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Determinants of Self-Employment in the United States

Viktoriya Nikolova
Furman University, vicky_5_c2000@yahoo.com

Michael S. Bargar
Furman University, michaelsbargar@yahoo.com

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Abstract
The prominence entrepreneurs have occupied in the popular imagination belies their relative neglect in formal economic theory. This paper adds to the growing body of work on entrepreneurs by examining the characteristics of self-employed individuals in the National Longitudinal Survey of Youth 1997. We believe our article to be the first that uses this fresh body of data for this purpose. Employing the standard binomial probit model with a list of potentially significant variables drawn from existing literature, we discovered that women are significantly less likely to be self-employed than men.

Keywords
self-employment, entrepreneurship

Cover Page Footnote
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I. Introduction

Entrepreneurs have long been viewed as an essential component of a vibrant economy, though their exact role has often been left out of formal models. Recent work identifies entrepreneurs as the missing link that explains the correlation between economic freedom and economic growth. There is an increasing body of literature that focuses on the factors affecting an individual's decision to enter self-employment. We contribute to the available literature by being the first to look at individual data from a source new to this line of research, the National Longitudinal Survey of Youth 1997. Here we examine the difference in levels of self-employment between men and women and how a set of variables such as the respondent's level of education, presence of children and region of residence, affect the choice of whether to become self-employed. We are also interested in investigating the possible impact of state levels of economic freedom on self-employment decisions, although data considerations required us to use regional data.

Our paper is organized as follows. In Part II, we review the literature available on entrepreneurs. In Part III, we elaborate on the data by explaining how we created each variable. In Part IV, we develop our model. The exposition and discussion of the results from the model are discussed in Part V. Conclusions and suggestions for future research are contained in Part VI.

II. Literature Review

A wide variety of variables have been examined in conjunction with their possible impact on individuals' decision to enter into self-employment/entrepreneurship. Many of these are personal characteristics, specific to each would-be entrepreneur, by which economists hope to discover the key factor that distinguishes them from their much more common brethren, the non-entrepreneur. The impact of a few of the most common control variables is fairly well-established. Forays into entrepreneurship are positively correlated with age, the male gender, with certain racial groups (in the United States at least) and, on a related note, with being an immigrant (Fairlie 2005). Gender differences are among the most consistent variables in studying self-employment decisions. Kim et al. (2006) reached the conclusion that women tend to be less of nascent entrepreneurs than men. The women's percentage in the entrepreneurial sector still lags significantly behind men's despite increasing in the past couple of decades. Fairlie and Meyer (1996) show this lag in their data of U.S. self-employment rates for men and women – 10.8 and 5.8 percent, respectively.

Age is another variable that researchers have found to be consistently correlated with self-employment. Older workers are more likely to be self-employed than younger ones. The reasons for this are disputed, however. Rees and Shah (1986) offered one explanation by proposing that people generally move

more toward self-employment the closer they get to the "end of normal working life as an alternative to retirement." However, this is expected to be tempered because risk aversion also increases with age, rendering entrepreneurial ventures less attractive.

Another possible explanation for the age effect on self-employment is the role of household wealth. Evans and Jovanovic (1989) specifically examined the effect liquidity constraints had on entrepreneurial entry. While they concluded that more assets increased the chances of entrepreneurial entry, further empirical evidence has been mixed. While Blanchflower and Oswald (1998) found evidence consistent with the theory by looking at the impact of receiving an inheritance or gift upon individual probability of entering self-employment, Hurst and Lusardi (2004) found a positive relationship between wealth and entrepreneurial entry only existing among the wealthiest households, exactly where liquidity constraints should not exist. They also found that past and future inheritances both predict entrepreneurial entry, indicating a relationship besides liquidity. In addition, Kim et al. (2006) found no statistically significant association between financial resources and nascent entrepreneurship when controlling for human and cultural capital. Nonetheless, the liquidity constraints theory continues to have utility. For instance, it may explain some of the historically lower self-employment rates among African-Americans (Fairlie 1999).

