Does Student Debt Discourage Young Workers from Becoming Self-Employed?

Katherine Lim
Office of Tax Analysis
U.S. Department of Treasury
katherine.lim@treasury.gov

Robert Munk†
Social, Economic, and Housing Statistics Division
U.S. Census Bureau
robert.o.munk@census.gov

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Abstract: Rising student debt balances have captured the attention of policy makers and academics; however, the effect of student debt on individuals' self-employment behavior is still unclear. In this paper, we estimate the association between student debt and self-employment using data from the Survey of Income and Program Participation merged with administrative data on employment histories. Our results suggest that student debt is associated with lower levels of self-employment for men, with a particularly pronounced effect on men becoming primarily self-employed. In contrast, women with substantial amounts of student debt are no more or less likely to become self-employed than are women with no student debt. These findings suggest that student debt may be part of the explanation for lower self-employment rates among younger adults, and they provide additional evidence that on average male and female self-employment behavior remain distinct.

†Corresponding author

I. Introduction

As of December 2016, total U.S. student debt stood at $1.3 trillion—a 170 percent increase since 2006.[1] This dramatic increase in student debt may influence the life choices of millions by creating credit constraints, discouraging risk taking, and increasing debt aversion. These concerns are largest for young adults, who hold the majority of student debt and face employment, housing, and fertility choices in coming years.[2] There is increasing evidence that student debt affects young adults' life transitions. Research suggests that student debt delays marriage (Addo, 2014; Gicheva, 2016), fertility (Nau et al., 2015), and homeownership (Cooper and Wang, 2014; Houle and Berger, 2015; Mezza et al., 2016). There is also evidence that student debt influences graduates' career paths by encouraging them to choose higher paying occupations over lower paying public interest occupations (Rothstein and Rouse, 2011).

The rapid increase in student debt has coincided with a decline in self-employment for young workers, leading researchers to question whether student debt has discouraged self-employment. [3] Between 1996 and 2016, the rate of new monthly transitions to self-employment for individuals between the ages of 20 and 34 decreased by 29 percent (Ewing Marion Kauffman Foundation, 2017). During this same time period, young adults took on student debt at increasing amounts. In 2004, 30 year olds had student loans with an average balance of $13,042 and by 2016 the figure rose to 22,450.[4]

There are a number of mechanisms through which student debt could influence self-employment transitions. Previous studies suggest that access to credit, the ability to insure against risk, and the ability to smooth household consumption during periods of low income all encourage transitions into self-employment (*e.g.*, Evans and Leighton, 1989; Evans and Jovanovich, 1989; Holtz-Eakin et al., 1994; Ahn, 2010).

Using data from the 1996 through 2008 panels of the Survey of Income and Program Participation (SIPP) and administrative earnings records, we investigate the relationship between

[1] See Chakrabarti et al. (2017).
[2] According to the New York Federal Reserve's "2016 Student Loan Update", 64% of student debt is held by individuals under the age of 40.
[3] For example: https://www.kauffman.org/currents/2015/05/3-ways-student-debt-can-affect-millennial-entrepreneurs
[4] According to the New York Federal Reserve's "2018 Student Loan Update". The student debt balances are not adjusted for inflation.

student debt and self-employment for young workers with bachelor's degrees.[5] The combined administrative and survey data provide the ability to separately estimate the effect of student debt levels for each year up to 10 years post-graduation. These data allow us to explore the role of student debt in early-career self-employment transitions among recent graduates. Prior research has examined workers aged 18 to 50 in a cross-sectional analysis (Krishnan and Wang, 2015), the parents of college students (Olds, 2016), or used county level data on student debt and business starts (Ambrose et al., 2015).

The rich survey and administrative data allow us to examine different types of self-employment and to separate student debt effects from general wealth effects. We are able to distinguish between self-employment that is a primary source of labor income and self-employment that supplements wage and salary earnings using administrative earnings records that cover both types of earnings. The distinction is important because individuals with high levels of student debt may increase their overall labor supply by working self-employed side jobs. The SIPP provides an individual measure of wealth, allowing us to compare the effect of student debt to the effect of wealth more generally and to add to the literature on the importance of liquidity constraints in determining self-employment transitions.

Our paper estimates the relationship between student debt and self-employment for men and women separately, which is unique among analyses examining the relationship between student debt and self-employment. There are a number of reasons why the effect of student debt on self-employment may differ by gender. Prior research suggests that, on average, men and women have different self-employment experiences. For example, women tend to be self-employed in different occupations, have lower average levels of capital, and work fewer hours than self-employed men (Fairlie and Robb, 2009). There is also strong evidence that women's self-employment—and in particular married women's self-employment—is positively associated with children and often entered into as a means of obtaining a flexible work schedule (Devine, 2001; Lombard, 2001; Wellington, 2006; Lim, 2019).[6] Second, student debt may contribute in

[5] As discussed in more detail, student debt in the analysis is measured as the individual's own unsecured debt near graduation.

[6] While we would like to estimate separate effects by parental and marital status, our sample size and data structure do not allow us to test whether the differences between men and women are driven by differences in their responses to marriage or having children.

complicated ways to the household bargaining that determines each spouse's labor supply. Because our sample covers ages when many respondents have young children, we feel the separate analyses by gender are an important contribution.

Overall, we find suggestive evidence that student debt is negatively associated with self-employment for men but not women.[7] Due to the diverse experiences of the self-employed, we separate self-employed individuals into those who receive the majority of their labor income from self-employment who we call primarily self-employed and those who receive the majority of their income from wage and salary employment. According to our preferred specification, men with more than $15,000 (inflation adjusted to 2015 dollars) of student debt are predicted to be about 6 percent less likely to have ever been primarily self-employed relative to men with less than $1,000 of student debt in the first year after graduation.[8] This difference grows to around 12 percent 10 years after graduation. For women, the estimated effects of debt on being primarily self-employed are statistically insignificant, small in magnitude, and do not exhibit an increasing effect over time.

We find no evidence that higher levels of student debt reduces secondary self-employment for either men or women. These results are consistent with a number of explanations including those with student debt being more likely to take on second jobs as independent contractors or those with student debt starting a business but being more likely to maintain their wage and salary employment. Additional research on whether secondary self-employment is likely to become primary self-employment would provide insight into whether our findings suggest that student debt changes the type of self-employment an individual engages in or merely delays the transition to becoming primarily self-employed. Even if those who become secondarily self-employed eventually move to primary self-employment, our results suggest that student debt still delays or possibly hinders that transition.

Our finding that student debt affects men's but not women's primary self-employment is consistent with the hypotheses that student debt reduces an individual's access to capital or tolerance for risk. If, on average, women are more likely to start businesses with less capital, high

[7] In this paper, we focus on the individual's unsecured debt because we cannot observe household structure from the administrative data, which covers a longer period than the SIPP panel. While we would ideally examine intra-household bargaining and the effect of spousal student debt, individuals may enter and leave relationships during the years not covered by the SIPP and we therefore would not have information on their partners' student debt levels and their relationship status.

[8] Student debt and net worth are measured in real 2015 dollars throughout the paper.

levels of student debt may be less of a barrier. Additionally, if women are more likely to be the secondary earner, they may view self-employment as less risky to the overall household finances even if they have higher levels of student debt.

Finally, we do not find a strong effect of net worth on self-employment for either men or women.[9] The estimates are nearly all statistically insignificant and the point estimates are often economically quite small. These results suggest that the effect of student debt is distinct from the effect of net worth more generally. Our findings are consistent with previous work that suggests little relationship between net worth and self-employment (Hurst and Lusardi, 2004). However, because we focus on young adults, who often have relatively low levels of net worth, this result may not generalize to the population as a whole.

A number of caveats are important for interpreting our results. First, our findings cannot be thought of as a causal relationship due to the complex processes that determine student debt, education levels, and employment decisions. Second, our results may miss some self-employment activity, in particular any activity not reported to the IRS or any activity that does not generate at least $400 of net profit. Our results cannot distinguish between individuals with higher levels of student debt having lower rates of entry into self-employment or merely lower rates of profitability. Either explanation suggests that student debt may hinder an individual's ability to start a successful business. Third, we do not directly observe student debt and are instead using the first report of unsecured debt for college graduates aged 23 to 25 as a proxy. While a direct measure of student debt would be preferred, using the 2014 SIPP we establish that 90 percent of unsecured debt for individuals between the ages of 23 and 25 is student debt. Given that the vast majority of unsecured debt for these individuals is student debt, we interpret our results as the effect of student debt, while acknowledging that, for some individuals, other types of unsecured debt influence our estimate. Despite these caveats, our paper makes important contributions to the understanding of how student debt affects self-employment suggesting that student debt has a differential effect than net worth more generally and that the effect differs by sex.

The remainder of the paper continues as follows. Section II provides a brief discussion of the literature. Section III describes the data, our sample selection, and the variables used in the

[9] Net worth is measured excluding unsecured debt to provide a measure of net worth that doesn't include student debt.

analysis. Section IV discusses our empirical strategy. Section V reports results for both men and women and, finally, Section VI discusses our conclusions.

II. Background

A. Evidence on Student Debt, Net Worth, and Self-Employment

The existing evidence on the relationship between student debt and self-employment suggests that higher levels of debt reduces self-employment. Our work finds results generally consistent with previous papers focusing on student debt and business ownership using different datasets and empirical strategies. A recent paper by Krishnan and Wang (2015), uses data from the Survey of Consumer Finances to show that higher student debt decreases business ownership with a particularly strong effect for younger individuals and those with dependent spouses. Our paper complements theirs using an alternative data source with a number of advantages. First, our student loan measure is more likely to be contemporaneous with graduation. They measure student debt at the household level, and they do not restrict their sample to student debt observed near age 22, which could be problematic because student loan balances will depend on payment histories prior to observation. Second, our sample is more representative of the population as a whole. Their sample is 80 percent male and nearly 19 percent of individuals start a business each year, which is not consistent with general levels of overall self-employment from other data sources.[10]

A related paper by Ambrose et al. (2015) uses county level data to show that higher levels of per-capita student debt decrease the net number of small employer firms in a county. Our paper uses individual level variation and includes non-employer businesses because we use self-employment as an outcome. Finally, Olds (2016) focuses on how tuition affects self-employment among parents with college-aged children and finds a large negative effect. While this paper is related to ours, it is more of a direct test of how changes in income affect self-employment because it uses tuition payments as an income shock rather than looking at the effect of taking on student debt on self-employment. Our focus is on the long-term impact of student debt on the self-employment behavior of young adults.

Our work also adds to the literature regarding the impact of student debt on young adults' transitions over the life-cycle. Previous work has found that student debt encourages individuals

[10] For example, the overall self-employment rate in 2015 was 10.1 percent (Hipple and Hammond, 2016). A likely contributing cause of their skewed sample is their focus only on heads of the household.

to take jobs in higher paying fields after graduation (Rothstein and Rouse, 2011) and delays marriage and fertility for young women (Addo, 2014; Nau et al., 2015). There is mixed evidence on the effects of student debt on home ownership with Mezza et al. (2016) finding that student debt decreases homeownership rates, while Houle and Berger (2015) find little evidence that student debt delays homeownership. Similarly, our paper examines how student debt may limit or delay transitions to self-employment, which grow with age.

In this paper, we compare our estimated effect of student debt on self-employment to the effect of net worth more generally. This comparison adds to the literature on the effect of liquidity constraints on self-employment and provides context to education policy makers about whether the effect of student debt is different from a more general wealth effect. An early paper by Holtz-Eakin et al. (1994) showed that individuals who received inheritances were more likely to start businesses than those who did not, lending support for the idea that potential entrepreneurs were credit constrained. More recent studies suggested that it might be unobserved differences between those who receive inheritances and those who do not driving the behavior rather than the inheritance itself. For example, Hurst and Lusardi (2004) find that both future and past inheritances affect self-employment, which suggests that family money may matter, but possibly not through true liquidity constraints. They also found no relationship across most of the distribution between wealth and starting a business or becoming self-employed and showed no relationship between housing wealth appreciation and self-employment.

