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PAPER

The Great Recession and Entrepreneurship

ROBERT W. FAIRLIE

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Preface

The "Great Recession" resulted in many business closings and foreclosures, but what effect did it have on business formation? On the one hand, recessions decrease potential business income and wealth, but on the other hand they restrict opportunities in the wage/salary sector leaving the net effect on entrepreneurship ambiguous. This paper provides analysis of the determinants of entrepreneurship at the individual level to shed light on this question. It will be of interest to researchers and policymakers who seek to better understand and respond to the implications of the Great Recession for entrepreneurship as well as those interested in understanding how local economic conditions affect entrepreneurship.

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For additional information on ICJ or KRI, please contact the directors:

Jim Dertouzos, Director
RAND Institute for Civil Justice
1776 Main Street, P.O. Box 2138
Santa Monica, CA 90407-2138
310-393-0411 x7476
Fax: 310-451-6979
Email: James_Dertouzos@rand.org

Susan Gates, Director
Kauffman-RAND Institute for
Entrepreneurship Public Policy
1776 Main Street, P.O. Box 2138
Santa Monica, CA 90407-2138
310-393-0411 x7452
Fax: 310-451-6979
Email: Susan_Gates@rand.org

Abstract

The "Great Recession" resulted in many business closings and foreclosures, but what effect did it have on business formation? On the one hand, recessions decrease potential business income and wealth, but on the other hand they restrict opportunities in the wage/salary sector leaving the net effect on entrepreneurship ambiguous. The most up-to-date microdata available -- the 1996 to 2009 Current Population Survey (CPS) -- are used to conduct a detailed analysis of the determinants of entrepreneurship at the individual level to shed light on this question. Regression estimates indicate that local labor market conditions are a major determinant of entrepreneurship. Higher local unemployment rates are found to increase the probability that individuals start businesses. Home ownership and local home values for home owners are also found to have positive effects on business creation, but these effects are noticeably smaller. Additional regression estimates indicate that individuals who are initially not employed respond more to high local unemployment rates by starting businesses than wage/salary workers. The results point to a consistent picture – the positive influences of slack labor markets outweigh the negative influences resulting in higher levels of business creation. Using the regression estimates for the local unemployment rate effects, I find that the predicted trend in entrepreneurship rates tracks the actual upward trend in entrepreneurship extremely well for the Great Recession.

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1. Introduction

The U.S. Economy has lost more than 8 million jobs since the start of the recession in December 2007. The national unemployment rate is hovering around 10 percent, which is twice as high as it was only two years ago. Many researchers have noted that the labor market has experienced its deepest downturn in the postwar era in this recession (Elsby, Hobijn and Sahin 2010). Sparking the recession was the housing crisis. Housing prices have plummeted since reaching their peak in mid 2007. The national housing price index experienced the largest decline on record (Federal Housing Finance Agency 2009). Home foreclosures have also risen rapidly over the past few years. In just May 2010, there were 323,000 foreclosure filings, representing an alarming 1 out every 400 housing units in the United States (Realtytrac 2010).

What effect did the recent recession have on entrepreneurship? Were would-be-entrepreneurs dissuaded by the recent recession from starting businesses or did they respond to layoffs and slack labor markets by turning to self-employment and business ownership? Business bankruptcy filings and closures increased sharply in the recent recession (U.S. Courts 2010), but the effects on business formation were less clear. At a first pass, we might expect that the recent recession had a negative effect on business starts because of the resulting decline in demand for the products and services produced by businesses. The recent housing slump may also be having a direct negative effect on entrepreneurship by restricting access to capital. Equity in one's home is the main asset for most Americans and represents 60 percent of all wealth (U.S. Census 2008). Personal wealth is a key factor in determining who starts a business because this wealth can be invested directly in the business or used as collateral to obtain business loans. Alternative sources of financial capital for business starts have also dried up lately. In the latest survey of lending officers, the Federal Reserve reports that commercial banks "have yet to unwind the considerable tightening that has occurred over the past two years" (Federal Reserve Board of Governors 2010).

On the other hand, the recent recession might have increased "necessity" entrepreneurship or business creation because of the rapid rise in the number of layoffs and

unemployment in the United States. Previous studies provide evidence that job loss and reduced labor market opportunities lead to entry into self-employed business ownership (Farber 1999; Parker 2009; Krashinsky 2005). Although the motivation might differ for starting the business in this case, many of these businesses may eventually be very successful. For example, a recent study by Stangler (2009) finds that the majority of Fortune 500 companies were started during recessions or bear markets.

Although the recent recession has resulted in many business closures and bankruptcies, the net effect of the recession on *business creation* is thus ambiguous. Indeed, the positive and negative influences may even cancel out resulting in a relatively flat rate of business creation over the business cycle. To explore this question, I conduct a detailed analysis of the determinants of entrepreneurship using newly created panel data from the most up-to-date microdata available -- the 1996 to 2009 Current Population Survey (CPS). Although the CPS data are usually used as cross-sectional data, panel data can be created from the underlying data files allowing one to measure business creation by individuals. Using these data, the effects of rising unemployment rates and the decline in housing values on entrepreneurship are examined by estimating the relationship between business creation at the individual level and local labor and housing markets. The analysis covers two recessions and two strong growth periods, and uses variation in unemployment and housing prices from more than 250 metropolitan areas.

This study is the first to provide a detailed analysis of the effects of the recent recession on business creation at the individual level in the United States. It also improves on previous research on business formation by capturing a broader range of new business activity than commonly-used Census data focusing only on new employer firms. Detailed information on home ownership, initial employment status, education and demographic characteristics of entrepreneurs and non-entrepreneurs available in the CPS allow for a much more extensive analysis of the relationship between local economic conditions and business formation than previously conducted in the literature.

2. The Entrepreneurial Decision

Theoretical models of the choice to become self-employed are generally based on a comparison of potential earnings from business ownership and earnings at a wage and salary job. The classic economic model by Evans and Jovanovic (1989) relies upon a framework where an individual can obtain the following income, Y^W, from the wage and salary sector: $Y^W = w + rA$, where w is the wage earned in the market, r is the interest rate, and A represents the consumer's assets. Earnings in the self-employment sector, Y^{SE}, are defined as: $Y^{SE} = \theta f(k)\varepsilon + r(A-k)$, where θ is entrepreneurial ability, f(.) is a production function whose only input is capital, ε is a random component to the production process, and k is the amount of capital purchased by the worker. Thus, the decision depends on a comparison of potential income from wage and salary work and investing wealth with potential income from self-employment and investing the remaining wealth after using it for startup capital.

This simple theoretical model is useful for illustrating the main avenues through which business cycles might affect entrepreneurship. Perhaps, the first effect that comes to mind is the direct effect on total sales and revenues of the firm. Recessions severely reduce consumer and firm demand for products and services provided by startups, thus decreasing potential entrepreneurial earnings, Y^{SE}. On the other hand, the costs of production are lower in a recession. Input costs, especially rent and labor, may decline substantially during a recession resulting in a higher value of entrepreneurial earnings (net of costs). The opportunity cost of capital, r, is likely to be lower in recessions also placing upward pressure on entrepreneurship.

Another major factor influencing the entrepreneurial decision is that compensation in the wage/salary sector also decreases in economic contractions resulting in a lower w. Lower wages, in turn, increase the probability of becoming an entrepreneur, all else equal. The positive effect of lower wages on entrepreneurship may be tempered somewhat in recessions, however, because

some workers may be reluctant to leave their jobs in a recession because of concerns about finding another one if the business fails.

Working in the opposite direction, however, recessions may reduce total wealth, A, which in turn would lower the likelihood of entrepreneurship. In the presence of liquidity constraints, lower levels of wealth may have made it more difficult for entrepreneurs to find the required startup capital to launch new ventures. The decline in housing values associated with this recession may have resulted in a substantial drop in wealth because of the relative importance of housing equity to total wealth and high rates of home ownership. Related to a decline in individual wealth, liquidity constraints tighten in recessions. Lending from financial institutions and investments from angels and venture capitalists declines substantially in recessions (PricewaterhouseCoopers 2010). Banks and investors are likely to be cautious investing in startups in weak economic conditions. They may also have substantially less wealth to invest in new ventures.

The combined effect of all of these opposing forces on entrepreneurship is ambiguous. The net effect from the positive influences of lower expected business earnings and wealth levels, and the negative influences of lower expected earnings in the wage/salary sector are theoretically unknown. An empirical analysis is thus needed.

PREVIOUS EMPIRICAL EVIDENCE

The previous literature provides empirical evidence on several aspects of how recessions might affect the entrepreneurial decision. One of the most extensively studied areas in the entrepreneurship literature is the relationship between personal wealth and business starts. Numerous studies using various methodologies and measures of wealth explore the relationship between wealth and self-employment for different countries. Most studies find that asset levels (e.g. net worth) measured in one year increase the probability of entering self-employment by the

following year.[1] The finding has generally been interpreted as providing evidence that entrepreneurs face liquidity constraints and that owner's wealth is important in determining access to financial capital for business starts.

Additional evidence on the link between startup capital and owner's wealth has been provided by examining the relationship between business loans and personal commitments, such as using personal assets for collateral for business liabilities and guarantees that make owners personally liable for business debts. Using data from the Survey of Small Business Finances (SSBF) and Survey of Consumer Finances (SCF), Avery, Bostic and Samolyk (1998) find that the majority of all small business loans have personal commitments. The common use of personal commitments to obtain business loans suggests that wealthier entrepreneurs may be able to negotiate better credit terms and obtain larger loans for their new businesses possibly leading to more successful firms. Cavalluzzo and Wolken (2005) find that personal wealth, primarily through home ownership, decreases the probability of loan denials among existing business owners. If personal wealth is important for existing business owners in acquiring business loans then it may be even more important for entrepreneurs in acquiring startup loans.

