of start-up capital than the other ethnicities. Further, LOB are more likely to be associated with the ranges in $10,000 to $100,000 than White and Black-

Americans, but less likely than Asian-Americans (though the $50,000 to $100,000 range is suppressed for Asian-Americans). The LOB are less associated with all of the ranges over $100,000 than Asian and White-Americans, but more associated with those (non-suppressed) ranges than Black-Americans. Hence there is indeed evidence that LOB are relatively likely to start a business with a small amount of non-personal capital, but this essay does not support the conclusion that this small amount of start-up capital, in turn, decreases their chances of survival or limits their future growth.

Martinez and Avil's (2011) Cox survival analysis suggest education is significant to business survival controlling for personal startup funds. Though this paper did not find a statistically significant impact of any education level on LOB survival, it did show that all owner education levels except associate's degree have a positive and significant coefficient on employment growth. The implied sign on the omitted category (less than a high school degree), is negative. Furthermore, this relationship appears to be nonlinear, with an increasing effect on employment growth rate as the time horizon increases.

Finally, an advantage of access to such a large dataset is the ability to examine specific Latino subgroups. Unfortunately, the only subgroup detail available in the SBO was on whether the Latino business owner has Mexican, Cuban, or Puerto Rican ancestry. The only ancestral origin that was significant in either the survival or employment growth regression was Puerto Rican origin. Note that this paper uses data on the continental 48 states and Washington D.C., and excludes businesses in Puerto Rico. On average, having Puerto Rican ancestry decreases the odds of business survival by 19% and lowers the employment growth rate by 3 percentage points over 1 year and 6 percentage points over 2 years. These results help provide empirical evidence to support recent discussions of the low barriers to entry in the United States for Puerto Rican

migrants and the accompanying struggles (e.g. Abel and Deitz 2015, *Economist* 2015), and is consistent with evidence that out-migrants from Puerto Rico are relatively low-skill (Borjas 2007).

Puerto Rican migrants' experience in the continental United States is significantly different than that of Cuban immigrants.[10] Cuban immigration to the United States increased substantially after the overthrow of the Fulgencio Batista regime by Castro-led revolution in 1959, but immigration continued through the 1990s. It is still true that compared with the overall immigrant and U.S.-born populations, Cubans are less likely to be proficient in English, have lower educational attainment, and earn a lower household income (Rusin, Zong, and Batalova 2015). It is also true, however, that Cuban immigrants, are older, have a higher level of education, and higher median household income compared with the rest of the Hispanic population in the United States (*Pew Research* 2006). Despite these differences, the impact of the LOB being Cuban-owned is statistically insignificant.

Future research with this or other data may want to more closely examine the cause of businesses exiting the data; while most exits are likely the result of failure, some may result from buy-out or a marketing change. Another limitation of this data results from Latino business owners tending to participate in smaller informal economic activities, such as street vending businesses and, consequently, formal sources of identification would not capture the full range of self-employment opportunities in which Latinos participate (Martinez, et al. 2011). Indeed, Raijman (2001) suggests census data do not adequately cover some types of economic activities,

[10] The use of the word "migrants" to refer to individuals from Puerto Rico rather than "immigrants" is purposeful as Puerto Rico is part of the United States.

such as part-time and irregular work or informal self-employment. Future research may want to examine this aspect of Latino business ownership.

Another area for future research is using big data to examine how various factors impact Latino relative to Latina survival rates. Both Martinez and Avil (2011) and Zuiker et al. (2003) found significant gender interactions with various factors impacting survival, but as mentioned above, many public datasets contain relatively few observations on Latinos and Latinas. Further, as Latinos are a heterogeneous group, future research may also want to examine the relative associations of various Latino origins with business, owner, and geographical characteristics, as this paper did with Latino, Asian, Black, and White business owners in Table 5. These areas for future research highlight how this research provides new insights into an important growth sector in the U.S. economy. Moving forward, federal, state, and local policy makers interested in economic development can use these results to not only guide their future investigations into disparities among ethnic groups in business ownership, but also increase the accuracy and thereby impact of their economic development programs.

APPENDIX

APPENDIX

Table A1. Multinomial Logit Results (Omitted Relative Risk Ratio Coefficients)

Business and County Variables	(1) Asian-American	(2) Black-American	(3) White-American
Business type: coop	4.68***	0.89	0.82
	(1.08)	(0.24)	(0.18)
Estate	1.03	XX	XX
	(0.51)	XX	XX
Nonprofit	2.18**	8.20***	1.31
	(0.85)	(2.01)	(0.28)
Public	0.97	0.97	0.56***
	(0.06)	(0.06)	(0.03)
Husband and wife	XX	0.90***	0.95***
	XX	(0.02)	(0.02)
Establ. employment	0.99***	1.00*	1.00***
	(0.00)	(0.00)	(0.00)
Establishment payroll	1.00**	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Firm payroll	1.00*	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Firm employment	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
County-level variables:			
Population	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Population squared	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Population density	1.00***	1.00**	1.00***
	(0.00)	(0.00)	(0.00)
25 to 34 population	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
35 to 44 population	1.00	1.00**	1.00
	(0.00)	(0.00)	(0.00)
45 to 54 population	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
55 to 64 population	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
> 64 population	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)

Table A1. (cont'd)

County Variables	(1) Asian-American	(2) Black-American	(3) White-American
Female population squared	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Black population	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Black population squared	1.00	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Asian population	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Asian population squared	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Hispanic population	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Hispanic population squared	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
% with: High school	947.09***	16,878.84***	13,089.72***
	(416.08)	(8,357.78)	(4,205.45)
Some college	39.80***	1,210.90***	8.59***
	(19.06)	(622.52)	(3.06)
Associates degree	188.23***	107.75***	312.14***
	(160.48)	(100.93)	(199.73)
Bachelor's degree	72.50***	580.62***	160.48***
	(31.81)	(291.45)	(53.78)
Graduate degree	3.80**	3.38**	0.83
	(2.03)	(2.03)	(0.33)
Build permits	1.00	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Industry employment	1.00	1.00	1.00***
	(0.00)	(0.00)	(0.00)
State industry employment	1.00***	1.00**	1.00
	(0.00)	(0.00)	(0.00)

Table A1. (cont'd)

State Variables	(1) Asian-American	(2) Black-American	(3) White-American
Arkansas	0.60***	0.49***	0.67***
	(0.09)	(0.07)	(0.09)
California	0.57***	XX	0.35***
	(0.07)	XX	(0.04)
Colorado	0.29***	0.10***	0.23***
	(0.03)	(0.01)	(0.02)
Connecticut	0.49***	0.17***	0.38***
	(0.06)	(0.02)	(0.04)
Delaware	0.85	0.31***	0.39***
	(0.15)	(0.06)	(0.06)
District of Columbia	0.44***	0.28***	0.21***
	(0.06)	(0.04)	(0.03)
Florida	0.27***	0.12***	0.15***
	(0.03)	(0.01)	(0.01)
Georgia	0.74***	0.52***	0.45***
	(0.08)	(0.05)	(0.04)
Idaho	XX	0.05***	0.49***
	XX	(0.01)	(0.06)
Illinois	0.40***	XX	0.29***
	(0.05)	XX	(0.03)
Indiana	XX	XX	XX
	XX	XX	XX
Iowa	0.37***	0.07***	0.37***
	(0.06)	(0.01)	(0.05)
Kansas	0.32***	0.14***	0.28***
	(0.04)	(0.02)	(0.03)
Kentucky	1.13	0.56***	1.18
	(0.17)	(0.08)	(0.15)
Louisiana	0.65***	0.44***	0.56***
	(0.08)	(0.05)	(0.06)
Maine	XX	XX	XX
	XX	XX	XX
Maryland	0.68***	0.41***	0.37***
	(0.08)	(0.04)	(0.04)
Massachusetts	0.59***	0.14***	0.47***
	(0.07)	(0.02)	(0.05)
Michigan	XX	0.23***	0.53***
	XX	(0.03)	(0.05)
Minnesota	0.52***	XX	0.60***
	(0.07)	XX	(0.07)

Table A1. (cont'd)

State Variables	(1) Asian-American	(2) Black-American	(3) White-American
Missouri	0.81	0.41***	0.80*
	(0.11)	(0.05)	(0.09)
Montana	0.32***	0.05***	0.58***
	(0.08)	(0.02)	(0.10)
Nebraska	0.29***	0.09***	0.31***
	(0.05)	(0.02)	(0.04)
Nevada	XX	XX	0.16***
	XX	XX	(0.02)
New Hampshire	0.60***	XX	0.57***
	(0.12)	XX	(0.10)
New Jersey	0.50***	0.10***	0.21***
	(0.06)	(0.01)	(0.02)
New Mexico	0.09***	0.02***	0.07***
	(0.01)	(0.00)	(0.01)
New York	0.42***	0.12***	0.33***
	(0.05)	(0.01)	(0.03)
North Carolina	0.71***	0.71***	0.58***
	(0.08)	(0.08)	(0.06)
North Dakota	XX	XX	XX
	XX	XX	XX
Ohio	0.76**	0.28***	0.63***
	(0.09)	(0.03)	(0.07)
Oklahoma	0.56***	0.19***	0.43***
	(0.07)	(0.02)	(0.05)
Oregon	0.80*	0.08***	0.48***
	(0.10)	(0.01)	(0.05)
Pennsylvania	0.67***	0.18***	0.44***
	(0.08)	(0.02)	(0.05)
Rhode Island	0.54***	0.19***	0.70***
	(0.09)	(0.04)	(0.10)
South Carolina	0.79*	0.99	0.75**
	(0.10)	(0.13)	(0.09)
South Dakota	XX	XX	XX
	XX	XX	XX
Tennessee	0.79*	0.41***	0.75***
	(0.10)	(0.05)	(0.08)
Texas	0.28***	0.10***	0.18***
	(0.03)	(0.01)	(0.02)
Utah	XX	XX	0.60***
	XX	XX	(0.07)

Table A1. (cont'd)

State and Year Variables	(1) Asian-American	(2) Black-American	(3) White-American
Vermont	XX	XX	XX
	XX	XX	XX
Virginia	0.70***	0.43***	0.38***
	(0.08)	(0.05)	(0.04)
Washington	0.60***	0.11***	0.39***
	(0.07)	(0.01)	(0.04)
West Virginia	1.18	0.22***	0.69*
	(0.25)	(0.05)	(0.13)
Wisconsin	0.39***	XX	0.40***
	(0.05)	XX	(0.05)
Wyoming	0.23***	XX	0.22***
	(0.05)	XX	(0.04)
2003	0.92***	1.12***	0.88***
	(0.01)	(0.01)	(0.01)
2004	0.87***	1.25***	0.79***
	(0.01)	(0.02)	(0.01)
2005	0.84***	1.40***	0.71***
	(0.02)	(0.03)	(0.01)
2006	0.80***	1.43***	0.64***
	(0.02)	(0.04)	(0.01)
2007	0.85***	1.42***	0.66***
	(0.02)	(0.04)	(0.01)

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A2. Multinomial Logit Results (Logit Coefficients)

Business Variables	(1) Asian-American	(2) Black-American	(3) White-American
Female	-0.08***	0.21***	-0.28***
	(0.02)	(0.02)	(0.01)
Education: high school	0.51***	0.82***	1.20***
	(0.03)	(0.04)	(0.02)
Some college	XX	1.30***	1.56***
	XX	(0.04)	(0.02)
Technical or trade school	0.25***	1.25***	1.32***
	(0.04)	(0.04)	(0.03)
Associate's degree	0.77***	XX	1.53***
	(0.04)	XX	(0.03)
Bachelor's degree	1.54***	1.33***	2.09***
	(0.03)	(0.04)	(0.02)
Graduate degree	1.78***	1.21***	2.02***
	(0.04)	(0.04)	(0.03)
Owner age: 25 to 34	XX	XX	-2.22***
	XX	XX	(0.04)
35 to 44	-1.35***	-0.99***	-2.06***
	(0.05)	(0.05)	(0.04)
45 to 54	-1.25***	-0.72***	-1.65***
	(0.05)	(0.05)	(0.04)
55 to 64	-1.20***	-0.47***	-1.31***
	(0.05)	(0.05)	(0.04)
Older than 64	-1.43***	-0.32***	-0.99***
	(0.05)	(0.06)	(0.04)
Hours: 20 to 39	-0.25***	XX	-0.25***
	(0.03)	XX	(0.02)
40	-0.02	-0.21***	-0.40***
	(0.03)	(0.03)	(0.02)
41 to 59	-0.13***	-0.12***	-0.25***
	(0.03)	(0.03)	(0.02)
More than59	0.04	0.24***	-0.33***
	(0.03)	(0.03)	(0.02)
Primary income	0.15***	-0.53***	-0.04**
	(0.02)	(0.02)	(0.02)
Provide	-0.24***	XX	-0.06***
	(0.02)	XX	(0.01)
Manage	0.09***	0.16***	0.12***
	(0.02)	(0.02)	(0.02)
Financial	0.05***	-0.08***	0.39***
	(0.02)	(0.02)	(0.02)

Table A2. (cont'd)

Business Variables	(1) Asian-American	(2) Black-American	(3) White-American
Business type: Coop	1.54***	-0.12	-0.20
	(0.23)	(0.27)	(0.22)
Estate	0.03	XX	XX
	(0.50)	XX	XX
Nonprofit	0.78**	2.10***	0.27
	(0.39)	(0.25)	(0.21)
Public	-0.03	-0.03	-0.58***
	(0.06)	(0.07)	(0.05)
Husband and wife	XX	-0.11***	-0.06***
	XX	(0.03)	(0.02)
Establishment employment	-0.01***	0.00*	-0.00***
	(0.00)	(0.00)	(0.00)
Establishment payroll	0.00**	-0.00***	0.00***
	(0.00)	(0.00)	(0.00)
Firm payroll	-0.00*	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
Firm employment	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)
Start-up capital amount:	-0.24***	-0.07*	-0.27***
$5,000-$10,000	(0.03)	(0.03)	(0.02)
$10,000-$25,000	0.14***	-0.20***	-0.19***
	(0.03)	(0.04)	(0.02)
$25,000-$50,000	0.28***	-0.23***	-0.14***
	(0.04)	(0.05)	(0.03)
$50,000-$100,000	XX	-0.32***	-0.04
	XX	(0.05)	(0.03)
$100,000-$250,000	0.61***	-0.29***	0.07**
	(0.04)	(0.05)	(0.03)
$250,000-$1 million	0.61***	-0.31***	0.21***
	(0.05)	(0.07)	(0.05)
Greater than $1 million	0.75***	XX	0.37***
	(0.08)	XX	(0.07)

Table A2. (cont'd)

Business Variables	(1) Asian-American	(2) Black-American	(3) White-American
Credit	-0.09***	0.10***	-0.16***
	(0.03)	(0.03)	(0.02)
Government	XX	0.28***	-0.12**
	XX	(0.07)	(0.05)
Bank loan	0.26***	-0.11***	0.17***
	(0.03)	(0.03)	(0.02)
Venture	0.29***	0.06	0.28***
	(0.08)	(0.09)	(0.06)
None needed	-0.20***	-0.12***	-0.08***
	(0.03)	(0.03)	(0.02)
Expansion capital source:	0.11***	0.05**	-0.02
Savings	(0.02)	(0.03)	(0.02)
Credit	-0.31***	-0.07**	0.08***
	(0.03)	(0.03)	(0.02)
Government	-0.21***	0.13	-0.24***
	(0.08)	(0.08)	(0.06)
Bank Loan	-0.12***	-0.32***	0.11***
	(0.03)	(0.03)	(0.02)
Venture	-0.07	XX	-0.08
	(0.10)	XX	(0.08)
None needed	-0.02	-0.18***	0.19***
	(0.02)	(0.02)	(0.02)
>10% Federal	0.09*	0.07	-0.42***
	(0.05)	(0.05)	(0.04)
State or local	-0.40***	0.34***	-0.12***
	(0.04)	(0.04)	(0.03)
Other bususnesses	-0.10***	0.11***	-0.12***
	(0.01)	(0.01)	(0.01)
Individuals	0.02*	-0.11***	0.04***
	(0.01)	(0.01)	(0.01)

Table A2. (cont'd)

County Variables	(1) Asian-American	(2) Black-American	(3) White-American
Population	-0.00***	-0.00***	0.00***
	(0.00)	(0.00)	(0.00)
Population squared	0.00***	0.00**	0.00***
	(0.00)	(0.00)	(0.00)
Population density	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
25 to 34 population	0.00	0.00**	0.00
	(0.00)	(0.00)	(0.00)
35 to 44 population	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
45 to 54 population	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)
55 to 64 population	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
Female population	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
Female population squared	0.00***	0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
Black population	0.00***	0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
Black population squared	0.00	-0.00***	0.00***
	(0.00)	(0.00)	(0.00)
Asian population	0.00***	0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
Asian population squared	-0.00***	-0.00***	0.00***
	(0.00)	(0.00)	(0.00)
Hispanic population	-0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
Hispanic population squared	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)
% with: high school	6.85***	9.73***	9.48***
	(0.44)	(0.50)	(0.32)
Some college	3.68***	7.10***	2.15***
	(0.48)	(0.51)	(0.36)
Associates degree	5.24***	4.68***	5.74***
	(0.85)	(0.94)	(0.64)
Bachelor's degree	4.28***	6.36***	5.08***
	(0.44)	(0.50)	(0.34)
Graduate degree	1.34**	1.22**	-0.18
	(0.54)	(0.60)	(0.40)

Table A2. (cont'd)

County Variables	(1) Asian-American	(2) Black-American	(3) White-American
Per capita income	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)
Mean household size	-0.51***	-0.41***	-1.53***
	(0.06)	(0.07)	(0.04)
% headed by single female	1.52***	10.23***	-4.26***
	(0.43)	(0.47)	(0.33)
Unemployment rate	2.87***	0.71	0.49
	(0.82)	(0.94)	(0.63)
Labor force participation rate	0.43*	-0.39	1.22***
	(0.23)	(0.25)	(0.17)
Build permits	0.00	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
Industry employment	-0.00	0.00	0.00***
	(0.00)	(0.00)	(0.00)
State industry employment	0.00***	0.00**	-0.00
	(0.00)	(0.00)	(0.00)

Table A2. (cont'd)

NAICS Sector Industry	(1) Asian-American	(2) Black-American	(3) White-American
11: Ag., Forestry, Fishing, Hunting	-0.42*	-0.53**	0.62***
	(0.22)	(0.21)	(0.16)
21: Mining, Quarrying, Oil, and Gas Extraction	-0.69***	-0.59**	1.33***
	(0.25)	(0.28)	(0.19)
22: Utilities	-0.02	0.24	0.73***
	(0.34)	(0.32)	(0.22)
23: Construction	-0.99***	-0.55***	0.36**
	(0.18)	(0.18)	(0.14)
31-33: Manufacturing	0.08	-0.86***	0.45***
	(0.18)	(0.18)	(0.14)
42: Wholesale Trade	0.67***	-0.92***	0.50***
	(0.18)	(0.18)	(0.14)
44-45: Retail Trade	0.68***	-0.47***	0.32**
	(0.17)	(0.18)	(0.14)
48-49: Transportation and Warehousing	-0.31*	XX	-0.15
	(0.18)	XX	(0.14)
51: Information	-0.09	0.16	0.67***
	(0.18)	(0.19)	(0.15)
52: Finance and Insurance	-0.23	-0.12	0.56***
	(0.18)	(0.18)	(0.14)
53: Real Estate, Rental and Leasing	0.22	-0.32*	XX
	(0.17)	(0.18)	XX
54: Professional, Scientific, Technical Services	-0.02	-0.16	0.50***
	(0.17)	(0.18)	(0.14)
55: Management of Companies and Enterprises	0.50**	0.13	0.51**
	(0.24)	(0.26)	(0.20)
56: Administrative Support, Waste Management, Remediation Services	-0.76***	-0.18	-0.13
	(0.18)	(0.18)	(0.14)
61: Educational Services	-0.03	0.00	0.32**
	(0.18)	(0.19)	(0.15)
62: Health Care, Social Assistance	0.09	0.34*	-0.04
	(0.18)	(0.18)	(0.14)
71: Arts, Entertainment, Recreation	-0.47***	0.38**	0.73***
	(0.18)	(0.18)	(0.14)
72: Accommodation, Food Services	1.12***	-0.83***	-0.34**
	(0.18)	(0.18)	(0.14)
81: Other Services	XX	0.01	0.13
	XX	(0.18)	(0.14)

Table A2. (cont'd)