There are a number of papers, however, that use information on financing to show more directly that business owners may face credit constraints. Burea (2009) finds that, for low wealth individuals, increases in wealth encourage self-employment. Although he argues that wealth may be more important in determining the scale of the business than whether the business is started at all. Similarly, Cagetti and DeNardi (2006) show that 29 percent of business owners put up personal collateral and that this collateral can be substantial. Among self-employed business owners, 18 percent report that they have been turned down for credit, and 9 percent say they did not apply for credit out of concern that they might be turned down. Robb and Robinson (2014) show that new firms rely heavily on external financing. Although financial capital may be important, Kim et al. (2006) find that financial capital is less important than factors like higher education or managerial experience. Together these findings suggest that liquidity constraints may exist for many self-

employed individuals. Our results that net worth in general does not have an economically or statistically significant effect on entry into self-employment for young adults is consistent with the findings of Hurst and Lusardi (2004), but we do not test the effect of net worth on the size or success of a business venture. It is possible that less wealthy individuals still become self-employed but select into lower capital requiring industries or operate with less than optimal levels of capital in their businesses. Additionally, our sample is young and have relatively low levels of net worth so is not well-suited to identify the effect wealth has across the full population distribution.

III. Data

A. Data Description

In this subsection, we discuss our two data sources—the 1996 through 2008 panels of the SIPP and the Detailed Earnings Record (DER)—describe how we link and combine the data sets, and discuss the advantages and disadvantages of using these data sets to study student debt and self-employment.

The SIPP—our source for student debt and demographics—follows a nationally representative sample of households for about four years. Drawn from the universe of the non-institutionalized U.S. population, the SIPP's primary goals are to track income dynamics, movements into and out of government transfer programs, and the family and social contexts of individuals. The SIPP is unique in providing high-quality, intra-year data by interviewing respondents every 4 months. The main survey does not change across interviews, but the Census Bureau administers topical modules that vary across interviews to collect detailed data on topics not addressed in the main survey (*e.g.*, medical expenses, child support, etc.). We take advantage of the assets and liabilities module in this paper, which the Census Bureau administered annually. This module provides our measures of respondent net worth and student debt, which we describe in detail below.

The DER—our source for self-employment data—is a longitudinal data set of administrative earnings constructed by the Social Security Administration. It contains data from IRS tax records on wage- and self-employment earnings from 1978 to 2017. We observe wage and salary earnings at the job level from Form W-2s and self-employment earnings at the person level from Form 1040-SE. Employers issue W-2s, while Schedule SEs are part of an individuals' annual

Form 1040 tax filing. Our use of these tax filings has important implications about interpreting our results, which we discuss in the subsequent variable description section.

To use the SIPP and DER together, we link the data sets using a Protected Identification Key (PIK)—essentially an anonymized social security number—created by the Census Bureau via probabilistic matching. Our sample only includes individuals found in both datasets so the matching process reduces our overall sample size. Mulrow et al. (2011) find that 98 percent of administrative records are assigned a PIK and that between 90 to 93 percent of survey responses are assigned a PIK. However, the PIK rates for the SIPP panels are lower due to interview refusals. The typical PIK rates for the SIPP are approximately 80 percent with the 2008 panel having a PIK rate near 90 percent. The 2001 panel presents a noteworthy exception with a PIK rate below 60 percent (Eggleston and Reeder, 2017). When PIKs are assigned, the quality of the links are high so we believe the matches we include are valid. There is some evidence from Bond et al. (2014) that factors like race, education, and citizenship correlate with linkage rates leading to systematic differences between linked and unlinked respondents. Our matching process combined with any sampling differences in the SIPP design may make our final analysis sample not fully representative of the U.S. population. Additionally, we assume that the PIK match rate is not systematically correlated with the student debt and self-employment relationship to yield unbiased estimates.[11]

When combined, these data sources, allow us to observe workers' earnings and employment for over a decade (DER), measure their unsecured debt close to graduation (SIPP), and make use of a comprehensive set of demographic controls (SIPP). Our data provide a unique combination of detailed information on debt and a large sample size not found in other surveys.

As further discussed below, our use of the DER limits us to a particular measure of self-employment that is more restrictive than other administrative data sources and different from standard survey self-employment measures. Additionally, we do not directly measure student debt, but rather use unsecured debt near graduation as a proxy for student debt. We show that in the

[11] For example, if PIK match rates were lower for individuals with high levels of student debt that would be ok because those individuals would be underrepresented in our sample, but their estimated self-employment behavior should be unbiased. However, if PIK match rates were lower for individuals with high levels of debt who decided to open a business, our estimates of the effect of student debt on self-employment would be negatively biased.

2014 SIPP 90 percent of unsecured debt was student debt, but we would have preferred to use student debt directly if it were available (Table 1).

B. Sample Selection

Respondents are included in our sample if they have a valid measure of unsecured debt between the ages of 22 to 25, are born in the United States, and have only a bachelor's degree at the time of the interview. In this subsection, we discuss why we require respondents to meet these three criteria.

The first sample criteria eliminates all respondents with an imputed value of unsecured debt and aims to collect our measure of student debt shortly after graduation. We feel it is important to eliminate respondents with an imputed value of our main covariate because it is unlikely the hot-deck method of imputation fully captures the correlation between administrative measures of employment and reported student debt. Ideally, we would observe the total amount borrowed for educational expenses, but, unfortunately, the SIPP does not collect this information. While using unsecured debt in the years after age 22 is only a proxy for student debt at graduation, the majority of unsecured debt near graduation is likely to be student debt.[12] Additionally, we control for the age when unsecured debt is observed to account for differences in the quality of the proxy further from graduation and for potential payments that could have been made between graduation and when student debt is measured.

We focus on American born respondents in order to focus on individuals with similar borrowing options. Many foreign-born students will not have access to federal aid. While we do observe a respondent's current citizenship status, we do not observe when it was obtained so we focus on individuals who were U.S. citizens from birth.

Finally, we limit the sample to those with only a bachelor's degree when debt is measured to focus on individuals who are likely to have student debt and for whom the age 22 to 25 debt measure is a good proxy for student debt. While it would be interesting to analyze the effect of student debt by educational group, the relatively small sample size of workers with advanced degrees, associates degrees, and vocational degrees would make this examination susceptible to

[12] See Table 1 and discussion in the following section.

sample size issues. Thus we leave this analysis to future researchers and focus our results on the effect of undergraduate student debt on individuals with a bachelor's degree.

Some respondents will pursue an advanced degree after the SIPP interview period. Because we cannot exclude these respondents from our sample and we want to avoid selectively eliminating some future graduate degree holders while keeping others, we base on restriction on the degree level when unsecured debt was first observed not at the end of the SIPP interview period.Thus readers should keep in mind that some respondents in our sample will return to school and accumulate more student debt.

C. Description of Variables Used in the Analysis

Our empirical models estimate the probability of being self-employed in each of the 10 years following graduation, which is assumed to occur at age 22. Our measure of self-employment comes from DER self-employment earnings based on Schedule SE tax filings, which are filed by individuals who owe self-employment taxes. Only select types of self-employed workers who have over $400 of positive net income from their business are required to file a 1040-SE: (1) sole proprietorships with over $400 of positive net income; (2) active partners providing services to their partnership are required to file for taxes owed on their positive net partnership income; and (3) single member LLCs with over $400 of net profits who decide to be taxed as a sole proprietorship. Our measure of self-employment will thus exclude business owners with losses, owners of S corporations, and owners of C corporations. Some of these individuals will certainly be considered self-employed in survey or other administrative data sources.

One challenge in using administrative self-employment earnings data is that self-employment income is often misreported. Early work examined self-employment reporting via IRS audits and found that business owners reported just under 80 percent of their income, compared to almost 95 percent for nonbusiness returns (Christian, 1994). Moreover, over 30 percent of income came from sole-proprietors who only account for 5.5 percent of filed returns (Christian, 1992). Subsequent work examining consumption and charitable contributions bolstered this early work, finding that the self-employed consume more than wage workers of similar income levels (Johansson, 2005; Engström and Holmlund, 2009; Feldman and Slemrod, 2007; Hurst et al., 2014). Finally, readers should keep in mind that administrative and survey measures of self-employment may differ. Work by Abraham et al. (2018) finds that many workers who respond as

self-employed in survey data do not file a Schedule SE and that a substantial fraction of those who claim to be wage-employed do file a Schedule SE. Workers who file a Form Schedule SE are considered self-employed by the IRS and many should classify themselves as self-employed in surveys, but sometimes it appears that they do not think of themselves as self-employed.[13] Our results demonstrate that based on administrative data, workers with high levels of student debt have different employment outcomes.

First, we define individuals with any self-employment income as self-employed. Then we classify the self-employed into two types based on the share of their annual labor income from self-employment earnings where labor income is the sum of self-employment and wage and salary income. Individuals who receive over half of their labor income from self-employment are considered primarily self-employed while individuals receiving less than or equal to half of their labor income from self-employment are considered secondarily self-employed. Using these definitions, we construct an outcome variable equal to 1 if the individual has been in that self-employment status in any year prior to the current year giving us three outcomes: ever self-employed, ever primarily self-employed, and ever secondarily self-employed. In this paper, we are interested in understanding whether student debt inhibits or delays voluntary transitions into self-employment and these three measures capture extensive margin differences in self-employment behavior over time. Importantly these measures do not provide evidence on the effect of student debt on business survival or subsequent entrances into self-employment.

Our primary covariate of interest is the respondent's unsecured debt, which includes student loans, credit card debt, medical bills not covered by insurance, and all other unsecured debt. We focus on unsecured debt generally because the 1996 through 2008 panels of the SIPP do not separately ask about student debt. In order to understand the composition of unsecured debt, we tabulate the different components using the 2014 SIPP, which did ask about different types of unsecured debt (Table 1). Panel A of Table 1 demonstrates that in the aggregate most unsecured debt is student debt. Among unsecured debt holders aged 22 to 25 with a bachelor's degree, the

[13] Some surveys like the CPS only focus on the main job of the individual so there are cases where the main job is a wage and salary position while a secondary job may be self-employed. In these cases, individuals may not provide information on their secondary job and the survey may miss some self-employment behavior. Additionally, it's possible that some workers are misclassified as contractors for tax purposes when they should be considered employees. These workers may be correctly classifying themselves in survey data while the administrative data incorrectly classifies them.

average student debt held was $13,220 or 90 percent of the mean total unsecured debt. Panel B of Table 1 shows that for at least half of these respondents 100 percent of their unsecured debt is student debt. Because student debt makes up the vast majority of unsecured debt in this population, we believe that differences in the levels of unsecured debt are likely to represent differences in student debt. Unsecured debt is measured annually, and we use the observation from the interview closest to age 22 for the respondent. As previously discussed, only individuals who reported their unsecured debt between ages 22 and 25 are included in the sample.

In our baseline regressions, we control for an individual's wealth using a measure of net worth that excludes unsecured debt.[14] We also separately examine the effect of net worth on self-employment to compare to the estimated effect of student debt. Net worth is measured as the sum of all assets reported in the SIPP minus any outstanding debt liabilities with the exception of unsecured debt.[15] For assets that are co-owned we divide by the number of identified owners where possible or by two where the number of owners is not available. Ideally we would know the percentage of the asset owned by the respondent, but the topical module does not collect this information and the vast majority of co-owned assets are co-owned with the respondent's spouse.

We focus on the respondent's own unsecured debt and net worth and do not include household-level measures because we can only observe changes to households while a respondent is in the survey. Our outcome variables, however, are measured over ten years and extend beyond the end date of the survey. During those ten years, respondents may divorce, marry, or cohabitate and we would have no information on their partners' debt and assets. Ideally we would examine the differential impacts of partner and own student debt, but this is only possible for a short period of time for a small and selected sample of respondents.[16] Namely, those married between the ages

[14] Specifically, net worth excluding unsecured debt is equal to the sum of net worth and the absolute value of unsecured debt.

[15] This measure of net worth allows us to interpret the unsecured debt coefficient as the full effect of student debt. If an extra $1 of student debt also decreased net worth by $1 we would have to sum the two effects to estimate the effect of the additional student debt.