Additional evidence on the importance of wealth for entrepreneurship is provided by several previous studies focusing on racial differences. Substantial racial disparities in wealth are found to be one of the most important explanations for why blacks and Latinos have low business creation rates and worse business outcomes and why Asian businesses are relatively successful (Bates 1997, Fairlie 1999, Fairlie and Woodruff 2010, Fairlie and Robb 2007, 2008, Lofstrom and Wang 2006, Bates and Lofstrom 2008).

A smaller literature has examined the relationship between home ownership and entrepreneurship. The lack of research is surprising because the single largest asset held by most

[1] See Evans and Jovanovic (1989), Evans and Leighton (1989), Meyer (1990), Holtz-Eakin, Joulfaian, and Rosen (1994), Lindh and Ohlsson (1996, 1998), Bates (1997), Blanchflower and Oswald (1998), Dunn and Holtz-Eakin (2000), Fairlie (1999), Johansson (2000), Taylor (2001), Zissimopoulos and Karoly (2003), Holtz-Eakin and Rosen (2005), Giannetti and Simonov (2004), Fairlie and Krashinsky (2005), and Nykvist (2005).

households is their home. Estimates of home ownership indicate that 67.2 percent of Americans own their own home (U.S. Census Bureau 2008). Among home owners, the median equity in their home is $59,000. The majority of Americans thus have equity in their homes that may be tapped into for capital to start businesses or expand a small business. Black, de Meza, and Jeffreys (1996) find a positive relationship between net housing equity and business starts using aggregate U.K. data. Home ownership is also found to be associated with entrepreneurship and obtaining business loans using Finish data (Johansson 2000) and data from the Survey of Small Business Finances (Cavalluzzo and Wolken 2005).

A comprehensive study of home ownership and business formation at the individual level, however, has not been conducted in the previous literature. One area in particular that remains understudied is whether home ownership is important for entrepreneurship even after controlling for detailed information on education and other demographic information. Carefully controlling for the effects of education on entrepreneurship may be especially important because education and wealth are highly correlated and education has a large positive effect on entrepreneurship and business performance.[2]

Previous research on the relationship between unemployment and entrepreneurship provides mixed results. Parker (2009) reviews the literature and cites many previous studies showing positive relationships, negative relationships, and zero relationships. Even with these mixed results, he notes that more recent studies are generally finding evidence of a positive or zero relationship between unemployment and entrepreneurship.

In a recent paper Stangler and Kedrosky (2010) provide evidence from several data sources of a roughly constant rate of firm formation over time. Their data on employer firm births from the U.S. Census Bureau indicate roughly constant rates over the period from 1977 to 2005. They do not find evidence of a strong cyclical pattern in business formation rates. One limitation

[2] See van der Sluis, van Praag and Vijverberg (2004), van Praag (2005), and Moutray (2007) for reviews of the evidence on the relationship between education and entrepreneurship.

to their analysis, however, is that they are not able to examine the effects of the Great Recession. They also rely primarily on published aggregate data and cannot examine the direct relationship between firm formation and economic conditions in the local area or characteristics of entrepreneur.

This study builds on the previous literature, which focuses on more aggregate measures and primarily employer firms, by examining the relationship between business creation at the individual level and local economic conditions. A relatively new measure of entrepreneurship is used in the analysis, and both conditions in local labor markets and local housing markets are examined. The study is the first to examine the effects of the "Great Recession" on business creation.

3. Data

Although research on entrepreneurship is growing rapidly, there are very few national datasets that provide information on the determinants of entrepreneurship. Using matched data from the 1996-2009 Current Population Surveys (CPS), I use a newly created measure of entrepreneurship, which captures the rate of business creation at the individual owner level. National and state-level estimates are reported in Fairlie (2010). The underlying datasets that are used to create the entrepreneurship measure are the basic monthly files to the Current Population Survey (CPS). By linking the CPS files over time, longitudinal data can be created, which allows for the examination of business formation. These surveys, conducted monthly by the U.S. Bureau of the Census and the U.S. Bureau of Labor Statistics, are representative of the entire U.S. population and contain observations for more than 130,000 people. Combining the 1996 to 2009 monthly data creates a sample size of more than 10 million adult observations.

Households in the CPS are interviewed each month over a 4-month period. Eight months later they are re-interviewed in each month of a second 4-month period. Thus, individuals who are interviewed in January, February, March and April of one year are interviewed again in January, February, March and April of the following year. The rotation pattern of the CPS, thus

allows for matching information on individuals monthly for 75% of all respondents to each survey. To match these data, I use the household and individual identifiers provided by the CPS. False matches are removed by comparing race, sex and age codes from the two months. All non-unique matches are also removed from the dataset. Finally, the datasets provided by the BLS are checked extensively for coding errors and other problems. Monthly match rates are generally between 94 and 96 percent, and false positive rates are very low.[3]

MEASURING ENTREPRENEURSHIP

Measures of the number and rate of business ownership are available from several large, nationally representative government datasets, such as the Survey of Business Owners (SBO), Census PUMS files, and the American Community Survey (ACS). But, typical measures of self-employed business ownership based on these cross-sectional data, cannot capture the dynamic nature of entrepreneurship. A measure of business formation, or the rate of flow into business ownership, is needed to represent entrepreneurship.[4] Using the matched CPS data over time, I create a measure of business formation that captures all new business owners including those who own incorporated or unincorporated businesses, and those who are employers or non-employers.

Two of the only other large, nationally representative datasets that provide a measure of business formation are the Statistics for U.S. Businesses (SUSB) and Business Employment Dynamics (BED).[5] The CPS data, however, provide for a much broader range of new business activity than these datasets because the SUSB and BED are limited to measuring only births for employer establishments or firms. The exclusion of non-employer firms is likely to lead to a

[3] The main reason for non-matching is when someone moves. Therefore, a somewhat non-random sample (mainly geographic movers) will be lost due to the matching routine. For these month-to-month matches this does not appear to create a serious problem, however, because the observable characteristics of the original sample and the matched sample are very similar. See Fairlie (2010) for more details on matching.
[4] The Total Entrepreneurial Activity (TEA) index used in the Global Entrepreneurship Monitor captures individuals who are involved in either the startup phase or managing a business that is less than 42 months old (Reynolds, Bygrave and Autio 2003).
[5] The SUSB is conducted by the U.S. Census Bureau and reported by the U.S. Small Business Administration, Office of Advocacy, and the Business Employment Dynamics (BED) is conducted by the U.S. Bureau of Labor Statistics.

substantial undercount of the rate of entrepreneurship because non-employer firms represent 75 percent of all firms (U.S. Small Business Administration 2001, Headd 2005) and a significant number of new employer firms start as non-employer firms (Davis, et. al. 2006).

To estimate the business formation rate in the matched CPS data, I first identify all individuals who do not own a business as their main job in the first survey month. By matching CPS files, I then identify whether they own a business as their main job with 15 or more usual hours worked in the following survey month.[6] The entrepreneurship rate is thus defined as the percentage of the population of non-business owners that start a business each month. To identify whether they are business owners in each month I use information on their main job defined as the one with the most hours worked. Thus, individuals who start side businesses will not be counted if they are working more hours on a wage and salary job. The 15 or more hours per week (or roughly 2 or more days per week) criterion is chosen to guarantee a reasonable work commitment to the new business.

ADDITIONAL ADVANTAGES OF THE CPS DATA

The CPS includes information on home ownership and detailed demographic information including race, gender, age, education and family income at the individual level. Large-scale, nationally representative business-level data include only very limited or no information on the business owner. Furthermore, microdata from the most comprehensive of these business-level datasets, such as the SUSB and BED, are confidential and restricted-access. To examine the relationship between entrepreneurship, and unemployment and housing, I append local unemployment rates and housing prices to the individual-level data. Local labor and housing

[6] All observations with allocated labor force status, class of worker, and hours worked variables are excluded from the sample. Missing values for variables in the CPS are allocated or imputed by using several procedures including hot deck procedures and information from previous survey months. These allocation procedures lead to higher estimated entrepreneurship rates because allocations are likely to increase the likelihood of changes (see Fairlie 2010 for more details).

markets are defined by metropolitan areas. The CPS identifies more than 250 metropolitan areas in the United States.

In sum, the matched CPS is the only dataset that provides the six criteria needed for this study. It provides a measure of business formation (i.e. panel data), long time period, large sample size, geographical identifiers, detailed owner's characteristics, and covers the recent recession.

4. The Recession and Entrepreneurship

As a first pass at examining recessionary effects on entrepreneurship, I present national trends in unemployment, home ownership, home values and entrepreneurship. Figure 1 displays the national unemployment rate since the beginning of 1996. I focus on the period starting in 1996 because it captures the start of the strong economic growth period of the 1990s reasonably well and because of data limitations in matching the CPS in immediately preceding years.[7] Examining trends from the beginning of 1996 to the end of 2009 captures two downturns and two growth periods. The NBER officially dates the peak of the strong economic growth period of the late 1990s as March 2001. The ensuing contraction period ended November 2001. The next peak of the business cycle was December 2007 and the official end of the Great Recession is June 2009 (NBER 2010). The national unemployment rate was steadily decreasing in the late 1990s. Amazingly, it went under 4 percent in late 2000. As the U.S. economy then slipped into a recession the unemployment rate increased steadily. The unemployment rate continued to rise until hitting a peak of over 6 percent in the middle of 2003. The macroeconomic recovery that

[7] The NBER dates the trough of the early 1990s business cycle as occurring in March 1991, but an examination of the national unemployment rate reveals that unemployment reached its peak in mid 1992 and real GDP growth was not consistently high until the third quarter of 1995 (it was very low in the first two quarters of 1995). It is not possible to extend the sample period backwards a couple years because it is not possible to create entrepreneurship data for 1994 and 1995. In these years, the Bureau of Labor Statistics re-randomized the identification codes making it impossible to match individuals over time. However, 1996 is the first year in which the unemployment rate was consistently declining and real GDP growth was consistently high.

started in November 2001 helped to reduce the unemployment rate to a low of roughly 4.5 percent in mid 2007. After this low point, unemployment rose relatively slowly until the second quarter of 2008 when it rose very quickly. Remarkably, in one year it rose nearly 4 percentage points. Within only a half year later it rose another full percentage point ending up above 10 percent in October 2009. This increase in unemployment represents the deepest downturn that the labor market has experienced in the postwar era. The recession has thus often been called the "Great Recession."