County Variables	(1) Asian-American	(2) Black-American	(3) White-American
Amenities	-0.18***	-0.28***	-0.15***
	(0.02)	(0.02)	(0.01)
Rural-urban code 2	0.01	0.07**	0.12***
Metro area, 0.25 to 1 million pop.	(0.03)	(0.03)	(0.02)
Rural-urban code 3	-0.10**	0.05	0.24***
Metro area, < 250,000	(0.04)	(0.05)	(0.03)
Rural-urban code 4	-0.12**	0.10	0.31***
Adjacent to metro, ≥ 20,000	(0.06)	(0.06)	(0.04)
Rural-urban code 5	-0.12	0.04	0.46***
Not adjacent to metro, ≥ 20,000	(0.08)	(0.09)	(0.06)
Rural-urban code 6	-0.12*	0.20***	0.57***
Adjacent to metro, 2,500-19,999	(0.07)	(0.07)	(0.05)
Rural-urban code 7	-0.29***	-0.18**	0.43***
Not adjacent to metro, 2,500-19,999	(0.08)	(0.09)	(0.06)
Rural-urban code 8	-0.30*	0.47***	0.66***
Adjacent to a metro, < 2,500	(0.17)	(0.16)	(0.13)
Rural-urban code 9	-0.99***	0.11	0.65***
Not adjacent to a metro, < 2,500	(0.17)	(0.16)	(0.11)

Table A2. (cont'd)

State Variables	(1) Asian-American	(2) Black-American	(3) White-American
Arizona	XX	-2.84***	-1.72***
	XX	(0.15)	(0.10)
Arkansas	-0.51***	-0.71***	-0.41***
	(0.15)	(0.15)	(0.13)
California	-0.57***	XX	-1.06***
	(0.13)	XX	(0.11)
Colorado	-1.24***	-2.25***	-1.49***
	(0.12)	(0.13)	(0.10)
Connecticut	-0.72***	-1.78***	-0.96***
	(0.12)	(0.13)	(0.11)
Delaware	-0.17	-1.16***	-0.94***
	(0.18)	(0.18)	(0.16)
District of Columbia	-0.83***	-1.27***	-1.58***
	(0.15)	(0.15)	(0.13)
Florida	-1.31***	-2.11***	-1.93***
	(0.11)	(0.11)	(0.09)
Georgia	-0.30***	-0.66***	-0.79***
	(0.11)	(0.11)	(0.09)
Idaho	XX	-3.10***	-0.72***
	XX	(0.32)	(0.12)
Illinois	-0.92***	XX	-1.25***
	(0.12)	XX	(0.10)
Indiana	XX	XX	XX
	XX	XX	XX
Iowa	-0.99***	-2.62***	-1.00***
	(0.16)	(0.19)	(0.14)
Kansas	-1.14***	-1.95***	-1.28***
	(0.13)	(0.14)	(0.11)
Kentucky	0.12	-0.58***	0.17
	(0.15)	(0.15)	(0.13)
Louisiana	-0.44***	-0.83***	-0.58***
	(0.12)	(0.12)	(0.11)
Maine	XX	XX	XX
	XX	XX	XX
Maryland	-0.38***	-0.90***	-0.99***
	(0.11)	(0.11)	(0.10)
Massachusetts	-0.53***	-1.96***	-0.75***
	(0.12)	(0.13)	(0.10)
Michigan	XX	-1.49***	-0.64***
	XX	(0.12)	(0.10)

Table A2. (cont'd)

State Variables	(1) Asian-American	(2) Black-American	(3) White-American
Minnesota	-0.65***	XX	-0.51***
	(0.14)	XX	(0.12)
Mississippi	0.55***	0.86***	0.66***
	(0.17)	(0.17)	(0.16)
Missouri	-0.21	-0.89***	-0.22*
	(0.13)	(0.13)	(0.11)
Montana	-1.14***	-2.95***	-0.54***
	(0.24)	(0.35)	(0.17)
Nebraska	-1.25***	-2.37***	-1.16***
	(0.17)	(0.19)	(0.13)
Nevada	XX	XX	-1.86***
	XX	XX	(0.11)
New Hampshire	-0.51***	XX	-0.56***
	(0.19)	XX	(0.18)
New Jersey	-0.68***	-2.28***	-1.56***
	(0.11)	(0.11)	(0.09)
New Mexico	-2.40***	-3.84***	-2.70***
	(0.13)	(0.18)	(0.10)
New York	-0.88***	-2.15***	-1.09***
	(0.12)	(0.12)	(0.10)
North Carolina	-0.34***	-0.35***	-0.55***
	(0.11)	(0.11)	(0.10)
North Dakota	XX	XX	XX
	XX	XX	XX
Ohio	-0.27**	-1.29***	-0.47***
	(0.12)	(0.12)	(0.11)
Oklahoma	-0.58***	-1.67***	-0.84***
	(0.13)	(0.13)	(0.11)
Oregon	-0.23*	-2.48***	-0.73***
	(0.12)	(0.15)	(0.11)
Pennsylvania	-0.40***	-1.70***	-0.82***
	(0.12)	(0.12)	(0.11)
Rhode Island	-0.62***	-1.65***	-0.36***
	(0.16)	(0.19)	(0.14)
South Carolina	-0.24*	-0.01	-0.29**
	(0.13)	(0.13)	(0.11)
South Dakota	XX	XX	XX
	XX	XX	XX
Tennessee	-0.24*	-0.89***	-0.29***
	(0.13)	(0.12)	(0.11)

Table A2. (cont'd)

State and Year Variables	(1) Asian-American	(2) Black-American	(3) White-American
Texas	-1.27***	-2.31***	-1.69***
	(0.11)	(0.11)	(0.09)
Utah	XX	XX	-0.51***
	XX	XX	(0.12)
Vermont	XX	XX	XX
	XX	XX	XX
Virginia	-0.35***	-0.84***	-0.97***
	(0.11)	(0.11)	(0.09)
Washington	-0.51***	-2.25***	-0.95***
	(0.12)	(0.13)	(0.10)
West Virginia	0.17	-1.51***	-0.37*
	(0.21)	(0.25)	(0.19)
Wisconsin	-0.94***	XX	-0.90***
	(0.13)	XX	(0.11)
Wyoming	-1.48***	XX	-1.50***
	(0.21)	XX	(0.17)
2003	-0.09***	0.12***	-0.12***
	(0.01)	(0.01)	(0.01)
2004	-0.14***	0.22***	-0.23***
	(0.01)	(0.02)	(0.01)
2005	-0.17***	0.34***	-0.34***
	(0.02)	(0.02)	(0.02)
2006	-0.23***	0.36***	-0.44***
	(0.02)	(0.03)	(0.02)
2007	-0.17***	0.35***	-0.42***
	(0.03)	(0.03)	(0.02)
Constant	-2.26***	-5.28***	4.61***
	(0.48)	(0.54)	(0.36)
Pseudo R^2	0.224	0.224	0.224
Observations	~11,847,500	~11,847,500	~11,847,500

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A3. Cox Proportional Hazard, Exponential, Weibull Survival Model Results (Omitted Odds Ratio Coefficients)

Business Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Business type: Husband and wife	1.43***	1.43***	1.44***
	(0.10)	(0.10)	(0.10)
Estate	XX	XX	XX
	XX	XX	XX
Coop	0.92	0.92	0.92
	(0.18)	(0.18)	(0.19)
Nonprofit	1.62**	1.62**	1.68**
	(0.33)	(0.33)	(0.37)
Public	XX	XX	XX
	XX	XX	XX
Establishment employment	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Establishment payroll	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Firm employment	1.00**	1.00**	1.00**
	(0.00)	(0.00)	(0.00)
Firm payroll	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)
Hispanic establishments	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Mexican establishments	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Puerto Rican establishments	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Cuban establishments	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Hispanic employment	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Mexican employment	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Puerto Rican employment	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Cuban employment	1.00***	1.00***	1.00***
	(0.00)	(0.00)	(0.00)

Table A3. (cont'd)

County Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Interaction: Mexican & Mexican	1.00	1.00	1.00
population	(0.00)	(0.00)	(0.00)
Puerto Rican & Puerto Rican	1.00**	1.00**	1.00**
population	(0.00)	(0.00)	(0.00)
Cuban & Cuban population	1.00**	1.00**	1.00***
	(0.00)	(0.00)	(0.00)
Mexican & Mexican establishments	1.00*	1.00*	1.00**
	(0.00)	(0.00)	(0.00)
Puerto Rican & Puerto Rican	1.00	1.00	1.00
establishments	(0.00)	(0.00)	(0.00)
Cuban & Cuban establishments	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Mexican & Mexican employment	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Puerto Rican & Puerto Rican	1.00	1.00	1.00
employment	(0.00)	(0.00)	(0.00)
Cuban & Cuban employment	1.00	1.00	1.00*
	(0.00)	(0.00)	(0.00)
Population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Population squared	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Population density	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
25 to 34 population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
35 to 44 population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
45 to 54 population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
55 to 64 population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
> 64 population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)

Table A3. (cont'd)

County Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Female population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Female population squared	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Black population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Black population squared	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Asian population	1.00*	1.00*	1.00*
	(0.00)	(0.00)	(0.00)
Asian population squared	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Hispanic population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Hispanic population squared	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Mexican population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Mexican population squared	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Puerto Rican population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Puerto Rican population squared	1.00***	1.00***	1.00**
	(0.00)	(0.00)	(0.00)
Cuban population	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Cuban population squared	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Mean household size	1.01	1.01	1.02
	(0.09)	(0.09)	(0.09)
% of hh headed by single female	1.27	1.27	1.21
	(0.78)	(0.78)	(0.76)
Build permits	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
Industry employment	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)
State industry employment	1.00	1.00	1.00
	(0.00)	(0.00)	(0.00)

Table A3. (cont'd)

State Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Arizona	0.88	0.89	0.91
	(0.13)	(0.13)	(0.14)
Arkansas	0.84	0.86	0.89
	(0.18)	(0.19)	(0.20)
California	0.91	0.91	0.92
	(0.15)	(0.16)	(0.16)
Colorado	1.03	1.05	1.08
	(0.15)	(0.15)	(0.16)
Connecticut	1.12	1.14	1.16
	(0.20)	(0.20)	(0.21)
Delaware	XX	XX	XX
	XX	XX	XX
District of Columbia	1.08	1.11	1.19
	(0.20)	(0.21)	(0.23)
Florida	1.03	1.04	1.08
	(0.15)	(0.15)	(0.16)
Georgia	0.94	0.95	0.97
	(0.13)	(0.13)	(0.14)
Idaho	0.76	0.76	0.74
	(0.15)	(0.15)	(0.15)
Illinois	0.83	0.85	0.90
	(0.13)	(0.13)	(0.15)
Indiana	0.87	0.88	0.91
	(0.15)	(0.15)	(0.16)
Iowa	0.95	0.97	1.00
	(0.18)	(0.19)	(0.20)
Kansas	0.89	0.90	0.93
	(0.16)	(0.16)	(0.17)
Kentucky	0.99	0.99	0.98
	(0.19)	(0.19)	(0.19)
Louisiana	1.04	1.04	1.03
	(0.16)	(0.16)	(0.16)
Maine	XX	XX	XX
	XX	XX	XX
Maryland	0.74**	0.75*	0.78
	(0.11)	(0.11)	(0.12)
Massachusetts	1.08	1.09	1.10
	(0.17)	(0.17)	(0.18)
Michigan	1.02	1.03	1.05
	(0.15)	(0.16)	(0.16)

Table A3. (cont'd)

State Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Minnesota	1.12	1.14	1.20
	(0.19)	(0.20)	(0.21)
Mississippi	1.27	1.28	1.32
	(0.26)	(0.26)	(0.28)
Missouri	0.89	0.90	0.94
	(0.15)	(0.15)	(0.16)
Montana	XX	XX	XX
	XX	XX	XX
Nebraska	1.06	1.07	1.09
	(0.20)	(0.21)	(0.22)
Nevada	0.90	0.91	0.94
	(0.16)	(0.16)	(0.17)
New Hampshire	0.71	0.72	0.74
	(0.20)	(0.20)	(0.21)
New Jersey	XX	XX	XX
	XX	XX	XX
New Mexico	0.81	0.82	0.83
	(0.12)	(0.12)	(0.12)
New York	XX	XX	XX
	XX	XX	XX
North Carolina	0.90	0.91	0.92
	(0.13)	(0.13)	(0.14)
North Dakota	XX	XX	XX
	XX	XX	XX
Ohio	0.89	0.91	0.93
	(0.14)	(0.14)	(0.15)
Oklahoma	0.95	0.97	0.98
	(0.15)	(0.15)	(0.16)
Oregon	0.77	0.78	0.79
	(0.13)	(0.13)	(0.14)
Pennsylvania	0.93	0.94	0.96
	(0.15)	(0.15)	(0.16)
Rhode Island	1.06	1.09	1.13
	(0.24)	(0.25)	(0.27)
South Carolina	0.81	0.82	0.85
	(0.15)	(0.15)	(0.16)
South Dakota	1.10	1.13	1.20
	(0.28)	(0.29)	(0.31)
Tennessee	0.86	0.86	0.86
	(0.14)	(0.14)	(0.15)

Table A3. (cont'd)

State and Year Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Texas	1.00	1.00	1.00
	(0.14)	(0.14)	(0.15)
Utah	0.89	0.90	0.92
	(0.18)	(0.18)	(0.19)
Vermont	XX	XX	XX
	XX	XX	XX
Virginia	0.97	0.98	1.00
	(0.14)	(0.14)	(0.15)
Washington	0.95	0.96	0.97
	(0.14)	(0.15)	(0.15)
West Virginia	1.08	1.08	1.08
	(0.24)	(0.24)	(0.25)
Wisconsin	0.86	0.87	0.89
	(0.15)	(0.15)	(0.16)
Wyoming	0.89	0.90	0.92
	(0.21)	(0.21)	(0.22)
2003	1.10***	1.09***	1.11***
	(0.03)	(0.03)	(0.04)
2004	1.13***	1.10***	1.00
	(0.04)	(0.04)	(0.04)
2005	1.25***	1.20***	1.02
	(0.06)	(0.05)	(0.04)
2006	1.45***	1.37***	1.14***
	(0.07)	(0.07)	(0.06)

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A4. Cox Proportional Hazard, Exponential, Weibull Survival Model Results (Coefficients and Accelerated Time Form)

Owner Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Female	0.06***	-0.06***	-0.04***
	(0.02)	(0.02)	(0.01)
Mexican	0.02	-0.02	-0.01
	(0.03)	(0.03)	(0.02)
Cuban	-0.00	0.01	0.01
	(0.04)	(0.04)	(0.02)
Puerto Rican	0.18***	-0.18***	-0.12***
	(0.05)	(0.05)	(0.03)
High school	-0.01	0.00	-0.01
	(0.04)	(0.04)	(0.02)
Some college	-0.00	-0.00	-0.01
	(0.04)	(0.04)	(0.03)
Technical or trade school	-0.04	0.04	0.02
	(0.05)	(0.05)	(0.03)
Associates degree	-0.02	0.01	-0.00
	(0.06)	(0.06)	(0.04)
Bachelor's degree	0.01	-0.01	-0.02
	(0.04)	(0.04)	(0.03)
Graduate degree	-0.04	0.03	0.00
	(0.05)	(0.05)	(0.03)
Business Age	0.02	0.01***	0.06***
	(0.02)	(0.00)	(0.00)
Owner age: 25 to 34	-0.12*	0.10	0.03
	(0.06)	(0.06)	(0.04)
35 to 44	-0.21***	0.21***	0.15***
	(0.06)	(0.06)	(0.04)
45 to 54	-0.20***	0.21***	0.16***
	(0.06)	(0.06)	(0.04)
55 to 64	-0.12**	0.12**	0.08**
	(0.06)	(0.06)	(0.04)
Older than 64	-0.05	0.04	-0.00
	(0.06)	(0.06)	(0.04)

Table A4. (cont'd)

Owner Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Hours: 20 to 39	-0.06	0.05	0.02
	(0.05)	(0.05)	(0.03)
40	-0.05	0.04	0.01
	(0.04)	(0.04)	(0.03)
41 to 59	-0.16***	0.15***	0.08***
	(0.04)	(0.04)	(0.03)
More than 59	-0.11**	0.11**	0.05*
	(0.04)	(0.04)	(0.03)
Primary income	-0.17***	0.18***	0.13***
	(0.03)	(0.03)	(0.02)
Provide goods or services	0.04	-0.04	-0.03*
	(0.03)	(0.03)	(0.02)
Management	0.03	-0.02	-0.01
	(0.03)	(0.03)	(0.02)
Finances	-0.06**	0.06**	0.04**
	(0.02)	(0.02)	(0.02)
Multiple establishments	-0.29***	0.29***	0.18***
	(0.04)	(0.04)	(0.02)
Business type: Husband and wife	0.36***	-0.36***	-0.23***
	(0.07)	(0.07)	(0.04)
Estate	XX	XX	XX
	XX	XX	XX
Coop	-0.09	0.08	0.05
	(0.19)	(0.20)	(0.13)
Nonprofit	0.48**	-0.49**	-0.32**
	(0.20)	(0.20)	(0.14)
Public	XX	XX	XX
	XX	XX	XX
Establishment employment	0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
Establishment payroll	-0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)
Firm employment	-0.00**	0.00**	0.00**
	(0.00)	(0.00)	(0.00)
Firm payroll	0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)

Table A4. (cont'd)

Owner Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
State-up capital source: savings	-0.06**	0.06**	0.04**
	(0.03)	(0.03)	(0.02)
Assets	0.00	-0.00	-0.00
	(0.03)	(0.03)	(0.02)
Credit	-0.06	0.05	0.03
	(0.04)	(0.04)	(0.02)
Government loan	-0.02	0.02	0.01
	(0.07)	(0.07)	(0.04)
Bank loan	-0.01	0.01	0.00
	(0.03)	(0.03)	(0.02)
Venture capital	0.04	-0.04	-0.03
	(0.06)	(0.06)	(0.04)
None needed	0.06	-0.07	-0.06*
	(0.05)	(0.05)	(0.03)
Expansion capital source: savings	0.09***	-0.10***	-0.08***
	(0.03)	(0.03)	(0.02)
Assets	0.06	-0.06	-0.05*
	(0.04)	(0.04)	(0.03)
Credit	0.05	-0.05	-0.03
	(0.04)	(0.04)	(0.02)
Government loan	0.00	0.01	0.01
	(0.08)	(0.08)	(0.05)
Bank loan	-0.20***	0.22***	0.16***
	(0.04)	(0.04)	(0.02)
Venture capital	0.09	-0.09	-0.07
	(0.07)	(0.07)	(0.05)
None needed	-0.04	0.04	0.03
	(0.04)	(0.04)	(0.02)
>10% sales: federal government	0.10*	-0.10*	-0.06*
	(0.05)	(0.05)	(0.03)
State or local government	-0.17***	0.18***	0.11***
	(0.04)	(0.04)	(0.03)
Primary customer: other businesses	-0.07***	0.07***	0.04***
	(0.03)	(0.03)	(0.02)
Individuals	-0.16***	0.16***	0.10***
	(0.02)	(0.02)	(0.02)

Table A4. (cont'd)

County Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Hispanic establishments	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Mexican establishments	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Puerto Rican establishments	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Cuban establishments	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Hispanic employment	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Mexican employment	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Puerto Rican employment	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)
Cuban employment	0.00***	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)
Interaction: Mexican & Mexican population	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)
Puerto Rican & Puerto Rican population	-0.00**	0.00**	0.00**
	(0.00)	(0.00)	(0.00)
Cuban & Cuban population	-0.00**	0.00**	0.00***
	(0.00)	(0.00)	(0.00)
Mexican & Mexican establishments	-0.00*	0.00*	0.00**
	(0.00)	(0.00)	(0.00)
Puerto Rican & Puerto Rican establishments	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)
Cuban & Cuban establishments	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)
Mexican & Mexican employment	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Puerto Rican & Puerto Rican employment	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Cuban & Cuban employment	0.00	-0.00	-0.00*
	(0.00)	(0.00)	(0.00)
Population	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Population squared	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Population density	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)

Table A4. (cont'd)

County Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
25 to 34 population	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
35 to 44 population	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
45 to 54 population	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)
55 to 64 population	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
> 64 population	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Female population	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Female population squared	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Black population	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Black population squared	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Asian population	0.00*	-0.00*	-0.00*
	(0.00)	(0.00)	(0.00)
Asian population squared	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Hispanic population	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Hispanic population squared	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Mexican population	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Mexican population squared	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
Puerto Rican population	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Puerto Rican population squared	0.00***	-0.00***	-0.00**
	(0.00)	(0.00)	(0.00)
Cuban population	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Cuban population squared	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)

Table A4. (cont'd)

County Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
% with: high school	0.94	-0.90	-0.47
	(0.62)	(0.62)	(0.39)
Some college	1.73**	-1.73**	-1.13**
	(0.69)	(0.69)	(0.44)
Associates degree	0.67	-0.59	-0.19
	(1.17)	(1.18)	(0.75)
Bachelor's degree	0.40	-0.37	-0.13
	(0.67)	(0.67)	(0.43)
Graduate degree	0.88	-0.84	-0.47
	(0.78)	(0.78)	(0.49)
Per capita income	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Mean household size	0.01	-0.01	-0.01
	(0.09)	(0.09)	(0.06)
% of hh headed by single female	0.24	-0.24	-0.12
	(0.61)	(0.62)	(0.39)
Unemployment rate	0.82	-0.74	-0.31
	(1.03)	(1.03)	(0.66)
Labor force participation rate	0.00	0.01	0.03
	(0.33)	(0.33)	(0.21)
Build permits	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)
Industry employment	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)
State industry employment	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)

Table A4. (cont'd)

County Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Amenities	XX	XX	XX
	XX	XX	XX
Rural-urban code 2	-0.06	-0.04*	-0.01
Metro area, 0.25 to 1 million pop.	(0.04)	(0.02)	(0.03)
Rural-urban code 3	0.02	0.02	0.01
Metro area, < 250,000	(0.06)	(0.03)	(0.04)
Rural-urban code 4	-0.01	0.01	-0.05
Adjacent to metro, ≥ 20,000	(0.07)	(0.04)	(0.05)
Rural-urban code 5	-0.00	0.02	-0.01
Not adjacent to metro, ≥ 20,000	(0.10)	(0.05)	(0.07)
Rural-urban code 6	0.06	0.06	0.01
Adjacent to metro, 2,500-19,999	(0.08)	(0.04)	(0.06)
Rural-urban code 7	0.02	0.00	0.00
Not adjacent to metro, 2,500-19,999	(0.09)	(0.05)	(0.06)
Rural-urban code 8	-0.01	-0.02	0.08
Adjacent to a metro, < 2,500	(0.21)	(0.11)	(0.14)
Rural-urban code 9	0.21	0.14	0.05
Not adjacent to a metro, < 2,500	(0.20)	(0.11)	(0.15)

Table. A4 (cont'd)

NAICS Sector Industry	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
21: Mining, Quarrying, and Oil and Gas Extraction	-0.03	-0.00	0.11
	(0.22)	(0.22)	(0.22)
22: Utilities	XX	XX	XX
	XX	XX	XX
23: Construction	-0.08	-0.05	0.04
	(0.11)	(0.11)	(0.11)
31-33: Manufacturing	-0.08	-0.07	-0.01
	(0.11)	(0.11)	(0.11)
42: Wholesale Trade	-0.20*	-0.18	-0.10
	(0.11)	(0.11)	(0.11)
44-45: Retail Trade	-0.06	-0.03	0.04
	(0.11)	(0.11)	(0.11)
48-49: Transportation and Warehousing	-0.05	-0.03	0.04
	(0.11)	(0.11)	(0.11)
51: Information	XX	XX	XX
	XX	XX	XX
52: Finance and Insurance	XX	XX	XX
	XX	XX	XX
53: Real Estate and Rental and Leasing	-0.22*	-0.20*	-0.12
	(0.12)	(0.12)	(0.12)
54: Professional, Scientific, and Technical Services	-0.17	-0.15	-0.11
	(0.11)	(0.11)	(0.11)
55: Management of Companies and Enterprises	0.09	0.10	0.15
	(0.18)	(0.18)	(0.18)
56: Administrative Support and Waste Management and Remediation Services	-0.07	-0.05	0.01
	(0.11)	(0.11)	(0.12)
61: Educational Services	-0.33**	-0.32**	-0.29**
	(0.14)	(0.14)	(0.14)
62: Health Care and Social Assistance	-0.36***	-0.34***	-0.29**
	(0.12)	(0.12)	(0.12)
71: Arts, Entertainment, and Recreation	-0.08	-0.06	-0.00
	(0.13)	(0.13)	(0.13)
72: Accommodation and Food Services	-0.20*	-0.18	-0.12
	(0.11)	(0.11)	(0.11)
81: Other Services	-0.16	-0.14	-0.08
	(0.11)	(0.11)	(0.11)
92: Public Administration	XX	XX	XX
	XX	XX	XX

Table A4. (cont'd)

State Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Arizona	-0.13	0.12	0.06
	(0.15)	(0.15)	(0.10)
Arkansas	-0.17	0.15	0.07
	(0.22)	(0.22)	(0.14)
California	-0.10	0.09	0.05
	(0.17)	(0.17)	(0.11)
Colorado	0.03	-0.05	-0.05
	(0.14)	(0.14)	(0.09)
Connecticut	0.11	-0.13	-0.09
	(0.18)	(0.18)	(0.11)
Delaware	XX	XX	XX
	XX	XX	XX
District of Columbia	0.08	-0.10	-0.11
	(0.18)	(0.18)	(0.12)
Florida	0.03	-0.04	-0.05
	(0.14)	(0.14)	(0.09)
Georgia	-0.06	0.05	0.02
	(0.14)	(0.14)	(0.09)
Idaho	-0.28	0.28	0.18
	(0.20)	(0.20)	(0.13)
Illinois	-0.18	0.16	0.07
	(0.16)	(0.16)	(0.10)
Indiana	-0.14	0.13	0.06
	(0.17)	(0.17)	(0.11)
Iowa	-0.05	0.04	-0.00
	(0.19)	(0.20)	(0.13)
Kansas	-0.12	0.10	0.05
	(0.17)	(0.18)	(0.11)
Kentucky	-0.01	0.01	0.01
	(0.19)	(0.19)	(0.12)
Louisiana	0.04	-0.04	-0.02
	(0.15)	(0.15)	(0.10)
Maine	XX	XX	XX
	XX	XX	XX
Maryland	-0.30**	0.28*	0.16
	(0.15)	(0.15)	(0.10)
Massachusetts	0.07	-0.09	-0.06
	(0.16)	(0.16)	(0.10)
Michigan	0.02	-0.03	-0.03
	(0.15)	(0.15)	(0.10)

Table A4. (cont'd)

State Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Minnesota	0.11	-0.13	-0.11
	(0.17)	(0.17)	(0.11)
Mississippi	0.24	-0.25	-0.17
	(0.20)	(0.20)	(0.13)
Missouri	-0.12	0.10	0.04
	(0.17)	(0.17)	(0.11)
Montana	XX	XX	XX
	XX	XX	XX
Nebraska	0.06	-0.07	-0.05
	(0.19)	(0.19)	(0.12)
Nevada	-0.10	0.09	0.04
	(0.18)	(0.18)	(0.11)
New Hampshire	-0.35	0.33	0.18
	(0.28)	(0.28)	(0.18)
New Jersey	XX	XX	XX
	XX	XX	XX
New Mexico	-0.21	0.20	0.12
	(0.14)	(0.14)	(0.09)
New York	XX	XX	XX
	XX	XX	XX
North Carolina	-0.11	0.10	0.05
	(0.15)	(0.15)	(0.09)
North Dakota	XX	XX	XX
	XX	XX	XX
Ohio	-0.11	0.10	0.04
	(0.15)	(0.15)	(0.10)
Oklahoma	-0.05	0.03	0.01
	(0.16)	(0.16)	(0.10)
Oregon	-0.26	0.25	0.14
	(0.17)	(0.17)	(0.11)
Pennsylvania	-0.07	0.06	0.02
	(0.16)	(0.16)	(0.10)
Rhode Island	0.06	-0.08	-0.07
	(0.23)	(0.23)	(0.15)
South Carolina	-0.21	0.20	0.10
	(0.18)	(0.18)	(0.12)
South Dakota	0.10	-0.12	-0.11
	(0.26)	(0.26)	(0.16)
Tennessee	-0.15	0.15	0.09
	(0.17)	(0.17)	(0.11)

Table A4. (cont'd)

State and Year Variables	(1) Cox Proportional Hazards Model	(2) Exponential Model	(3) Weibull Model
Texas	-0.00	-0.00	0.00
	(0.14)	(0.14)	(0.09)
Utah	-0.12	0.10	0.05
	(0.20)	(0.20)	(0.13)
Vermont	XX	XX	XX
	XX	XX	XX
Virginia	-0.03	0.02	0.00
	(0.14)	(0.15)	(0.09)
Washington	-0.05	0.04	0.02
	(0.15)	(0.15)	(0.10)
West Virginia	0.08	-0.07	-0.05
	(0.23)	(0.23)	(0.15)
Wisconsin	-0.15	0.14	0.07
	(0.17)	(0.17)	(0.11)
Wyoming	-0.12	0.10	0.05
	(0.24)	(0.24)	(0.15)
2003	0.09***	-0.08***	-0.07***
	(0.03)	(0.03)	(0.02)
2004	0.12***	-0.10***	0.00
	(0.04)	(0.04)	(0.02)
2005	0.22***	-0.18***	-0.01
	(0.04)	(0.04)	(0.03)
2006	0.37***	-0.32***	-0.08***
	(0.05)	(0.05)	(0.03)
Constant		1.53**	1.25***
		(0.68)	(0.43)
Observations	~127,000	~127,000	~127,000

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A5. Pooled OLS Regression Results: LOB Employment Growth (Omitted Coefficients)

Business and County Variables	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
Business type: Husband and wife	-0.00	0.00	0.00	-0.02	0.02
	(0.02)	(0.02)	(0.02)	(0.03)	(0.06)
Estate	XX	XX	XX	XX	XX
	XX	XX	XX	XX	XX
Coop	-0.02	-0.04	-0.05	-0.06	-0.02
	(0.06)	(0.06)	(0.06)	(0.08)	(0.12)
Nonprofit	-0.08	-0.08	-0.08	-0.07	-0.10
	(0.08)	(0.08)	(0.08)	(0.11)	(0.17)
Public	XX	XX	XX	XX	XX
	XX	XX	XX	XX	XX
Establishment employment	0.00***	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Establishment payroll	-0.00	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Firm employment	0.00***	0.00***	0.00***	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Firm payroll	-0.00***	-0.00***	-0.00***	-0.00***	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
County-level variables:					
Hispanic establishments	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mexican establishments	-0.00	-0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Puerto Rican establishments	0.00	-0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cuban establishments	-0.00	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic employment	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mexican employment	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Puerto Rican employment	-0.00	-0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cuban employment	-0.00**	-0.00***	-0.00***	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Table A5. (cont'd)

County Variables	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
Interaction: Mexican & Mexican	0.00	0.00	0.00	0.00	0.00
population	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Puerto Rican & Puerto Rican	0.00	0.00	0.00	-0.00	-0.00
population	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cuban & Cuban population	0.00	0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mexican & Mexican establishments	-0.00	-0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Puerto Rican & Puerto Rican	-0.00	-0.00	-0.00	0.00	0.00
establishments	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cuban & Cuban establishments	-0.00	-0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mexican & Mexican employment	0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Puerto Rican & Puerto Rican	0.00	0.00	0.00	-0.00	-0.00
employment	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cuban & Cuban employment	-0.00	-0.00	-0.00	-0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Population	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Population squared	0.00	0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Population density	-0.00	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
25 to 34 population	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
35 to 44 population	-0.00	0.00	0.00	-0.00*	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
45 to 54 population	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
55 to 64 population	0.00	0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
> 64 population	0.00	0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Table A5. (cont'd)

County Variables	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
Female population	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Female population squared	-0.00	-0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Black population	-0.00	-0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Black population squared	0.00	0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Asian population	-0.00	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Asian population squared	0.00	0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population squared	0.00	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mexican population	0.00	0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Mexican population squared	-0.00	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Puerto Rican population	0.00**	0.00***	0.00***	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Puerto Rican population squared	-0.00**	-0.00***	-0.00**	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cuban population	0.00	0.00	0.00	-0.00*	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Cuban population squared	0.00	0.00	0.00	0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)

Table A5. (cont'd)

State Variables	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
Arizona		0.03	0.04	-0.01	0.01
		(0.04)	(0.04)	(0.06)	(0.08)
Arkansas		-0.00	0.01	-0.10	-0.12
		(0.05)	(0.05)	(0.11)	(0.17)
California		0.05	0.05	-0.05	-0.15
		(0.05)	(0.05)	(0.07)	(0.11)
Colorado		0.03	0.04	-0.06	-0.07
		(0.03)	(0.04)	(0.05)	(0.08)
Connecticut		-0.05	-0.04	-0.09	-0.10
		(0.05)	(0.05)	(0.07)	(0.11)
Delaware		0.01	0.02	0.03	0.07
		(0.05)	(0.05)	(0.07)	(0.11)
District of Columbia		0.03	0.04	-0.00	-0.08
		(0.04)	(0.04)	(0.07)	(0.11)
Florida		0.03	0.04	-0.03	-0.10
		(0.04)	(0.04)	(0.06)	(0.09)
Georgia		0.04	0.04	0.07	0.10
		(0.04)	(0.04)	(0.07)	(0.10)
Idaho		0.03	0.04	0.05	0.16
		(0.04)	(0.05)	(0.07)	(0.11)
Illinois		0.04	0.05	0.04	0.01
		(0.04)	(0.04)	(0.06)	(0.09)
Indiana		0.01	0.02	0.12	0.20
		(0.04)	(0.04)	(0.08)	(0.13)
Iowa		0.03	0.04	-0.01	0.07
		(0.04)	(0.04)	(0.08)	(0.12)
Kansas		0.02	0.03	-0.02	0.00
		(0.04)	(0.04)	(0.07)	(0.11)
Kentucky		0.03	0.04	0.07	0.14
		(0.05)	(0.05)	(0.08)	(0.13)
Louisiana		0.02	0.03	0.04	0.08
		(0.04)	(0.04)	(0.06)	(0.10)
Maine		XX	XX	XX	XX
		XX	XX	XX	XX
Maryland		0.08**	0.09**	0.09	0.11
		(0.04)	(0.04)	(0.06)	(0.09)
Massachusetts		-0.00	-0.01	-0.05	-0.03
		(0.04)	(0.04)	(0.06)	(0.09)
Michigan		0.02	0.03	-0.04	-0.02
		(0.04)	(0.04)	(0.06)	(0.09)

Table A5. (cont'd)

State Variables	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
Minnesota		0.07	0.08*	-0.01	-0.02
		(0.05)	(0.05)	(0.08)	(0.11)
Mississippi		0.00	0.02	0.02	0.14
		(0.06)	(0.06)	(0.11)	(0.10)
Missouri		0.01	0.01	0.01	0.00
		(0.04)	(0.04)	(0.06)	(0.09)
Montana		0.15**	0.16**	0.24*	0.34
		(0.06)	(0.06)	(0.14)	(0.21)
Nebraska		0.04	0.05	0.05	0.09
		(0.05)	(0.05)	(0.09)	(0.13)
Nevada		0.02	0.03	-0.00	0.00
		(0.05)	(0.05)	(0.07)	(0.11)
New Hampshire		0.07	0.08	0.03	0.05
		(0.07)	(0.07)	(0.10)	(0.15)
New Jersey		0.00	0.01	-0.02	-0.05
		(0.03)	(0.04)	(0.05)	(0.08)
New Mexico		0.03	0.04	0.02	0.05
		(0.03)	(0.04)	(0.05)	(0.08)
New York		0.02	0.03	-0.01	-0.01
		(0.04)	(0.05)	(0.07)	(0.11)
North Carolina		0.06*	0.06*	0.00	0.05
		(0.03)	(0.04)	(0.05)	(0.08)
North Dakota		0.09	0.10	0.05	-0.17
		(0.08)	(0.08)	(0.14)	(0.25)
Ohio		0.04	0.04	0.03	0.05
		(0.04)	(0.04)	(0.06)	(0.10)
Oklahoma		0.05	0.06	0.10*	0.13
		(0.03)	(0.04)	(0.06)	(0.09)
Oregon		0.07*	0.07*	0.03	0.06
		(0.04)	(0.04)	(0.06)	(0.09)
Pennsylvania		-0.02	-0.01	-0.02	-0.00
		(0.04)	(0.04)	(0.06)	(0.09)
Rhode Island		0.04	0.05	-0.07	-0.04
		(0.06)	(0.06)	(0.09)	(0.13)
South Carolina		0.09**	0.10**	0.05	0.08
		(0.04)	(0.04)	(0.06)	(0.09)
South Dakota		0.14*	0.15*	-0.06	-0.14
		(0.08)	(0.09)	(0.14)	(0.25)
Tennessee		0.02	0.03	0.00	0.03
		(0.03)	(0.04)	(0.05)	(0.08)

Table A5. (cont'd)

State and Year Variables	(1)	(2)	(3)	(4)	(5)
	Employment Growth				
	1-year	1-year	1-year	2-year	3-year
Texas		0.04	0.04	0.03	0.03
		(0.03)	(0.04)	(0.05)	(0.08)
Utah		0.07	0.08	-0.03	-0.01
		(0.05)	(0.06)	(0.08)	(0.12)
Vermont		0.08	0.09	0.05	0.20
		(0.08)	(0.08)	(0.14)	(0.20)
Virginia		-0.01	-0.00	-0.01	-0.05
		(0.03)	(0.04)	(0.06)	(0.09)
Washington		0.04	0.05	-0.03	0.02
		(0.04)	(0.04)	(0.05)	(0.08)
West Virginia		-0.09	-0.10	-0.18	-0.21
		(0.11)	(0.11)	(0.15)	(0.20)
Wisconsin		0.01	0.02	0.01	0.02
		(0.04)	(0.04)	(0.06)	(0.10)
Wyoming		0.21**	0.22***	0.10	0.19
		(0.08)	(0.09)	(0.14)	(0.19)
2004	-0.17***	-0.17***	-0.17***		
	(0.01)	(0.01)	(0.01)		
2005	-0.17***	-0.17***	-0.17***	-0.16***	
	(0.01)	(0.02)	(0.02)	(0.01)	
2006	-0.14***	-0.14***	-0.14***	-0.15***	-0.13***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
2007	-0.15***	-0.15***	-0.14***	-0.14***	-0.13***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)

Robust standard errors in parentheses

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

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ESSAY 3

THE IMPACT OF LATINO-OWNED BUSINESS ON LOCAL ECONOMIC PERFORMANCE

Introduction

Small business development in the U.S. by minorities and immigrant groups is of special economic interest for a number of reasons. Self-employment has been proposed as a viable alternative to formal wage and salary employment, especially for individuals who may have difficulty breaking into the formal employment market. Business formation among ethnic minorities and women has been cited as a tool to promote equal economic opportunities in communities and a principal means for new immigrants to adopt and survive economically (Mar 2005). Minority-owned businesses are an integral component of recent popular local economic development strategies commonly known as economic gardening, grow your own, and locally based entrepreneurship.

Despite the calls for promoting ethnic and immigrant-owned business as a local development strategy to create income and employment, to alleviate poverty, and to discourage population loss, less is known about the contributions of such businesses in general, and Latino-owned business (LOB) in particular, to economic performance at the local level in the U.S. Although some studies have examined the impact of LOB at the local level (Grey 2006; Robles and Zarnikau 2004), there are few attempts at comprehensive examinations of the impact of LOB overall in the United States. Latinos are the largest immigrant group, and one of the largest ethnic groups in the United States (Robles and Cordero-Guzmán. 2007). The objective of this

essay is to address this problem and provide research findings that inform decision makers and practitioners on the effects of LOB on local economic performance.

Literature Review

Although past research examined the impact of immigration on measures of economic performance (Massey 1993, Zhou 2004) and other research examined the relative success of different ethnic groups in self-employment (e.g., Borjas 1990, Fairlie and Robb 2008), there is a dearth of research into the impact of employment by various ethnic groups on measures of economic success. This relative lack of research is despite the calls for promoting minority-owned businesses as a local development strategy to create income and employment, to alleviate poverty, and to discourage population loss. There is a need for better information about the contributions minority-owned businesses in general and Latino-owned business (LOB) in particular to economic performance at the local level in the U.S.

Relative to other ethnicities, Latinos concentrate in relatively vulnerable sectors, such as lower-order services (Puryear et al. 2008, Robles and Cordero-Guzmán 2007), construction, wholesale trade, and retail trade sectors (U.S. Census Bureau 2010). Martinez et al. (2011) explain LOB are often associated with low-barrier industries because they lack financial capital to enter high-barrier industries. High barrier industries are industries that require at least a bachelor's degree (often higher) or a large amount startup capital. High barrier industries include professional services, and finance or insurance. Low barrier industries include some food services and construction. Past research found that business owners with large amounts of personal capital to spend on business startup will open more lucrative businesses in high-barrier

industries, while others experience lower growth in the relatively vulnerable low-barrier industries (Bates, Lofstrom, and Servnon 2010). Given this relationship, one would expect a divide between the impact of LOB employment share in high and low-barrier industries on local economic growth.