Strong evidence also exists to connect entry into self-employment and a self-employed family member. Dunn and Holtz-Eakin (2000) show that each parent contributes toward their child's decision whether to enter self-employment or not. Fathers who have been or still are self-employed have a strong influence on the son's self-employment, while self-employed mothers barely have any influence over the son. However, the cumulative effect of two self-employed parents (whether currently or formerly) is even greater. For young women, the mother's self-employment has the most significant effect, though having a self-employed father or two self-employed parents' remains significant. The authors offer a potential interpretation that "entrepreneurial tastes or abilities are also transmitted more strongly from parents to children of the same gender."[1] Hout and Rosen (2000) reach a similar conclusion – the fathers' self-employment status is the primary factor that affects their children's status out of the familial variables they consider. This is consistent with Fairlie and Robb's (2007) report on the Characteristics of Business Owners Survey that found business owners are more likely to have family members who are business owners. Additionally, Fairlie

[1] Dunn, Thomas and Douglas Holtz-Eakin. "Financial Capital, Human Capital, and the Transition to Self-Employment: Evidence from Intergenerational Links." *Journal of Labor Economics*, Vol. 18, No.2 (Apr. 2000), pp. 299

(1999) mentions an older study that found that 53 percent of a sample of self-employed proprietors had self-employed parents.

Many researchers believe that it is more difficult for non-whites to enter certain occupations (Rees and Shah 1986). Fairlie and Meyer (1996) studied the self-employment differences among sixty ethnic and racial groups. They found, contrary to widespread belief, that discrimination and the language barrier are not the leading cause for entry into self-employment for minorities. Rather than being pushed by an adverse job market, many ethnic groups are pulled towards entrepreneurship by higher returns to self-employment than to wage-and-salary work. Another study found that African-Americans, Latinos, American Indians and East Asians have the lowest self-employment rates among the ethnic groups in the United States, while people with Jewish, Dutch/Belgian and Scandinavian ancestries have the highest rates (Hout and Rosen 2000). The authors point out the disadvantages faced by minorities, especially Latinos and African-Americans, when considering self-employment. They found that representatives from these minorities are less likely to have a self-employed father, a factor tied to higher rates of self-employment elsewhere. In addition, the usual effect of having a self-employed father appears nonexistent for these groups. Those with self-employed fathers are about as unlikely to become self-employed as those whose fathers have never been self-employed. These findings lend credence to Fairlie's admonition that "estimates of the determinants of self-employment can easily be badly biased if their correlation with ethnicity and race are not incorporated."[2]

Hout and Rosen also found that "immigrants and the sons of immigrants are more likely than third- and fourth-generation Americans to be self-employed."[3] While that study found no connection between a father's self-employment in another country and his son's self-employment in the United States, the basic finding is well-established in literature for at least some ethnic groups. The entrepreneurial experience of Koreans, who have the highest self-employment rate of any ethnic group, has been extensively studied by sociologist Pyong Gap Min. As a result of this and other work that suggests that immigrants turn to business ownership as a means to economic advancement and social mobility, controlling for immigration status is fairly standard for individual-level data.[4]

Numerous researchers have focused on education in self-employment models. Rees and Shah (1986) stress the importance of education as a leading force for migration toward self-employment. The argument made in this paper

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[2] Fairlie, Robert W. and Bruce D. Meyer. "Ethnic and Racial Self-Employment Differences and Possible Explanations," The Journal of Human Resources, Vol. 31, No. 4 (Autumn, 1996), pp. 787

[3] Hout and Rosen, "Self-Employment, Family Background and Race," pg 686

[4] See for example "Access (not) denied" by Kim et al. and "Entrepreneurship and earnings from young adults from disadvantaged families" by Fairlie.

states that more educated people tend to "be better informed," thus making them "more efficient at assessing self-employment opportunities." Moreover, Fairlie (2005) provides evidence on the effects of parental education on their children's work decisions. The author separates the parental education levels in three categories – "both parents dropped out of high school," "one or both parents graduated from high school," "one or both parents attended college." Fairlie finds a positive, albeit slight, correlation between the parent's educational achievement and their children choosing self-employment.

Kim et al. (2006) found a positive relationship between managerial experience and self-employment. While previous self-employment experience may demonstrate a propensity towards autonomous work and other psychological factors favoring entrepreneurship, this study found people who had previously attempted to start a business were 50 percent less likely to try again. They theorized that the difficulties experienced turned people off of the idea.

Psychological traits such as risk aversion are often theoretically associated with entrepreneurship, but hard data is difficult to come by. This paper will leave the question aside except in proxy. Evans and Leighton (1989), Taniguchi (2002), and Rees and Shah (1986) provide more examples of personal characteristics that may affect entry into self-employment.