The largest single asset affecting personal wealth is home equity. Over the past couple of years housing values have dropped precipitously. Figure 2 displays the Median Sales Price of Existing Single-Family Homes from the National Association of Realtors. In the second quarter of 2007 the median house price was $223,500. By the fourth quarter of 2009 median house prices dropped to $172,100. In constant 2009 dollars, the drop in home prices was even larger. The median home price adjusted for inflation dropped from $234,469 in 2007 Q2 to $172,100 in 2009 Q4, representing a decline of 27 percent.

Looking back to the late 1990s, home prices increased steadily. At the beginning of 1996 the median home price was $118,100. The median price rose to $227,600 by mid 2005, which nearly doubled the value over the decade. From mid 2005 to the beginning of the housing crisis in mid 2007 the median price was relatively constant. Although the late 1990s are associated with substantial gains in housing prices the increase is somewhat tempered by inflation. In real dollars the increase from the beginning of 1996 to mid 2005 was roughly 50 percent. In either real or nominal terms, however, housing prices clearly rose in the late 1990s and early 2000s, then were constant for a couple of years, and dropped rapidly after the summer of 2007.

Recently, many individuals have been forced to either sell or foreclose on their homes because they could not make their housing payments, which may have negatively impacted national home ownership rates (Realtytrac 2010). Figure 3 displays home ownership rates from 1996 to 2009. Home ownership rates were 65.1 percent in 1996. By 2004 the rate of home

ownership rose to more than 69 percent. Starting in 2007, however, the home ownership rate started to decline. By the end of 2009 it had dropped to 67.3 percent. Although there has been a decline in home ownership in the past couple of years, it has not been that severe. A 2 percentage point drop in rates only represents a roughly 3 percent change relative to the mean. These changes in home ownership rates are much less severe than the changes in housing prices displayed in Figure 2.

TRENDS IN ENTREPRENEURSHIP

How has entrepreneurship fared over the same period of time in which unemployment rates have increased rapidly and the housing market has dropped significantly? What were the trends in entrepreneurship in the strong economic growth period of the late 1990s? Figure 4 displays annual estimates of the monthly entrepreneurship rate from 1996 to 2009. As noted above the entrepreneurship rate measures the rate of business creation at the individual owner level. It captures the percentage of the adult, non-business owner population that starts a business each *month*. It captures all new business owners, including those who own incorporated or unincorporated business, and those who are employers or non-employers. An average of 0.29 percent of the adult population, or 290 out of 100,000 adults created a new business each month over the period from 1996 to 2009.

In 2009, an average of 0.34 percent of the adult population, or 340 out of 100,000 adults created a new business each month. The business formation rate increased from 2008 when it was 0.32 percent. It was the third straight year that the index increased, resulting in an increase from 0.29 percent in 2006 to 0.34 percent in 2009. The recent increase is the largest over the fourteen-year sample period. In fact, over the period from 1996 to 2009, the business creation rate fluctuated within the range of 0.27 percent to 0.31 percent. It was not until 2008 and 2009 that it rose above the high end of this range, which coincides with the recent recession. In the late 1990s,

the entrepreneurship rate decreased slightly, then rose from 2001 to 2003. It remained relative constant over the next three years before increasing in the recent recession.

RELATIONSHIP WITH ENTREPRENEURSHIP

As displayed above, home prices increased in the late 1990s and dropped substantially after summer 2007. Unemployment rates followed a clear cyclical pattern over the past decade and a half. These trends may have worked with and against each other in affecting entrepreneurship. As a first pass at investigating the relationship between entrepreneurship and unemployment and housing prices, I plot the national series against each other. Figure 5 displays the entrepreneurship rate and an annualized measure of the unemployment rate. The entrepreneurship rate follows the same cyclical pattern as the unemployment rate. Both entrepreneurship and unemployment were high in 1996 then declined steadily in the strong economic growth period of the late 1990s. Both rates increased in the early 2000s corresponding with the recession. In the mid 2000s both rates declined until the start of the Great Recession in 2007. The unemployment rate rose very rapidly over the next two years. The entrepreneurship rate also rose in these two years.

The national entrepreneurship and unemployment rates followed the same time-series pattern over the period from 1996 to 2009. The relationship between the two measures appears to be very strong. But, the displayed patterns are somewhat deceptive. The cyclical pattern in the entrepreneurship rate is much less pronounced in relative terms than for the unemployment rate. Taking the recent recession as an example, the unemployment rate increased from 4.6 percent in 2006 to 9.3 percent in 2009. This represents an increase of more than 100 percent. The entrepreneurship rate increased from 0.29 percent in 2006 to 0.34 percent in 2009. This represents an increase of 17 percent. Thus, the entrepreneurship rate does not follow nearly as strong of a cyclical trend as the unemployment rate which may be due to the opposing forces noted above.

Figure 6 displays the entrepreneurship rate against the national median home price in $2009. The negative relationship between the two trends in the recent recession is very clear. Home prices have dropped sharply over the past few years as entrepreneurship rates have increased. These patterns run counter to the decline in home equity decreasing entrepreneurship and are likely due to stronger positive effects of rising unemployment rates. Entrepreneurship rates also dropped in the late 1990s when home prices were rising. Interestingly, however, both entrepreneurship and home prices rose steadily in the early 2000s. In this period, rising home equity may have provided capital for would-be-entrepreneurs to start businesses.

At the national level, trends in entrepreneurship appear to be primarily counter cyclical -- rising in economic downturns and declining in strong economic growth periods. The national patterns for entrepreneurship, however, are weaker than unemployment patterns over the business cycle. Trends in home prices and their effects on access to capital may have offset some of the business cycle effects. But, these are only broad strokes based on national trends. Instead, it is important to focus on variation in local labor market and housing conditions. Unemployment rates and housing prices differ substantially across metropolitan areas, and these differences can be used to more carefully examine the relationship between entrepreneurship, and unemployment and home prices.

5. Unemployment, Home Ownership and Entrepreneurship

I first examine the overall relationship between unemployment rates in local labor markets and entrepreneurship. Figure 7 displays the entrepreneurship rate for various levels of metropolitan area unemployment rates. These capture variation across metropolitan areas as well as over time. Entrepreneurship rates are 0.22 percent for local labor markets with an unemployment rate under 2 percent. The rate of entrepreneurship rises steadily with the unemployment rate reaching a peak of 0.34 percent for local labor markets with unemployment

rates of 10 percent or higher. The relationship between entrepreneurship rates and local labor markets appears to be roughly linear through the displayed range of unemployment rates.

I next examine the relationship between home ownership and entrepreneurship in the CPS. Entrepreneurship rates for home owners do not differ from those for non home owners. Both rates equal 0.29 percent. Home owners are thus not more likely to start businesses than are non-home owners, but this finding could change after controlling for other characteristics of the individual, especially income and employment status. Home ownership is strongly correlated with income and employment.

All home owners do not have the same amount of home equity to potentially borrow against to start businesses. An individual residing in California is likely to have more home equity than in the Midwest because of higher average house prices, for example. Focusing on home owners, Figure 8 displays entrepreneurship rates by a range of home values in the metropolitan area by quarter.[8] Entrepreneurship rates steadily increase with median home prices. For home owners living in MSAs with median home prices less than $100,000 the entrepreneurship rate is 0.26 percent. The entrepreneurship rate increases to 0.33 percent for individuals living in MSAs with median home prices of $500,000 or more. The relationship appears to be roughly linear.

A first pass at the relationship between entrepreneurship and local unemployment rates, home ownership, and local home prices suggests that there might exist stronger relationships than the national trends indicate. Thus, a more detailed analysis especially one that controls for the potentially opposing forces of rising local unemployment rates and declining home values in recessions is needed.

REGRESSION ANALYSIS

[8] MSA median home prices are measured quarterly and were obtained by special request to the National Association of Realtors.

To examine the independent effects of local labor market unemployment rates and housing markets, I turn to a regression analysis. The following regression equation for the probability of entrepreneurship is estimated:

(5.1) $y_{imt} = \alpha + \gamma_1 U_{mt} + \gamma_2 H_{imt} + \beta' X_{imt} + \lambda_t + \varepsilon_{imt}$,

where y_{imt} equals 1 if the individual starts a business by the second survey month and 0 otherwise, U_{mt} is the unemployment rate in the local labor market (metropolitan area) in month t, H_{imt} is whether the individual owns his or her home, X_{imt} includes individual characteristics, λ_t are month fixed effects to control for seasonal variation, and ε_{imt} is the error term. The individual characteristics include gender, race/ethnicity, nativity, age, education, family income, marital status, region, and urban status. The parameters of interest are γ_1 and γ_2. γ_1 captures the effects of local labor market conditions on entrepreneurship, and γ_2 captures the relationship between whether an individual owns a home and entrepreneurship. In some specifications, I replace home ownership with a proxy for home equity based on local home prices (defined by the metropolitan area). All specifications are estimated using OLS. Marginal effects estimates are similar from probit and logit models, and are thus not reported.

Table 1 reports estimates of (5.1). The base specification includes controls for individual characteristics. The estimates indicate that women are less likely to become entrepreneurs. African-Americans, Latinos, and Asians are also less likely to start businesses, all else equal.[9] Immigrants, however, are more likely than the native-born to start businesses. Immigrants have entrepreneurship rates that are 0.12 percentage points higher than U.S. born rates. Entrepreneurship increases with age and married people are more likely to start businesses.