The impact of LOB employment share on population growth relates to another stream of literature on immigrant and native flows. Although this paper does not specify that persons making up the LOB employment share must be immigrants, over 1 in 3 Latinos in the U.S. are immigrants (Zong and Batalova 2015). Card and DiNardo (2000) find that immigrant inflows do not imply selective out-migration by natives. This essay will extend their work by breaking down this overall effect by industry share. This essay will also examine the validity of the distance dependence of mobility, in which large concentrations of immigrants in surrounding areas reduce native out-mobility (Crowder et al. 2011). Finally, it is important to emphasize that Latino workers and LOB in the United States are not a monolithic group of low-wage migrants (Zarrugh 2007). This essay expands on past research by specifically breaking down that impact of LOB by industry, while controlling for local business owner characteristics. This essay begins its examination with equation-by-equation OLS and then moves to a Spatial Durbin Model. The results show that the impact of LOB overall employment share is insignificant, but that, when decomposed by industry, LOB employment share does have significant impacts on economic performance measures. Significance varies by industry, but the results support the aforementioned divide in the impact of LOB employment share in low and high-barrier industries.

A problem with much regional growth literature, especially when examining local economic performance, is the existence of spatial spillover effects. When using data sets

composed of observations on smaller geographic areas such as counties, the economic changes in one locality may have spillover effects on neighboring areas, creating a pattern of spatial dependence that requires a spatial econometric approach to prevent biased results. Previous studies using United States county- and state-level data have confirmed that county-level cross sectional data display spatial dependence (Rey and Montouri 1999; Rupasingha et al. 2002; Rey and Janikas 2005). There are competing spatial models to address various forms of spatial dependence. Specifically, some studies consider only spatial dependence in the dependent variable using spatial lag model or SAR and others examine only spatial dependence in the error term using spatial error model or SEM (Abreu et al. 2004). Abreu et al. (2004) also refer to studies that use both, error and lag dependence, in the same model using general spatial model as well as spatial dependence in the independent variables. LeSage and Fischer (2008) suggest that the appropriate spatial regression model for regional growth regressions such as the regressions included herein is the Spatial Durbin Model (SDM) because the spatial spillover effects of economic performance variables are global in nature.

Methods

Thus this essay will use the following methods to investigate these five hypotheses:

H1. LOB employment share has a positive impact on the local economic performance measures.

H2. LOB employment share in low-barrier industries has a negative impact on the local economic performance measures.

H3. LOB employment share in high-barrier industries has a positive impact on the local economic performance measures.

H4. Immigrant inflows do not imply selective out-migration by natives.

H5. Large concentrations of immigrants in surrounding areas reduce native out-mobility.

The objective of this paper is to investigate the effects of LOB on the economic performance of U.S. counties. As mentioned above, I measure local economic performance using per capita income growth, employment growth, the change in poverty, and population growth using publicly available county-level data as described below. The analytical framework for this objective is based on a conditional convergence approach (Barro 1998), which is derived from the neoclassical growth model. The neoclassical growth model assumes that the per capita growth rate in a country or region tends to be inversely related to the starting levels of output or income level (Barro and Sala-i-Martin 1992) and suggests that poorer economies should grow faster than richer economies. According to the model, poor economies should eventually "catch up" based on the assumption of decreasing returns to capital, which should cause more advanced economies to grow more slowly than less advanced ones.

To evaluate the relationship between Latino business ownership and economic performance, I use the following regression equation at the county-level:

$$(7) \qquad g_{(t-\tau,t),i} = \alpha_i + \beta y_{t-\tau,i} + \gamma LOB_{t-\tau,i} + \delta X_{t-\tau,i} + \varepsilon_{it}$$

where $g_{(t-\tau,t),i}$ is the average dependent variable under consideration for county i from period t-τ to t, where τ represents the length of time period, $y_{t-\tau,i}$ is the convergence variable (initial per capita income, initial employment, initial poverty rate, and initial population), $X_{t-\tau,i}$ is a vector of other initial conditions and ε_{it} is the error term. For the dependent variables, I use the time period between 2000 and 2010. Since these are growth (or change) variables, I calculate the change between the two time periods using 2000 as the base year (except for poverty rate) and then

average the growth rate over the time. For the change in poverty rate, I take the difference between the poverty rate for 2000 and 2010. Per capita income and employment growth are measured using external Bureau of Economic Analysis (BEA) county-level data and change in poverty and population growth rate is measured using external Bureau of the Census data.

The variable of interest in this estimation is LOB and hypothesized to be positively associated with growth in income, employment, and population and negatively associated with change in poverty rate. I test both the share of employment by LOB in 2002 and the change of this share between 2002 and 2007. I further expand the examination of the impact of Latino business ownership by examining the impact of LOB employment share in each NAICS 2-digit industry code. In this latter specification, LOB is a vector of LOB employment share under each 2-digit NAICS code. The standard county-level control variables used in the regional growth literature include percent of people who have various levels of education as a proxy for human capital, local government taxes per capita, and expenditures on education and highways as government variables, minority populations to capture labor market trends, population density as an agglomeration variable, and natural amenities. All these controls are available from external data sources.

This paper initially estimates the growth model using equation-by-equation OLS. But econometric models for both determinants and effects of LOB must account for potential estimation issues. For example both LOB activity and our measures of economic performance in counties have common elements that drive underlying dynamics of these variables. Because of this, it is highly likely that LOB activities and regional economic performance (income and employment growth, poverty, and population change) are endogenously determined. In other words, the estimates could reflect some degree of reverse causality or spurious correlation.

Therefore, the models must test for endogeneity bias and correct the bias (if there is any) by appropriate estimation procedures. The estimation strategy must also account for possible endogeneity bias in other independent variables. To mitigate this issue, I lag values of all independent variables, to determine the extent to which any relationship between LOB and local economic performance indicators is causal. This "weakly exogenous" approach (Levine et al. 2000) assumes that future growth rates of our dependent variables do not affect current levels of explanatory variables. The model measures all right-hand-side variables at the beginning year, which is 2000 or around 2000, and all growth variables for the period between 2000 and 2010.

Another potential estimation issue in the local economic performance regressions may be the existence of spatial spillover effects. Using data sets composed of observations on smaller geographic areas such as counties, the economic changes in one locality may have spillover effects on neighboring areas, creating a pattern of spatial dependence that requires a spatial econometric approach. Previous studies using U.S. county- and state-level data have confirmed that these regional cross sectional data display spatial dependence (Rey and Montouri 1999; Rupasingha et al. 2002; Rey and Janikas 2005). Previous growth studies have used competing spatial models to address various forms of spatial dependence. For example, some studies consider only spatial dependence in the dependent variable using spatial lag model or SAR and others examine only spatial dependence in the error term using spatial error model or SEM (Abreu et al. 2004). Abreu et al. (2004) also refer to studies that use both, error and lag dependence, in the same model using general spatial model as well as spatial dependence in the independent variables. LeSage and Fischer (2008) suggest that the appropriate spatial regression model for regional growth regressions such as the following regressions is the Spatial Durbin Model because the spatial spillover effects of our economic performance variables are global.

The Spatial Durbin Model (SDM) includes a spatial lag of the dependent variable as well as spatial lags of the explanatory variables.

The SDM for this growth model can be written as:

(8) $$g_i = \rho W g_i + \theta W X_i + \beta X_i + \alpha_i + \varepsilon$$

$$\varepsilon \sim N(0, \sigma^2 I)$$

where g_i denotes an *nx*1 vector of the dependent variable in equation (2), X_i represents an *nxk* matrix containing the determinants of the dependent variable including the LOB and convergence variables and *W* is an *nxn* inverse-distance spatial weighting matrix, such that the elements of *W*, $w_{ij} = \frac{1}{d_{ij}}$, where d_{ij} is the distance between the centroids of counties *i* and *j*. Other specifications of the weighting matrix, including the nearest neighbor specification, produce similar results and thus not included here for sake of readability. The terms $\rho W g_i$ and $\theta W X_i$ in the equation add dependent variable and explanatory variables respectively from neighboring counties. ρ, β, and θ denote the parameters to be estimated. The coefficients ρ and θ estimate the extent to which the dependent and independent variables of nearby counties influence economic performance in the original county.

Data

Similar to procedures described in essay 2, the data result from merging three restricted access Census Bureau data sets by individual firm and establishment level. The three databases are the Integrated Longitudinal Business Database (ILBD), the Longitudinal Business Database (LBD) and the Survey of Business Owners (SBO). As explained in essay 2, researchers can only access these datasets within a Census RDC and if they have an approved project. To further

examine the effects of these businesses on local economic performance, the data links merged ILBD-LBD and SBO data with publicly available county-level data from Bureau of the Census, Bureau of Economic Analysis (BEA) and the U.S. Department of Agriculture (USDA).

Factors associated with LOB ownership and dynamics include characteristics of business and industry, characteristics of business owner, and characteristics of location. The standard economic model predicts that these factors are associated with the firm's production process. While measures of business ownership are available from the SBO, the data are cross-sectional and cannot capture the dynamics of LOB. Measures of business creation, expansion, and destruction are needed to represent dynamics of businesses. Such measures are available from the LBD or can be created using the LBD. On the other hand, the LBD lacks information on the characteristics of business owners such as race, ethnicity, gender, education level, whether the owner is foreign born, and access to capital. Such information is available from the SBO.

Further, the LBD is at the establishment level, whereas the SBO is at the firm level. However, the LBD has a firm identifier, making the linking of the LBD with the SBO feasible by firm identifier. The ILBD is needed to address the issue that while SBO has information about firms that have no paid employees, the LBD has information only about establishments that have paid employees. The ILBD consists of administrative records for all nonemployer business units. By linking the ILBD, LBD, and SBO, one can track the dynamics of not only employer LOB but also the nonemployer LOB including the transitions of LOB nonemployers to LOB employers. Although location of the businesses are available from these merged data sets, location specific characteristics such as agglomeration, racial make-up of location, amenities, and market size are not available in this data. This requires linking merged data with location specific factors that are publicly available from the Bureau of the Census, the BEA and the USDA. The investigation of

the effects of LOB on local economic performance requires aggregating LOB firm outcomes at the county-level and then merging with publicly available data.

To analyze Latino-owned businesses and county economic performance, this paper tests the effects of the share of employment by LOB and the growth of this share between 2002 and 2007 on county economic performance measures, namely income and employment growth, changes in poverty, and population growth. This paper uses the so-called "labor market approach" to calculate the LOB employment variables (Acs and Armington 2004). First, I calculate the total employment by all the businesses in a county using merged data sets (SBO with ILBD/LBD) for the year 2002. Next I calculate the total employment by LOB for 2002 using the same merged data and then calculate the ratio of employment by LOB as a percent of total employment, which the model assumes to approximate the county-level share of private employment by LOB. I also calculate the same share for 2007 and then take the difference in the share between 2002 and 2007 to calculate the change of employment by LOB over time.[11] My study period for this analysis is between 2000 and 2010 and dependent variables (income and employment growth, changes in poverty, and population growth) is calculated for this time period using data from external data sources.[12] All the other control variables (or initial conditions in a growth framework) are measured at 2000 or close to that year depending on data availability from external sources.

Although some form of the SBO is available since 1982, many of these earlier surveys are not as comprehensive as the ones for 2002 and 2007. For example, one of the most important

[11] Since the SBO is a stratified sample of firms based on racial/ethnic status of the owner, the model uses the SBO weights to make sure LOB employment ratio at the county level is representative of the firm population.
[12] The ending year for the growth/change period is 2010 due to the unavailability of population and poverty data prior to the 2010 decennial Census. Although annual data are available for income and employment variables, this paper uses 2010 for them also to be consistent with the data selection for population and poverty variables.

questions on sources of capital was not asked in the surveys prior to 2002. Therefore, for the matching purposes I use the years 2002 and 2007 of SBO data and annual ILBD and LBD data from 1994-2007 data. The matched data contains detailed information from the LBD on establishment openings and closing, jobs creation, expansion, contraction, and destruction of businesses and from the SBO the business owner characteristics and additional firm characteristics. Although the age and size of the firm can be traced roughly using SBO data, this paper uses a more precise measure that is available in the previous literature (Davis et al. 2007; Haltiwanger et al. 2010) to identify firm dynamics including new firm formation using the LBD.

Results

The results of the equation-by-equation OLS regressions of the growth in the four measures of economic performance between 2000 and 2010 on Latino employment share growth between 2002 and 2007 are given in Table 8. This regression controls for county-level industry employment, industry establishment counts, and state indicator variables, but their coefficients are given in the appendix Table A6 for readability. As it is likely that the LOB employment share growth between 2002 and 2007 is endogenously determined with measures of economic performance, this paper briefly discusses these results, but focuses on the impact of the base share of LOB employment, rather than the contemporaneous growth in that share.

Table 8. OLS Regressions of Economic Performance on LOB Employment Share Growth

	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
LOB share growth	0.01	0.03	0.01	-0.01
	(0.06)	(0.06)	(0.04)	(0.04)
Per capita income	-0.00***	-0.00***	-0.00***	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Employment	-0.00	-0.00***	0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Poverty rate	0.30***	-0.05	-0.48***	-0.14*
	(0.08)	(0.09)	(0.03)	(0.07)
Population	0.00	-0.00	-0.00***	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Population squared	-0.00	-0.00	0.00***	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Population density	0.00**	-0.00	-0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Average household size	0.10***	0.13***	-0.00	0.05***
	(0.02)	(0.02)	(0.01)	(0.02)
% headed by single female	-0.59***	-0.40***	0.30***	-0.48***
	(0.08)	(0.09)	(0.03)	(0.07)
Median age	0.03***	-0.01*	-0.01***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Median age squared	-0.00***	0.00*	0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Female population	-0.00	0.00*	0.00***	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Female population squared	0.00	0.00	-0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asian population	-0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asian population squared	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Black population	-0.00	-0.00*	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Black population squared	-0.00	0.00	0.00***	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population	-0.00**	0.00	0.00*	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population squared	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Median age	0.03***	-0.01*	-0.01***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)

Table 8. (cont'd)

	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
% with education: high school	0.32***	0.12*	-0.08***	0.04
	(0.07)	(0.07)	(0.02)	(0.05)
Some college	0.37***	0.23***	-0.08***	0.19***
	(0.08)	(0.09)	(0.03)	(0.07)
Associates degree	0.75***	0.17	-0.21***	-0.19
	(0.16)	(0.15)	(0.05)	(0.12)
Bachelor's degree	0.78***	0.58***	-0.11***	0.35***
	(0.12)	(0.13)	(0.03)	(0.14)
graduate school degree	0.69***	0.21	0.08*	0.14
	(0.15)	(0.19)	(0.05)	(0.15)
Taxes per capita	-0.00*	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Education spending	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Highway spending	0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Build permits	-0.00**	0.00***	0.00	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Labor force participation rate	0.24***	-0.13**	-0.04***	-0.02
	(0.04)	(0.06)	(0.01)	(0.05)
% owner's education: high school	-0.09**	0.02	0.02	0.02
	(0.04)	(0.03)	(0.01)	(0.02)
Some college	-0.08**	0.01	-0.01	0.04*
	(0.04)	(0.04)	(0.01)	(0.03)
Trade school degree	0.04	0.01	-0.01	-0.07**
	(0.04)	(0.04)	(0.01)	(0.04)
Associates degree	-0.09	0.04	0.00	0.02
	(0.06)	(0.06)	(0.02)	(0.05)
Bachelor's degree	-0.09**	0.02	-0.00	-0.02
	(0.04)	(0.05)	(0.02)	(0.04)
Graduate school degree	0.02	0.06	-0.03*	0.02
	(0.05)	(0.05)	(0.02)	(0.04)

Table 8. (cont'd)

	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Amenities	-0.00	-0.01***	0.00*	-0.01**
	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 2	-0.01	-0.01*	0.00	-0.02**
Metro area, 0.25 to 1 million pop.	(0.00)	(0.01)	(0.00)	(0.01)
Rural-urban code 3	-0.02***	-0.01	0.00	-0.02**
Metro area, < 250,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 4	-0.03***	-0.03***	0.01***	-0.03***
Adjacent to metro, ≥ 20,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 5	-0.02**	-0.01	0.01**	-0.02**
Not adjacent to metro, ≥ 20,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 6	-0.03***	-0.02**	0.01***	-0.02***
Adjacent to metro, 2,500-19,999	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 7	-0.02***	-0.02**	0.01***	-0.03***
Not adjacent to metro, 2,500-19,999	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 8	-0.03***	-0.02**	0.01***	-0.02**
Adjacent to a metro, < 2,500	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 9	-0.03***	-0.02**	0.01***	-0.02**
Not adjacent to a metro, < 2,500	(0.01)	(0.01)	(0.00)	(0.01)
Constant	-0.22	-1.58**	0.10	-1.19**
	(0.87)	(0.66)	(0.21)	(0.48)
Observations	~3,100[13]	~3,100	~3,100	~3,100
R^2	0.48	0.49	0.43	0.64
Industry employment	YES	YES	YES	YES
Industry establishments	YES	YES	YES	YES
State FE	YES	YES	YES	YES

The coefficient of primary interest is that on overall LOB employment share growth. This coefficient does not have a statistically significant impact on the measures of economic performance. Using overall LOB employment share in 2002 rather than the growth in that share also yields insignificant coefficients. The results of this regression are given in Table A7 in the

[13] Exact number of observations is suppressed by the Bureau of the Census to protect against improper disclosure.

appendix. The coefficients on our convergence variables – per capita income employment, poverty rate, population – are consistent with catch-up growth; high initial per capita income is associated with lower per capita income growth and higher initial poverty is associated with lower poverty growth.

Average household size has a statistically significant impact on the income growth rate at the 99% level. The coefficient indicates that for every increase in average household size by 1, the income growth rate will increase by 0.1. As is consistent with the literature (Hoynes et al. 2006), the percent of households headed by a single female has a significant negative relationship with income, employment, and population growth, and a significant positive relationship with poverty growth. Having a higher proportion of the population with a level of education other than "less than a high school degree" (the omitted category) has a mostly statistically significant positive impact on per capita income, employment, and population growth, and a negative impact on poverty growth. The percent of business owners with various levels of education is mostly insignificant and, although the number of building permits issued is statistically significant, the coefficient is almost zero.

To take a more in depth look at the impact of LOB employment share, this paper next decomposes LOB employment share into LOB employment share in various industries. As it is likely that LOB employment share growth (2002-2007) is endogenously determined, we focus on the impact of LOB employment share in various industries in 2002. The results of this OLS regression are presented in Table A8 in the appendix.

Table A8 shows that the coefficients on variables other than LOB employment share remained mostly unchanged. Decomposing LOB employment share by industry reveals significant coefficients in various industries. As mentioned previously, however, given our data

is on relatively small geographic regions, the spatial spillover effects are likely (Rey and Montouri 1999; Rupasingha et al. 2002; Rey and Janikas 2005). Such effects are common in regional growth literature and would at best leave the OLS regression inefficient, and at worst bias the results (LeSage and Fischer 2008). This paper uses the Spatial Durbin Model (SDM) to address this potential problem and focuses on those results. Table 9 presents the results of the SDM. As in Table 8, the SDM controls for industry employment, industry establishment counts, and state indicator variables, but the coefficients can be found in Table A9 in the appendix. For readability, some control variables with coefficients similar to the OLS model are also moved to Table A9 in the appendix, as have their spatial lags.