[16] Not including partners' debt is likely to raise our standard errors if partners' debt also matters for an individual's self-employment decision. The bias resulting from not controlling for partner's debt depends on the correlation between own and partner's debt. If it is positive, then own debt may be partially accounting for partner debt. Additionally a partner's debt might influence the individual's decision in the same way as their own debt or depending on the household decision making and bargaining process it could differentially impact the self-employment decision.

of 23-25. Because this is a small and highly selected sample, we leave the examination of the differential impacts of partner and respondent student debt to future research.

We also include a set of regression controls to address systematic differences between respondents. Specifically, we include marital status when student debt is observed, age when student debt is observed, race and ethnicity, indicators for the four SIPP panels, and year fixed effects.

C. Summary Statistics

Table 2 presents unweighted summary statistics for our sample for men and women separately for each year since graduation.[17] The first rows show how our self-employment measures change as individuals age. The fraction of individuals ever self-employed in our sample rises in the years after graduation to around 40 percent of men and around 30 percent of women ten years after graduation. Around 18 percent of men and 12 percent of women are primarily self-employed at some point in the ten years after graduation while around 20 percent of both men and women are ever secondarily self-employed.

The following rows show demographic characteristics for the sample that makes up each year after graduation. The individual's demographic information is measured once from the SIPP, but the underlying individuals comprising the sample for each year after graduation changes, which drives the changes in underlying demographics by year of graduation. Specifically, the sample size declines further from graduation as we do not have outcome data on respondents from later SIPP panels. For example, ten years after graduation 53 percent of the sample is from the 1996 panel and none are from the 2008 panel while a year after graduation 32 percent of the sample are from each panel. Individuals in the 2008 SIPP panel are observed from 2008 through 2013. The youngest individuals in our sample are 22 in 2013 meaning that we can follow them for 3 years after graduation. In the years further from graduation, a larger share of the sample was married when debt was observed, which is likely because earlier cohorts were more likely to be married between 22 and 25 and they make up a larger share of the sample. The changing underlying sample could bias our coefficients if we think that student debt affected earlier cohorts differently than later ones, but with the current sample size we cannot estimate differential effects by cohort.

[17] The estimates in table 2 are unweighted and, therefore, do not represent the population of the United States.

Table 3 contains unweighted summary statistics on unsecured debt for our sample. Around 55 percent of the sample has greater than $1,000 of unsecured debt near graduation. Among those with more than $1,000 of unsecured debt, the median level of debt is $10,150 for men and $8,636 for women. Few individuals in our sample have high levels of debt: the 90th percentiles of debt are only $32,120 for men and $26,420 for women.

In order to compare the effect of student debt to net worth more generally, we also estimate models using net worth as our dependent variable of interest. Table 3 also shows the unweighted distribution net worth excluding unsecured debt. In our sample, we see that the median net worth for men near graduation is $5,362 and for women it is $3,866. The 90th percentile of net worth for men is $48,680 and for women it is $35,210.

In Figures 1, 2, and 3, we plot our unweighted self-employment outcomes by year since graduation for different levels of unsecured debt.[18] In our sample, men with lower levels of unsecured debt are more likely to be self-employed and this effect grows in the years after graduation. The difference is particularly pronounced for our ever primarily self-employed outcome where men with high levels of student debt have very small increases in self-employment between 0 and 10 years after graduation. For the ever secondarily self-employed outcome, men with high levels of student debt have similar levels of secondary self-employment for the first decade of work. In our sample, the patterns for women do not show much difference in self-employment across different levels of debt. These figures show that the relationships that we estimate in our regression analysis are present even in the raw data.

IV. Empirical Strategy

In order to examine the relationship between student debt and self-employment, we estimate a series of probit regressions to predict self-employment status separately by year since graduation. Each probit is specified according to the following model:

$$SE_{it} = \beta_0 + \beta_1 f(student\ debt_i) + \beta X_i + tax\ year_{it} + \varepsilon_i$$

Where SE_{it} is an indicator for each of our self-employment outcome variables for individual *i*, where *t* represents the number of years after age 22, $student\ debt_i$ represents the respondent's unsecured debt measured between age 22 and 25, X_i is a vector of individual level controls that

[18] The estimates in figures 1, 2, and 3 are unweighted and, therefore, do not represent the population of the United States.

includes: marital status, race, an indicator for the age at which unsecured debt was measured, an indicator for the SIPP panel, and a cubic in our measure of net worth excluding student debt. Finally, $tax\ year_{it}$ controls for the calendar year when individual *i* is age 22 plus *t* years old. We estimate this model separately for men and women.

Because the relationship between student debt and self-employment is likely to be nonlinear, we model student debt using indicator variables for different levels of unsecured debt. We include an indicator for having less than $1K of unsecured debt, one for having between $1K and $5K; $5K and $10K; $10K and $15K; and greater than $15K. We use caution in interpreting our results because the relationship between student debt and self-employment is likely to be endogenous. For example, workers with high entrepreneurial ability may avoid taking out student loans or students from wealthier families may be less likely to take out loans and more likely to have financing or the personal experience to start a business.[19] For these reasons, we do not believe our results can be interpreted as causal, but still shed light on the association between student debt and self-employment behavior with the caveat that unobserved factors could play a role in determining this relationship.

Finally, our sample focuses on individuals who graduated with a bachelor's degree. It is possible that student debt has an effect on the probability of graduation. If individuals with high levels of debt are less likely to graduate and the bachelor's degree itself has an impact on the likelihood of becoming self-employed, we will miss this effect of student debt on self-employment. Self-employment rates tend to be highest among those with professional degrees and those with lower levels of education so the effect of limiting our sample to those with a bachelor's degree could bias our estimated effect of student debt upwards or downwards.[20]

To examine whether the effect of student debt is similar to a general reduction in net worth, we re-estimate the model described above with a binned version of net worth as our primary explanatory variables. Specifically we include an indicator for having less than $1K of net worth, one for having between $1K and $5K, $5K and $10K, $10K and $15K, and greater than $15K. To

[19] Business owners are on average wealthier than the average individual (Pomerleau, 2015), and there is relatively strong evidence of business ownership running in families (e.g. Lentz and Laband, 1990, Hvide and Oyer, 2018).
[20] We limited our sample to bachelor's degree holders for two reasons. First, to ease interpretation of the results and second, because graduate degree holders are less uniform in the age that they receive their degree, we would be less confident in our age-debt observed relationship for determining debt upon graduation. If graduate degree holders, took time between undergraduate and graduate school, we would be unable to estimate student debt at graduation.

control for unsecured debt we include an indicator for having less than $1K of unsecured debt along with a cubic polynomial of unsecured debt. We compare the effect of net worth more generally to that of student debt to understand whether student debt has a differential effect from lower levels of net worth.

V. Results

Our main results show that student debt is negatively associated with becoming self-employed in the years following graduation for college-educated men and that this effect is driven by lower levels of men becoming primarily self-employed (Tables 4 and 5). We find little evidence that student debt levels affect men becoming secondarily self-employed (Table 6). The negative effect of student debt grows larger in the years after graduation. For example, men with $10K to $15K of unsecured debt are 7.4 percent less likely than men with less than $1K of unsecured debt to be primarily self-employed in the year after graduation, and this difference grows to 14.7 percent ten years after graduation (Table 5). Using our estimates to predict our self-employment outcomes, we show that ten years after graduation our model implies that 45 percent of men with less than $1K of student debt will have been self-employed compared to 31 percent of those with between $10K and $15K of student debt (Appendix Table A1). Focusing on the predicted rates of men becoming primarily self-employed 10 years after graduation, Appendix Table A2 shows that our estimates predict 20 percent of men with less than $1K of student debt will have been primarily self-employed compared to only 6 percent of those with $10K-$15K of student debt and 8 percent of those with more than $15K. The predicted rates of secondary self-employed 10 years after graduation range between 22 and 26 percent across all student debt levels (Appendix Table A3).

For women, we generally find small, statistically insignificant effects of debt on self-employment (Table 4). Ten years after graduation, our estimates predict that 28 percent of women with less than $1K of student debt will have been self-employed compared to 26 percent of those with $10K-$15K of student debt and 35 percent of those with more than $15K (Appendix Table A1). The predicted rates for ever being primarily self-employed ten years after graduation are not statistically different across debt levels and the rates of ever being secondarily self-employed do not show a consistent pattern across debt levels (Appendix Tables A2 and A3). If student debt discourages self-employment among men because it restricts access to capital required to start a

business, women may be less constrained, on average, because they start smaller businesses (Fairlie and Robb, 2009). However, women and men with student loans should face similar requirements for debt repayment, so if student debt discourages self-employment due to the risky and varied income stream relative to wage and salary employment, we would expect women to be affected by student debt as well. It's possible that women are, on average, secondary earners and this lessens the effect of student debt on the self-employment decision. A data source with information on the businesses started by the individuals as well as their student debt levels could shed light on whether the gender differences we estimate remain after controlling for other characteristics of the owner and the business similar to the exercise performed in Fairlie and Robb (2009).

Next, we estimate the effect of net worth exclusive of unsecured debt on self-employment behavior to examine whether having student debt is analogous to generally having lower overall net worth. Our results, shown in Tables 7, 8 and 9, are generally small in magnitude and not statistically significant, and they do not differ substantially between men and women. The estimates vary in sign although we might expect higher levels of net worth to have positive effects on becoming self-employed if individuals with higher levels of wealth are less liquidity constrained. The predicted probabilities are generally not statistically different from each other, with some exceptions, and their values are largely similar (Appendix Tables A4, A5, and A6). We do not find evidence that net worth upon graduation has a strong effect on becoming primarily self-employed in the years after graduating. The contrast with our student debt findings suggests that there is something particular about student debt that may influence self-employment decisions. Student debt is generally not forgivable in bankruptcy, whereas other types of debt is. More recently there has been increasing participation in income based repayment programs that may allow borrowers to pay lower installments if their income is lower.[21] These programs could help individuals who want to start businesses since many new owners do not make a profit. The loans may still accrue interest though increasing the overall level of debt.

VI. Conclusions

[21] The share of borrowers in income-driven repayment plans for Direct Federal loans increased from around 10% in 2013 to 27% in 2017. (Consumer Financial Protection Bureau, 2019).

Our paper leverages a unique dataset that both measures unsecured debt close to graduation and employment outcomes for up to ten years after graduation to show that, among bachelor's degree holders, men with moderate to high levels of student debt are less likely to be self-employed compared to those with no student debt. The effect is driven by a decrease in men becoming primarily self-employed with little estimated effect on men becoming secondarily self-employed. In contrast, we find little evidence that student debt is associated with either higher or lower self-employment rates among women. When we compare the effect of student debt to that of net worth more generally, we find that net worth does not seem to affect self-employment behavior for our young adult sample suggesting that student debt might have a differential effect from other types of debt or lower net worth more generally.

The estimated effects are statistically and economically significant. Ten years after graduation our estimates predict that only 6 to 8 percent of men with over $10K of debt will ever have been primarily self-employed compared to around 20 percent for those with less than $5K of student debt. Our results suggest that higher levels of student debt may have contributed to lower levels of business starts and lower levels of self-employment among young men.

However, due to the endogeneity of student debt we cannot rule out that other factors may be influencing the observed relationship between debt and self-employment behavior. Additionally, our results say nothing about whether high student debt levels are desirable from a societal standpoint. Access to student debt may have allowed individuals to gain a college degree or attend a school of their choice outweighing any negative impact the debt has on the ability to become self-employed. Our results suggest the more serious type of self-employment is most affected by high levels of student debt. Further work using a data source with information on the types and characteristics of businesses started would be useful for understanding the broader employment and economic effects of fewer self-employed young adults.

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Table 1: 2014 SIPP Unsecured Debt Composition

Panel A: Unsecured Debt Summary Statistics

	Entire Sample			Only Total Unsecured Debt > 0		
	Mean	S.E.	% of Total Unsecured Debt	Mean	S.E.	% of Total Unsecured Debt
Total unsecured debt	14,630	1149	n/a	24,260	1,787	n/a
Student debt	13,220	1121	90%	21,920	1,773	90%
Credit card debt	519	59	4%	861	96	4%
Other unsecured debt	893	226	6%	1,481	366	6%
N		1,100			700	

Panel B: Distribution of the Percent of Unsecured Debt that is Student Debt

Respondents with..	P5	P10	P25	P50	P75	P90
Any unsecured debt	0	0	64.8	99.7	100	100
Any student debt	71.4	87.7	97.3	100	100	100

Source: U.S. Census Bureau, Survey of Income and Program Participation, 2014 Panel, Waves 1 through 4

Note: The sample is composed of respondents aged 22 to 25 with a bachelors degree. Means and standard errors are adjusted using replicate weights. All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits.