Rees and Shah Provide an example of one particular approach that has been used to study employment decisions. The researchers first created a model of earnings for wage work versus self-employment. They then studied the differing impacts of various factors on each model and the attractiveness of self-employment vis-à-vis wage work. This allowed them to calculate the probability that an individual will abandon one for the other. Bruce (2000), Blau (1987), Kuhn and Schuetze (2001), Fairlie (2005), and Rissman (2003) provide examples of different variations upon this approach.

Much research on the determinants of entrepreneurial levels studies the impact of government policies. Bruce (2000) looked at differential tax treatment of the self-employed and used time series models to show that these differences had a significant impact on entry into self-employment. Bruce (2002) found that more favorable tax rates encourage transition into self-employment, but not necessarily the reverse, and that differential tax rates are statistically significant. Higher taxes can serve as insurance against the risk of self-employment, though the effect this has on self-employment rates is difficult to determine. Gentry and Hubbard (2000) failed to find a link between more progressive taxation and the decision to become an entrepreneur, but did find less progressive taxes lead to significant increases in entrepreneurship. Bruce and Moshin (2005) used time-series models to find that various federal taxes had statistically significant but quantitatively small effects on entrepreneurial levels. Cullen and Gordon (2002), on the other hand, provide a theoretical framework that shows taxes can have a

significant effect on entrepreneurial levels. They forecast that a shift to a 20% flat tax rate would triple the self-employment rate. Holtz-Eakin (1999) found the estate tax disproportionately fell on entrepreneurs, leading into an article in 2000 that discussed the question of efficiency and equity surrounding any preferential treatment of small businesses. Gordon (1998) showed that having a lower corporate tax rate than personal tax rate provided an incentive for entrepreneurs who can reclassify their earnings. Gilbert et al. (2004) review the larger historical and economic context in which changes in government policy have taken place.

From the greater body of literature has sprung a new line of research that examines the effect of government policies on entrepreneurship. Tying the correlation between economic freedom and economic growth (see Campbell and Rogers 2007, footnote 1) together with the connection drawn between entrepreneurial levels and economic growth (Kreft 2003, with Sobel 2005), there is now suspicion that the latter connection is the means by which the former plays out. Certain researchers are now studying the effect of specific government policies on entrepreneurship levels and consequently economic growth on a macro scale. These papers find that the tie between economic freedom and entrepreneurship that has previously been shown on a national level continues to hold across U.S. states. Campbell and Rogers (2005) found state economic freedom to be significantly tied to new business formation, more so than policies aimed at demographics or lending. Choi and Phan (2006) used longitudinal data to demonstrate that government policy can affect new firm creation through policies related to technology, promoting competition and labor mobility. Garrett and Wall (2006) examined the effect of all 50 states' policy environments on entrepreneurship and found income tax rates, bankruptcy law, and minimum wage legislation to be statistically and economically significant. Acs et al. (2008) and Baumol et al. (2007) provide policy suggestions for increasing entrepreneurial rates.

III. Data

The studies that previously examined the relationship between government policies and entrepreneurship levels rely exclusively on macro level data. In contrast, we are the first to look at individual level data in the form of the National Longitudinal Survey of Youth 1997 (NLSY97). This consists of a nationally representative sample of just under 9,000 youths aged 12 to 16 years old as of December 31, 1996. The first round in 1997 interviewed both the youth and their parents. The youth have been interviewed on an annual basis since then, with the most recent data from 2005.

The NLSY97 has several advantages for this research. It contains extensive data on the employment, health, assets, marital history and demographic characteristics, which can help us monitor the youths' transition into adulthood. It

possesses a relatively large sample size, although attrition has brought it to about 7,300 respondents by 2005 (an 81.7 % retention rate). Its longitudinal structure allows us to identify changes in states over time. One disadvantage of using the NLSY97 is the young age of those being studied, with the very oldest being 26, when literature suggests self-employment and age are positively correlated. The information about assets, which literature identifies as being critical to self-employment decisions, is often exhaustive but inconsistent and even nonexistent for many of the interviewees. Here again age played a factor, as the survey questions that addressed this topic had to be modified to account for the respondents' youth.