Table 9. SDM Regressions of Economic Performance on 2002 Industry LOB Employment Share

	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Growth	(4) Population Growth Rate
LOB share in NAICS sector:				
11: Agriculture,	-0.04**	0.04*	0.01	0.03
Forestry, Fishing, and Hunting	(0.02)	(0.02)	(0.01)	(0.02)
21: Mining, Quarrying, and	0.01	-0.03	-0.00	-0.05
Oil and Gas Extraction	(0.04)	(0.04)	(0.01)	(0.03)
22: Utilities	0.21*	0.32**	-0.08*	0.31**
	(0.11)	(0.15)	(0.04)	(0.14)
23: Construction	0.05*	-0.01	-0.00	-0.02
	(0.03)	(0.03)	(0.01)	(0.02)
31-33: Manufacturing	-0.04	-0.03	-0.00	0.00
	(0.04)	(0.04)	(0.02)	(0.03)
42: Wholesale Trade	0.06	0.03	-0.01	0.02
	(0.06)	(0.06)	(0.01)	(0.05)
44-45: Retail Trade	0.02	0.09	0.02	0.03
	(0.06)	(0.06)	(0.03)	(0.03)
48-49: Transportation and	0.00	0.01	0.00	0.01
Warehousing	(0.02)	(0.02)	(0.01)	(0.02)
51: Information	-0.00	-0.14**	-0.03*	-0.20***
	(0.05)	(0.06)	(0.02)	(0.07)
52: Finance and Insurance	-0.08	0.03	-0.03	0.01
	(0.07)	(0.06)	(0.04)	(0.04)
53: Real Estate, Rental &	-0.06**	-0.06**	0.01*	-0.02
Leasing	(0.03)	(0.03)	(0.01)	(0.03)
54: Professional, Scientific, and	0.08***	0.05	-0.01	0.00
Technical Services	(0.03)	(0.03)	(0.01)	(0.03)
55: Management of Companies	0.11***	0.04	-0.01	-0.07**
and Enterprises	(0.04)	(0.05)	(0.01)	(0.03)
56: Administrative Support,	0.03	-0.02	-0.02	-0.03
Waste Management and	(0.04)	(0.05)	(0.01)	(0.02)
Remediation Services				
61: Educational Services	-0.04	-0.12	-0.01	-0.02
	(0.03)	(0.10)	(0.01)	(0.04)
62: Health Care, Social Assist.	0.06	0.07	0.00	0.03
	(0.05)	(0.04)	(0.02)	(0.03)
71: Arts, Entertainment, and	0.02	0.04	0.00	0.02
Recreation	(0.02)	(0.04)	(0.01)	(0.02)
72: Accommodation, Food Serv.	0.01	0.01	-0.00	-0.01
	(0.03)	(0.02)	(0.01)	(0.02)
81: Other Services	-0.07**	-0.04	0.02*	-0.04**
	(0.03)	(0.03)	(0.01)	(0.02)

Table 9. (cont'd)

	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Growth	(4) Population Growth Rate
% with education: High school	0.29***	0.05	-0.05**	-0.08
	(0.08)	(0.08)	(0.02)	(0.06)
Some college	0.34***	0.18**	-0.04	0.15**
	(0.09)	(0.09)	(0.03)	(0.08)
Associates degree	0.82***	0.20	-0.20***	-0.12
	(0.17)	(0.16)	(0.05)	(0.13)
Bachelor's degree	0.79***	0.44***	-0.10***	0.23*
	(0.12)	(0.13)	(0.03)	(0.13)
Graduate school degree	0.59***	0.18	0.12**	0.06
	(0.15)	(0.20)	(0.04)	(0.15)
Amenities	-0.00	-0.01***	0.00**	-0.01**
	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 2	0.00	0.01	-0.01***	0.00
Metro area, 0.25 to 1 million pop.	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 3	-0.00	0.01	-0.00*	-0.01
Metro area, < 250,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 4	-0.02**	-0.01	0.00	-0.01
Adjacent to metro, ≥ 20,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 5	-0.02*	-0.00	0.00	-0.02
Not adjacent to metro, ≥ 20,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 6	-0.01**	-0.00	0.00	-0.01
Adjacent to metro, 2,500-19,999	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 7	-0.01	-0.01	0.00	-0.02**
Not adjacent to metro, 2,500-19,999	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 8	-0.02**	-0.00	0.00	-0.01
Adjacent to a metro, < 2,500	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 9	-0.02**	-0.01	0.01*	-0.01
Not adjacent to a metro, < 2,500	(0.01)	(0.01)	(0.00)	(0.01)

Table 9 (cont'd)

Spatial Lags	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Growth	(4) Population Growth Rate
LOB share in NAICS sector:				
11: Agriculture, Forestry,	-0.02***	-0.01	0.01**	0.00
Fishing and Hunting	(0.01)	(0.01)	(0.00)	(0.01)
21: Mining, Quarrying, and Oil	-0.01	0.01	-0.02***	-0.03*
and Gas Extraction	(0.02)	(0.02)	(0.01)	(0.01)
22: Utilities	0.14**	0.37***	-0.05**	0.29***
	(0.06)	(0.08)	(0.02)	(0.06)
23: Construction	-0.00	0.01	-0.01***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
31-33: Manufacturing	0.00	-0.02	-0.00	-0.02**
	(0.01)	(0.01)	(0.00)	(0.01)
42: Wholesale Trade	0.01	0.02*	-0.00	0.00
	(0.01)	(0.01)	(0.00)	(0.01)
44-45: Retail Trade	-0.05***	-0.01	0.00	-0.01
	(0.02)	(0.02)	(0.01)	(0.01)
48-49: Transportation and	0.00	-0.00	0.00*	0.00
Warehousing	(0.00)	(0.01)	(0.00)	(0.01)
51: Information	-0.01	-0.04**	-0.01	-0.03**
	(0.02)	(0.02)	(0.01)	(0.01)
52: Finance and Insurance	0.00	0.04**	-0.01	0.04**
	(0.02)	(0.02)	(0.01)	(0.02)
53: Real Estate, Rental &	-0.00	0.01	-0.00	0.00
Leasing	(0.01)	(0.01)	(0.00)	(0.01)
54: Professional, Scientific, and	0.01	0.01	-0.00	0.01
Technical Services	(0.01)	(0.01)	(0.00)	(0.01)
55: Management of Companies	0.02*	-0.01	-0.00	-0.01
and Enterprises	(0.01)	(0.02)	(0.01)	(0.01)
56: Administrative Support,	-0.00	-0.02*	-0.00	-0.02*
Waste Management and	(0.01)	(0.01)	(0.00)	(0.01)
Remediation Services				
61: Educational Services	-0.02	-0.03*	0.00	-0.02
	(0.01)	(0.02)	(0.00)	(0.01)
62: Health Care, Social Assist.	0.01	0.01	0.01***	0.01
	(0.02)	(0.01)	(0.01)	(0.01)
71: Arts, Entertainment, and	0.01*	0.01	0.00	0.01
Recreation	(0.01)	(0.01)	(0.00)	(0.01)
72: Accommodation, Food Serv.	0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
81: Other Services	-0.02**	-0.03***	0.01***	-0.02***
	(0.01)	(0.01)	(0.00)	(0.01)

Table 9 (cont'd)

Spatial Lags	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Growth	(4) Population Growth Rate
% with education: High school	-0.01	-0.00	0.00	0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Some college	-0.00	0.01	-0.00	0.03***
	(0.01)	(0.01)	(0.00)	(0.01)
Associates degree	-0.03	-0.01	0.00	-0.03*
	(0.02)	(0.02)	(0.01)	(0.02)
Bachelor's degree	0.01	0.00	-0.00	-0.00
	(0.02)	(0.02)	(0.01)	(0.02)
graduate school degree	-0.02	0.00	0.01*	0.03
	(0.02)	(0.03)	(0.01)	(0.02)
Amenities	-0.00	-0.00**	0.00	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 2	0.00*	0.00	-0.00*	-0.00
Metro area, 0.25 to 1 million pop.	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 3	0.00	0.00	-0.00**	-0.00
Metro area, < 250,000	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 4	0.00*	0.00	-0.00	0.00
Adjacent to metro, ≥ 20,000	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 5	-0.00**	0.00	0.00*	0.00
Not adjacent to metro, ≥ 20,000	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 6	0.00	0.00*	-0.00	0.00
Adjacent to metro, 2,500-19,999	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 7	0.00***	0.00*	-0.00**	0.00
Not adjacent to metro, 2,500-19,999	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 8	-0.00	0.00	-0.00	0.00
Adjacent to a metro, < 2,500	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 9	0.00	0.00***	-0.00***	0.00
Not adjacent to a metro, < 2,500	(0.00)	(0.00)	(0.00)	(0.00)
Constant	0.29	-0.99	0.03	-0.61
	(0.80)	(0.64)	(0.20)	(0.47)
Observations	~3,100	~3,100	~3,100	~3,100
Industry employment	YES	YES	YES	YES
Industry establishments	YES	YES	YES	YES
State	YES	YES	YES	YES

Table 9. (cont'd)

	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Growth	(4) Population Growth Rate
ρ	-0.02***	-0.01	-0.02***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.01)
Wald test of $\rho = 0$ $\left(Chi^2(1)\right)$	29.78***	2.38	24.15***	7.98***
	(0.00)	(0.12)	(0.00)	(0.01)
Wald test for coefficients on lags of $X = 0$ $\left(Chi^2(260)\right)$	470.01***	428.00***	400.65***	497.02***
	(0.00)	(0.00)	(0.00)	(0.00)

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

The Spatial Durbin Model reveals statistically significant changes in the coefficients on LOB employment share decomposed by industry when compared to the OLS results. Further, the Wald test for significance of ρ reveals that we can reject $\rho = 0$ in all of the regressions except employment growth. Hence, we can reject with 99% confidence that neighboring counties' income, poverty, and population growth do not impact a county's own income, poverty, and population growth. Further, the Wald test on the coefficients on the spatial lags of the dependent variables is significant in all four regressions at the 99% confidence level. Thus, it appears that a model failing to account for neighboring counties' control variables risks omitted variable bias. With these tests in mind, this paper will focus on the SDM results presented in Table A6.

More employment under LOB in the agriculture, forestry, fishing, and hunting sector has a significant and positive relationship with employment growth, but a significant and negative relationship with income growth. Share of LOB employment in the construction industry has a significant and positive relationship with the income growth rate. A one percentage point increase in LOB employment share in the utilities industry is associated with a statistically

significant .0021, .0032, and .0031 increase in the income, employment, and population growth rate, respectively. Share of LOB employment in the utilities sector has a similar significant negative relationship with poverty growth. Share of LOB employment share in the professional, scientific, and technical services and the management of companies and enterprises industries both have a significant and positive relationship with income growth, though management of companies and enterprises has a significant and negative relationship with population growth.

The USDA rural-urban continuum code indicator variables 4, 5, 6, 8, and 9 all have a significant negative impact on per capita income growth. The omitted category is 1, which is the most metro (or least rural) categorization. Although this relationship is not significant for code 7, (nonmetro county with urban population of 2,500-19,999, not adjacent to a metro area), code 7 does have a significant and negative relationship with population growth.

The coefficients on the spatial lags of the SDM are also included in Table A6. The coefficients on neighboring counties' per capita income, employment, and poverty rate growth are consistent with past research into regional convergence (Rey and Janikas 2005, Rey and Montouri 1999). Neighboring counties' LOB employment share in the construction industry has a significant and negative relationship with poverty rate growth. Neighboring counties' LOB employment share in retail has a significant and negative relationship with income growth.

Conclusions and Suggestions for Future Research

Much research has examined the effect of immigration on measures of economic performance (see Massey 1993, Zhou 2004) and the relative survival of different ethnic groups in self-employment (e.g., Borjas 1990, Fairlie and Robb 2008). Despite this research, few studies

examine the impact of employment by various ethnic groups on measures of economic success. Indeed, less is known about the contributions of minority-owned businesses in general and Latino-owned business (LOB) in particular to economic performance at the local level in the U.S. Despite numerous calls for minority-owned business promotion as a local development strategy to create income and employment, to alleviate poverty, and to discourage population loss, this paper is one of the first examinations specifically into these potential relationships. Furthermore, by breaking down the impact of LOB by industry, this paper examines these impacts on local economies with more precision than past work, which has examined the impact on the low and high-skill labor markets. Although we can reject the first hypothesis (H1), that LOB employment share has a positive impact on the local economic performance measures, when this essay split up the LOB employment share by industry, we find both positive and negative impacts on economic performance measures.

As mentioned previously, Latinos tend to concentrate in the services (Puryear et al. 2008, Robles and Cordero-Guzmán 2007), construction, wholesale trade, and retail trade sectors (U.S. Census Bureau 2010). As explained above, high barrier industries include professional services and finance or insurance, and typically require an advanced degree or large amounts of startup capital. Low barrier industries, conversely, do not require an advanced degree or a large amount of start-up capital and include some food services and construction. Martinez et al. (2011) show that LOB are often associated with these low-barrier industries because they lack financial capital to enter high-barrier industries. Indeed, past research suggests that business owners with large amounts of personal capital to invest on business startup will be able to open more faster-growing businesses in a high-barrier industry, while others experience relatively slow growth (and less survival) in the low-barrier businesses (Bates, Lofstrom, and Servnon 2010). Given this

past research, one would expect a different effect of LOB employment share in high-barrier and low-barrier industries on local economic performance.

This essay's results indeed support H2 (LOB employment share in low-barrier industries has a negative impact on the local economic performance measures), and H3 (LOB employment share in high-barrier industries has a positive impact on the local economic performance measures), with exceptions. LOB employment share in (1) agriculture, forestry, fishing, and hunting, (2) real estate and rental and leasing, and (3) other services industries all have a negative effect on per capita income growth, while LOB employment share in the (1) utilities, (2) construction, (3) professional, scientific, and technical services, and (4) management of companies and enterprises industries have a positive effect on per capita income. Thus the relationship holds with the exception of construction, which has a statistically significant and positive effect on per capita income. Further, these regressions control for building permits issued and hence it is unlikely that this relationship can be attributed to more construction activity in an area. It may be that LOB tend to work high-skill jobs within the construction industry relative to other ethnicities.

This essay's results on the impact of LOB employment share on population growth rates also contribute to another stream of literature on immigrant and native flows. The LOB employment share in information, management of companies and enterprises, and other services industries all have a negative impact on population growth. This paper does not specify that the LOB must be immigrant-LOB, but over 1 in 3 Latinos in the U.S. are immigrants (Zong and Batalova 2015). Thus the results presented here partially contradict H4 (Immigrant inflows do not imply selective out-migration by natives). Though this paper similarly found no overall effect, breaking down the overall effect by industry share, this paper shows that there is a

statistically significant effect of LOB employment share that varies by industry. Further, most of the LOB employment share spatial lags' impact on population growth are also negative. Thus we can reject our fifth hypothesis (H5), that large concentrations of immigrants in surrounding areas reduce native out-mobility, and this essay does not support theoretical arguments related to the distance dependence of mobility.

Finally, it is again important to emphasize that Latino workers and LOB in the United States are not a monolithic group of low-wage migrants (Zarrugh 2007). Although this research broke down the impact of LOB by industry, future research may thus want to control for the LOB's country of origin and education levels, given availability of such data. Researchers may also want to control for potential interactions between employment under other ethnic groups and employment under LOB. Furthermore, just as disaggregating LOB employment across industries revealed significant impacts of LOB employment share in this paper, disaggregating LOB employment share further (to higher-digit NAICS codes) may reveal more impacts hidden by the aggregation to 2-digit NAICS coded industries. For example, this paper indicates that more details on the construction industry may be of interest to further investigate the supposed low and high-barrier industrial divide among LOB. That is, while the results indicate that LOB employment in the construction sector is positively related with per capita income growth, it is possible that the story may be more nuanced if the sector is more finely divided into higher-order and lower-order construction services. Such details may be useful to economic development practitioners. Finally, future research may want to interact rurality with LOB share variables; although this paper controlled for rurality, it may be that the impact of LOB in each industry varies nonlinearly with rurality.

APPENDIX

APPENDIX

Table A6. OLS Regressions of Economic Performance on LOB Employment Share Growth

NAICS Sector	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Employment under 11: Ag.,	0.00	0.00	0.00	0.00
Forestry, Fishing and Hunting	(0.00)	(0.00)	(0.00)	(0.00)
21: Mining, Quarrying, and Oil	0.00	0.00	-0.00	0.00
and Gas Extraction	(0.00)	(0.00)	(0.00)	(0.00)
22: Utilities	0.00*	0.00***	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
23: Construction	0.00	-0.00***	-0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
31-33: Manufacturing	-0.00***	0.00	0.00**	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
42: Wholesale Trade	-0.00	0.00	-0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
44-45: Retail Trade	-0.00	-0.00	0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
48-49: Transportation and	-0.00	0.00	0.00	0.00
Warehousing	(0.00)	(0.00)	(0.00)	(0.00)
51: Information	0.00	-0.00**	0.00**	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
52: Finance and Insurance	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
53: Real Estate, Rental &	0.00*	0.00*	-0.00	0.00
Leasing	(0.00)	(0.00)	(0.00)	(0.00)
54: Professional, Scientific, and	0.00**	0.00***	-0.00	0.00
Technical Services	(0.00)	(0.00)	(0.00)	(0.00)
55: Management of Companies	0.00	-0.00	0.00	0.00
and Enterprises	(0.00)	(0.00)	(0.00)	(0.00)
56: Administrative Support,	0.00	-0.00***	0.00	-0.00***
Waste Management and	(0.00)	(0.00)	(0.00)	(0.00)
Remediation Services				
61: Educational Services	-0.00*	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
62: Health Care, Social Assist.	0.00	0.00	0.00	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
71: Arts, Entertainment, and	-0.00	-0.00*	-0.00	-0.00
Recreation	(0.00)	(0.00)	(0.00)	(0.00)

Table A6. (cont'd)

NAICS Sector	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
72: Accommodation, Food Serv.	0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
81: Other Services	0.00	0.00**	0.00	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
% of establishments under 11:	-0.73	1.42**	0.22	1.08**
Ag., Forestry, Fishing, Hunting	(0.86)	(0.65)	(0.21)	(0.45)
21: Mining, Quarrying, and Oil	-0.21	1.75***	0.20	1.45***
and Gas Extraction	(0.87)	(0.65)	(0.21)	(0.44)
22: Utilities	-0.49	-0.00	0.49	0.22
	(1.37)	(1.17)	(0.45)	(0.81)
23: Construction	-0.80	2.05***	0.27	1.94***
	(0.86)	(0.65)	(0.21)	(0.45)
31-33: Manufacturing	-1.42	1.32**	0.32	1.43***
	(0.87)	(0.66)	(0.21)	(0.45)
42: Wholesale Trade	-0.43	1.71**	0.29	1.37***
	(0.90)	(0.69)	(0.22)	(0.47)
44-45: Retail Trade	-0.69	1.51**	0.25	1.36***
	(0.84)	(0.67)	(0.21)	(0.47)
48-49: Transportation and	-0.72	1.89***	0.25	1.66***
Warehousing	(0.90)	(0.68)	(0.21)	(0.45)
51: Information	0.44	1.83*	-0.00	1.04
	(1.19)	(1.01)	(0.27)	(0.73)
52: Finance and Insurance	-0.85	1.55**	0.22	1.40***
	(0.88)	(0.62)	(0.23)	(0.49)
53: Real Estate, Rental &	-0.36	2.25***	0.26	2.10***
Leasing	(0.85)	(0.65)	(0.21)	(0.45)
54: Professional, Scientific, and	-0.38	1.52**	0.17	1.61***
Technical Services	(0.87)	(0.63)	(0.21)	(0.44)
55: Management of Companies	1.09	2.53*	-0.16	-0.05
and Enterprises	(1.52)	(1.35)	(0.43)	(1.07)
56: Administrative Support,	-0.43	2.24***	0.28	1.99***
Waste Management and	(0.87)	(0.68)	(0.21)	(0.46)
Remediation Services				
61: Educational Services	-0.63	0.91	0.29	0.95
	(0.97)	(0.90)	(0.26)	(0.64)
62: Health Care, Social Assist.	-1.01	1.60**	0.29	1.52***
	(0.88)	(0.65)	(0.20)	(0.44)
71: Arts, Entertainment, and	-0.67	1.80***	0.21	1.54***
Recreation	(0.84)	(0.66)	(0.22)	(0.52)

Table A6. (cont'd)

NAICS Sector and States	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
72: Accommodation, Food Serv.	-0.25	1.76**	0.24	1.10**
	(0.94)	(0.71)	(0.22)	(0.47)
81: Other Services	-0.73	1.38**	0.23	1.31***
	(0.87)	(0.64)	(0.21)	(0.46)
Arizona	-0.04*	0.08*	0.01	0.06
	(0.02)	(0.04)	(0.01)	(0.04)
Arkansas	-0.04***	-0.03**	0.02***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
California	0.00	0.04*	-0.00	0.03
	(0.02)	(0.02)	(0.01)	(0.02)
Colorado	-0.03	-0.03	0.01**	-0.03**
	(0.02)	(0.02)	(0.01)	(0.02)
Connecticut	0.09***	0.03	-0.01**	-0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Delaware	-0.00	0.07**	0.00	0.13***
	(0.04)	(0.03)	(0.01)	(0.02)
District of Columbia	0.11	-0.04	-0.04*	-0.10
	(0.11)	(0.10)	(0.02)	(0.09)
Florida	-0.04***	0.08***	0.01**	0.10***
	(0.02)	(0.02)	(0.01)	(0.02)
Geogia	-0.06***	0.01	0.01***	0.05***
	(0.01)	(0.01)	(0.00)	(0.01)
Idaho	-0.09***	0.00	0.02**	0.01
	(0.02)	(0.02)	(0.01)	(0.02)
Illinois	-0.02*	-0.02	0.02***	-0.02*
	(0.01)	(0.02)	(0.00)	(0.01)
Indiana	-0.06***	-0.07***	0.02***	-0.05***
	(0.01)	(0.02)	(0.00)	(0.01)
Iowa	-0.01	-0.02	0.01**	-0.04***
	(0.02)	(0.02)	(0.01)	(0.01)
Kansas	-0.06***	-0.03*	0.01**	-0.06***
	(0.02)	(0.02)	(0.01)	(0.01)
Kentucky	-0.02	-0.03**	0.02***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Louisiana	0.06***	0.02	-0.01**	-0.01
	(0.02)	(0.02)	(0.01)	(0.02)
Maine	-0.01	0.01	0.01	0.01
	(0.02)	(0.02)	(0.01)	(0.02)
Maryland	0.08***	0.04**	-0.02***	0.01
	(0.02)	(0.02)	(0.01)	(0.02)