The relationship between entrepreneurship and education is not clear. Entrepreneurship rates are lower for high school graduates than for high school dropouts (the left out category is high school dropouts). Entrepreneurship rates are then similar for individuals with some college

[9] These patterns are consistent with low rates of minority business ownership except for Asians who are found to have higher rates of business ownership (Fairlie and Robb 2008).

and high school graduates. Although college graduates and those with graduate degrees have higher rates of entrepreneurship than high school graduates they essentially have the same rate of entrepreneurship as high school dropouts. Thus, there appears to be somewhat of a U-shaped relationship between entrepreneurship and education. Related to education, I find that entrepreneurship rates tend to decline with total family income.

Turning to the effects of local labor market conditions on entrepreneurship, Specification 1 includes the local labor market unemployment rate. The coefficient estimate is positive and statistically significant. It implies that an increase in the local unemployment rate by 5 percentage points increases entrepreneurship rates by 0.04 percentage points (or 15 percent of the mean level). A 5 percentage point increase in the unemployment rate is roughly the same magnitude as the increase in unemployment from the start of the recent recession to the end of 2009 as displayed in Figure 1.

Another interesting finding is that home owners are more likely to start businesses. The coefficient is positive and statistically significant, although relatively small. Home owners have a 0.012 percentage point higher rate of entrepreneurship than non-home owners, which is roughly a 4 percent higher rate relative to the mean. In the presence of liquidity constraints, the ability of owners to borrow against the value of their homes, such as home equity loans, may make it easier to finance new business ventures.

In Specification 2, I include industry controls. Industries differ in their propensity for individuals to start businesses and the industrial composition of metropolitan areas may be related to unemployment rates and housing prices. Construction has the highest rate of business creation followed by Professional Services. The lowest rate of entrepreneurship is found in Manufacturing. The addition of industry controls, however, has little effect on the results for the local unemployment rate. Local unemployment rates continue to have a large positive effect on entrepreneurship. The home ownership coefficient declines somewhat becoming statistically insignificant. Industry controls are not included in the main specification because of endogeneity

concerns. The main issue is that the choice of industry and the choice of starting a business may be simultaneously determined. Workers are not constrained to starting businesses in their current industry and may choose different industries depending on the goals of their businesses.

To further check the robustness of the results, Specification 3 includes a smooth time trend. A quadratic time trend is included to capture any long-term, slower moving trends in entrepreneurship. Controlling for time trends is complicated by the goal of capturing the effects of the business cycle. Clearly, the inclusion of year dummies or a very flexible time trend (that allows repeated ups and downs) would not make sense in the context of estimating the effects of recessions on entrepreneurship. The inclusion of these variables would "over fit" the data and remove the possibility of identifying recessionary effects. A quadratic specification captures a smooth, longer-term trend over the period from 1996 to 2009 and does not allow the shape of a double peaked business cycle over the period. In this specification, the coefficient on the local unemployment rate becomes smaller, but remains large and statistically significant.[10] The home ownership coefficient is similar to the one reported in Specification 1. Thus, the estimates are not being driven by longer term trends in entrepreneurship.

In the final specification reported in Table 1, I estimate a regression equation that includes fixed effects for every MSA identified in the CPS (264). The inclusion of these fixed effects controls for differences across MSAs that are fixed over time. Unobservable differences across MSAs such as the general political and business climate might confound the results. In this specification, identification of the effect of local unemployment rates and home ownership are identified solely by changes over time within MSAs. In Specification 4, the coefficient estimate on the local unemployment rate becomes slightly larger. A 5 percentage point increase in the local unemployment rate results in a 0.058 percentage points (or 20 percent of the mean level)

[10] Although not reported, I also estimate a specification that includes a linear trend in entrepreneurship. The coefficient estimate on the local unemployment rate is larger (0.0074) and closer to the base specification. The quadratic, and to a lesser extent, the linear trends, might be soaking up some of the business cycle effects on entrepreneurship.

increase in the entrepreneurship rate. The home ownership coefficient is also larger in this specification. The inclusion of MSA fixed effects increases the coefficient estimate on home ownership to 0.020 percentage points.

All of the specifications reported in Table 1 include a dummy variable for home ownership. These regression models implicitly assume that all home owners have the same amount of equity in their homes. Although data is not available on actual home equity it is worthwhile to examine local home prices as a proxy. Home equity is determined by down payment amounts and price appreciation, but is also determined by home values. All else equal, individuals living in areas with higher home values will have more equity in their homes. An advantage of using local area home prices is that they are more exogenous to business creation at the individual level than having individual-level information on home values. Table 2 reports estimates from regressions that replace the dummy variable for home ownership with a variable measuring local home prices for home owners. Local home prices equal zero for non home owners. The same set of specifications is reported.

The coefficient estimate on local home values is positive and statistically significant. The coefficient implies that a $100,000 increase in home values results in an increase in the entrepreneurship rate of 0.011 percentage points or 4 percent of the mean rate of entrepreneurship. The decline in the national median real home price from its peak of $227,600 in summer 2005 to $170,300 at the end of 2009 was smaller. Thus, the effect of a major change in median home prices on the entrepreneurship rate is not large. The additional specifications reported in Table 2 do not change this conclusion. The estimates reported in the remaining specifications are similar or smaller.

In sum, both of the estimated effects of housing equity, although positive, are small relative to the effects of local unemployment rates. Home owners are more likely to start businesses than non-home owners and home owners with higher local home prices are more

likely to start businesses, all else equal, but the effects are not large. In contrast, the effects of the local unemployment rate are large and substantial. I focus more on these effects below.

INTERACTIONS WITH EMPLOYMENT STATUS

The current estimates of local labor market effects capture the net effect of local economic conditions on entrepreneurship. It is possible that different groups of individuals respond differently to local economic conditions which could provide some suggestive evidence on the two main opposing factors influencing entrepreneurship in recessions. On the one hand, high unemployment rates could increase entrepreneurship because of limited opportunities in the labor market. We then might expect individuals who are not employed to respond positively to higher local unemployment rates. On the other hand, recessions limit demand for the products and services of entrepreneurs. In this case, individuals who currently have wage/salary jobs would be reluctant to leave those jobs to start a business that might struggle in these economic conditions. Wage/salary workers thus might respond negatively or not at all to higher local unemployment rates.

To investigate this question, I use information in the CPS on the individual's initial labor force state, measured in the first survey month. I identify whether the individual is working in a wage/salary job or not employed, and interact this information with the MSA unemployment rate. In this case, the following regression equation for the probability of entrepreneurship is estimated:

(5.2) $y_{imt} = \alpha + \gamma_1^W W_{imt} * U_{mt} + \gamma_1^N N_{imt} U_{mt} + \varphi N_{imt} + \gamma_2 H_{imt} + \beta' X_{imt} + \lambda_t + \varepsilon_{imt}$,

where W_{imt} is whether the individual works in a wage/salary job in the first survey month and N_{imt} is whether the individual is not employed in the first survey month. In this case, we are interested in the parameters, γ_1^W and γ_1^N. These parameters capture the effects of local labor market conditions on the employed and not employed, respectively.

Table 3 reports estimates of (5.2). In Specification 1 it does not appear as though wage/salary workers respond to local unemployment rates. The coefficient on the interaction term

is small and statistically insignificant. In contrast, the coefficient on the not employed interaction with the local unemployment rate is large, positive and statistically significant. The coefficient estimate implies that individuals who are not currently employed are 0.045 percentage points more likely to start businesses when local unemployment rates rise by 5 percentage points. This is a relatively large effect.

The main effect of not being employed is also included in the regression. Individuals who are not currently employed are much more likely than wage/salary workers to start businesses in the following month. The coefficient estimate is large, positive and statistically significant. The unemployed and individuals not in the labor force may face different incentives for entrepreneurship, especially if they were recently laid off from their jobs. More specifically, they have a lower opportunity cost of starting a business because of the lost returns to tenure and experience on their jobs.

Additional specifications show roughly similar results. Individuals who are not employed have higher business creation rates in the face of higher unemployment rates. The results for business creation among wage/salary workers are not consistent across specifications. I find a negative coefficient in one specification and a positive and significant coefficient in one specification. In two specifications I find smaller, positive coefficients. In all of the additional specifications, I find large, positive and statistically significant coefficients on the dummy variable for not being employed. Finally, estimates do not differ substantially when including home values instead of home ownership (Table 4).

In sum, the estimates provide evidence that those initially not working respond positively to higher local unemployment rates. Wage/salary workers who might often wait for better economic conditions are not found to respond strongly to higher unemployment rates. The results are consistent with bad labor market conditions leading to higher levels of business creation out of necessity.

TYPES OF BUSINESSES CREATED IN SLACK LABOR MARKETS

What types of businesses are created in recessions? How does this compare to the types of businesses created in strong growth periods? In this section, I identify the most common types of businesses created in very slack labor markets and compare these to the types of businesses created in very tight labor markets. This analysis may shed additional light on recessionary effects on entrepreneurship. To conduct the analysis, I separate individuals into those residing in MSAs in the top quartile for unemployment rates and those residing in the bottom quartile for unemployment rates. The CPS provides information on the industries of the businesses created.

Table 5 reports estimates for aggregate industries. High unemployment MSAs are defined by having a local unemployment rate in the 4th quartile, which is 6.6 percent or higher. Low unemployment MSAs are defined as having a local unemployment rate in the 1st quartile, which is 3.7 percent or lower. Local unemployment rates vary not only across MSAs, but over time. Thus, recessionary periods contribute greatly to high local unemployment areas in this analysis. Estimates from the CPS indicate that businesses created in slack local labor market conditions represent a diverse set of industries. The largest representation of new businesses in high unemployment markets are in Professional and Business Services (20.8 percent) and Construction (20.6 percent). Education and Health Services capture 12.7 percent and Wholesale and Retail Trade capture another 12.3 percent of all new businesses. The remaining new businesses are concentrated in a wide range of industries.