For the purpose of this paper we limited our sample to the 2005 year of the NLSY97. We first cleaned our data set by restricting it to respondents who were in the labor force throughout the entire interview process. Respondents were dropped from the data set if they reported being out of the labor force or in the military during the thirty weeks that interviews were conducted in 2005-2006. Over seventeen-hundred individuals were dropped via this criterion. We were left with 4,693 men and women who were present in the labor force during this time period and who had all the available data for our base model.

Our dependent variable was constructed by assigning a zero to every remaining individual interviewed in the ninth round (2005 data) of the NLSY97. The zeros were replaced by ones if the individual was working at a self-employed job, thus creating a dichotomous variable. We chose not to restrict our dependent variable to only those who are self-employed in their main jobs in order to capture any budding entrepreneurs. New entrepreneurs may begin businesses in their spare time while continuing to support themselves with wage work. A total of 344 self-employed individuals were identified, with 249 reporting being self-employment as their main job. We used the larger sample for the purposes of this study.

Independent variables:

We gleaned our list of independent variables that affect the decision of whether to become self-employed from the reviewed literature. Among the most widely agreed upon are age, sex and race. After data cleaning, the remaining respondents were between the ages of 20 and 26, with a mean age of 22.98. People at these ages should have already graduated from high school and be either obtaining higher education or working. Despite the theoretical importance of age as a control variable, we did not include it in our model because of small variation in our cross-sectional model.

Numerous papers focus their research exclusively on either men or women (see Taniguchi 2002, Fairlie and Meyer 1996). We kept both genders in our basic model to compare how the different independent variables affect each gender's

choice to enter self-employment. As males have been found to be more likely to be self-employed, they are coded as 0 and females are coded as 1.

Numerous papers have found race and ethnicity to be an important factor in determining self-employment. There were two variables available for us to create dummy control variables. The first had three categories: black, Hispanic, and non-black, non-Hispanic. The second had more extensive information. With literature pointing towards the necessity of controlling for low rates of black and Hispanic entrepreneurship, we chose to create a black and a Hispanic dummy variable from the former source. This variable should provide insight for whether this new survey holds any evidence that the historical trend of low self-employment rates for these minorities shows any sign of improving.

We created another set of dummy variables to account for the part education plays in self-employment decision making. Education serves as a proxy for human capital. Its expected effect on the likelihood of being self-employed is uncertain due to differing theories. On the one hand, it is expected that increased human capital would increase the chance that an individual could overcome the obstacles inherent in starting a business. Professionals are also expected to be more capable of opening their own practice. On the other hand, Rissman (2003) postulated that self-employment is a low-income alternative to wage work, indicating that less education and therefore fewer job opportunities should be positively correlated with self-employment. To confuse the matter, Kim et al. (2006) found a curvilinear impact of education on self-employment, with both too little and too much discouraging entrepreneurial attempts. We generated four new dummy variables from the available data on the highest grade completed. One indicates fewer than twelve grades were completed; another indicates for twelve grades completed, roughly equivalent to a high school diploma; a third for thirteen to fifteen grades completed, analogous to some college attainment; and finally one for sixteen or more grades completed, indicating a bachelor's or higher degree. We checked this measure of educational attainment against a second variable set in the NLSY that had the highest degrees earned. We discovered a data issue between these two measures. While the two largely correspond as expected, there are some instances where the highest grade completed does not match the expected degree. For example, about one hundred respondents received a high school diploma with fewer than twelve grades, in one case apparently receiving it upon completing fifth grade. We have no answers for this irregularity.

We used parental education in our analysis as a proxy for the human capital and experience that is passed on from parents to their children in the form of advice or encouragement. Four dummy variables account for the educational attainment of the respondents' parents. These come from information on the highest grade of schooling completed by the respondent's mother and father. This

data was compiled in order to catch the highest number of observations. The four variables now represent the highest educational attainment by either parent: college, some college, high school or less than high school.

Many papers seek to test the liquidity constraint theory. This theory hypothesizes that individuals with more assets will find it easier to raise the capital necessary to start a business, and therefore will be more likely to be self-employed. The most comprehensive variable available to us was the net worth at age 20. Measures of net worth for more specific years were limited to much smaller sample sizes and unavailable for 2005. The age of the respondents might limit their access to formal capital such as bank loans. Informal family loans may be more important to overcome liquidity constraints. Therefore we accounted for parental assets, for which data is available from 1997.