Table 2: Covariate Means by Year Since Graduation

		Panel A: Men									
		Years Since Graduation									
		1	2	3	4	5	6	7	8	9	10
Self-employment	Ever self-employed	0.18	0.21	0.21	0.27	0.27	0.29	0.36	0.35	0.39	0.41
Status	Ever primarily self-employed	0.07	0.11	0.11	0.12	0.12	0.13	0.14	0.15	0.17	0.18
	Ever secondarily self-employed	0.11	0.1	0.1	0.15	0.15	0.16	0.22	0.2	0.22	0.23
Marital status	Never married	0.79	0.79	0.79	0.77	0.77	0.75	0.77	0.75	0.72	0.76
	Married	0.18	0.18	0.18	0.19	0.19	0.21	0.23	0.2	0.22	0.24
	Previously married, separated	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Age when unsecured	22	0.14	0.14	0.14	0.12	0.12	0.08	0.09	0.1	0.11	0.11
debt observed	23	0.25	0.25	0.25	0.27	0.23	0.25	0.23	0.25	0.28	0.24
	24	0.25	0.25	0.25	0.27	0.27	0.29	0.27	0.25	0.28	0.29
	25	0.32	0.32	0.32	0.35	0.35	0.38	0.36	0.4	0.33	0.35
Race and ethnicity	White	0.86	0.86	0.86	0.85	0.85	0.83	0.86	0.85	0.83	0.82
	Black, non-Hispanic	0.04	0.04	0.04	0.05	0.04	0.04	0.04	0.04	0.04	0.05
	Other, non-Hispanic	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.07	0.07	0.07
	Hispanic	0.04	0.04	0.04	0.05	0.05	0.04	0.04	0.04	0.03	0.04
SIPP Panel	1996 Panel	0.32	0.32	0.32	0.35	0.35	0.38	0.41	0.45	0.5	0.53
	2001 Panel	0.14	0.14	0.14	0.15	0.15	0.17	0.18	0.2	0.22	0.24
	2004 Panel	0.18	0.18	0.18	0.19	0.19	0.21	0.23	0.25	0.28	0.24
	2008 Panel	0.32	0.32	0.32	0.35	0.31	0.25	0.18	0.08	---	---
N		1,400	1,400	1,400	1,300	1,300	1,200	1,100	1,000	900	850
		Panel A: Women									
		Years Since Graduation									
		1	2	3	4	5	6	7	8	9	10
Self-employment	Ever self-employed	0.11	0.13	0.16	0.18	0.19	0.24	0.25	0.27	0.29	0.31
Status	Ever primarily self-employed	0.05	0.05	0.08	0.08	0.08	0.09	0.09	0.1	0.11	0.12
	Ever secondarily self-employed	0.06	0.08	0.08	0.1	0.11	0.15	0.16	0.17	0.18	0.19
Marital status	Never married	0.68	0.68	0.68	0.68	0.72	0.71	0.69	0.67	0.68	0.65
	Married	0.26	0.26	0.26	0.26	0.28	0.29	0.28	0.3	0.29	0.31
	Previously married, separated	0.02	0.02	0.02	0.02	0.02	0.02	0.03	0.03	0.02	0.02
Age when unsecured	22	0.16	0.16	0.16	0.16	0.14	0.12	0.13	0.13	0.14	0.12
debt observed	23	0.29	0.29	0.29	0.29	0.28	0.26	0.25	0.27	0.29	0.27
	24	0.26	0.26	0.26	0.26	0.28	0.26	0.25	0.23	0.25	0.27
	25	0.29	0.29	0.29	0.29	0.31	0.32	0.31	0.33	0.29	0.31
Race and ethnicity	White	0.84	0.84	0.84	0.84	0.83	0.82	0.81	0.8	0.86	0.85
	Black, non-Hispanic	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06
	Other, non-Hispanic	0.05	0.05	0.05	0.05	0.06	0.06	0.06	0.05	0.06	0.05
	Hispanic	0.04	0.04	0.04	0.04	0.04	0.04	0.04	0.03	0.04	0.03
SIPP Panel	1996 Panel	0.34	0.34	0.34	0.34	0.36	0.38	0.41	0.43	0.46	0.5
	2001 Panel	0.13	0.13	0.13	0.13	0.14	0.15	0.16	0.17	0.18	0.19
	2004 Panel	0.26	0.26	0.26	0.26	0.28	0.29	0.31	0.33	0.32	0.27
	2008 Panel	0.26	0.26	0.26	0.24	0.22	0.18	0.09	0.05	---	---
N		1,900	1,900	1,900	1,900	1,800	1,700	1,600	1,500	1,400	1,300

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.
Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Table 3: Distribution of Respondent Unsecured Debt and Net Worth by Gender

			Panel A: Respondent Unsecured Debt						
		Indicator for $1,000 Unsecured Debt or Less	Unsecured Debt Exceeds $1,000						
	N	Mean	Mean	S.D.	P10	P25	P50	P75	P90
Men	1,365	0.57	15,030	21,700	1,757	3,974	10,150	17,790	32,120
Women	1,888	0.54	12,890	20,270	1,772	3,521	8,636	15,360	26,420
			Panel B: Respondent Net Worth Excluding Unsecured Debt						
	N	Mean	Mean	S.D.	P10	P25	P50	P75	P90
Men	1,365	---	20,920	67,100	0	1,008	5,362	16,040	48,680
Women	1,888	---	17,950	97,010	0	782	3,866	12,230	35,210

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Table 4: Marginal Effects of Unsecured Debt on Ever Being Self-Employed; Relative to Less than $1,000 of Debt

	Panel A: Men									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Between $1,000-$5,000	0.047	0.017	0.021	0.042	0.027	0.008	0.010	-0.030	-0.023	0.002
	(0.035)	(0.036)	(0.037)	(0.039)	(0.040)	(0.041)	(0.044)	(0.046)	(0.049)	(0.050)
Between $5,001-$10,000	-0.049	-0.069*	-0.056	-0.050	-0.050	-0.043	-0.054	-0.049	-0.043	-0.102*
	(0.035)	(0.037)	(0.039)	(0.042)	(0.044)	(0.046)	(0.049)	(0.053)	(0.058)	(0.058)
Between $10,001-$15,000	-0.110***	-0.135***	-0.128***	-0.113***	-0.113**	-0.077	-0.060	-0.122**	-0.137**	-0.138**
	(0.029)	(0.032)	(0.035)	(0.039)	(0.044)	(0.051)	(0.057)	(0.058)	(0.059)	(0.060)
Greater than $15,000	-0.018	-0.044	-0.050	-0.055*	-0.062*	-0.081**	-0.114***	-0.143***	-0.141***	-0.120**
	(0.031)	(0.032)	(0.032)	(0.033)	(0.035)	(0.036)	(0.039)	(0.042)	(0.045)	(0.048)
	Panel B: Women									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Between $1,000-$5,000	0.021	0.016	0.017	0.006	0.022	0.039	0.060*	0.064*	0.075**	0.092**
	(0.024)	(0.025)	(0.027)	(0.027)	(0.029)	(0.031)	(0.034)	(0.035)	(0.037)	(0.038)
Between $5,001-$10,000	-0.030	-0.022	-0.023	-0.003	-0.011	-0.008	-0.024	-0.025	-0.035	-0.022
	(0.023)	(0.027)	(0.029)	(0.031)	(0.033)	(0.035)	(0.036)	(0.039)	(0.041)	(0.044)
Between $10,001-$15,000	-0.016	-0.042	-0.034	-0.013	-0.032	-0.048	-0.052	-0.079**	-0.062	-0.020
	(0.027)	(0.027)	(0.030)	(0.034)	(0.034)	(0.036)	(0.038)	(0.038)	(0.041)	(0.044)
Greater than $15,000	-0.041**	-0.049**	-0.029	-0.029	-0.032	-0.030	-0.008	0.038	0.065*	0.065*
	(0.020)	(0.021)	(0.024)	(0.026)	(0.027)	(0.029)	(0.032)	(0.035)	(0.038)	(0.039)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.
Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

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

Table 5: Marginal Effects of Unsecured Debt on Ever Being Primarily Self-Employed; Relative to Less than $1,000 of Debt

	Panel A: Men									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Between $1,000-$5,000	0.023	0.012	0.016	0.015	0.002	-0.004	-0.000	-0.033	-0.016	-0.013
	(0.027)	(0.028)	(0.029)	(0.031)	(0.032)	(0.032)	(0.034)	(0.035)	(0.038)	(0.039)
Between $5,001-$10,000	-0.093***	-0.097***	-0.084***	-0.089***	-0.078***	-0.068**	-0.067**	-0.072**	-0.074*	-0.074*
	(0.013)	(0.017)	(0.020)	(0.023)	(0.027)	(0.029)	(0.031)	(0.035)	(0.038)	(0.041)
Between $10,001-$15,000	-0.074***	-0.089***	-0.092***	-0.114***	-0.105***	-0.121***	-0.124***	-0.133***	-0.137***	-0.147***
	(0.018)	(0.020)	(0.020)	(0.020)	(0.025)	(0.024)	(0.027)	(0.032)	(0.032)	(0.033)
Greater than $15,000	-0.061***	-0.075***	-0.063***	-0.084***	-0.092***	-0.089***	-0.093***	-0.117***	-0.119***	-0.122***
	(0.018)	(0.018)	(0.020)	(0.020)	(0.022)	(0.023)	(0.025)	(0.027)	(0.029)	(0.031)
	Panel B: Women									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Between $1,000-$5,000	-0.004	-0.002	-0.002	0.012	0.009	0.019	0.027	0.036	0.043	0.044
	(0.015)	(0.016)	(0.018)	(0.019)	(0.020)	(0.022)	(0.023)	(0.025)	(0.028)	(0.029)
Between $5,001-$10,000	-0.019	-0.020	-0.027	-0.022	-0.032*	-0.031	-0.026	-0.017	-0.014	0.003
	(0.016)	(0.017)	(0.018)	(0.019)	(0.019)	(0.021)	(0.023)	(0.026)	(0.029)	(0.032)
Between $10,001-$15,000	-0.019	-0.024	-0.041**	-0.022	-0.037*	-0.050**	-0.048**	-0.044*	-0.023	-0.013
	(0.017)	(0.017)	(0.016)	(0.019)	(0.019)	(0.020)	(0.021)	(0.024)	(0.030)	(0.032)
Greater than $15,000	-0.018	-0.016	-0.016	-0.010	-0.014	-0.027	-0.026	-0.012	0.001	-0.012
	(0.014)	(0.015)	(0.017)	(0.017)	(0.018)	(0.019)	(0.021)	(0.023)	(0.027)	(0.026)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.
Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

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

Table 6: Marginal Effects of Unsecured Debt on Ever Being Secondarily Self-Employed; Relative to Less than $1,000 of Debt