Interestingly, the distribution of new businesses created in tight local labor market conditions is remarkably similar. Professional and Business Services and Construction continue to capture the highest shares of new businesses. Education and Health Services and Wholesale and Retail Trade capture the next two highest shares. In most cases, the share of businesses created in low unemployment markets in each industry differs by less than a percentage point than the share for businesses created in high unemployment markets. The distribution of industries represented by businesses created in high unemployment markets is also similar to the

total for all MSAs. These results do not indicate a few "desperation" industries for businesses created in weak labor markets.

HOW MUCH DOES THE BUSINESS CYCLE AFFECT ENTREPRENEURSHIP?

How well do trends in local unemployment rates explain recent trends in entrepreneurship? To examine this question, I calculate predicted trends in entrepreneurship from 1996 to 2009 based solely on changes in local unemployment rates and compare these trends to trends in actual entrepreneurship rates. The analysis provides additional evidence on the relative magnitude of the coefficient estimates reported in Table 1. To match the sample used to estimate coefficients, I focus on the total metropolitan area entrepreneurship rate. Figure 9 displays the total MSA entrepreneurship rate from 1996 to 2009. The total MSA entrepreneurship rate follows the same trend as the national rate displayed in Figure 5. Most importantly, the increase in the recent recession from an entrepreneurship rate of 0.29 percent in 2006 to 0.34 percent in 2009 is identical for the national and MSA samples.

Predicted entrepreneurship rates follow the same general trend as actual entrepreneurship rates (see Figure 9). The main difference is that the predicted rates do not fall as much in the strong economic growth period of the late 1990s. The predicted entrepreneurship rate remains more constant over this period. Predicted entrepreneurship rates, however, track the most recent recession very well. The predicted entrepreneurship rate increases from 0.29 percent in 2006 to 0.33 percent in 2009, which is very similar to the actual increase in entrepreneurship rates over this period. These results indicate that the recent rise in entrepreneurship rates is primarily due to the rapidly weakening conditions in the labor market as measured by local unemployment rates.

In Figures 10 and 11, I examine how well trends in home ownership and local home prices predict entrepreneurship trends, respectively. The combination of weak trends in home ownership and a relatively small coefficient from the regression analysis suggests that it cannot have a large effect. Indeed, the estimates displayed in Figure 10 indicate that predicted

entrepreneurship rates barely increase in the late 1990s and early 2000s, and subsequently drop in the recent recession. The pattern is stronger for the predicted entrepreneurship rate based on local home values, but also remains weak (Figure 11). Predicted entrepreneurship rates rise from an earlier level of 0.30 percent in the late 1990s to 0.31 percent at the peak of the housing market in 2006. As the housing market collapsed starting in 2007, the predicted entrepreneurship rate dropped back down to 0.30 percent. These were small changes relative to the rise in entrepreneurship rates that actually occurred from 2006 to 2009.

The estimates displayed in this set of figures makes it clear the relative importance of factors determining trends in entrepreneurship, especially in the recent recession. Changes in local labor market conditions are the main determinant of changes in the entrepreneurship rate. Although over the full sample period they do not predict changes in entrepreneurship rates perfectly, they predict the recent recession almost perfectly. In contrast, changes in the housing market, either through declining levels of home ownership or declining home values, do not predict changes in entrepreneurship rates well. Furthermore, trends in housing markets predict declining and not rising entrepreneurship rates in the recent recession.

6. Conclusions

Recessions have a large negative effect on business closings and foreclosures, but what effect do they have on business creation? The net effect from lower levels of business income and wealth, but lower earnings in the wage/salary sector on entrepreneurship is theoretically ambiguous. The most up-to-date microdata available -- the 1996 to 2009 Current Population Survey (CPS) -- are used to conduct a detailed analysis of the determinants of entrepreneurship at the individual level to answer this question. Regression estimates indicate that local labor market conditions are a major determinant of entrepreneurship. Higher local unemployment rates, measured at the MSA level and each month over the sample period, are found to increase the probability that individuals start businesses. Home ownership and local home values for home

owners are also found to have positive effects on business creation, but these effects are noticeably smaller.

Additional regression estimates indicate that individuals who are initially not employed are more likely to respond to higher local unemployment rates by starting businesses. The evidence is not as clear that individuals who are initially employed also respond positively to higher local unemployment rates. The results point to a consistent picture – slack labor market conditions are a key determinant of business creation. Although the corresponding declines in home ownership and housing equity in recessionary periods work in the opposite direction by decreasing access to financial capital they are not nearly as large as the counter-cyclical effects of local labor market conditions. The positive effects of individuals turning to self-employed business ownership because of the lack of better opportunities in the wage/salary sector outweigh the negative effects of limited demand and access to capital.

The historically rapid rise in unemployment rates in the so-called "Great Recession" has resulted in an increase in entrepreneurship rates over the past few years. Using the regression estimates for the local unemployment rate effects, I find that the predicted trend in entrepreneurship rates tracks the actual trend in entrepreneurship extremely well for the recent recession. I can predict the entire increase in entrepreneurship rates in the past few years from only the rapidly deteriorating labor market conditions. Estimates for home ownership and housing equity, on the other hand, indicate a small *decline* in entrepreneurship since the start of the recession. Over the longer sample period, I find that trends in entrepreneurship generally follow a counter-cyclical pattern, but these trends are much less pronounced than the counter-cyclical trends in unemployment rates. For example, in the recent recession the unemployment rate increased by 100 percent from 2006 to 2009, whereas the entrepreneurship rate increased by 16 percent.

Understanding the effects of recessions on business formation is important because of the contributions of entrepreneurship to job creation, innovation, and wealth in the U.S. economy.

Although a large number of small businesses struggled and failed in the recent recession, many new businesses that ultimately will be very successful were potentially created. Recent findings by Stangler (2009) indicate that 57 percent of the current list of Fortune 500 companies was started during previous recessions or bear markets. The finding presented here that businesses created in very slack labor markets have a similar industry distribution as those created in very tight labor markets suggests that business formation in the recent recession is not limited to a narrow set of types of businesses. Therefore, one positive byproduct of the recent severe recession is that a wide range of eventually-successful firms might emerge and contribute to the long-run economy.

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Figure 1: National Unemployment Rate
U.S. Bureau of Labor Statistics (1996-2009)

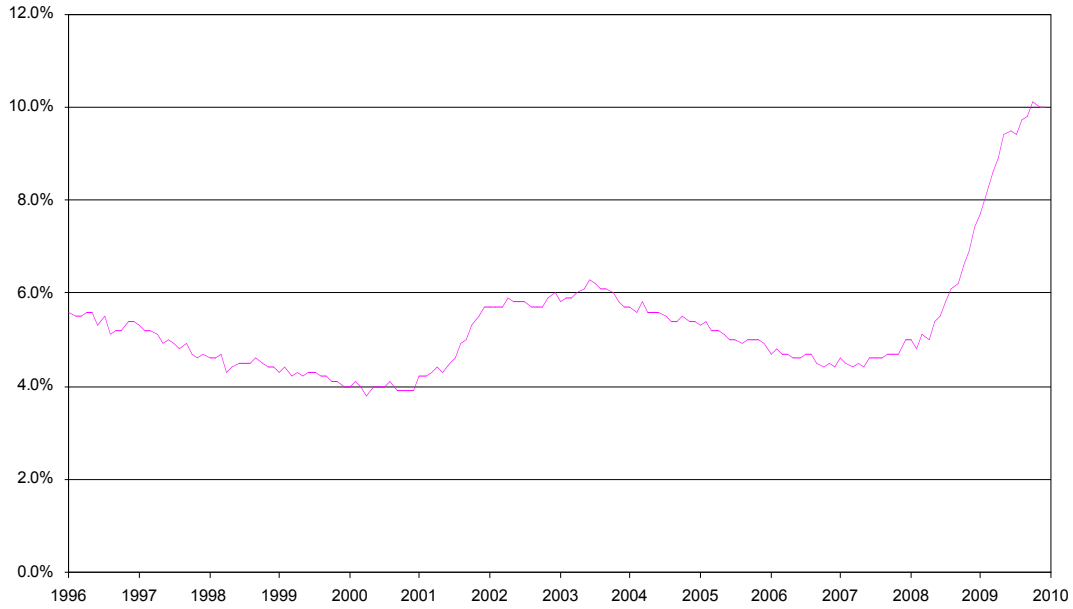

Figure 2: Median Sales Price of Existing Single-Family Homes
National Association of Realtors (1996-2009)

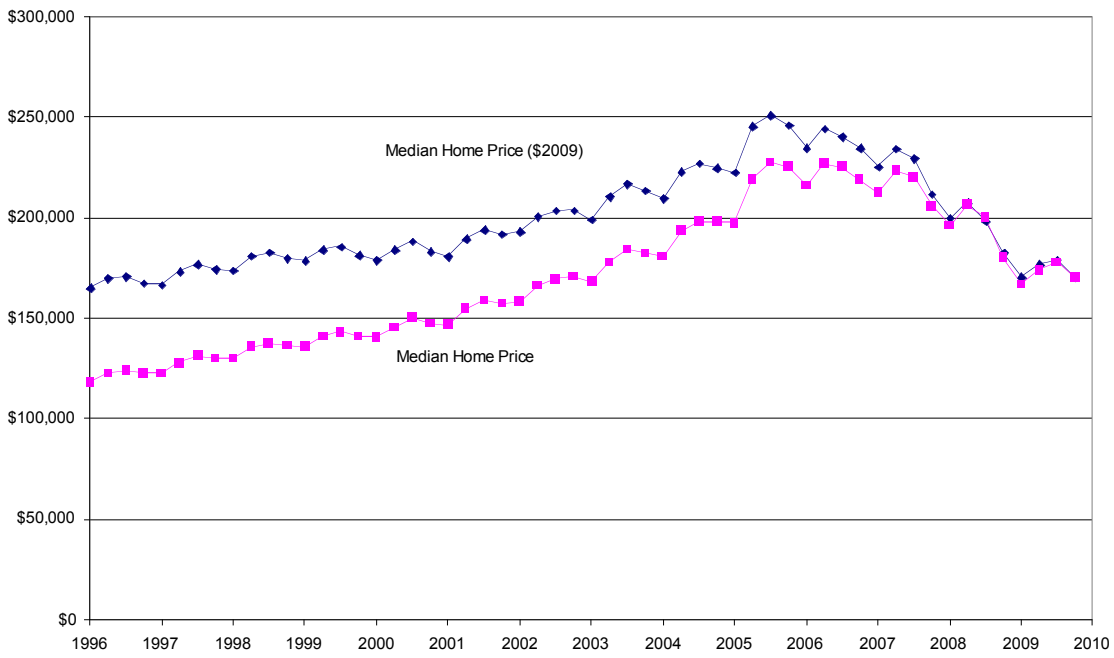

Figure 3: National Home Ownership Rates
Current Population Survey (1996-2009)