We generated new variables to account for one or both parents of the respondent being self-employed. The parental information in the NLSY97 included a question on whether the parent had received income from a business, farm, professional practice or partnership in 1996. While not taking into account the parent's entire career history, this serves as a second best proxy. It is supplemented by a variable of whether parent's spouse received similar income during 1996. However, this information was available for fewer of the interviewees, so we made the assumption that neither parent was self-employed if the first parent was not self-employed and there was no data on their spouse. Since fewer than 7 percent of interviewed parents were self-employed, we considered this to be a safe assumption.

We also tackled the issue of the respondent's marital status. It is essential to control for this variable because an additional provider in the household will reduce the inherent risk of entering self-employment. The NLSY97 also provides information on whether the respondent is cohabiting. For the purpose of this paper we expected cohabitation to have a similar effect to marriage and equated the two in our created variable.

Another variable we look at is the potential work experience. For every year the individual has been out of school, he or she could have gained working experience. This experience could have a similar effect to education, as more experienced workers have more skills that could aid an entrepreneurial venture. We measured it in terms of years and define it as age minus highest grade completed minus five. This should account for individuals working after completing their education, and five years off the raw estimate to account for the fact that individuals are unlikely to work before the age of five.

Another created variable aimed to measure poor health. Rees and Shah (1986), Blanchflower and Oswald (1998), and Rissman (2003) have separately included this variable in their studies. The effect of poor health on this decision is ambiguous. The individual may have trouble finding work and turn to self-

employment as an alternative to unemployment, or the individual may be less inclined to leave their job because they receive necessary health insurance through their employer. Our variable is a combination of respondents who reported having a medical condition that significantly limited their activities and those who reported having poor health in general.

Immigration status is another necessary independent variable. On the whole, immigrants are more likely to be self-employed than native-born citizens. They may have difficulty finding work due to inadequate English skills or see business ownership as a means of social mobility. We controlled for this by compiling various related variables from the NLSY97 to form a single measure of whether the respondent is a native-born citizen or not. The base variable from the 1997 survey year was supplemented by follow-up questions asked in subsequent years. It is equally important to look at the parental immigration status. The circumstances that led immigrants to be self-employed may continue to have an effect for their children (first-generation Americans).

We also believed it was important to control for the respondent's previous self-employment experience. A previous spell of self-employment could indicate that the individual is of an entrepreneurial mindset and more likely to start new businesses. Alternatively, the experience of running a business may have turned the individual off of the idea. To control for this, we created a dummy variable that equals one if the respondent held any self-employed job between 1998 and 2004 and zero if the respondent held no self-employed jobs during this time.

We considered the respondent's independence to be particularly important as a determinant of self-employment. Therefore, we generated a variable that indicates whether the respondent is currently living with one or both parents. Presumably, living with one's parents provides a measure of financial support and so decreases the risk of entrepreneurial ventures. We transformed data from the NLSY97 to account for living with any parent or parent figure at the time of interview.

To test our hypothesis that the state government policies and the states' economic freedom indexes affect one's employment decision, we included two variables for geography – a region dummy variable, and an urban variable. The first variable, region, splits the Unites States into four major regions: northeast (including CT, ME, MA, NH, NJ, NY, PA, RI, VT), north central (IL, IN, IA, KS, MI, MN, MO, NE, OH, ND, SD, WI), south (AL, AR, DE, DC, FL, GA, KY, LA, MD, MS, NC, OK, SC, TN, TX, VA,WV), and west (AK, AZ, CA, CO, HI, ID, MT, NV, NM, OR, UT, WA, WY). Our intention was to measure the impact of state levels of economic freedom using the current state of residence data from the BLS. However, this information is classified and available only to certified graduate and post-graduate researchers. Using the publicly available region of residence is as close as we could come to our original point of research. To fill out

the geographic indicators, we include a variable for city residence to account for increased opportunities in an urban environment.

IV. Model

Our study revolves around the concrete choice of whether a person is currently self-employed or not. Our model uses a standard binomial probit model to examine the probability of an individual from the NLSY97 2005 round being self-employed at the time of the interview. The linear probability model is inappropriate in this case because "the fitted probabilities can be less than zero or greater than one and the partial effect of any explanatory variable (appearing in level form) is constant."[5] As this is a limited dependent variable model, either one of the binary response models would be viable for our analysis. While either the logit or probit models would serve, we chose the probit model for our topic since it is a standard normal cumulative distribution function with a normally distributed error term[6] and "many economic variables are normally distributed"[7]. This is also the model used by Evans and Leighton (1989) when they performed a similar examination of factors affecting the probability of self-employment using the National Longitudinal Survey of Young Men, which lasted from 1966-1981. By testing variables found to be theoretically and empirically important in previous literature on a new data set, we hope to determine their continued efficacy in predicting self-employment.