	Panel A: Men									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Between $1,000-$5,000	0.022	0.001	0.002	0.026	0.024	0.010	0.006	-0.001	-0.012	0.011
	(0.026)	(0.026)	(0.028)	(0.030)	(0.032)	(0.033)	(0.038)	(0.040)	(0.041)	(0.044)
Between $5,001-$10,000	0.048	0.026	0.028	0.036	0.025	0.021	0.009	0.020	0.027	-0.030
	(0.034)	(0.033)	(0.035)	(0.037)	(0.038)	(0.040)	(0.043)	(0.047)	(0.051)	(0.050)
Between $10,001-$15,000	-0.036	-0.046*	-0.036	-0.000	-0.008	0.045	0.065	0.013	-0.001	0.007
	(0.024)	(0.026)	(0.030)	(0.035)	(0.038)	(0.048)	(0.055)	(0.054)	(0.054)	(0.056)
Greater than $15,000	0.041	0.026	0.011	0.026	0.029	0.006	-0.026	-0.032	-0.026	-0.002
	(0.027)	(0.027)	(0.026)	(0.028)	(0.030)	(0.032)	(0.034)	(0.037)	(0.039)	(0.043)
	Panel B: Women									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Between $1,000-$5,000	0.023	0.016	0.017	-0.007	0.011	0.019	0.032	0.025	0.031	0.047
	(0.019)	(0.020)	(0.021)	(0.021)	(0.023)	(0.025)	(0.028)	(0.028)	(0.030)	(0.031)
Between $5,001-$10,000	-0.012	-0.003	0.001	0.016	0.018	0.018	0.002	-0.009	-0.020	-0.026
	(0.018)	(0.022)	(0.023)	(0.026)	(0.028)	(0.030)	(0.030)	(0.032)	(0.032)	(0.034)
Between $10,001-$15,000	-0.000	-0.022	0.001	0.002	-0.002	-0.001	-0.006	-0.034	-0.036	-0.004
	(0.021)	(0.021)	(0.025)	(0.027)	(0.028)	(0.031)	(0.033)	(0.032)	(0.032)	(0.036)
Greater than $15,000	-0.024*	-0.034**	-0.014	-0.018	-0.018	-0.003	0.020	0.049	0.065**	0.075**
	(0.014)	(0.015)	(0.019)	(0.020)	(0.022)	(0.025)	(0.028)	(0.031)	(0.033)	(0.034)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Robust standard errors in parentheses

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

Table 7: Marginal Effects of Net Worth on Ever Being Self-Employed; Relative to Less than $1,000 of Net Worth

	Panel A: Men									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth Level										
Between $1,000-$5,000	-0.040	-0.022	-0.002	-0.048	-0.042	-0.048	-0.040	-0.035	-0.022	-0.052
	(0.029)	(0.032)	(0.033)	(0.036)	(0.038)	(0.040)	(0.043)	(0.045)	(0.047)	(0.049)
Between $5,001-$10,000	-0.011	-0.026	-0.011	-0.050	-0.093**	-0.073*	-0.029	0.012	0.034	0.019
	(0.032)	(0.034)	(0.035)	(0.037)	(0.039)	(0.042)	(0.046)	(0.049)	(0.051)	(0.052)
Between $10,001-$15,000	-0.005	-0.045	-0.035	-0.083*	-0.103**	-0.072	-0.024	-0.012	0.031	-0.003
	(0.043)	(0.043)	(0.045)	(0.047)	(0.049)	(0.052)	(0.058)	(0.058)	(0.062)	(0.067)
Greater than $15,000	0.032	0.023	0.026	-0.003	-0.034	-0.026	0.014	0.033	0.023	0.005
	(0.031)	(0.033)	(0.033)	(0.036)	(0.037)	(0.039)	(0.043)	(0.045)	(0.048)	(0.050)
	Panel B: Women									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth Level										
Between $1,000-$5,000	0.025	0.029	0.028	0.045*	0.040	0.043	0.023	0.051	0.051	0.080**
	(0.020)	(0.023)	(0.024)	(0.025)	(0.027)	(0.029)	(0.031)	(0.032)	(0.034)	(0.036)
Between $5,001-$10,000	0.022	-0.006	-0.009	-0.012	-0.027	-0.027	-0.019	-0.015	0.007	0.010
	(0.024)	(0.025)	(0.027)	(0.028)	(0.029)	(0.032)	(0.034)	(0.036)	(0.038)	(0.039)
Between $10,001-$15,000	-0.033	-0.048*	-0.042	-0.036	-0.017	-0.021	-0.047	-0.004	0.019	0.016
	(0.024)	(0.027)	(0.031)	(0.033)	(0.036)	(0.040)	(0.042)	(0.046)	(0.049)	(0.051)
Greater than $15,000	0.009	-0.004	0.004	0.021	0.019	0.011	-0.000	0.001	0.007	0.001
	(0.021)	(0.023)	(0.025)	(0.026)	(0.028)	(0.030)	(0.033)	(0.034)	(0.036)	(0.038)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Robust standard errors in parentheses

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

Table 8: Marginal Effects of Net Worth on Ever Being Primarily Self-Employed; Relative to Less than $1,000 of Net Worth

	Panel A: Men									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth Level										
Between $1,000-$5,000	-0.017	-0.018	-0.019	-0.026	-0.035	-0.052*	-0.054*	-0.056	-0.036	-0.039
	(0.020)	(0.022)	(0.024)	(0.026)	(0.029)	(0.030)	(0.032)	(0.034)	(0.036)	(0.038)
Between $5,001-$10,000	-0.018	-0.037*	-0.045*	-0.042	-0.068**	-0.070**	-0.082***	-0.078**	0.066*	0.072*
	(0.021)	(0.022)	(0.023)	(0.026)	(0.028)	(0.029)	(0.031)	(0.034)	(0.036)	(0.037)
Between $10,001-$15,000	0.005	-0.004	-0.017	-0.044	-0.073**	-0.060	-0.050	-0.047	-0.034	-0.017
	(0.031)	(0.034)	(0.034)	(0.034)	(0.035)	(0.038)	(0.041)	(0.043)	(0.046)	(0.051)
Greater than $15,000	0.023	0.011	-0.000	-0.010	-0.027	-0.033	-0.027	-0.020	-0.014	-0.012
	(0.022)	(0.023)	(0.024)	(0.026)	(0.028)	(0.029)	(0.032)	(0.035)	(0.036)	(0.038)
	Panel B: Women									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth Level										
Between $1,000-$5,000	0.012	0.015	0.018	0.016	0.005	-0.002	-0.013	0.011	0.019	0.020
	(0.014)	(0.015)	(0.016)	(0.017)	(0.017)	(0.019)	(0.020)	(0.022)	(0.025)	(0.027)
Between $5,001-$10,000	0.004	-0.002	-0.004	-0.011	-0.015	-0.009	-0.013	-0.017	-0.031	-0.034
	(0.016)	(0.016)	(0.017)	(0.018)	(0.019)	(0.021)	(0.023)	(0.023)	(0.026)	(0.027)
Between $10,001-$15,000	-0.038***	-0.033**	-0.033**	-0.037**	-0.026	-0.030	-0.041	-0.032	-0.040	-0.038
	(0.012)	(0.014)	(0.016)	(0.018)	(0.021)	(0.023)	(0.025)	(0.027)	(0.031)	(0.033)
Greater than $15,000	0.011	0.013	0.012	0.010	0.014	0.012	0.006	0.016	0.020	0.000
	(0.015)	(0.016)	(0.017)	(0.018)	(0.019)	(0.020)	(0.022)	(0.024)	(0.027)	(0.028)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Robust standard errors in parentheses

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

Table 9: Marginal Effects of Net Worth on Ever Being Secondarily Self-Employed; Relative to Less than $1,000 of Net Worth

	Panel A: Men									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth Level										
Between $1,000-$5,000	-0.022	-0.004	0.018	-0.024	-0.008	0.002	0.014	0.020	0.015	-0.009
	(0.023)	(0.025)	(0.026)	(0.028)	(0.031)	(0.034)	(0.036)	(0.038)	(0.039)	(0.042)
Between $5,001-$10,000	0.009	0.013	0.037	-0.007	-0.027	-0.008	0.048	0.087**	0.100**	0.092*
	(0.027)	(0.027)	(0.029)	(0.030)	(0.032)	(0.035)	(0.040)	(0.043)	(0.045)	(0.047)
Between $10,001-$15,000	-0.012	-0.040	-0.017	-0.035	-0.027	-0.012	0.030	0.037	0.068	0.018
	(0.033)	(0.030)	(0.033)	(0.037)	(0.040)	(0.044)	(0.050)	(0.049)	(0.053)	(0.056)
Greater than $15,000	0.003	0.008	0.022	0.003	-0.012	0.001	0.036	0.045	0.027	0.009
	(0.024)	(0.025)	(0.025)	(0.028)	(0.030)	(0.033)	(0.036)	(0.037)	(0.039)	(0.041)
	Panel B: Women									
	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth Level										
Between $1,000-$5,000	0.012	0.013	0.009	0.028	0.036*	0.043*	0.033	0.036	0.030	0.056*
	(0.015)	(0.018)	(0.019)	(0.020)	(0.022)	(0.024)	(0.026)	(0.027)	(0.028)	(0.029)
Between $5,001-$10,000	0.018	-0.005	-0.003	0.001	-0.011	-0.018	-0.008	-0.000	0.037	0.041
	(0.019)	(0.020)	(0.022)	(0.023)	(0.024)	(0.026)	(0.029)	(0.030)	(0.032)	(0.033)
Between $10,001-$15,000	0.002	-0.018	-0.011	0.000	0.010	0.006	-0.013	0.019	0.052	0.046
	(0.021)	(0.023)	(0.026)	(0.028)	(0.031)	(0.034)	(0.036)	(0.040)	(0.043)	(0.044)
Greater than $15,000	-0.002	-0.016	-0.007	0.011	0.005	-0.004	-0.009	-0.019	-0.018	-0.005
	(0.016)	(0.018)	(0.019)	(0.021)	(0.022)	(0.024)	(0.026)	(0.028)	(0.028)	(0.030)

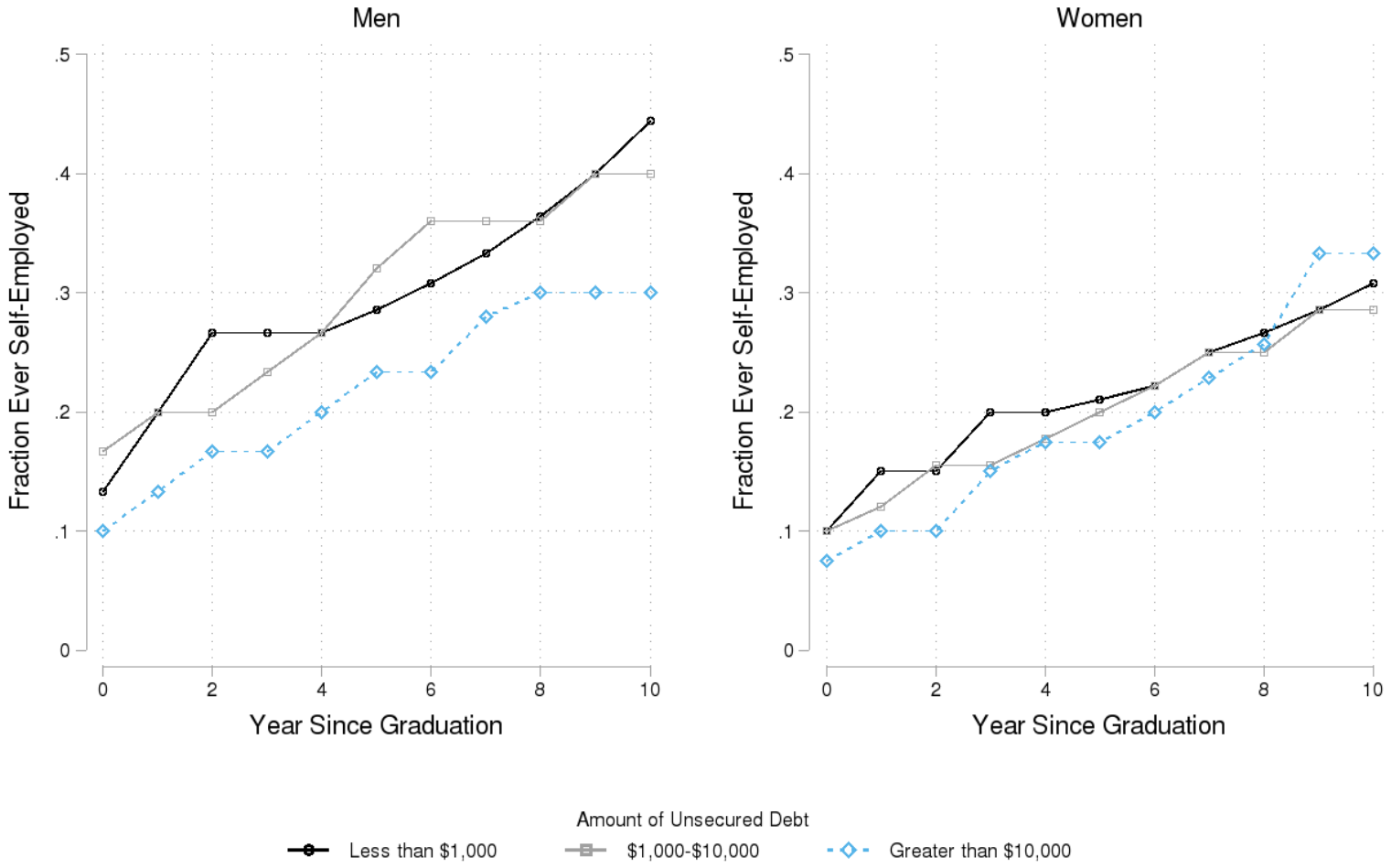
Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Robust standard errors in parentheses