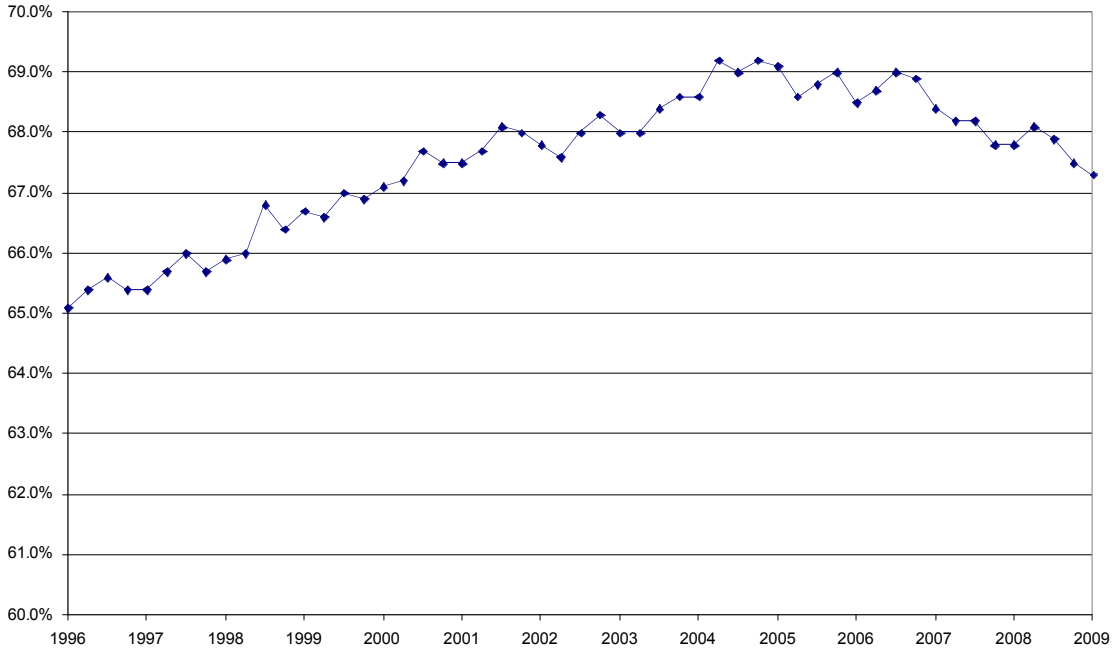

Figure 4: Entrepreneurship Rates
Current Population Survey (1996-2009)

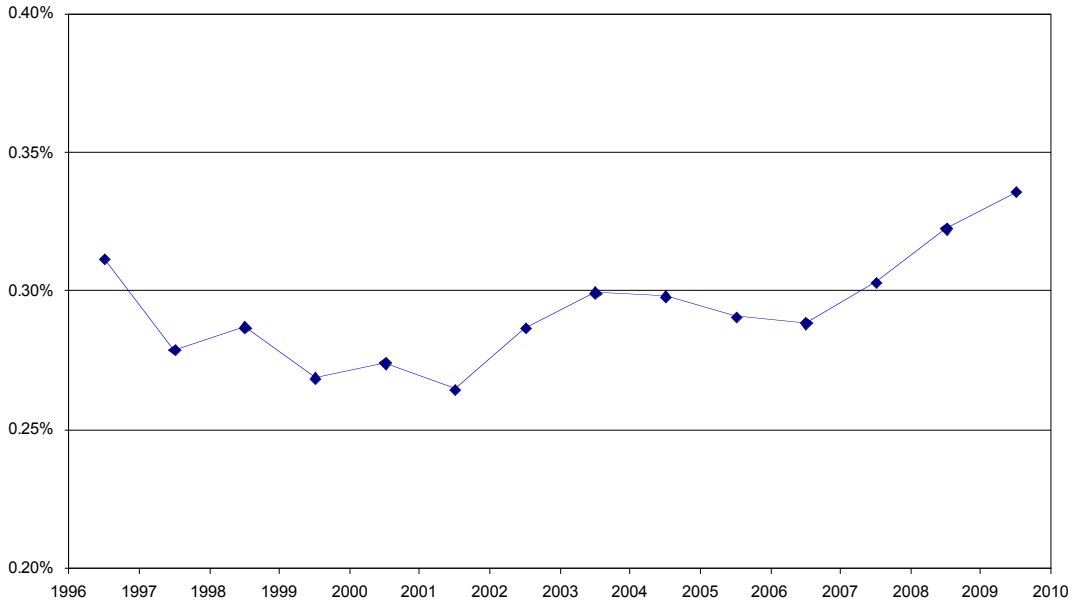

Figure 5: Entrepreneurship and Unemployment Rates
Current Population Survey and U.S. Bureau of Labor Statistics (1996-2009)

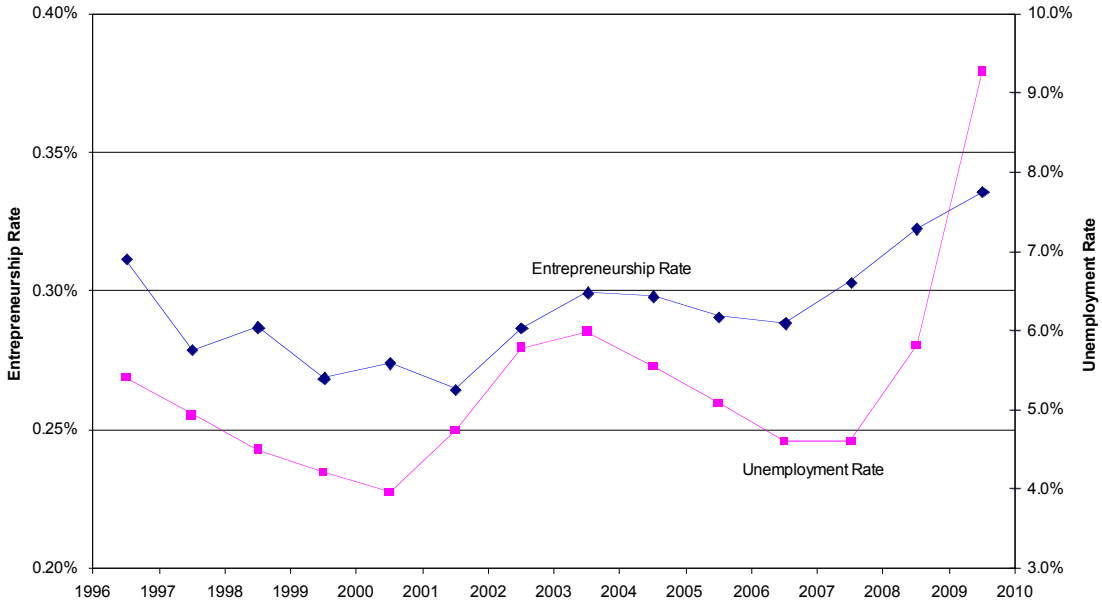

Figure 6: Entrepreneurship Rates and Median Home Prices
Current Population Survey and National Association of Realtors (1996-2009)

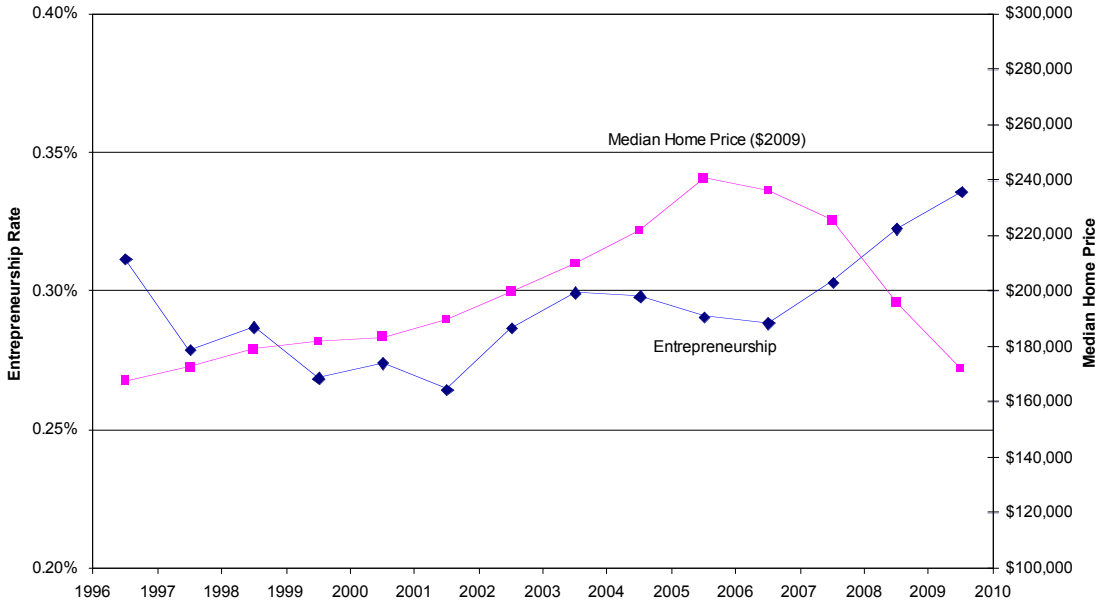

Figure 7: Entrepreneurship Rates by Local Unemployment Rates
Current Population Survey (1996-2009)