Table A6. (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Massachusetts	0.06*	-0.01	-0.01**	-0.04**
	(0.03)	(0.02)	(0.01)	(0.02)
Michigan	-0.09***	-0.11***	0.03***	-0.08***
	(0.01)	(0.02)	(0.01)	(0.01)
Minnesota	-0.01	0.00	0.01***	-0.02*
	(0.02)	(0.02)	(0.01)	(0.01)
Mississippi	-0.03**	-0.03*	0.01***	-0.01
	(0.01)	(0.02)	(0.00)	(0.01)
Missouri	-0.04***	0.00	0.01**	0.00
	(0.01)	(0.01)	(0.00)	(0.01)
Montana	-0.03*	0.02	0.01	0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Nebraska	-0.04**	-0.01	0.01**	-0.03**
	(0.02)	(0.02)	(0.01)	(0.01)
Nevada	-0.03	0.05	0.02*	0.06
	(0.04)	(0.03)	(0.01)	(0.04)
New Hampshire	0.00	-0.00	-0.00	-0.04**
	(0.02)	(0.02)	(0.01)	(0.02)
New Jersey	0.05***	-0.04*	-0.00	-0.07***
	(0.02)	(0.02)	(0.01)	(0.02)
New Mexico	-0.03	0.03	-0.00	0.02
	(0.03)	(0.03)	(0.01)	(0.02)
New York	-0.01	-0.00	0.00	-0.02
	(0.02)	(0.02)	(0.01)	(0.01)
North Carolina	-0.03**	-0.01	0.02***	0.04***
	(0.01)	(0.01)	(0.00)	(0.01)
North Dakota	0.06***	0.02	0.00	-0.04**
	(0.02)	(0.02)	(0.01)	(0.02)
Ohio	-0.05***	-0.06***	0.02***	-0.05***
	(0.01)	(0.02)	(0.01)	(0.01)
Oklahoma	-0.04**	0.01	0.01	0.01
	(0.02)	(0.02)	(0.01)	(0.01)
Oregon	-0.05***	0.01	0.02***	0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Pennsylvania	-0.02	0.00	-0.00	-0.01
	(0.02)	(0.02)	(0.01)	(0.01)
Rhode Island	0.05***	-0.04*	-0.02***	-0.10***
	(0.02)	(0.03)	(0.01)	(0.02)
South Carolina	-0.04***	-0.01	0.02***	0.04***
	(0.01)	(0.02)	(0.01)	(0.01)

Table A6. (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
South Dakota	0.01	0.01	0.01	-0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Tennessee	-0.03**	-0.04***	0.02***	0.00
	(0.01)	(0.01)	(0.00)	(0.01)
Texas	-0.03*	0.03**	0.01	0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Utah	-0.07***	-0.01	-0.01	0.01
	(0.03)	(0.03)	(0.01)	(0.02)
Vermont	0.00	-0.02	-0.00	-0.05***
	(0.02)	(0.02)	(0.01)	(0.02)
Virginia	0.03***	0.01	-0.01*	0.01
	(0.01)	(0.02)	(0.00)	(0.01)
Washington	-0.04**	0.04*	0.02***	0.06***
	(0.02)	(0.02)	(0.01)	(0.02)
West Virginia	-0.04**	0.02	0.00	0.01
	(0.02)	(0.02)	(0.01)	(0.01)
Wisconsin	-0.03**	-0.01	0.02***	-0.02
	(0.02)	(0.02)	(0.01)	(0.01)
Wyoming	0.04*	0.08***	-0.02**	0.06**
	(0.02)	(0.03)	(0.01)	(0.02)

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A7. OLS Regression of Economic Performance on 2002 LOB Employment Share

County Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
LOB employment share	0.01	0.05	-0.01	-0.04
	(0.07)	(0.06)	(0.04)	(0.04)
Per capita income	-0.00***	-0.00***	-0.00***	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Employment	-0.00	-0.00***	0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Poverty rate	0.30***	-0.05	-0.48***	-0.13*
	(0.08)	(0.09)	(0.03)	(0.07)
Population	0.00	-0.00	-0.00***	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Population squared	-0.00	-0.00	0.00***	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Population density	0.00**	-0.00	-0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Average household size	0.10***	0.12***	-0.00	0.06***
	(0.02)	(0.02)	(0.01)	(0.02)
% of households headed by single female	-0.59***	-0.39***	0.29***	-0.48***
	(0.08)	(0.09)	(0.03)	(0.07)
Median age	0.03***	-0.01*	-0.01***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Median age squared	-0.00***	0.00*	0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Female population	-0.00	0.00*	0.00***	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Female population squared	0.00	0.00	-0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asian population	-0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asian population squared	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Black population	-0.00	-0.00*	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Black population squared	-0.00	0.00	0.00***	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population	-0.00**	0.00	0.00*	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population squared	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)

Table A7. (cont'd)

County Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
% with education: high school	0.32***	0.12*	-0.09***	0.03
	(0.07)	(0.07)	(0.02)	(0.05)
Some college	0.37***	0.24***	-0.09***	0.19**
	(0.08)	(0.09)	(0.03)	(0.07)
Associates degree	0.75***	0.18	-0.21***	-0.19
	(0.16)	(0.15)	(0.05)	(0.12)
Bachelor's degree	0.78***	0.59***	-0.11***	0.35**
	(0.12)	(0.13)	(0.03)	(0.14)
Graduate school degree	0.69***	0.20	0.08*	0.15
	(0.15)	(0.19)	(0.05)	(0.15)
% owner's education: high school	-0.09**	0.02	0.02	0.02
	(0.04)	(0.03)	(0.01)	(0.02)
Some college	-0.08**	0.01	-0.01	0.04*
	(0.04)	(0.04)	(0.01)	(0.03)
Trade school degree	0.04	0.01	-0.01	-0.07*
	(0.04)	(0.04)	(0.01)	(0.04)
Associates degree	-0.09	0.04	0.00	0.02
	(0.06)	(0.06)	(0.02)	(0.05)
Bachelor's degree	-0.09**	0.02	-0.00	-0.02
	(0.04)	(0.05)	(0.02)	(0.04)
Graduate school degree	0.02	0.06	-0.03*	0.02
	(0.05)	(0.05)	(0.02)	(0.04)
Taxes per capita	-0.00*	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Education spending	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Highway spending	0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Labor force participation rate	0.24***	-0.14**	-0.04***	-0.02
	(0.04)	(0.06)	(0.01)	(0.05)
Build permits	-0.00**	0.00***	0.00	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)

Table A7. (cont'd)

County Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Amenities	-0.00	-0.01***	0.00*	-0.01**
	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 2	-0.01	-0.01*	0.00	-0.02**
Metro area, 0.25 to 1 million pop.	(0.00)	(0.01)	(0.00)	(0.01)
Rural-urban code 3	-0.02***	-0.01	0.00	-0.02**
Metro area, < 250,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 4	-0.03***	-0.03***	0.01***	-0.03***
Adjacent to metro, ≥ 20,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 5	-0.02**	-0.01	0.01**	-0.02**
Not adjacent to metro, ≥ 20,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 6	-0.03***	-0.02**	0.01***	-0.02***
Adjacent to metro, 2,500-19,999	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 7	-0.02***	-0.02**	0.01***	-0.03***
Not adjacent to metro, 2,500-19,999	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 8	-0.03***	-0.02**	0.01***	-0.02**
Adjacent to a metro, < 2,500	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 9	-0.03***	-0.02**	0.01***	-0.02**
Not adjacent to a metro, < 2,500	(0.01)	(0.01)	(0.00)	(0.01)

Table A7. (cont'd)

NAICS Sector	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Employment under 11:	0.00	0.00	0.00	0.00
Ag., Forestry, Fishing, Hunting	(0.00)	(0.00)	(0.00)	(0.00)
21: Mining, Quarrying, and	0.00	0.00	-0.00	0.00
Oil and Gas Extraction	(0.00)	(0.00)	(0.00)	(0.00)
22: Utilities	0.00*	0.00***	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
23: Construction	0.00	-0.00***	-0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
31-33: Manufacturing	-0.00***	0.00	0.00**	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
42: Wholesale Trade	-0.00	0.00	-0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
44-45: Retail Trade	-0.00*	-0.00	0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
48-49: Transportation and	-0.00	0.00	0.00	0.00
Warehousing	(0.00)	(0.00)	(0.00)	(0.00)
51: Information	0.00	-0.00**	0.00**	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
52: Finance and Insurance	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
53: Real Estate, Rental &	0.00*	0.00*	-0.00	0.00
Leasing	(0.00)	(0.00)	(0.00)	(0.00)
54: Professional, Scientific, and	0.00**	0.00***	-0.00	0.00
Technical Services	(0.00)	(0.00)	(0.00)	(0.00)
55: Management of Companies	0.00	-0.00	0.00	0.00
and Enterprises	(0.00)	(0.00)	(0.00)	(0.00)
56: Administrative Support,	0.00	-0.00***	0.00	-0.00***
Waste Management and	(0.00)	(0.00)	(0.00)	(0.00)
Remediation Services				
61: Educational Services	-0.00*	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
62: Health Care, Social Assist.	0.00	0.00	0.00	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
71: Arts, Entertainment, and	-0.00	-0.00*	-0.00	-0.00
Recreation	(0.00)	(0.00)	(0.00)	(0.00)
72: Accommodation, Food Serv.	0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
81: Other Services	0.00	0.00**	0.00	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)

Table A7. (cont'd)

NAICS Sector Employment	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
% of establishments under 11:	-0.74	1.41**	0.22	1.09**
Ag., Forestry, Fishing, Hunting	(0.86)	(0.65)	(0.21)	(0.46)
21: Mining, Quarrying, and	-0.21	1.73***	0.21	1.46***
Oil and Gas Extraction	(0.87)	(0.65)	(0.21)	(0.44)
22: Utilities	-0.50	-0.05	0.49	0.25
	(1.37)	(1.17)	(0.45)	(0.82)
23: Construction	-0.80	2.04***	0.27	1.95***
	(0.85)	(0.65)	(0.21)	(0.45)
31-33: Manufacturing	-1.42	1.33**	0.33	1.42***
	(0.87)	(0.65)	(0.21)	(0.45)
42: Wholesale Trade	-0.43	1.71**	0.30	1.38***
	(0.90)	(0.69)	(0.21)	(0.47)
44-45: Retail Trade	-0.69	1.50**	0.25	1.37***
	(0.84)	(0.66)	(0.21)	(0.47)
48-49: Transportation and	-0.72	1.87***	0.26	1.68***
Warehousing	(0.90)	(0.67)	(0.21)	(0.45)
51: Information	0.44	1.82*	0.00	1.05
	(1.19)	(1.01)	(0.27)	(0.73)
52: Finance and Insurance	-0.85	1.54**	0.22	1.41***
	(0.88)	(0.62)	(0.23)	(0.49)
53: Real Estate, Rental &	-0.36	2.24***	0.27	2.11***
Leasing	(0.85)	(0.65)	(0.21)	(0.45)
54: Professional, Scientific, and	-0.38	1.51**	0.17	1.61***
Technical Services	(0.87)	(0.62)	(0.21)	(0.45)
55: Management of Companies	1.08	2.51*	-0.16	-0.04
and Enterprises	(1.52)	(1.35)	(0.43)	(1.07)
56: Administrative Support,	-0.43	2.22***	0.29	2.01***
Waste Management and	(0.87)	(0.68)	(0.21)	(0.46)
Remediation Services				
61: Educational Services	-0.62	0.91	0.29	0.95
	(0.97)	(0.90)	(0.26)	(0.64)
62: Health Care, Social Assist.	-1.01	1.59**	0.29	1.53***
	(0.88)	(0.65)	(0.20)	(0.44)
71: Arts, Entertainment, and	-0.67	1.77***	0.22	1.56***
Recreation	(0.83)	(0.66)	(0.21)	(0.52)
72: Accommodation, Food Serv.	-0.26	1.73**	0.24	1.12**
	(0.94)	(0.71)	(0.22)	(0.47)
81: Other Services	-0.73	1.36**	0.23	1.33***
	(0.87)	(0.64)	(0.21)	(0.47)

Table A7. (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Arizona	-0.04*	0.08*	0.01	0.06
	(0.02)	(0.04)	(0.01)	(0.04)
Arkansas	-0.04***	-0.03**	0.02***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
California	0.00	0.04*	-0.00	0.03
	(0.02)	(0.02)	(0.01)	(0.02)
Colorado	-0.03	-0.04*	0.01**	-0.03**
	(0.02)	(0.02)	(0.01)	(0.02)
Connecticut	0.09***	0.03	-0.01**	-0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Delaware	-0.00	0.07**	0.00	0.13***
	(0.04)	(0.03)	(0.01)	(0.02)
District of Columbia	0.11	-0.04	-0.04*	-0.10
	(0.11)	(0.10)	(0.02)	(0.09)
Florida	-0.04***	0.08***	0.01**	0.10***
	(0.02)	(0.02)	(0.01)	(0.02)
Geogia	-0.06***	0.01	0.01***	0.05***
	(0.01)	(0.01)	(0.00)	(0.01)
Idaho	-0.09***	0.00	0.02***	0.01
	(0.02)	(0.02)	(0.01)	(0.02)
Illinois	-0.02*	-0.02	0.02***	-0.02*
	(0.01)	(0.02)	(0.00)	(0.01)
Indiana	-0.06***	-0.07***	0.02***	-0.05***
	(0.01)	(0.02)	(0.00)	(0.01)
Iowa	-0.01	-0.03	0.01**	-0.04***
	(0.02)	(0.02)	(0.01)	(0.01)
Kansas	-0.06***	-0.03**	0.01**	-0.05***
	(0.02)	(0.02)	(0.01)	(0.01)
Kentucky	-0.02	-0.03**	0.02***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Louisiana	0.06***	0.02	-0.01**	-0.01
	(0.02)	(0.02)	(0.01)	(0.02)
Maine	-0.01	0.01	0.01	0.01
	(0.02)	(0.02)	(0.01)	(0.02)
Maryland	0.08***	0.04**	-0.02***	0.01
	(0.02)	(0.02)	(0.01)	(0.02)
Massachusetts	0.06*	-0.01	-0.01**	-0.04**
	(0.03)	(0.02)	(0.01)	(0.02)
Michigan	-0.09***	-0.11***	0.03***	-0.08***
	(0.01)	(0.02)	(0.01)	(0.01)

Table A7. (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Minnesota	-0.01	0.00	0.01***	-0.02*
	(0.02)	(0.02)	(0.01)	(0.01)
Mississippi	-0.03**	-0.03*	0.01***	-0.01
	(0.01)	(0.02)	(0.00)	(0.01)
Missouri	-0.04***	0.00	0.01***	0.00
	(0.01)	(0.01)	(0.00)	(0.01)
Montana	-0.03*	0.01	0.01	0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Nebraska	-0.04**	-0.01	0.01**	-0.03**
	(0.02)	(0.02)	(0.01)	(0.01)
Nevada	-0.03	0.05	0.02*	0.06
	(0.04)	(0.03)	(0.01)	(0.04)
New Hampshire	0.00	-0.00	-0.00	-0.04**
	(0.02)	(0.02)	(0.01)	(0.02)
New Jersey	0.05***	-0.04*	-0.00	-0.07***
	(0.02)	(0.02)	(0.01)	(0.02)
New Mexico	-0.03	0.02	-0.00	0.02
	(0.03)	(0.03)	(0.01)	(0.02)
New York	-0.01	-0.01	0.00	-0.02
	(0.02)	(0.02)	(0.01)	(0.01)
North Carolina	-0.03**	-0.01	0.02***	0.04***
	(0.01)	(0.01)	(0.00)	(0.01)
North Dakota	0.06***	0.02	0.00	-0.04**
	(0.02)	(0.02)	(0.01)	(0.02)
Ohio	-0.06***	-0.06***	0.02***	-0.05***
	(0.01)	(0.02)	(0.01)	(0.01)
Oklahoma	-0.04**	0.01	0.01*	0.01
	(0.02)	(0.02)	(0.01)	(0.01)
Oregon	-0.05***	0.01	0.02***	0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Pennsylvania	-0.02	0.00	-0.00	-0.01
	(0.02)	(0.02)	(0.01)	(0.01)
Rhode Island	0.05***	-0.05*	-0.02***	-0.10***
	(0.02)	(0.03)	(0.01)	(0.02)
South Carolina	-0.04***	-0.01	0.02***	0.04***
	(0.01)	(0.02)	(0.01)	(0.01)
South Dakota	0.01	0.01	0.01	-0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Tennessee	-0.03**	-0.04***	0.02***	0.00
	(0.01)	(0.01)	(0.00)	(0.01)

Table A7. (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Texas	-0.03*	0.03**	0.01	0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Utah	-0.07***	-0.01	-0.01	0.01
	(0.03)	(0.03)	(0.01)	(0.02)
Vermont	0.00	-0.02	-0.00	-0.05***
	(0.02)	(0.02)	(0.01)	(0.02)
Virginia	0.03***	0.01	-0.01*	0.01
	(0.01)	(0.02)	(0.00)	(0.01)
Washington	-0.04**	0.04*	0.02***	0.06***
	(0.02)	(0.02)	(0.01)	(0.02)
West Virginia	-0.04**	0.02	0.00	0.01
	(0.02)	(0.02)	(0.01)	(0.01)
Wisconsin	-0.03**	-0.01	0.02***	-0.01
	(0.02)	(0.02)	(0.01)	(0.01)
Wyoming	0.04*	0.08***	-0.01**	0.06**
	(0.02)	(0.03)	(0.01)	(0.02)
Constant	-0.22	-1.56**	0.09	-1.21**
	(0.87)	(0.66)	(0.21)	(0.48)
Observations	~3,100	~3,100	~3,100	~3,100
R^2	0.48	0.49	0.43	0.64

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A8. OLS Regressions of Economic Performance on 2002 Industry LOB Employment Share

NAICS Sector	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
LOB share in 11: Agriculture,	-0.01	0.05**	0.00	0.02
Forestry, Fishing and Hunting	(0.02)	(0.02)	(0.01)	(0.02)
21: Mining, Quarrying, and	0.02	-0.05	0.02	-0.03
Oil and Gas Extraction	(0.03)	(0.03)	(0.01)	(0.03)
22: Utilities	0.16*	-0.08	-0.08***	-0.13
	(0.09)	(0.13)	(0.03)	(0.13)
23: Construction	0.04	-0.02	0.00	-0.02
	(0.03)	(0.03)	(0.01)	(0.02)
31-33: Manufacturing	-0.04	-0.00	-0.01	0.02
	(0.04)	(0.04)	(0.02)	(0.03)
42: Wholesale Trade	0.06	0.02	0.00	0.03
	(0.06)	(0.06)	(0.01)	(0.05)
44-45: Retail Trade	0.04	0.07	0.03	0.02
	(0.07)	(0.06)	(0.04)	(0.03)
48-49: Transportation and	-0.00	0.00	0.00	0.01
Warehousing	(0.02)	(0.03)	(0.01)	(0.02)
51: Information	0.01	-0.10	-0.03*	-0.19**
	(0.04)	(0.08)	(0.02)	(0.08)
52: Finance and Insurance	-0.07	-0.03	-0.03	-0.06*
	(0.06)	(0.05)	(0.04)	(0.04)
53: Real Estate, Rental &	-0.05*	-0.07**	0.02**	-0.02
Leasing	(0.03)	(0.03)	(0.01)	(0.03)
54: Professional, Scientific, and	0.08***	0.02	0.00	-0.04
Technical Services	(0.03)	(0.03)	(0.01)	(0.03)
55: Management of Companies	0.12***	0.06	-0.01	-0.05
and Enterprises	(0.03)	(0.05)	(0.01)	(0.03)
56: Administrative Support,	0.03	-0.01	-0.02	-0.01
Waste Management and	(0.04)	(0.05)	(0.01)	(0.02)
Remediation Services				
61: Educational Services	0.00	-0.10	-0.01*	0.00
	(0.03)	(0.11)	(0.01)	(0.04)
62: Health Care, Social Assist.	-0.00	0.02	-0.02	-0.03*
	(0.06)	(0.03)	(0.02)	(0.02)
71: Arts, Entertainment, and	0.02	0.05	-0.00	0.01
Recreation	(0.02)	(0.03)	(0.01)	(0.02)
72: Accommodation, Food Serv.	0.00	0.02	-0.00	0.00
	(0.03)	(0.02)	(0.01)	(0.02)
81: Other Services	-0.04	-0.01	0.01	-0.02
	(0.03)	(0.03)	(0.01)	(0.02)

Table A8. (cont'd)

County Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Per capita income	-0.00***	-0.00***	-0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Employment	-0.00	-0.00**	0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Poverty rate	0.29***	-0.07	-0.48***	-0.14*
	(0.09)	(0.09)	(0.03)	(0.07)
Population	0.00	-0.00	-0.00***	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Population squared	0.00	-0.00	0.00***	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Population density	0.00**	-0.00	-0.00	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Average household size	0.10***	0.12***	-0.00	0.06***
	(0.02)	(0.02)	(0.01)	(0.02)
% headed by single female	-0.59***	-0.38***	0.29***	-0.47***
	(0.08)	(0.09)	(0.03)	(0.07)
Median age	0.03***	-0.01*	-0.01***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Median age squared	-0.00***	0.00	0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Female population	-0.00	0.00*	0.00***	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Female population squared	-0.00	0.00	-0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asian population	-0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asian population squared	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Black population	0.00	-0.00*	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Black population squared	-0.00	0.00	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population	-0.00***	0.00*	0.00*	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population squared	-0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)

Table A8. (cont'd)

County Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
% with education: High school	0.30***	0.14**	-0.07***	0.04
	(0.07)	(0.07)	(0.02)	(0.05)
Some college	0.35***	0.25***	-0.08***	0.21***
	(0.08)	(0.08)	(0.03)	(0.07)
Associates degree	0.74***	0.24	-0.21***	-0.16
	(0.16)	(0.15)	(0.05)	(0.12)
Bachelor's degree	0.74***	0.59***	-0.11***	0.33**
	(0.12)	(0.13)	(0.03)	(0.14)
graduate school degree	0.72***	0.23	0.06	0.16
	(0.15)	(0.18)	(0.04)	(0.15)
% owner's education: High school	0.00	0.00*	-0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Some college	0.00*	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Trade school degree	0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Associates degree	0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Bachelor's degree	-0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Graduate school degree	0.00*	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Taxes per capita	-0.00	-0.00	0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Education spending	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Highway spending	0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Labor force participation rate	0.25***	-0.14**	-0.04***	-0.03
	(0.04)	(0.07)	(0.01)	(0.05)
Build permits	-0.00*	0.00***	0.00	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)

Table A8. (cont'd)

County Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Amenities	-0.00	-0.01***	0.00*	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Rural-urban code 2	-0.01	-0.02*	0.00	-0.02**
Metro area, 0.25 to 1 million pop.	(0.00)	(0.01)	(0.00)	(0.01)
Rural-urban code 3	-0.02***	-0.01	0.00	-0.02**
Metro area, < 250,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 4	-0.03***	-0.03***	0.01***	-0.03***
Adjacent to metro, ≥ 20,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 5	-0.02***	-0.01	0.01**	-0.02**
Not adjacent to metro, ≥ 20,000	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 6	-0.03***	-0.02**	0.01***	-0.02***
Adjacent to metro, 2,500-19,999	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 7	-0.02***	-0.02**	0.01***	-0.03***
Not adjacent to metro, 2,500-19,999	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 8	-0.03***	-0.02*	0.01***	-0.02*
Adjacent to a metro, < 2,500	(0.01)	(0.01)	(0.00)	(0.01)
Rural-urban code 9	-0.03***	-0.02**	0.01***	-0.02**
Not adjacent to a metro, < 2,500	(0.01)	(0.01)	(0.00)	(0.01)

Table A8. (cont'd)

NAICS Sector	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Employment under 11: Ag., Forestry, Fishing, Hunting	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
21: Mining, Quarrying, and Oil and Gas Extraction	0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
22: Utilities	0.00*	0.00***	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
23: Construction	-0.00	-0.00***	0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
31-33: Manufacturing	-0.00***	0.00	0.00**	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
42: Wholesale Trade	-0.00	0.00	-0.00*	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
44-45: Retail Trade	-0.00*	-0.00	0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
48-49: Transportation and Warehousing	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
51: Information	0.00	-0.00**	0.00**	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
52: Finance and Insurance	-0.00*	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
53: Real Estate, Rental & Leasing	0.00	0.00*	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
54: Professional, Scientific, and Technical Services	0.00	0.00***	-0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
55: Management of Companies and Enterprises	0.00	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
56: Administrative Support, Waste Management and Remediation Services	0.00	-0.00**	-0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
61: Educational Services	-0.00*	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
62: Health Care, Social Assist.	0.00	0.00	0.00	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
71: Arts, Entertainment, and Recreation	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
72: Accommodation, Food Serv.	-0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
81: Other Services	0.00	0.00*	0.00	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)

Table A8. (cont'd)

NAICS Sector	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
% establishments under 11: Ag.,	-0.89	1.48**	0.22	1.12**
Forestry, Fishing, Hunting	(0.93)	(0.63)	(0.21)	(0.47)
21: Mining, Quarrying, and	-0.38	1.81***	0.21	1.50***
Oil and Gas Extraction	(0.94)	(0.64)	(0.21)	(0.45)
22: Utilities	-0.62	-0.07	0.40	0.20
	(1.46)	(1.18)	(0.40)	(0.82)
23: Construction	-0.95	2.12***	0.27	2.00***
	(0.93)	(0.63)	(0.21)	(0.46)
31-33: Manufacturing	-1.61*	1.37**	0.33	1.49***
	(0.94)	(0.65)	(0.21)	(0.47)
42: Wholesale Trade	-0.60	1.77***	0.28	1.41***
	(0.97)	(0.68)	(0.21)	(0.48)
44-45: Retail Trade	-0.84	1.58**	0.26	1.40***
	(0.92)	(0.65)	(0.21)	(0.49)
48-49: Transportation and	-0.86	1.95***	0.26	1.70***
Warehousing	(0.97)	(0.67)	(0.21)	(0.47)
51: Information	0.28	1.87*	-0.00	1.10
	(1.26)	(1.00)	(0.27)	(0.75)
52: Finance and Insurance	-0.99	1.65***	0.20	1.46***
	(0.96)	(0.61)	(0.23)	(0.50)
53: Real Estate, Rental &	-0.49	2.31***	0.25	2.11***
Leasing	(0.92)	(0.64)	(0.21)	(0.46)
54: Professional, Scientific, and	-0.50	1.61***	0.16	1.65***
Technical Services	(0.94)	(0.61)	(0.21)	(0.45)
55: Management of Companies	1.07	2.58**	-0.19	0.11
and Enterprises	(1.61)	(1.31)	(0.43)	(1.07)
56: Administrative Support,	-0.56	2.28***	0.29	2.06***
Waste Management and	(0.95)	(0.66)	(0.21)	(0.47)
Remediation Services				
61: Educational Services	-0.79	1.00	0.31	0.99
	(1.04)	(0.88)	(0.26)	(0.65)
62: Health Care, Social Assist.	-1.17	1.65**	0.28	1.56***
	(0.95)	(0.64)	(0.20)	(0.45)
71: Arts, Entertainment, and	-0.88	1.85***	0.21	1.59***
Recreation	(0.90)	(0.65)	(0.21)	(0.53)
72: Accommodation, Food Serv.	-0.40	1.82***	0.24	1.19**
	(1.02)	(0.70)	(0.22)	(0.48)
81: Other Services	-0.87	1.42**	0.23	1.34***
	(0.94)	(0.63)	(0.21)	(0.48)

Table A8. (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Arizona	-0.05**	0.08*	0.01	0.07
	(0.02)	(0.04)	(0.01)	(0.05)
Arkansas	-0.04***	-0.03*	0.02***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
California	-0.00	0.03	-0.00	0.03
	(0.02)	(0.02)	(0.01)	(0.02)
Colorado	-0.03*	-0.03	0.01**	-0.03*
	(0.02)	(0.02)	(0.01)	(0.02)
Connecticut	0.09***	0.03	-0.01**	-0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Delaware	-0.00	0.07**	0.00	0.14***
	(0.04)	(0.03)	(0.01)	(0.02)
District of Columbia	0.09	-0.02	-0.03	-0.09
	(0.11)	(0.10)	(0.02)	(0.09)
Florida	-0.05***	0.08***	0.01*	0.11***
	(0.02)	(0.02)	(0.01)	(0.02)
Geogia	-0.06***	0.01	0.01***	0.05***
	(0.01)	(0.01)	(0.00)	(0.01)
Idaho	-0.10***	0.01	0.02***	0.01
	(0.02)	(0.02)	(0.01)	(0.02)
Illinois	-0.03**	-0.02	0.02***	-0.02
	(0.01)	(0.02)	(0.00)	(0.01)
Indiana	-0.06***	-0.07***	0.02***	-0.05***
	(0.01)	(0.02)	(0.00)	(0.01)
Iowa	-0.02	-0.02	0.01**	-0.04***
	(0.02)	(0.02)	(0.01)	(0.01)
Kansas	-0.06***	-0.03**	0.01**	-0.05***
	(0.02)	(0.02)	(0.01)	(0.01)
Kentucky	-0.02	-0.03**	0.02***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Louisiana	0.06***	0.02	-0.01**	-0.01
	(0.02)	(0.02)	(0.01)	(0.02)
Maine	-0.01	0.01	0.01	0.01
	(0.02)	(0.02)	(0.01)	(0.02)
Maryland	0.08***	0.04**	-0.02***	0.01
	(0.02)	(0.02)	(0.01)	(0.02)

Table A8. (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Massachusetts	0.06*	-0.01	-0.02***	-0.04*
	(0.03)	(0.02)	(0.01)	(0.02)
Michigan	-0.10***	-0.11***	0.03***	-0.08***
	(0.01)	(0.02)	(0.01)	(0.01)
Minnesota	-0.01	0.01	0.01***	-0.03**
	(0.02)	(0.02)	(0.01)	(0.01)
Mississippi	-0.03*	-0.03*	0.01**	-0.01
	(0.01)	(0.02)	(0.01)	(0.01)
Missouri	-0.05***	0.00	0.01**	0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Montana	-0.03*	0.02	0.01	0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Nebraska	-0.05***	-0.01	0.01**	-0.03**
	(0.02)	(0.02)	(0.01)	(0.01)
Nevada	-0.03	0.04	0.02*	0.06
	(0.04)	(0.03)	(0.01)	(0.04)
New Hampshire	0.00	-0.01	-0.00	-0.04**
	(0.02)	(0.02)	(0.01)	(0.02)
New Jersey	0.05***	-0.04*	-0.01	-0.07***
	(0.02)	(0.02)	(0.01)	(0.02)
New Mexico	-0.04	0.02	-0.01	0.02
	(0.03)	(0.03)	(0.01)	(0.02)
New York	-0.01	-0.00	0.00	-0.02
	(0.02)	(0.02)	(0.01)	(0.01)
North Carolina	-0.03***	-0.00	0.02***	0.05***
	(0.01)	(0.01)	(0.00)	(0.01)
North Dakota	0.06**	0.02	0.00	-0.04**
	(0.02)	(0.02)	(0.01)	(0.02)
Ohio	-0.06***	-0.06***	0.02***	-0.05***
	(0.01)	(0.02)	(0.01)	(0.01)
Oklahoma	-0.04**	0.00	0.01	0.01
	(0.02)	(0.02)	(0.01)	(0.01)
Oregon	-0.05***	0.01	0.02***	0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Pennsylvania	-0.02	0.00	-0.00	-0.01
	(0.02)	(0.02)	(0.01)	(0.01)
Rhode Island	0.05***	-0.05*	-0.02***	-0.10***
	(0.02)	(0.02)	(0.01)	(0.02)
South Carolina	-0.04***	-0.01	0.02***	0.04***
	(0.01)	(0.02)	(0.01)	(0.01)

Table A8. (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
South Dakota	0.01	0.01	0.00	-0.02
	(0.02)	(0.02)	(0.01)	(0.02)
Tennessee	-0.03**	-0.04***	0.02***	0.00
	(0.01)	(0.01)	(0.00)	(0.01)
Texas	-0.03**	0.03**	0.01	0.02*
	(0.01)	(0.01)	(0.00)	(0.01)
Utah	-0.07**	-0.01	-0.01	0.01
	(0.03)	(0.03)	(0.01)	(0.02)
Vermont	-0.00	-0.01	-0.00	-0.05***
	(0.02)	(0.02)	(0.01)	(0.02)
Virginia	0.03**	0.01	-0.01*	0.01
	(0.01)	(0.02)	(0.00)	(0.01)
Washington	-0.04**	0.04*	0.02***	0.06***
	(0.02)	(0.02)	(0.01)	(0.02)
West Virginia	-0.04**	0.03	0.00	0.01
	(0.02)	(0.02)	(0.01)	(0.01)
Wisconsin	-0.04**	-0.01	0.02***	-0.02
	(0.02)	(0.02)	(0.01)	(0.01)
Wyoming	0.03*	0.08***	-0.01**	0.06**
	(0.02)	(0.03)	(0.01)	(0.02)
Constant	-0.08	-1.63**	0.09	-1.24**
	(0.94)	(0.65)	(0.21)	(0.49)
Observations	~3,100	~3,100	~3,100	~3,100
R^2	0.48	0.49	0.43	0.64

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table A9. SDM Regression of Economic Performance on 2002 Industry LOB Employment Share

County Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Per capita income	-0.00***	-0.00*	-0.00***	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Employment	-0.00***	-0.00***	0.00***	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Poverty rate	0.31***	-0.07	-0.49***	-0.12*
	(0.08)	(0.09)	(0.03)	(0.07)
Population	0.00	-0.00*	-0.00**	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Population squared	-0.00*	-0.00	0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Population density	-0.00**	-0.00	0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Average household size	0.07***	0.11***	0.01**	0.05***
	(0.02)	(0.02)	(0.01)	(0.02)
% headed by single female	-0.69***	-0.39***	0.34***	-0.50***
	(0.09)	(0.10)	(0.03)	(0.08)
Median age	0.03***	-0.01	-0.01***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Median age squared	-0.00***	0.00	0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Female population	-0.00	0.00**	0.00	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Female population squared	0.00*	0.00	-0.00***	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asian population	-0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asian population squared	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Black population	-0.00*	-0.00**	-0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Black population squared	-0.00	0.00	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population	-0.00***	0.00	0.00***	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population squared	-0.00	-0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)

Table A9. (cont'd)

County Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
% owner's education: high school	-0.04	0.06*	0.01	0.04*
	(0.03)	(0.03)	(0.01)	(0.02)
Some college	-0.08**	0.01	-0.00	0.05**
	(0.04)	(0.04)	(0.01)	(0.03)
Trade school degree	0.04	0.04	-0.01	-0.04
	(0.04)	(0.04)	(0.01)	(0.03)
Associates degree	-0.04	0.08	-0.00	0.04
	(0.06)	(0.06)	(0.02)	(0.05)
Bachelor's degree	-0.07*	0.06	-0.00	0.02
	(0.04)	(0.04)	(0.01)	(0.04)
Graduate school degree	0.05	0.06	-0.04**	0.02
	(0.05)	(0.05)	(0.02)	(0.04)
Taxes per capita	-0.00	0.00	0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Education spending	-0.00*	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Highway spending	0.00*	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Labor force participation rate	0.28***	-0.10	-0.04***	0.01
	(0.04)	(0.07)	(0.01)	(0.05)
Build permits	-0.00	0.00***	-0.00*	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)

Table A9. (cont'd)

NAICS Sector	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Employment under 11: Ag., Forestry, Fishing, Hunting	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
21: Mining, Quarrying, and Oil and Gas Extraction	0.00	0.00**	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
22: Utilities	0.00**	0.00***	-0.00**	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
23: Construction	-0.00	-0.00***	0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
31-33: Manufacturing	-0.00***	-0.00	0.00**	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
42: Wholesale Trade	-0.00	0.00	-0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
44-45: Retail Trade	-0.00*	-0.00	0.00**	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
48-49: Transportation and Warehousing	0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
51: Information	0.00	-0.00***	0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
52: Finance and Insurance	0.00	0.00	0.00	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
53: Real Estate, Rental & Leasing	0.00***	0.00*	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
54: Professional, Scientific, and Technical Services	0.00**	0.00***	-0.00*	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
55: Management of Companies and Enterprises	0.00**	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
56: Administrative Support, Waste Management and Remediation Services	-0.00	-0.00***	0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
61: Educational Services	-0.00*	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
62: Health Care, Social Assist.	0.00	0.00	0.00	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
71: Arts, Entertainment, and Recreation	-0.00	-0.00**	-0.00	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
72: Accommodation, Food Serv.	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
81: Other Services	0.00	0.00***	-0.00	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)

Table A9. (cont'd)

NAICS Sector	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
% establishments under 11: Ag.,	-0.99	0.97	0.23	0.57
Forestry, Fishing, Hunting	(0.78)	(0.62)	(0.20)	(0.45)
21: Mining, Quarrying, and	-0.43	1.32**	0.20	1.05**
Oil and Gas Extraction	(0.79)	(0.62)	(0.20)	(0.43)
22: Utilities	-0.65	-0.50	0.45	-0.59
	(1.26)	(1.09)	(0.37)	(0.76)
23: Construction	-0.98	1.67***	0.24	1.45***
	(0.78)	(0.61)	(0.20)	(0.43)
31-33: Manufacturing	-1.41*	1.12*	0.21	0.98**
	(0.79)	(0.63)	(0.20)	(0.45)
42: Wholesale Trade	-0.63	1.28*	0.32	0.93**
	(0.82)	(0.65)	(0.20)	(0.46)
44-45: Retail Trade	-0.82	1.10*	0.23	0.84*
	(0.76)	(0.63)	(0.20)	(0.47)
48-49: Transportation and	-1.01	1.20*	0.31	0.96**
Warehousing	(0.81)	(0.64)	(0.20)	(0.44)
51: Information	0.27	1.36	0.06	0.56
	(1.11)	(0.96)	(0.25)	(0.70)
52: Finance and Insurance	-1.01	1.20**	0.23	1.00**
	(0.81)	(0.60)	(0.21)	(0.47)
53: Real Estate, Rental &	-0.49	1.82***	0.23	1.58***
Leasing	(0.77)	(0.62)	(0.20)	(0.44)
54: Professional, Scientific, and	-0.64	1.01*	0.17	1.03**
Technical Services	(0.80)	(0.61)	(0.20)	(0.44)
55: Management of Companies	0.79	2.30*	-0.10	-0.59
and Enterprises	(1.39)	(1.32)	(0.40)	(1.08)
56: Administrative Support,	-0.68	1.71***	0.30	1.37***
Waste Management and	(0.78)	(0.64)	(0.20)	(0.45)
Remediation Services				
61: Educational Services	-0.68	0.71	0.26	0.65
	(0.86)	(0.82)	(0.25)	(0.59)
62: Health Care, Social Assist.	-1.17	1.05*	0.24	0.92**
	(0.80)	(0.62)	(0.19)	(0.43)
71: Arts, Entertainment, and	-0.68	1.48**	0.20	1.10**
Recreation	(0.77)	(0.63)	(0.20)	(0.51)
72: Accommodation, Food Serv.	-0.59	1.24*	0.28	0.59
	(0.87)	(0.69)	(0.21)	(0.46)
81: Other Services	-0.88	1.04*	0.22	0.88*
	(0.80)	(0.61)	(0.20)	(0.45)

Table A9. (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Growth	(4) Population Growth Rate
Arizona	-0.05	-0.08	0.01	0.00
	(0.06)	(0.07)	(0.02)	(0.06)
Arkansas	-0.03	-0.08*	0.01	-0.04
	(0.03)	(0.04)	(0.01)	(0.04)
California	-0.01	-0.04	-0.05***	-0.01
	(0.05)	(0.06)	(0.02)	(0.05)
Colorado	0.01	-0.03	-0.01	0.02
	(0.04)	(0.05)	(0.02)	(0.04)
Connecticut	0.06	-0.10*	-0.02	-0.10**
	(0.06)	(0.05)	(0.01)	(0.05)
Delaware	-0.08*	-0.07	0.01	0.03
	(0.05)	(0.06)	(0.01)	(0.05)
District of Columbia	0.19	-0.29*	-0.02	-0.24
	(0.12)	(0.16)	(0.04)	(0.15)
Florida	-0.05	0.01	0.01	0.02
	(0.03)	(0.03)	(0.01)	(0.03)
Geogia	-0.02	-0.02	0.01	-0.00
	(0.03)	(0.03)	(0.01)	(0.02)
Idaho	-0.08	-0.02	-0.02	0.04
	(0.05)	(0.05)	(0.02)	(0.05)
Illinois	-0.03	-0.07*	-0.00	-0.04
	(0.03)	(0.04)	(0.01)	(0.03)
Indiana	-0.01	-0.06*	-0.01	-0.03
	(0.03)	(0.04)	(0.01)	(0.03)
Iowa	-0.01	-0.04	-0.01	0.00
	(0.03)	(0.04)	(0.01)	(0.03)
Kansas	-0.03	-0.07*	-0.01	-0.03
	(0.03)	(0.04)	(0.01)	(0.03)
Kentucky	-0.02	-0.09***	0.00	-0.04
	(0.03)	(0.03)	(0.01)	(0.03)
Louisiana	0.03	-0.04	-0.01	-0.03
	(0.03)	(0.07)	(0.01)	(0.05)
Maine	-0.10***	-0.07	0.01	-0.01
	(0.04)	(0.05)	(0.01)	(0.05)
Maryland	-0.02	-0.09**	-0.01	-0.08**
	(0.04)	(0.04)	(0.01)	(0.04)
Massachusetts	-0.01	-0.15***	-0.00	-0.10**
	(0.07)	(0.04)	(0.01)	(0.04)
Michigan	-0.07**	-0.06*	-0.00	0.00
	(0.03)	(0.04)	(0.01)	(0.03)