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

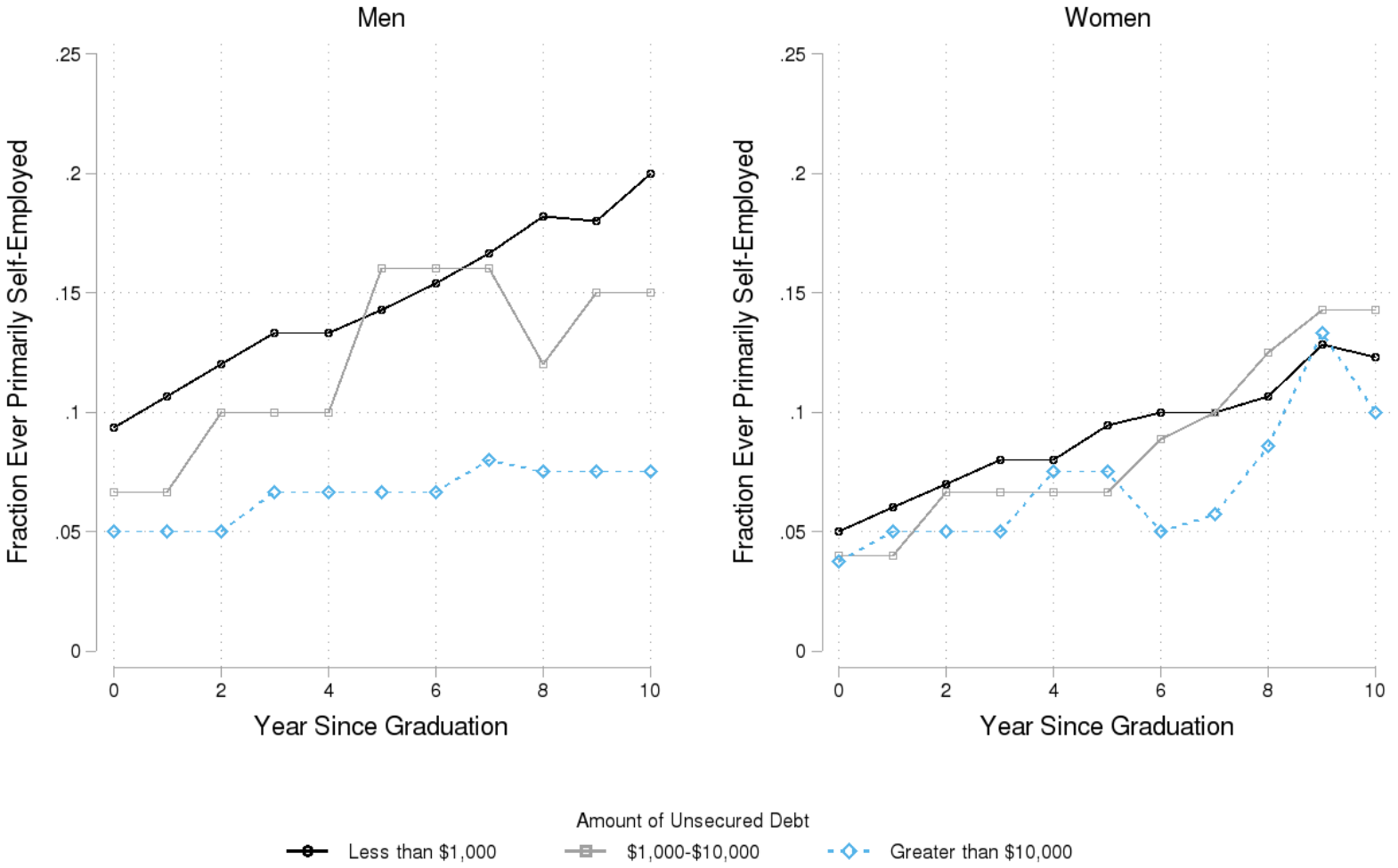
Figure 1: Fraction Ever Self-Employed by Unsecured Debt Levels



Note: Fractions are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Source: United States Census Bureau, Survey of Income and Program and Participation Panels 1996 through 2008 and Detailed Earnings Record.

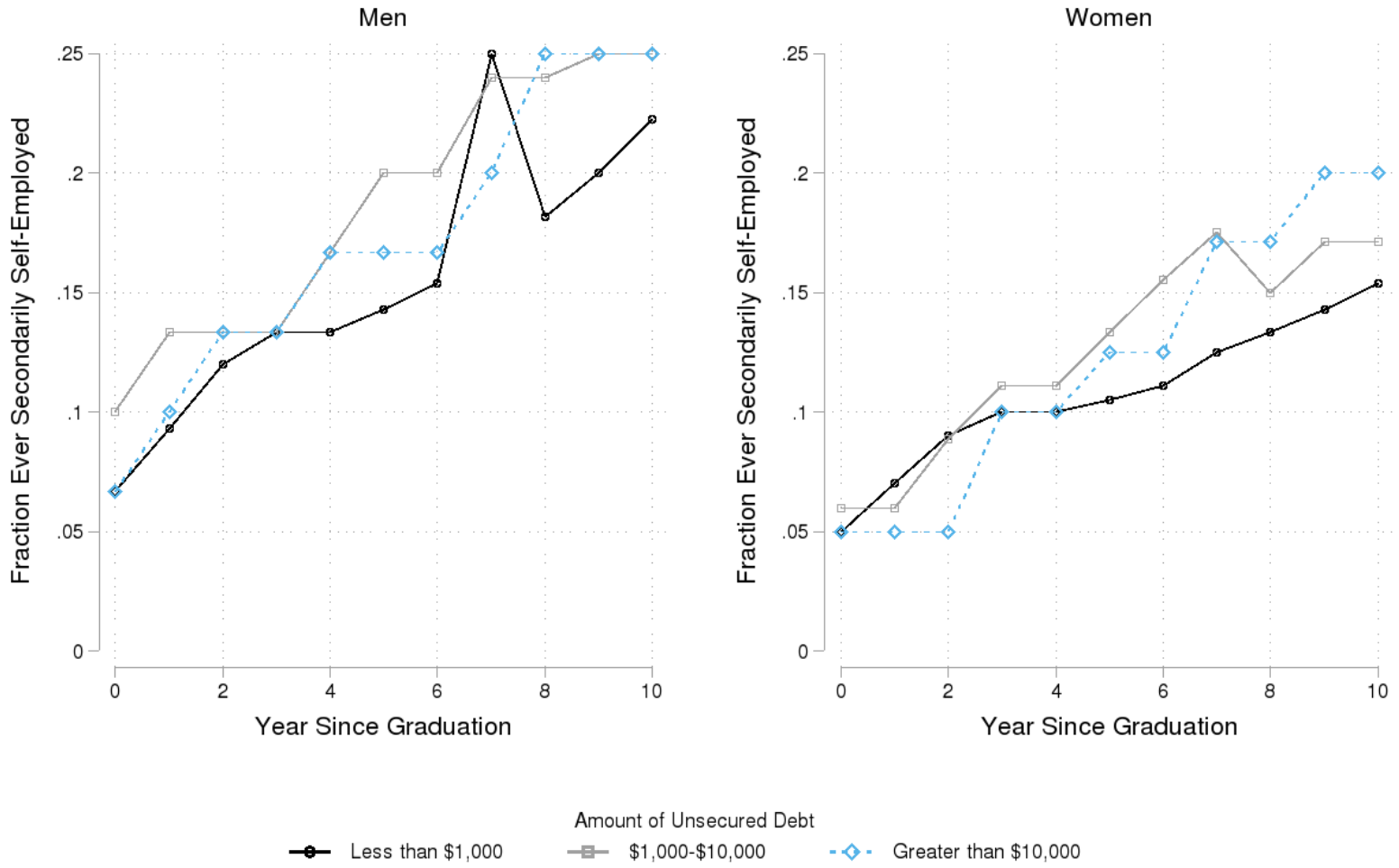
Figure 2: Fraction Primarily Self-Employed by Unsecured Debt Levels



Note: Fractions are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Source: United States Census Bureau, Survey of Income and Program and Participation Panels 1996 through 2008 and Detailed Earnings Record.

Figure 3: Fraction Secondarily Self-Employed by Unsecured Debt Levels



Note: Fractions are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Source: United States Census Bureau, Survey of Income and Program and Participation Panels 1996 through 2008 and Detailed Earnings Record.

Appendix Table A1: Predicted Rates of Ever Being Self-Employed by Unsecured Debt Levels with 95 Percent Confidence Intervals

Panel A: Men

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Less than $1,000	0.194	0.233	0.251	0.275	0.306	0.332	0.378	0.415	0.424	0.448
	(0.166 - 0.221)	(0.203 - 0.262)	(0.221 - 0.281)	(0.243 - 0.306)	(0.272 - 0.339)	(0.297 - 0.368)	(0.339 - 0.416)	(0.373 - 0.456)	(0.380 - 0.468)	(0.402 - 0.493)
Between $1,000-$5,000	0.241	0.250	0.272	0.317	0.333	0.340	0.388	0.384	0.400	0.449
	(0.178 - 0.303)	(0.186 - 0.314)	(0.207 - 0.338)	(0.248 - 0.386)	(0.262 - 0.404)	(0.268 - 0.412)	(0.310 - 0.466)	(0.304 - 0.465)	(0.316 - 0.485)	(0.363 - 0.536)
Between $5,001-$10,000	0.145	0.164	0.195	0.224	0.255	0.289	0.323	0.366	0.381	0.346
	(0.082 - 0.208)	(0.099 - 0.229)	(0.124 - 0.266)	(0.149 - 0.300)	(0.177 - 0.334)	(0.206 - 0.373)	(0.235 - 0.412)	(0.270 - 0.462)	(0.277 - 0.485)	(0.242 - 0.449)
Between $10,001-$15,000	0.084	0.098	0.123	0.162	0.193	0.255	0.318	0.293	0.287	0.310
	(0.034 - 0.134)	(0.043 - 0.153)	(0.061 - 0.185)	(0.091 - 0.232)	(0.114 - 0.272)	(0.162 - 0.348)	(0.213 - 0.423)	(0.188 - 0.398)	(0.180 - 0.394)	(0.201 - 0.419)
Greater than $15,000	0.176	0.189	0.200	0.219	0.244	0.251	0.264	0.271	0.282	0.328
	(0.121 - 0.230)	(0.134 - 0.243)	(0.146 - 0.255)	(0.163 - 0.275)	(0.185 - 0.303)	(0.190 - 0.313)	(0.198 - 0.331)	(0.200 - 0.343)	(0.208 - 0.357)	(0.246 - 0.409)