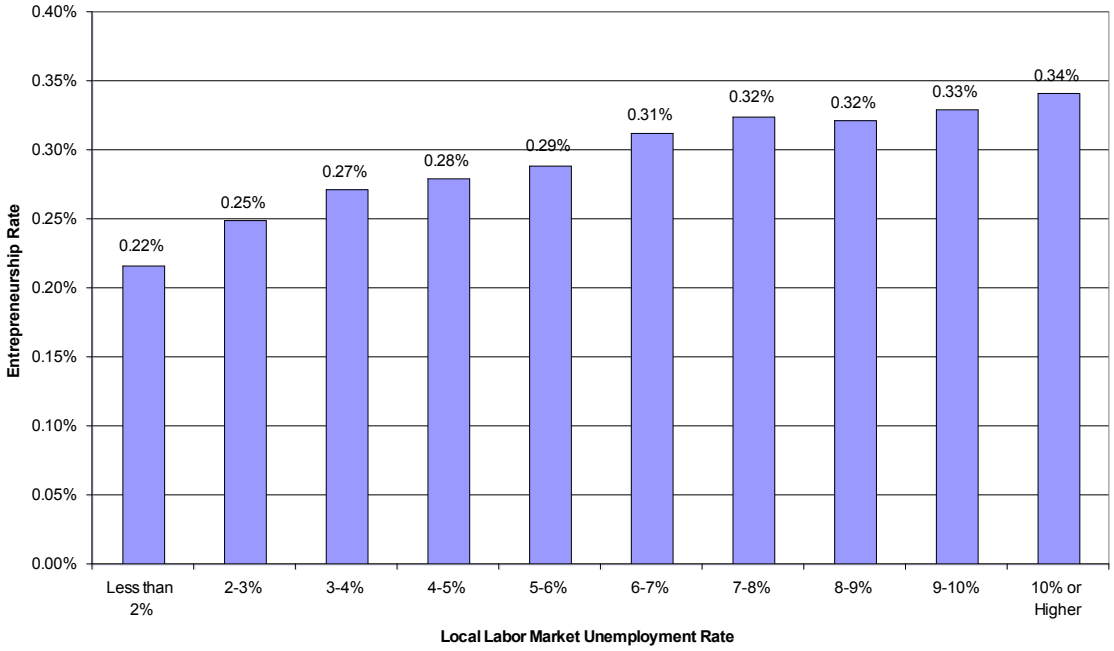

Figure 8: Entrepreneurship Rates by MSA Median Home Prices
Current Population Survey (1996-2009)

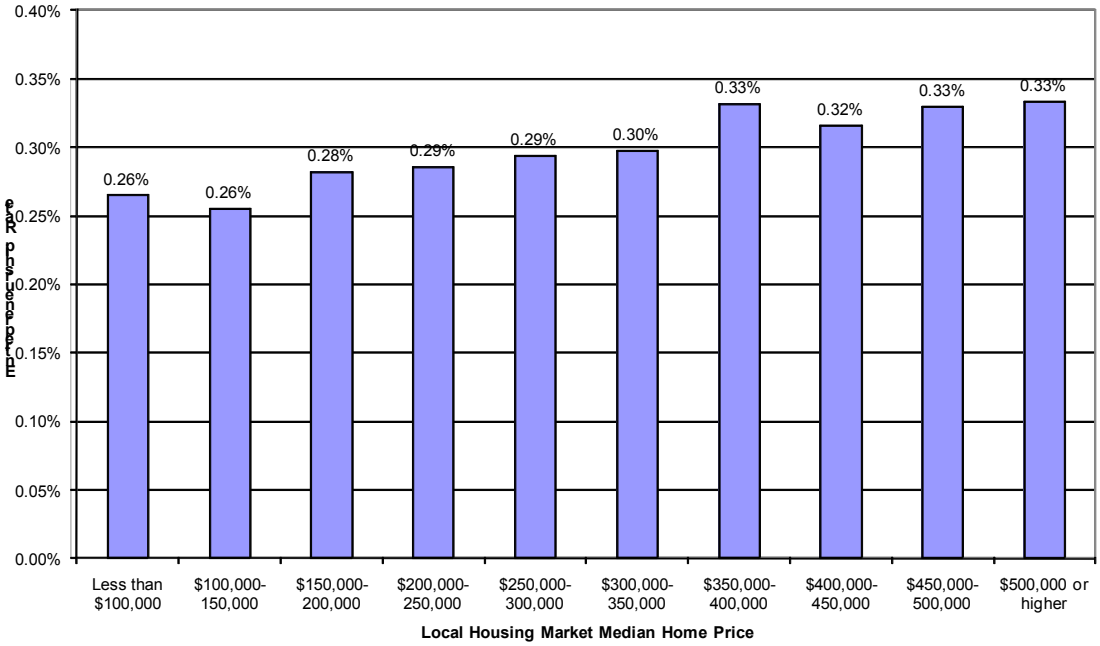

Figure 9: Actual and Predicted MSA Entrepreneurship Rates from Local Unemployment Trends
Current Population Survey (1996-2009)

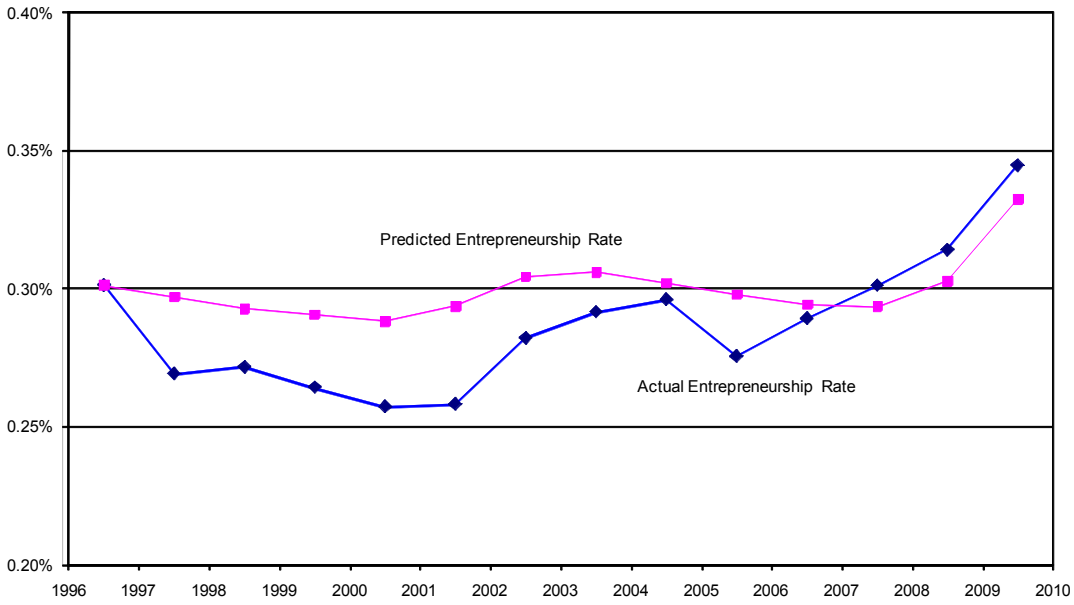

Figure 10: Actual and Predicted MSA Entrepreneurship Rates from Home Ownership Trends Current Population Survey (1996-2009)

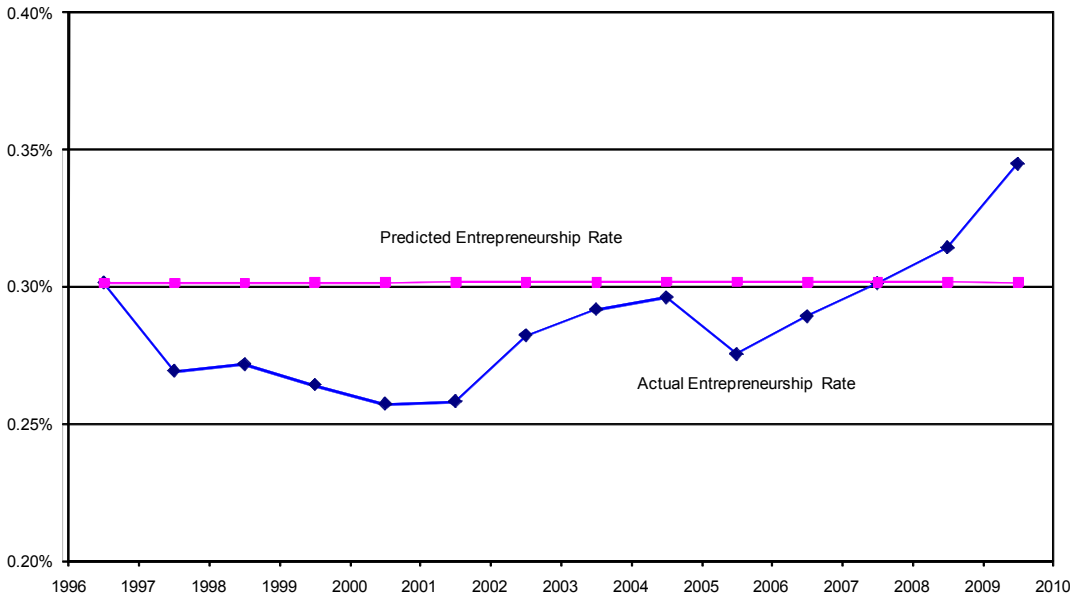

Figure 11: Actual and Predicted MSA Entrepreneurship Rates from Local Home Value Trends Current Population Survey (1996-2009)