To implement the model empirically, we create the following equation:

Prob (Self-employment) = F (Education, Parents, Region of residence, X)

We define the probability of self-employment as a function of education, a set of parental variables, the region of residence of the individual and a series of observable characteristics X, which contain vectors for gender, race and all other control variables. We have constructed a dichotomous variable for self-employment which equals one if the respondent is self-employed at the time of the interview and zero if they are unemployed or working for an employer. This dichotomous variable is the base for our dependent variable in the probit model. While many authors have focused their attention on a specific gender, we look at both men and women in our main model. We run our model on the male and female subsections of our survey data in order to compare possible differences in the variables' impact.

Two series of dummy variables for the education of the respondents and their parents act as proxies for the amount of human capital available to the individual. The impact of this human capital is uncertain. A variable for blacks

[5] Wooldridge, Jeffrey M. "Introductory Econometrics: A Modern Approach." 2000. South-Western College Publishing.

[6] Wooldridge. 2000.

[7] Studenmund, A. H. "Using Econometrics, A Practical Guide." 2006. Pearson Education, Inc.

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and another for Hispanics are necessary both as control variables due to the racial variations in self-employment found in literature and to see if this historical trend shows any sign of changing in this young cohort. The same reasons hold for the female variable, as males have been more likely to be self-employed in past research. Both living with one's parent(s) and being married or in a marriage-like relationship (cohabiting) are expected to decrease the financial risk of entering self-employment and so increase its probability. Having children in the household is expected to increase the risk of self-employment and so decrease its likelihood. A measure of additional jobs is necessary to account for secondary or tertiary jobs that the individual may be running on the side. Also uncertain is the impact of poor health, which would impact the types of jobs considered by the interviewees and their decision-making process. Immigrants and those with self-employed family members have been found to be more likely to enter self-employment, rendering these important control variables. A variable accounting for an urban environment is also necessary to control for differences in local job markets. We expect that greater opportunities in cities will result in a greater likelihood of self-employment. Finally, we expect the region dummy variables, which serve as a stand-in for the typical state economic freedom indexes, to have varying effects.

V. Results

Our base model to analyze the influences on self-employment includes 17 independent variables discussed in the Data section. Table 1 in Appendix 1 contains the results. Since the probit model coefficients are very different than ones from ordinary least squares estimation, we will only look at the sign and magnitude of the probit coefficients. From running the base model, we observed that women are less likely than men to be self-employed on average. This result matches our prediction and is in line with previous literature. We also conclude that being Hispanic is negatively correlated with self-employment. However, the news here is that the variable for 'Black' is almost completely uncorrelated with self-employment despite the historical trend of low African-American self-employment rates. While black men seem less likely to be self-employed than black women, in both cases the z-score is too low to reject the hypothesis that being black has no effect on likely entry into self-employment.

Evidence presented in the Literature Review and the Data section strongly suggested that immigration status affected a person's choice of employment. Our model remained in concordance with the majority consensus by finding immigrants were more likely to be self-employed. Holding multiple jobs also had a strong correlation with self-employment. This suggests that it is common for the self-employed to be running multiple businesses, or that many self-employed hold a wage-and-salary job while running their business. This is in line with our

hypothesis. Potential work experience also has a significant positive correlation with self-employment. This may buttress the theory that older, more experienced workers are more likely to become self-employed.

The final significant coefficient in our basic model is for the northeast variable. There is a negative relationship between living in these states and an individual's decision to become self-employed. On the other hand, the coefficient for the west and south variables implies that individuals living in those regions are more likely to be entrepreneurs. Unfortunately, neither one of these is statistically significant at the 5 percent level. Although suggestive that geographic regions impacts employment decisions, this variable is too broad to draw any more specific conclusions.

We expected the amount of human capital, represented here by education, to have an effect on the decision to enter self-employment but were unsure of its direction. In the basic model, the variables corresponding to less than high school completed, some college completed, and college graduate, all failed to be statistically significant. With our assumptions about human capital, it is plausible that people who have attained higher education would have more of an entrepreneurial spirit than otherwise, but the results fail to support this when looking at men and women together.