Panel B: Women

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Less than $1,000	0.125	0.150	0.170	0.190	0.210	0.232	0.249	0.265	0.281	0.284
	(0.105 - 0.145)	(0.129 - 0.172)	(0.147 - 0.192)	(0.166 - 0.214)	(0.185 - 0.235)	(0.205 - 0.260)	(0.219 - 0.278)	(0.234 - 0.297)	(0.248 - 0.314)	(0.249 - 0.318)
Between $1,000-$5,000	0.146	0.166	0.186	0.196	0.231	0.271	0.309	0.329	0.356	0.376
	(0.105 - 0.188)	(0.121 - 0.210)	(0.140 - 0.233)	(0.148 - 0.244)	(0.180 - 0.283)	(0.217 - 0.326)	(0.251 - 0.368)	(0.269 - 0.389)	(0.293 - 0.419)	(0.310 - 0.441)
Between $5,001-$10,000	0.094	0.128	0.146	0.187	0.199	0.224	0.225	0.240	0.246	0.262
	(0.053 - 0.136)	(0.081 - 0.175)	(0.095 - 0.198)	(0.130 - 0.244)	(0.141 - 0.258)	(0.161 - 0.288)	(0.160 - 0.290)	(0.172 - 0.309)	(0.173 - 0.319)	(0.184 - 0.340)
Between $10,001-$15,000	0.109	0.108	0.135	0.176	0.178	0.185	0.196	0.186	0.219	0.264
	(0.060 - 0.158)	(0.060 - 0.157)	(0.082 - 0.189)	(0.115 - 0.237)	(0.116 - 0.240)	(0.121 - 0.249)	(0.128 - 0.264)	(0.118 - 0.254)	(0.147 - 0.292)	(0.185 - 0.344)
Greater than $15,000	0.083	0.101	0.141	0.161	0.178	0.202	0.241	0.304	0.346	0.349
	(0.050 - 0.117)	(0.065 - 0.137)	(0.099 - 0.183)	(0.117 - 0.206)	(0.131 - 0.225)	(0.152 - 0.253)	(0.185 - 0.297)	(0.242 - 0.365)	(0.279 - 0.412)	(0.281 - 0.417)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Robust standard errors in parentheses

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

Appendix Table A2: Predicted Rates of Ever Being Primarily Self-Employed by Unsecured Debt Levels with 95 Percent Confidence Intervals

Panel A: Men

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Less than $1,000	0.102	0.121	0.123	0.143	0.157	0.157	0.165	0.188	0.194	0.204
	(0.081 - 0.123)	(0.098 - 0.143)	(0.101 - 0.146)	(0.118 - 0.168)	(0.130 - 0.183)	(0.130 - 0.185)	(0.136 - 0.194)	(0.155 - 0.221)	(0.159 - 0.229)	(0.167 - 0.240)
Between $1,000-$5,000	0.125	0.132	0.140	0.158	0.158	0.154	0.165	0.155	0.178	0.191
	(0.077 - 0.173)	(0.082 - 0.182)	(0.088 - 0.191)	(0.103 - 0.213)	(0.102 - 0.214)	(0.098 - 0.210)	(0.105 - 0.224)	(0.095 - 0.215)	(0.112 - 0.244)	(0.123 - 0.259)
Between $5,001-$10,000	0.009	0.024	0.040	0.054	0.078	0.090	0.097	0.116	0.120	0.130
	(-0.007 - 0.025)	(-0.002 - 0.049)	(0.007 - 0.073)	(0.016 - 0.093)	(0.032 - 0.124)	(0.040 - 0.139)	(0.043 - 0.151)	(0.055 - 0.177)	(0.053 - 0.187)	(0.058 - 0.201)
Between $10,001-$15,000	0.028	0.031	0.031	0.029	0.052	0.037	0.041	0.055	0.057	0.057
	(-0.002 - 0.058)	(-0.001 - 0.064)	(-0.002 - 0.064)	(-0.002 - 0.060)	(0.010 - 0.094)	(-0.002 - 0.075)	(-0.004 - 0.085)	(0.003 - 0.108)	(0.004 - 0.110)	(0.004 - 0.110)
Greater than $15,000	0.041	0.046	0.060	0.058	0.065	0.068	0.072	0.071	0.074	0.082
	(0.013 - 0.070)	(0.017 - 0.075)	(0.028 - 0.092)	(0.027 - 0.090)	(0.031 - 0.098)	(0.033 - 0.103)	(0.033 - 0.110)	(0.029 - 0.112)	(0.030 - 0.118)	(0.033 - 0.130)

Panel B: Women

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Less than $1,000	0.059	0.065	0.075	0.077	0.087	0.097	0.101	0.108	0.122	0.125
	(0.045 - 0.073)	(0.050 - 0.080)	(0.059 - 0.091)	(0.061 - 0.093)	(0.069 - 0.104)	(0.078 - 0.116)	(0.080 - 0.121)	(0.086 - 0.130)	(0.098 - 0.146)	(0.100 - 0.151)
Between $1,000-$5,000	0.056	0.063	0.073	0.089	0.095	0.115	0.128	0.144	0.165	0.169
	(0.030 - 0.082)	(0.035 - 0.091)	(0.042 - 0.103)	(0.055 - 0.123)	(0.060 - 0.131)	(0.077 - 0.154)	(0.086 - 0.169)	(0.100 - 0.188)	(0.116 - 0.213)	(0.119 - 0.220)
Between $5,001-$10,000	0.040	0.045	0.048	0.055	0.054	0.065	0.074	0.092	0.108	0.128
	(0.012 - 0.068)	(0.016 - 0.075)	(0.017 - 0.080)	(0.021 - 0.088)	(0.021 - 0.088)	(0.028 - 0.103)	(0.033 - 0.116)	(0.045 - 0.138)	(0.056 - 0.160)	(0.071 - 0.186)
Between $10,001-$15,000	0.040	0.041	0.034	0.055	0.050	0.046	0.053	0.064	0.099	0.112
	(0.010 - 0.070)	(0.011 - 0.072)	(0.006 - 0.061)	(0.020 - 0.089)	(0.016 - 0.083)	(0.012 - 0.080)	(0.016 - 0.090)	(0.022 - 0.106)	(0.047 - 0.152)	(0.055 - 0.168)
Greater than $15,000	0.041	0.049	0.059	0.067	0.073	0.069	0.075	0.097	0.123	0.114
	(0.017 - 0.066)	(0.023 - 0.075)	(0.031 - 0.087)	(0.037 - 0.097)	(0.042 - 0.105)	(0.037 - 0.101)	(0.040 - 0.110)	(0.057 - 0.136)	(0.077 - 0.169)	(0.069 - 0.159)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four significant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Robust standard errors in parentheses

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

Appendix Table A3: Predicted Rates of Ever Being Secondarily Self-Employed by Unsecured Debt Levels with 95 Percent Confidence Intervals

Panel A: Men

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Less than $1,000	0.096	0.113	0.128	0.133	0.150	0.176	0.214	0.228	0.231	0.245
	(0.075 - 0.116)	(0.091 - 0.135)	(0.105 - 0.151)	(0.109 - 0.157)	(0.124 - 0.176)	(0.147 - 0.204)	(0.182 - 0.247)	(0.193 - 0.263)	(0.194 - 0.269)	(0.206 - 0.284)
Between $1,000-$5,000	0.118	0.114	0.130	0.159	0.174	0.186	0.221	0.226	0.220	0.256
	(0.070 - 0.165)	(0.067 - 0.160)	(0.081 - 0.179)	(0.105 - 0.212)	(0.117 - 0.230)	(0.127 - 0.244)	(0.155 - 0.287)	(0.158 - 0.295)	(0.149 - 0.290)	(0.180 - 0.331)
Between $5,001-$10,000	0.144	0.139	0.156	0.168	0.175	0.197	0.223	0.248	0.259	0.215
	(0.080 - 0.207)	(0.078 - 0.199)	(0.092 - 0.220)	(0.101 - 0.236)	(0.106 - 0.245)	(0.124 - 0.270)	(0.145 - 0.302)	(0.162 - 0.333)	(0.166 - 0.352)	(0.125 - 0.305)
Between $10,001-$15,000	0.060	0.067	0.092	0.132	0.142	0.221	0.280	0.241	0.230	0.252
	(0.016 - 0.103)	(0.022 - 0.113)	(0.037 - 0.146)	(0.068 - 0.197)	(0.072 - 0.212)	(0.132 - 0.310)	(0.178 - 0.382)	(0.141 - 0.341)	(0.131 - 0.330)	(0.150 - 0.354)
Greater than $15,000	0.136	0.139	0.139	0.159	0.179	0.182	0.189	0.196	0.205	0.243
	(0.087 - 0.185)	(0.092 - 0.186)	(0.093 - 0.185)	(0.110 - 0.208)	(0.126 - 0.232)	(0.127 - 0.236)	(0.130 - 0.247)	(0.133 - 0.258)	(0.139 - 0.271)	(0.169 - 0.317)

Panel B: Women

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Unsecured Debt Level										
Less than $1,000	0.066	0.086	0.096	0.113	0.124	0.137	0.148	0.158	0.159	0.159
	(0.051 - 0.081)	(0.069 - 0.103)	(0.078 - 0.114)	(0.094 - 0.133)	(0.104 - 0.145)	(0.114 - 0.159)	(0.124 - 0.172)	(0.132 - 0.184)	(0.132 - 0.185)	(0.131 - 0.187)
Between $1,000-$5,000	0.090	0.103	0.112	0.107	0.135	0.155	0.180	0.182	0.190	0.206
	(0.056 - 0.123)	(0.067 - 0.139)	(0.075 - 0.150)	(0.070 - 0.143)	(0.094 - 0.176)	(0.111 - 0.200)	(0.131 - 0.228)	(0.134 - 0.231)	(0.138 - 0.241)	(0.151 - 0.260)
Between $5,001-$10,000	0.055	0.083	0.097	0.130	0.142	0.155	0.150	0.149	0.139	0.133
	(0.023 - 0.086)	(0.044 - 0.122)	(0.054 - 0.139)	(0.082 - 0.178)	(0.092 - 0.192)	(0.101 - 0.208)	(0.096 - 0.204)	(0.093 - 0.205)	(0.082 - 0.196)	(0.073 - 0.193)
Between $10,001-$15,000	0.066	0.064	0.097	0.115	0.122	0.136	0.143	0.124	0.122	0.155
	(0.028 - 0.104)	(0.027 - 0.101)	(0.052 - 0.142)	(0.065 - 0.165)	(0.071 - 0.174)	(0.080 - 0.191)	(0.083 - 0.202)	(0.067 - 0.181)	(0.065 - 0.180)	(0.090 - 0.220)
Greater than $15,000	0.042	0.052	0.082	0.096	0.107	0.134	0.168	0.207	0.223	0.234
	(0.018 - 0.065)	(0.027 - 0.077)	(0.050 - 0.114)	(0.061 - 0.131)	(0.069 - 0.144)	(0.091 - 0.176)	(0.119 - 0.217)	(0.153 - 0.261)	(0.165 - 0.281)	(0.174 - 0.294)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four signifcant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Robust standard errors in parentheses

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

Appendix Table A4: Predicted Rates of Ever Being Self-Employed by Net Worth Levels with 95 Percent Confidence Intervals

Panel A: Men

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth										
Less than $1,000	0.187	0.218	0.229	0.285	0.330	0.348	0.364	0.373	0.374	0.417
	(0.144 - 0.229)	(0.173 - 0.263)	(0.183 - 0.275)	(0.235 - 0.336)	(0.276 - 0.385)	(0.291 - 0.405)	(0.303 - 0.424)	(0.310 - 0.436)	(0.309 - 0.440)	(0.348 - 0.486)
Between $1,000-$5,000	0.147	0.197	0.227	0.237	0.288	0.299	0.324	0.338	0.352	0.365
	(0.109 - 0.185)	(0.152 - 0.241)	(0.180 - 0.274)	(0.189 - 0.286)	(0.235 - 0.341)	(0.243 - 0.355)	(0.265 - 0.383)	(0.276 - 0.401)	(0.286 - 0.418)	(0.297 - 0.433)
Between $5,001-$10,000	0.176	0.192	0.218	0.235	0.237	0.275	0.335	0.385	0.408	0.436
	(0.130 - 0.223)	(0.144 - 0.240)	(0.168 - 0.268)	(0.184 - 0.287)	(0.184 - 0.291)	(0.217 - 0.333)	(0.269 - 0.401)	(0.314 - 0.457)	(0.335 - 0.482)	(0.360 - 0.512)
Between $10,001-$15,000	0.182	0.173	0.194	0.202	0.227	0.276	0.340	0.361	0.405	0.414
	(0.107 - 0.256)	(0.101 - 0.244)	(0.119 - 0.268)	(0.126 - 0.278)	(0.148 - 0.306)	(0.192 - 0.360)	(0.244 - 0.436)	(0.267 - 0.455)	(0.304 - 0.507)	(0.305 - 0.524)
Greater than $15,000	0.218	0.242	0.255	0.282	0.297	0.322	0.378	0.406	0.397	0.422
	(0.176 - 0.261)	(0.198 - 0.285)	(0.210 - 0.300)	(0.236 - 0.328)	(0.249 - 0.344)	(0.272 - 0.372)	(0.323 - 0.433)	(0.346 - 0.466)	(0.332 - 0.461)	(0.356 - 0.488)