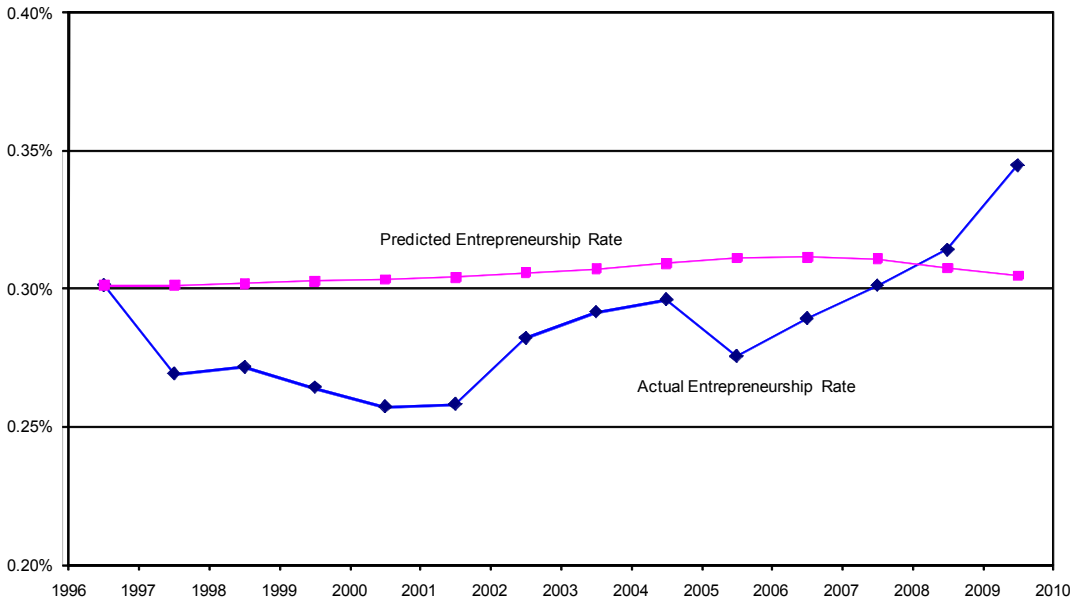

Table 1
Regressions for Probability of Entrepreneurship
Current Population Survey (1996-2009)

Explanatory Variables	(1)	(2)	(3)	(4)
Female	-0.00136	-0.00165	-0.00136	-0.00137
	(0.00005)	(0.00005)	(0.00005)	(0.00005)
Black	-0.00089	-0.00074	-0.00089	-0.00100
	(0.00007)	(0.00007)	(0.00007)	(0.00007)
Latino	-0.00056	-0.00043	-0.00058	-0.00076
	(0.00008)	(0.00008)	(0.00008)	(0.00009)
Native American	-0.00013	-0.00020	-0.00013	-0.00018
	(0.00028)	(0.00028)	(0.00028)	(0.00028)
Asian	-0.00127	-0.00127	-0.00128	-0.00126
	(0.00012)	(0.00012)	(0.00012)	(0.00012)
Immigrant	0.00117	0.00109	0.00116	0.00096
	(0.00008)	(0.00008)	(0.00008)	(0.00008)
Age (00s)	0.01686	0.03214	0.01709	0.01672
	(0.00140)	(0.00142)	(0.00140)	(0.00140)
Age squared	-0.01767	-0.03772	-0.01805	-0.01765
	(0.00164)	(0.00167)	(0.00165)	(0.00165)
Married	0.00056	0.00043	0.00058	0.00062
	(0.00006)	(0.00006)	(0.00006)	(0.00006)
Previously married	0.00023	0.00035	0.00024	0.00026
	(0.00008)	(0.00008)	(0.00008)	(0.00008)
High School graduate	-0.00036	0.00018	-0.00037	-0.00040
	(0.00008)	(0.00008)	(0.00008)	(0.00008)
Some college	-0.00029	0.00040	-0.00030	-0.00035
	(0.00008)	(0.00008)	(0.00008)	(0.00008)
College graduate	-0.00001	0.00085	-0.00002	-0.00013
	(0.00009)	(0.00009)	(0.00009)	(0.00009)
Graduate school	-0.00006	0.00105	-0.00007	-0.00016
	(0.00011)	(0.00011)	(0.00011)	(0.00011)
Family income: missing	-0.00023	-0.00001	-0.00028	-0.00030
	(0.00008)	(0.00008)	(0.00009)	(0.00009)
Family income: $25,000 to $50,000	-0.00120	-0.00059	-0.00122	-0.00124
	(0.00007)	(0.00007)	(0.00007)	(0.00007)
Family income: $50,000 to $75,000	-0.00184	-0.00106	-0.00187	-0.00192
	(0.00008)	(0.00008)	(0.00008)	(0.00008)
Family income: $75,000 or more	-0.00172	-0.00098	-0.00178	-0.00188
	(0.00008)	(0.00008)	(0.00008)	(0.00008)

(continued)

Table 1 (Continued)

Explanatory Variables	(1)	(2)	(3)	(4)
Local Unemployment Rate	0.00842	0.00807	0.00674	0.01153
	(0.00085)	(0.00085)	(0.00088)	(0.00091)
Home owner	0.00012	0.00008	0.00013	0.00020
	(0.00006)	(0.00006)	(0.00006)	(0.00006)
Industry controls	No	Yes	No	No
Entrepreneurship trend	No	No	Yes	No
MSA fixed effects	No	No	No	Yes
Mean of dependent variable	0.00287	0.00287	0.00287	0.00287
Sample size	5,694,980	5,694,980	5,694,980	5,694,980

Notes: (1) The sample consists of individuals (ages 20-64) who do not own a business in the first survey month. (2) Additional controls include month, region and urban status dummies.

Table 2
Regressions for Probability of Entrepreneurship with Home Values
Current Population Survey (1996-2009)

Explanatory Variables	(1)	(2)	(3)	(4)
Local unemployment rate	0.00942	0.00888	0.00756	0.01175
	(0.00101)	(0.00101)	(0.00106)	(0.00107)
Local home value for home owners ($100,000)	0.00011	0.00008	0.00010	0.00005
	(0.00002)	(0.00002)	(0.00002)	(0.00002)
Industry controls	No	Yes	No	No
Entrepreneurship trend	No	No	Yes	No
MSA fixed effects	No	No	No	Yes
Mean of dependent variable	0.00290	0.00290	0.00290	0.00290
Sample size	4,976,595	4,976,595	4,976,595	4,976,595

Notes: (1) The sample consists of individuals (ages 20-64) who do not own a business in the first survey month. (2) Additional controls include month, region and urban status dummies.

Table 3
Regressions for Probability of Entrepreneurship with Labor Force Interactions
Current Population Survey (1996-2009)

Explanatory Variables	(1)	(2)	(3)	(4)
Employed*local unemployment rate	0.00121	0.00131	-0.00015	0.00467
	(0.00101)	(0.00101)	(0.00104)	(0.00106)
Not employed*local unemployment rate	0.00903	0.00411	0.00772	0.01261
	(0.00152)	(0.00153)	(0.00154)	(0.00156)
Not employed	0.00606	0.00871	0.00605	0.00605
	(0.00011)	(0.00013)	(0.00011)	(0.00011)
Home owner	-0.00002	0.00007	-0.00001	0.00006
	(0.00006)	(0.00006)	(0.00006)	(0.00006)
Industry controls	No	Yes	No	No
Entrepreneurship trend	No	No	Yes	No
MSA fixed effects	No	No	No	Yes
Mean of dependent variable	0.00287	0.00287	0.00287	0.00287
Sample size	5,694,980	5,694,980	5,694,980	5,694,980

Notes: (1) The sample consists of individuals (ages 20-64) who do not own a business in the first survey month. (2) Additional controls include month, region and urban status dummies.

Table 4
Regressions for Probability of Entrepreneurship with Labor Force Interactions
Current Population Survey (1996-2009)

Explanatory Variables	(1)	(2)	(3)	(4)
Employed*local unemployment rate	0.00256	0.00255	0.00103	0.00536
	(0.00120)	(0.00120)	(0.00124)	(0.00125)
Not employed*local unemployment rate	0.00708	0.00160	0.00558	0.01017
	(0.00181)	(0.00182)	(0.00184)	(0.00185)
Not employed	0.00622	0.00898	0.00622	0.00621
	(0.00013)	(0.00015)	(0.00013)	(0.00013)
Local home value for home owners ($100,000)	0.00006	0.00006	0.00006	0.00001
	(0.00002)	(0.00002)	(0.00002)	(0.00002)
Industry controls	No	Yes	No	No
Entrepreneurship trend	No	No	Yes	No
MSA fixed effects	No	No	No	Yes
Mean of dependent variable	0.00290	0.00290	0.00290	0.00290
Sample size	4,976,595	4,976,595	4,976,595	4,976,595

Notes: (1) The sample consists of individuals (ages 20-64) who do not own a business in the first survey month. (2) Additional controls include month, region and urban status dummies.

Table 5
Industry Distribution for Businesses Created in High and Low Unemployment MSAs
Current Population Survey (1996-2009)

Industry	High Unemployment MSAs	Low Unemployment MSAs	All MSAs
Agriculture	3.6%	3.9%	3.3%
Construction	20.6%	18.4%	19.3%
Manufacturing	3.3%	2.9%	3.2%
Wholesale/Retail Trade	12.3%	10.8%	12.0%
Trans/Utilities	3.8%	3.2%	3.5%
Information	2.7%	2.3%	2.7%
Financial Activities	6.2%	6.9%	6.7%
Professional/Business Services	20.8%	23.4%	22.2%
Education/Health Services	12.7%	14.9%	13.5%
Leisure/Hospitality	6.5%	5.8%	6.3%
Other Services	7.5%	7.6%	7.4%
Sample size	4,270	3,760	16,223

Notes: (1) The sample consists of individuals (ages 20-64) who start a business in the second survey month. (2) High unemployment MSAs are defined by having unemployment rates in the 4th quartile (6.6 percent and higher), and low unemployment MSAs are defined by having unemployment rates in the 1st quartile (3.7 percent and less).