We decided to test our model on each gender separately to test if the independent variables have different impacts on men and women. The consistently lower rates of female entrepreneurs in literature led us to believe that these results would be significantly different. Table 1 contains the results of these gender-specific models.

An interesting pattern emerges in the educational variables for the gender-specific models. Education levels are not only significant for both genders, they have opposite coefficients. This explains the insignificance of the educational variables in the basic model to an extent. Post-secondary education decreases the odds that a woman will enter self-employment, while some college increases the odds a man will become self-employed. The differing coefficients strongly suggest that there are different dynamics at work for men and women when they receive more education. Perhaps self-employment is less attractive to women, so becoming better educated allows them to attain better wage-and-salary work in its place. Men might see things the opposite way, with more education better preparing them to start their own business.

The different effects in regional coefficients are also worthy of note. While in the Northeast both men and women are disinclined to enter self-employment, in the South men appear to be more likely to be self-employed and women are nearly as unlikely to be self-employed. These opposing correlations might be attributable to cultural differences among the regions, with the south being more traditional when it comes to men's and women's roles in society.

Among the stereotypical expectations of women are those that relate to their presence in the household – the wife is supposed to be taking care of the home and children even if she has a stable wage-and-salary job. Although this result was not significant at the 5 percent level, it suggests that the gender effect is more far-reaching than any single variable.

It is also interesting to look at the results for the marriage variable. Earlier in the paper we examined the idea that marriage or cohabitation are likely to promote and encourage entering self-employment, especially if the spouse has a stable income job. According to traditional perceptions, men should be the breadwinners for the family; thus our coefficient for marriage corresponds to the stereotypes of our society – married men are not as likely to experiment and venture when they have a family to support. On the other hand, married women or those who have a partner are more likely to engage in entrepreneurship because they can rely on their spouse for support if their undertaking does not turn out to be successful. Unfortunately, neither these intriguing results nor the ones accounting for children are statistically significant.

One final note of interest for the women-only model was the variable controlling for living with a parent as a proxy for independence. This was the only model we ran where this variable was significant. It has a positive coefficient, implying that living at home increases the odds that a woman will start her own business. This matches our prediction, but the same effect is not seen for men.

We ran three more probit models to test several different variables that could provide additional insight into our subject. In order to reflect parental influences, we added variables to account for parental education, immigration and history of self-employed parent or parents. The number of observations for this particular model, as well as the previous model which included the variable for self-employed parents, dropped to 4009 individuals. We believe that we lost 684 observations because not all the respondents gave information regarding their parents. Still, we have a large enough sample to be confident that we are making the proper inferences as far as the total population is concerned. Unfortunately, none of the parental variables were statistically significant. Nonetheless, adding these variables had an effect by making two other variables - children and holding a college degree - statistically significant. Contrary to expectations, the presence of children in the household had a positive correlation with being self-employed. Since having children increases the risk of any entrepreneurial venture, we had expected a negative correlation. Holding a bachelors degree reduced the odds of being self-employed, possibly due to greater job opportunities as discussed previously. There is no direct line of causation between the effect of parental influence and either of these variables, but perhaps the model with parental variables provided an overall more accurate picture of self-employment decisions.

We then ran the basic model with a new variable for previously self-employed individuals. This variable was significantly and positively associated with being self-employed, demonstrating that an individual who is willing to become self-employed once is more likely to become self-employed again. While all the previously significant variables remained so, controlling for previous self-employment increased the significance of education. Having some or a complete college education became strongly and negatively correlated with being self-employed. It appears that after controlling for individuals who are more inclined to be self-employed, the impact that higher education has on discouraging self-employment becomes more evident.

We ran a final model that included all the parental variables and the variable for previous self-employment. The results from this model match those of the previous ones. The variables for parental characteristics remained insignificant while previous self-employment remained strongly correlated. Among the education variables, being a college graduate remained significantly and negatively correlated with self-employment.

VI. Conclusion

Our research has provided us with the information necessary to paint the image of likely entrepreneurs in the United States. The person most likely to be self-employed is a male immigrant living in the South with at least some college education who is holding down multiple jobs and has some work experience. Most likely to shun self-employment would be a Southern, Hispanic female with a college education. This picture, shallow though it appears, does illuminate some of the details about self-employment decisions and raise questions about others.