Table A9. (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Minnesota	-0.03	-0.03	-0.00	0.01
	(0.03)	(0.04)	(0.01)	(0.03)
Mississippi	-0.04	-0.01	0.01	0.02
	(0.03)	(0.03)	(0.01)	(0.02)
Missouri	-0.02	-0.01	-0.00	0.01
	(0.03)	(0.04)	(0.01)	(0.03)
Montana	-0.06	-0.00	0.00	0.03
	(0.05)	(0.05)	(0.02)	(0.04)
Nebraska	-0.07**	-0.06	0.00	-0.00
	(0.04)	(0.04)	(0.01)	(0.03)
Nevada	0.03	0.08	-0.03	0.07
	(0.06)	(0.07)	(0.02)	(0.06)
New Hampshire	-0.04	-0.13***	-0.00	-0.08*
	(0.05)	(0.05)	(0.01)	(0.05)
New Jersey	0.05	-0.12***	-0.01	-0.12***
	(0.04)	(0.04)	(0.01)	(0.04)
New Mexico	-0.02	-0.06	-0.02	-0.01
	(0.05)	(0.06)	(0.02)	(0.05)
New York	-0.02	-0.07*	-0.01	-0.04
	(0.04)	(0.04)	(0.01)	(0.03)
North Carolina	-0.03	-0.04	-0.00	0.01
	(0.03)	(0.03)	(0.01)	(0.03)
North Dakota	-0.02	-0.01	-0.02	0.02
	(0.05)	(0.05)	(0.01)	(0.04)
Ohio	-0.01	-0.05	-0.01	-0.00
	(0.03)	(0.04)	(0.01)	(0.03)
Oklahoma	-0.01	-0.04	-0.00	0.02
	(0.04)	(0.04)	(0.01)	(0.04)
Oregon	-0.03	-0.03	-0.03	0.01
	(0.05)	(0.05)	(0.02)	(0.05)
Pennsylvania	-0.04	-0.08**	-0.01	-0.06*
	(0.03)	(0.04)	(0.01)	(0.03)
Rhode Island	0.01	-0.17***	-0.01	-0.17***
	(0.06)	(0.05)	(0.01)	(0.05)
South Carolina	-0.05*	-0.03	0.01	0.04
	(0.03)	(0.03)	(0.01)	(0.03)
South Dakota	-0.03	0.00	0.01	0.08**
	(0.04)	(0.05)	(0.01)	(0.04)
Tennessee	-0.01	-0.07**	0.01	-0.01
	(0.02)	(0.03)	(0.01)	(0.03)

Table A9 (cont'd)

State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Texas	-0.03	-0.05	0.01	-0.00
	(0.03)	(0.05)	(0.01)	(0.04)
Utah	-0.03	0.01	-0.02	0.06
	(0.06)	(0.06)	(0.02)	(0.05)
Vermont	-0.03	-0.16***	-0.00	-0.13***
	(0.05)	(0.04)	(0.01)	(0.04)
Virginia	0.01	-0.06*	-0.01	-0.03
	(0.03)	(0.03)	(0.01)	(0.03)
Washington	-0.05	-0.05	-0.02	0.06
	(0.05)	(0.06)	(0.02)	(0.05)
West Virginia	-0.03	-0.03	-0.02*	0.00
	(0.03)	(0.04)	(0.01)	(0.03)
Wisconsin	-0.01	-0.04	0.00	0.01
	(0.03)	(0.04)	(0.01)	(0.03)
Wyoming	0.02	0.05	-0.02*	0.09**
	(0.04)	(0.05)	(0.01)	(0.04)

Table A9 (cont'd)

Spatial Lags of County Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Per capita income	-0.00*	-0.00	-0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Employment	-0.00***	-0.00	0.00***	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Poverty rate	-0.01	-0.01	-0.01***	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Population	0.00*	0.00	-0.00***	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Population squared	-0.00***	0.00**	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Population density	-0.00	0.00*	0.00**	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Average household size	0.00	0.00	-0.00	0.01**
	(0.00)	(0.00)	(0.00)	(0.00)
% headed by single female	-0.01	0.00	0.01**	0.00
	(0.01)	(0.01)	(0.00)	(0.01)
Median age	0.00*	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Median age squared	-0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Female population	-0.00	-0.00	0.00**	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Female population squared	0.00***	-0.00**	-0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Asian population	0.00	-0.00	-0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Asian population squared	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Black population	0.00	-0.00*	-0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Black population squared	-0.00***	0.00	0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population	-0.00	-0.00**	0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Hispanic population squared	0.00	-0.00	-0.00**	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)

Table A9. (cont'd)

Spatial Lags of County Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
% owner's education: high school	0.02***	0.02***	-0.00*	0.01
	(0.01)	(0.01)	(0.00)	(0.00)
Some college	0.00	-0.00	0.00	-0.00
	(0.01)	(0.01)	(0.00)	(0.01)
Trade school degree	0.01	0.02**	-0.01***	0.00
	(0.01)	(0.01)	(0.00)	(0.01)
Associates degree	0.01	0.02*	-0.00	0.00
	(0.01)	(0.01)	(0.00)	(0.01)
Bachelor's degree	0.00	0.02*	0.00	0.02**
	(0.01)	(0.01)	(0.00)	(0.01)
Graduate school degree	-0.01	-0.00	-0.00	-0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Taxes per capita	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Education spending	-0.00	-0.00***	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Highway spending	0.00*	0.00***	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Labor force participation rate	0.01*	0.01*	-0.00	0.01
	(0.01)	(0.01)	(0.00)	(0.01)
Build permits	-0.00**	0.00	0.00	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)

Table A9. (cont'd)

Spatial Lags of NAICS Sector	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Employment under 11: Ag.,	-0.00*	0.00*	0.00	0.00
Forestry, Fishing and Hunting	(0.00)	(0.00)	(0.00)	(0.00)
21: Mining, Quarrying, and	0.00***	0.00	-0.00***	-0.00*
Oil and Gas Extraction	(0.00)	(0.00)	(0.00)	(0.00)
22: Utilities	0.00*	0.00	-0.00***	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
23: Construction	-0.00**	-0.00	0.00***	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
31-33: Manufacturing	-0.00	-0.00***	0.00	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
42: Wholesale Trade	-0.00	0.00***	-0.00***	0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
44-45: Retail Trade	0.00*	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
48-49: Transportation and	0.00*	0.00	-0.00	0.00
Warehousing	(0.00)	(0.00)	(0.00)	(0.00)
51: Information	0.00	-0.00	-0.00	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
52: Finance and Insurance	0.00	0.00	0.00**	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
53: Real Estate, Rental &	-0.00	-0.00	-0.00	-0.00***
Leasing	(0.00)	(0.00)	(0.00)	(0.00)
54: Professional, Scientific, and	-0.00	0.00	0.00	0.00**
Technical Services	(0.00)	(0.00)	(0.00)	(0.00)
55: Management of Companies	0.00***	0.00	-0.00	0.00
and Enterprises	(0.00)	(0.00)	(0.00)	(0.00)
56: Administrative Support,	0.00	-0.00	-0.00	-0.00
Waste Management and	(0.00)	(0.00)	(0.00)	(0.00)
Remediation Services				
61: Educational Services	-0.00	-0.00	0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
62: Health Care, Social Assist.	-0.00	0.00	0.00**	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
71: Arts, Entertainment, and	-0.00	-0.00***	0.00**	-0.00**
Recreation	(0.00)	(0.00)	(0.00)	(0.00)
72: Accommodation, Food Serv.	-0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
81: Other Services	0.00**	0.00**	-0.00***	0.00***
	(0.00)	(0.00)	(0.00)	(0.00)

Table A9. (cont'd)

Spatial Lags or NAICS Sector	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
% establishments under 11: Ag.,	-0.03**	-0.03	0.01**	-0.03*
Forestry, Fishing, Hunting	(0.02)	(0.02)	(0.01)	(0.02)
21: Mining, Quarrying, and	0.00	0.00	0.01	-0.00
Oil and Gas Extraction	(0.02)	(0.02)	(0.01)	(0.02)
22: Utilities	-0.03	0.09	0.09**	-0.14
	(0.12)	(0.14)	(0.04)	(0.12)
23: Construction	-0.03*	-0.01	0.01**	-0.00
	(0.02)	(0.02)	(0.01)	(0.02)
31-33: Manufacturing	-0.15***	-0.08**	0.03***	0.00
	(0.03)	(0.03)	(0.01)	(0.03)
42: Wholesale Trade	0.02	-0.05	0.02	-0.04
	(0.04)	(0.05)	(0.01)	(0.04)
44-45: Retail Trade	-0.01	0.00	0.01	-0.02
	(0.02)	(0.02)	(0.01)	(0.02)
48-49: Transportation and	-0.03	0.03	0.01	0.03
Warehousing	(0.02)	(0.03)	(0.01)	(0.02)
51: Information	0.07	0.01	0.07**	-0.01
	(0.08)	(0.10)	(0.03)	(0.08)
52: Finance and Insurance	-0.05	-0.09**	-0.02	-0.03
	(0.04)	(0.04)	(0.01)	(0.03)
53: Real Estate, Rental &	-0.00	0.07**	0.01	0.01
Leasing	(0.02)	(0.03)	(0.01)	(0.02)
54: Professional, Scientific, and	-0.01	-0.03	0.02	-0.03
Technical Services	(0.03)	(0.04)	(0.01)	(0.03)
55: Management of Companies	-0.22	-0.26	0.15*	-0.45**
and Enterprises	(0.23)	(0.25)	(0.08)	(0.19)
56: Administrative Support,	0.01	-0.04	0.00	-0.05
Waste Management and	(0.03)	(0.04)	(0.01)	(0.03)
Remediation Services				
61: Educational Services	0.15***	0.11	-0.06***	0.07
	(0.06)	(0.07)	(0.02)	(0.06)
62: Health Care, Social Assist.	-0.01	-0.03	0.01	-0.02
	(0.02)	(0.03)	(0.01)	(0.02)
71: Arts, Entertainment, and	0.03	0.01	-0.02	-0.02
Recreation	(0.03)	(0.04)	(0.01)	(0.03)
72: Accommodation, Food Serv.	-0.03	-0.03	0.01	-0.03
	(0.03)	(0.04)	(0.01)	(0.03)
81: Other Services	-0.06***	0.00	0.01*	0.00
	(0.02)	(0.02)	(0.01)	(0.02)

Table A9. (cont'd)

Spatial Lags of State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Arizona	0.00	0.02	-0.01***	-0.01
	(0.01)	(0.02)	(0.00)	(0.02)
Arkansas	-0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
California	0.01*	0.01***	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Colorado	-0.00	-0.00	0.00*	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Connecticut	-0.01*	0.01	0.00	0.02***
	(0.00)	(0.01)	(0.00)	(0.00)
Delaware	-0.00	-0.00	-0.00	0.01
	(0.01)	(0.01)	(0.00)	(0.01)
District of Columbia	0.00	-0.06**	0.02*	-0.08**
	(0.03)	(0.03)	(0.01)	(0.03)
Florida	-0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Geogia	-0.00	-0.00	0.00*	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Idaho	-0.00*	-0.00	0.00**	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Illinois	-0.00**	-0.00	0.00**	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Indiana	-0.00***	-0.00***	0.00**	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Iowa	-0.00*	-0.00*	0.00***	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Kansas	-0.00*	-0.00	0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Kentucky	0.00	0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Louisiana	0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Maine	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Maryland	0.00	0.00	-0.00**	0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Massachusetts	-0.00	-0.00	-0.00*	-0.01
	(0.00)	(0.00)	(0.00)	(0.00)
Michigan	-0.01***	-0.01***	0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)

Table A9. (cont'd)

Spatial Lags of State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Minnesota	-0.00	-0.00**	0.00***	-0.00***
	(0.00)	(0.00)	(0.00)	(0.00)
Mississippi	0.00	-0.00	0.00	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Missouri	-0.00	-0.00**	0.00*	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Montana	-0.00	-0.00	-0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Nebraska	-0.00	-0.00	0.00***	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Nevada	-0.02**	-0.03***	0.00**	-0.00
	(0.01)	(0.01)	(0.00)	(0.01)
New Hampshire	-0.01***	-0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
New Jersey	-0.01***	-0.00	0.00***	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
New Mexico	0.00	0.01**	0.00	0.02***
	(0.00)	(0.01)	(0.00)	(0.01)
New York	-0.01***	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
North Carolina	-0.00	0.00	0.00***	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
North Dakota	0.00	-0.00	0.00***	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Ohio	-0.01***	-0.00**	0.00***	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Oklahoma	-0.00	-0.00	0.00	-0.00**
	(0.00)	(0.00)	(0.00)	(0.00)
Oregon	-0.00*	-0.00	0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Pennsylvania	-0.00**	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Rhode Island	0.00	0.00	-0.00*	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
South Carolina	0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
South Dakota	-0.00	-0.01***	0.00***	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Tennessee	-0.00	0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)

Table A9. (cont'd)

Spatial Lags of State Variables	(1) Income Growth Rate	(2) Employment Growth Rate	(3) Poverty Rate Growth	(4) Population Growth Rate
Texas	-0.00	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Utah	-0.01	-0.01***	0.00	-0.01***
	(0.00)	(0.00)	(0.00)	(0.00)
Vermont	-0.01**	0.00	0.00	0.01**
	(0.00)	(0.00)	(0.00)	(0.00)
Virginia	-0.00	0.00	-0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Washington	-0.00	0.00	0.00	0.00
	(0.00)	(0.00)	(0.00)	(0.00)
West Virginia	-0.00***	-0.00*	0.00	-0.00*
	(0.00)	(0.00)	(0.00)	(0.00)
Wisconsin	-0.00**	-0.00	0.00	-0.00
	(0.00)	(0.00)	(0.00)	(0.00)
Wyoming	-0.00	0.00	0.00	0.00
	(0.00)	(0.01)	(0.00)	(0.00)

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

SYNTHESIS AND CONCLUSIONS

This three essay dissertation seeks to investigate how geographic, socioeconomic, and industrial factors impact and interact with self-employed Latino and Latino immigrants in the United States. Further, the essays seek to investigate the impact of Latino business owners on local economic performance. These goals result from the context of a rapidly growing Latino population in the United States combined with growth in the self-employed population in general. Essay 1 focuses on Hispanic self-employment in urban areas by using publicly available data and finds that the Latino population contributes disproportionately to the self-employed population. These results provide support to minority-owned business (especially LOB) development policies and programs. As such, essay 1 highlights the importance of understanding and investigating factors associated with the survival, growth, and impact of Latino business owners. Essays 2 and 3 begin this investigation and build on past research.

Past research supports some important findings surrounding LOB. This research focused on how various business factors impact the survival of LOB and the impact of immigrants on local economic performance. Economic development practitioners use these past findings on how factors impact the survival of LOB to inform their programing and maximize its effectiveness. The limited number of observations limited the significance of much of these past findings. Essay 2 uses limited access microdata with over 100,000 observations to test hypotheses drawn from this past work and expand on past work by not just examining factor associations and how those factors impact survival likelihood, but also how these factors impact employment growth.

Specifically, essay 2 examines the impact of geographic, socioeconomic, and industrial factors on the survival and employment growth of LOB. Before beginning such an investigation,

however, it is important to understand relative associations between such geographic, socioeconomic, and industrial factors and ethnic groups. If, for example, using personal savings for start-up capital reduces that likelihood that a LOB survives, the size of that problem increases significantly if Latino business owners are likely to use personal savings for start-up capital, relative to other ethnicities.

Essay 2's findings and contributions to the understanding of LOB are numerous. First essay 2 shows that Asian-American business owners are more likely than Latino-Americans to take on bank loan debt and less likely to take on credit card debt. Indeed, LOB are more associated with using credit card and government loan or government guaranteed loans than White business owners, while White business owners are more likely to use bank loans or venture capital. Essay 2 does find, however, that only Black business owners are less likely than LOB to use bank loans.

Another important contribution of essay 2 is the relative association and impact of a particular LOB working in different industries. Previous studies have divided this investigation into high and low-barrier industries, finding that LOB are more associated with low-barrier industries and, as a results, grow slower and are more likely to go out of business. This study goes further by investigating the impact and association with all of the NAICS 2-digit sectors. Essay 2's results find that the only sector significantly more associated with Latino owners, relative to Whites, is accommodation and food services.

In Essay 2's survival analysis, the only significant coefficient on start-up capital source was on personal savings, but it actually increases the odds of survival of a Latino business by 4%. Indeed this paper supports a different finding on start-up capital that only Black business owners are less associated with using personal savings than Latinos. It may still be the case,

however, that LOB are more likely to use informal loans from friends or family and moneylenders. Finally, essay 2 finds that the low-barrier industries of construction and food service do not have significantly lower survival rates relative to other industries. Such a detailed examination is useful to economic development practitioners when examining the likelihood of survival of businesses and thereby likelihood that those businesses may require extra assistance. Past research may have incorrectly led these practitioners to treat LOB in high-barrier (or low-barrier) industries with undue similarity. Indeed, just as past studies indicated that failing to disaggregate LOB into high- and low-barrier industries hides relationships, essay 2 shows that failing to disaggregate high- and low-barrier industries further also hides relationships.

The final examination of Essay 2 into employment growth extends past research that had only examined survival. The results do not support the conclusion that LOB in low-barrier industries grow at a slower rate. Indeed, LOB in the high-barrier industries of professional services or finance have similar or lower employment growth rates than LOB in the low-barrier industries of wholesale or retail trade. Further, this essay shows that LOB using savings for start-up capital does not have a statistically significant impact on employment growth, and using personal assets for start-up or expansion capital actually increases the employment growth. For many economic development practitioners, the goal is not simply the survival of local businesses, but also local employment growth. Some practitioners may assume that factors impacting survival also impact the employment growth of a business in the same direction. Essay 2 highlights the importance of drawing a distinction between survival and employment growth with numerous factors impacting employment growth in the opposite direction as survival. For example, although LOB owned by women are less likely to survive, they exhibit faster employment growth on average.

Essay 2's results come together to paint a more complete portrait of the interaction of LOB with geographic, socioeconomic, and industrial factors in the United States. This information is important to local and regional economic development practitioners because a common technique for such practitioners is minority business support. Essay 2 helps with specifics for potential areas for concern among LOB, but does not examine the actual impact of LOB on local economic performance. Although there is much research into the impact of immigrant and ethnic entrepreneurship, there has not been much research into the specific impact of LOB and how that varies by industry. Essay 3 investigates this impact.

As with the investigations into the impact of geographic, socioeconomic, and industrial factors on LOB, much past research has investigated the impact of LOB on high and low-barrier industries. Similarly to Essay 2, Essay 3 extends this investigation to all of the 2-digit NAICS sectors. Essay 3 does support the divide between the impact of high and low-barrier industries, though with the exception of construction, which has a statistically significant and positive effect on per capita income. It may be that LOB tend to own high-skill businesses within the construction industry relative to other ethnicities.

Essay 3's results on the impact of LOB employment share on population growth rates also contribute to literature on immigrant and native migration flows. Although this paper does not specify that the LOB must be immigrant-LOB, over 1 in 3 Latinos in the U.S. are immigrants, and thus the results shine some light on immigrant-LOB. The LOB employment share in information, management of companies and enterprises, and other services industries all have a negative impact on population growth. As with essay 2, essay 3 provides a more detailed examination, moving beyond simply high and low-barrier industries. This type of detailed examination is useful to economic development practitioners. Indeed, essay 3 allows those

practitioners to understand more about the likely impact of LOB in various industries. There is limited past research into the actual impact of LOB on local economic performance, and thus limited information for economic development practitioners looking to have the largest possible impact with their constrained resources. Essay 3 provides some of the first information to these practitioners and thus allows them to more accurately gauge the local economic impact of prospective or existing LOB and thereby how to allocate their constrained resources more effectively.

Thus this dissertation's results simultaneously provide important results on the importance of Latino to self-employment, investigate factors that affect the survival and growth of LOB, and examine the impact of LOB on their local economies. These results come together to emphasize that Latino workers and LOB in the United States are not a monolithic group of low-wage and low-skill migrants in low-barrier industries. Thus this dissertation further emphasizes the importance of future research and that disaggregating LOB employment share further (to higher-digit NAICS codes) may reveal more impacts hidden by the aggregation to 2-digit NAICS coded industries. Such findings would extend the contributions of this paper even further and provide an increasingly detailed and comprehensive picture of how geographic, socioeconomic, and industrial factors contribute to or hinder self-employed Latinos, and, in turn, how self-employed Latino impact their local communities through the economy.

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