Panel B: Women

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth										
Less than $1,000	0.109	0.139	0.160	0.173	0.195	0.221	0.251	0.261	0.275	0.279
	(0.081 - 0.136)	(0.108 - 0.170)	(0.127 - 0.193)	(0.139 - 0.207)	(0.158 - 0.232)	(0.180 - 0.262)	(0.207 - 0.295)	(0.214 - 0.307)	(0.227 - 0.323)	(0.229 - 0.330)
Between $1,000-$5,000	0.134	0.168	0.188	0.218	0.235	0.264	0.274	0.311	0.326	0.359
	(0.104 - 0.163)	(0.136 - 0.201)	(0.154 - 0.222)	(0.181 - 0.254)	(0.197 - 0.273)	(0.223 - 0.305)	(0.232 - 0.316)	(0.266 - 0.356)	(0.279 - 0.373)	(0.309 - 0.409)
Between $5,001-$10,000	0.131	0.132	0.150	0.161	0.169	0.194	0.232	0.246	0.281	0.289
	(0.092 - 0.169)	(0.094 - 0.171)	(0.110 - 0.191)	(0.119 - 0.203)	(0.125 - 0.212)	(0.147 - 0.241)	(0.180 - 0.283)	(0.193 - 0.299)	(0.225 - 0.338)	(0.231 - 0.348)
Between $10,001-$15,000	0.075	0.091	0.117	0.137	0.178	0.200	0.203	0.256	0.294	0.296
	(0.037 - 0.114)	(0.049 - 0.133)	(0.068 - 0.167)	(0.083 - 0.191)	(0.118 - 0.238)	(0.134 - 0.267)	(0.135 - 0.272)	(0.180 - 0.333)	(0.211 - 0.377)	(0.211 - 0.380)
Greater than $15,000	0.118	0.135	0.164	0.195	0.214	0.232	0.251	0.261	0.282	0.280
	(0.088 - 0.149)	(0.103 - 0.167)	(0.130 - 0.198)	(0.158 - 0.231)	(0.176 - 0.252)	(0.191 - 0.272)	(0.206 - 0.295)	(0.213 - 0.309)	(0.231 - 0.332)	(0.228 - 0.333)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four signifcant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Robust standard errors in parentheses

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

Appendix Table A5: Predicted Rates of Ever Being Primarily Self-Employed by Net Worth Levels with 95 Percent Confidence Intervals

Panel A: Men

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth										
Less than $1,000	0.083	0.104	0.115	0.135	0.161	0.166	0.174	0.185	0.184	0.193
	(0.054 - 0.112)	(0.071 - 0.136)	(0.081 - 0.150)	(0.097 - 0.173)	(0.119 - 0.203)	(0.122 - 0.211)	(0.127 - 0.221)	(0.135 - 0.236)	(0.132 - 0.236)	(0.138 - 0.248)
Between $1,000-$5,000	0.066	0.086	0.097	0.109	0.126	0.114	0.120	0.130	0.147	0.153
	(0.039 - 0.094)	(0.055 - 0.117)	(0.064 - 0.129)	(0.074 - 0.144)	(0.087 - 0.165)	(0.075 - 0.153)	(0.079 - 0.162)	(0.084 - 0.175)	(0.098 - 0.196)	(0.101 - 0.205)
Between $5,001-$10,000	0.065	0.066	0.070	0.093	0.093	0.097	0.092	0.107	0.117	0.121
	(0.036 - 0.094)	(0.037 - 0.096)	(0.040 - 0.100)	(0.059 - 0.127)	(0.058 - 0.127)	(0.060 - 0.133)	(0.054 - 0.131)	(0.064 - 0.151)	(0.071 - 0.164)	(0.073 - 0.169)
Between $10,001-$15,000	0.088	0.100	0.098	0.091	0.088	0.107	0.123	0.139	0.149	0.175
	(0.033 - 0.143)	(0.041 - 0.158)	(0.041 - 0.156)	(0.035 - 0.146)	(0.034 - 0.143)	(0.048 - 0.166)	(0.058 - 0.189)	(0.072 - 0.206)	(0.076 - 0.223)	(0.093 - 0.258)
Greater than $15,000	0.106	0.115	0.115	0.125	0.134	0.133	0.147	0.166	0.170	0.181
	(0.075 - 0.137)	(0.083 - 0.147)	(0.083 - 0.147)	(0.092 - 0.158)	(0.101 - 0.168)	(0.099 - 0.168)	(0.108 - 0.185)	(0.122 - 0.209)	(0.123 - 0.217)	(0.132 - 0.230)

Panel B: Women

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth										
Less than $1,000	0.050	0.055	0.063	0.072	0.080	0.090	0.102	0.106	0.125	0.134
	(0.031 - 0.069)	(0.035 - 0.075)	(0.041 - 0.084)	(0.049 - 0.095)	(0.055 - 0.105)	(0.063 - 0.118)	(0.072 - 0.132)	(0.074 - 0.137)	(0.089 - 0.160)	(0.095 - 0.172)
Between $1,000-$5,000	0.062	0.070	0.081	0.088	0.085	0.088	0.089	0.117	0.144	0.154
	(0.042 - 0.082)	(0.048 - 0.091)	(0.057 - 0.104)	(0.063 - 0.112)	(0.060 - 0.110)	(0.062 - 0.115)	(0.062 - 0.116)	(0.086 - 0.147)	(0.109 - 0.179)	(0.116 - 0.191)
Between $5,001-$10,000	0.054	0.053	0.059	0.061	0.065	0.081	0.090	0.089	0.093	0.099
	(0.029 - 0.079)	(0.028 - 0.078)	(0.032 - 0.085)	(0.034 - 0.088)	(0.037 - 0.094)	(0.050 - 0.113)	(0.056 - 0.123)	(0.055 - 0.123)	(0.057 - 0.129)	(0.061 - 0.137)
Between $10,001-$15,000	0.012	0.022	0.029	0.035	0.054	0.060	0.062	0.074	0.084	0.095
	(-0.004 - 0.027)	(0.002 - 0.042)	(0.005 - 0.054)	(0.008 - 0.062)	(0.020 - 0.087)	(0.023 - 0.096)	(0.024 - 0.100)	(0.031 - 0.117)	(0.036 - 0.133)	(0.044 - 0.147)
Greater than $15,000	0.061	0.068	0.074	0.082	0.094	0.102	0.108	0.122	0.145	0.134
	(0.038 - 0.083)	(0.044 - 0.092)	(0.050 - 0.099)	(0.056 - 0.107)	(0.066 - 0.121)	(0.073 - 0.130)	(0.076 - 0.140)	(0.086 - 0.157)	(0.105 - 0.184)	(0.095 - 0.173)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four signifcant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Robust standard errors in parentheses

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

Appendix Table A6: Predicted Rates of Ever Being Secondarily Self-Employed by Net Worth Levels with 95 Percent Confidence Intervals

Panel A: Men

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth										
Less than $1,000	0.109	0.115	0.114	0.151	0.171	0.185	0.192	0.190	0.193	0.225
	(0.074 - 0.144)	(0.080 - 0.150)	(0.079 - 0.149)	(0.111 - 0.191)	(0.128 - 0.215)	(0.138 - 0.231)	(0.142 - 0.242)	(0.138 - 0.241)	(0.139 - 0.246)	(0.167 - 0.282)
Between $1,000-$5,000	0.087	0.111	0.132	0.128	0.163	0.186	0.205	0.210	0.207	0.216
	(0.056 - 0.118)	(0.076 - 0.147)	(0.094 - 0.170)	(0.090 - 0.166)	(0.120 - 0.206)	(0.139 - 0.234)	(0.155 - 0.256)	(0.156 - 0.263)	(0.152 - 0.262)	(0.158 - 0.274)
Between $5,001-$10,000	0.118	0.128	0.151	0.144	0.144	0.176	0.240	0.277	0.293	0.317
	(0.078 - 0.158)	(0.087 - 0.169)	(0.106 - 0.195)	(0.100 - 0.188)	(0.099 - 0.190)	(0.126 - 0.227)	(0.180 - 0.300)	(0.210 - 0.344)	(0.222 - 0.363)	(0.245 - 0.389)
Between $10,001-$15,000	0.097	0.075	0.097	0.117	0.145	0.173	0.221	0.227	0.260	0.243
	(0.041 - 0.154)	(0.027 - 0.123)	(0.043 - 0.151)	(0.056 - 0.177)	(0.078 - 0.211)	(0.101 - 0.245)	(0.138 - 0.305)	(0.146 - 0.308)	(0.171 - 0.350)	(0.151 - 0.335)
Greater than $15,000	0.112	0.123	0.136	0.155	0.160	0.186	0.228	0.234	0.219	0.234
	(0.080 - 0.144)	(0.090 - 0.155)	(0.102 - 0.170)	(0.118 - 0.191)	(0.122 - 0.197)	(0.144 - 0.227)	(0.181 - 0.275)	(0.184 - 0.285)	(0.166 - 0.273)	(0.179 - 0.289)

Panel B: Women

	Years Since Graduation									
	1	2	3	4	5	6	7	8	9	10
Net Worth										
Less than $1,000	0.060	0.085	0.097	0.101	0.115	0.133	0.151	0.158	0.153	0.150
	(0.039 - 0.081)	(0.060 - 0.110)	(0.071 - 0.124)	(0.074 - 0.129)	(0.085 - 0.145)	(0.099 - 0.166)	(0.114 - 0.187)	(0.120 - 0.196)	(0.114 - 0.192)	(0.110 - 0.190)
Between $1,000-$5,000	0.071	0.097	0.106	0.129	0.151	0.175	0.184	0.195	0.183	0.206
	(0.049 - 0.094)	(0.071 - 0.124)	(0.079 - 0.134)	(0.099 - 0.158)	(0.119 - 0.183)	(0.140 - 0.210)	(0.147 - 0.220)	(0.156 - 0.233)	(0.145 - 0.221)	(0.163 - 0.248)
Between $5,001-$10,000	0.078	0.079	0.094	0.103	0.104	0.115	0.143	0.158	0.190	0.191
	(0.046 - 0.109)	(0.049 - 0.110)	(0.060 - 0.128)	(0.067 - 0.138)	(0.069 - 0.139)	(0.076 - 0.153)	(0.100 - 0.186)	(0.113 - 0.203)	(0.140 - 0.239)	(0.140 - 0.243)
Between $10,001-$15,000	0.062	0.067	0.086	0.102	0.125	0.139	0.138	0.177	0.205	0.196
	(0.027 - 0.097)	(0.031 - 0.103)	(0.044 - 0.128)	(0.055 - 0.148)	(0.073 - 0.177)	(0.081 - 0.197)	(0.080 - 0.197)	(0.109 - 0.245)	(0.131 - 0.280)	(0.122 - 0.271)
Greater than $15,000	0.058	0.069	0.090	0.113	0.119	0.128	0.142	0.139	0.136	0.146
	(0.037 - 0.079)	(0.046 - 0.091)	(0.064 - 0.116)	(0.084 - 0.141)	(0.090 - 0.149)	(0.097 - 0.160)	(0.107 - 0.177)	(0.103 - 0.176)	(0.098 - 0.173)	(0.105 - 0.186)

Source: U.S. Census Bureau, Survey of Income and Program Participation, 1996-2008 Panels and Detailed Earnings Record.

Note: All counts are rounded according to the guidelines of the U.S. Census Bureau Disclosure Review Board and estimates are rounded to four signifcant digits. Estimates in this table are unweighted and, therefore, do not represent the population of the United States.

Robust standard errors in parentheses

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