The contrasting effect of various independent variables on women and men, although limited in statistical significance, has shed some light on the nature of the genders' different self-employment rates, if not on its causes. The effect of education on woman entrepreneurs is particularly intriguing. If the lower rate of women entrepreneurs is a problem, it is one that more education will only exacerbate. Furthermore, if educated women choose not to become self-employed, it would logically follow that self-employed are more likely to be less educated. Since educated women would presumably have more career choices than uneducated women, it is possible that this is evidence that women in general are naturally disinclined to become self-employed. Whatever the ultimate reason may be behind this finding, it suggests that future research ought to further examine the differences between men and women when it comes to self-employment decisions.

Another notable finding of our research was the reversal of the long-standing finding that blacks have a lower than average self-employment rate.

Every study we examined has found that blacks are less likely to be self-employed, so it is a remarkable find that this has no statistical significance in our model. Perhaps those factors that traditionally kept African-Americans from opening or sustaining businesses have abated, at least among the younger generation. Although this research must be qualified, this seems to be an encouraging sign of racial progress. The Hispanic variable was still found to be negatively correlated, but perhaps future studies will have similar findings. We suggest that researchers focus on the possibility of an age gap in ethnic minorities.

A word should be said about using the NLSY97 for a study of this type. This data set's greatest drawback was the lack of reliable information on assets. As a result, we were unable to control for or study a variable that many prominent researchers in the field consider to be vitally important. However, as time passes and the respondents in the survey progress in their careers, we expect that the information on assets will become fully fleshed out and useful. At that point, the liquidity constraint theory could be tested and the model contained in this paper greatly strengthened.

One other regret we had with our model was our inability to account for different government policies through location variables. Although the finding that people in the northeast were disinclined to become self-employed is suggestive, the area in question is too broad to draw more than the vaguest theories from it. Equally intriguing is the finding that perhaps men and women receive opposite incentives for living in the South, but drawing cultural implications is maddeningly imprecise. Until the state data becomes available, we can only hypothesize as to any impact of government policy. The variables we were able to incorporate in our model primarily consist of personal factors that are unaffected by legislation. Of the variables we found to be significant, the government really only has a say over education and immigrant status. Even encouraging college education is a double-edged sword that has no net impact. With this in mind, we suggest that further research be done to see if business friendly legislation as measured by economic freedom indices has any additional impact.

Table 1. Statistics for the Basic model, Women and Men.

VARIABLES	Summary	Women	Men
Black	-0.00430	0.0716	-0.0430
	(0.0793)	(0.123)	(0.107)
Hispanic	-0.228**	-0.292*	-0.215*
	(0.0926)	(0.150)	(0.120)
Children	0.112	0.136	0.131
	(0.0828)	(0.114)	(0.135)
Living with parent	0.00831	0.219*	-0.120
	(0.0705)	(0.113)	(0.0924)
Multiple job holder	1.083***	1.085***	1.124***
	(0.0720)	(0.110)	(0.0978)
Female	-0.221***		
	(0.0654)		
Less than HS completed	-0.0264	-0.0788	0.0313
	(0.0965)	(0.153)	(0.128)
Some college completed	-0.0134	-0.420***	0.287**
	(0.0888)	(0.142)	(0.118)
College graduate	-0.0307	-0.337*	0.190
	(0.120)	(0.176)	(0.168)
Married as of 2005	0.0318	0.209*	-0.105
	(0.0754)	(0.113)	(0.111)
Poor health	0.138	-0.301	0.398
	(0.212)	(0.418)	(0.268)
Potential work exp.	0.0644***	0.0250	0.0881***
	(0.0200)	(0.0315)	(0.0265)
Immigrant	0.444***	0.587***	0.374**
	(0.124)	(0.184)	(0.172)
Central city	-0.0124	0.0159	-0.0294
	(0.0636)	(0.0989)	(0.0850)
Northeast	-0.179*	-0.215	-0.147
	(0.105)	(0.155)	(0.145)
South	0.0233	-0.211*	0.212*
	(0.0817)	(0.126)	(0.111)
West	0.0988	0.0490	0.149
	(0.0942)	(0.139)	(0.130)
Constant	-1.976***	-1.892***	-2.239***
	(0.157)	(0.237)	(0.208)
Observations	4693	2336	2357

Standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

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